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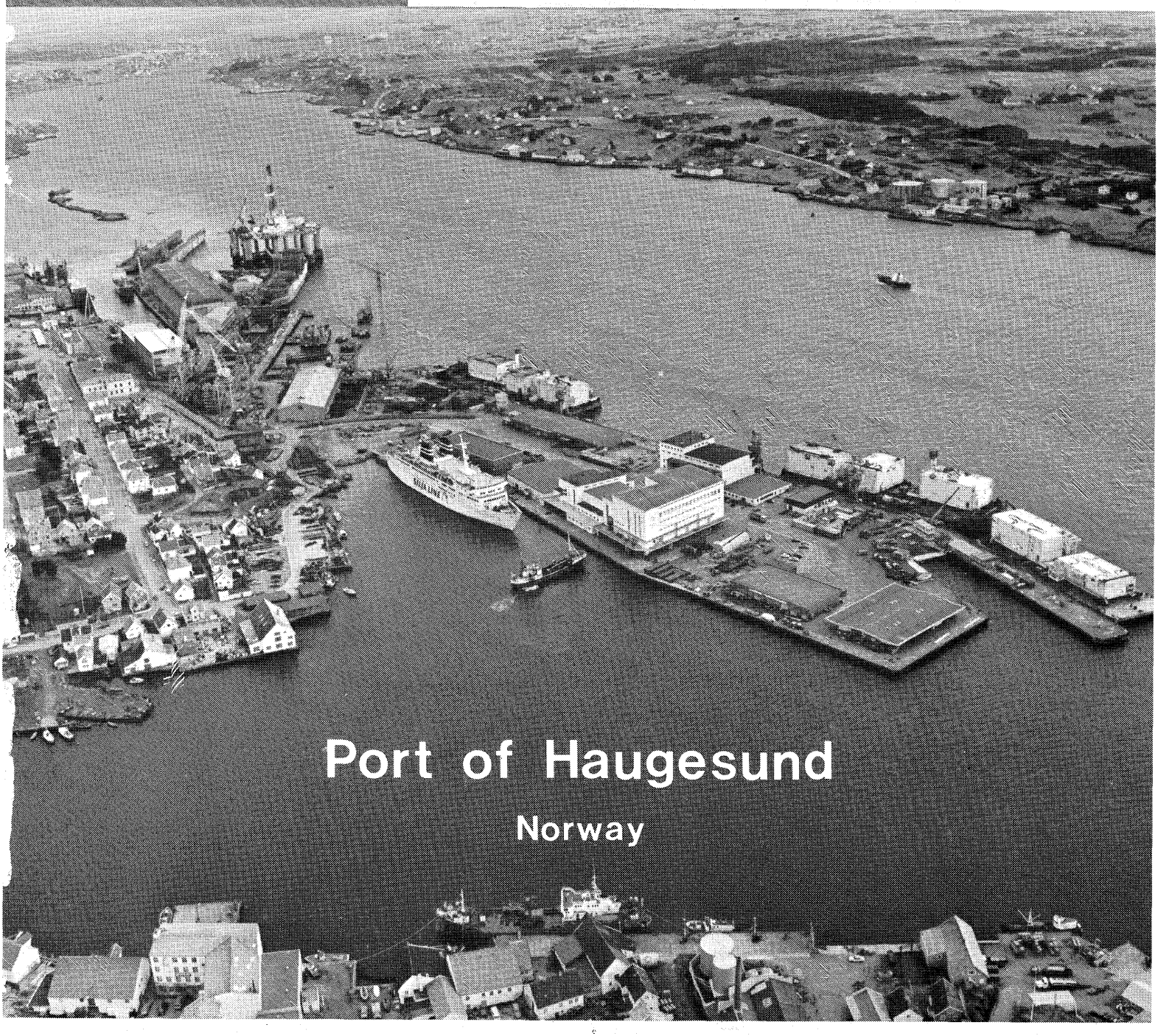
PORTS and HARBORS

September, 1979 · Vol. 24, No. 9



Port of Haugesund

Norway

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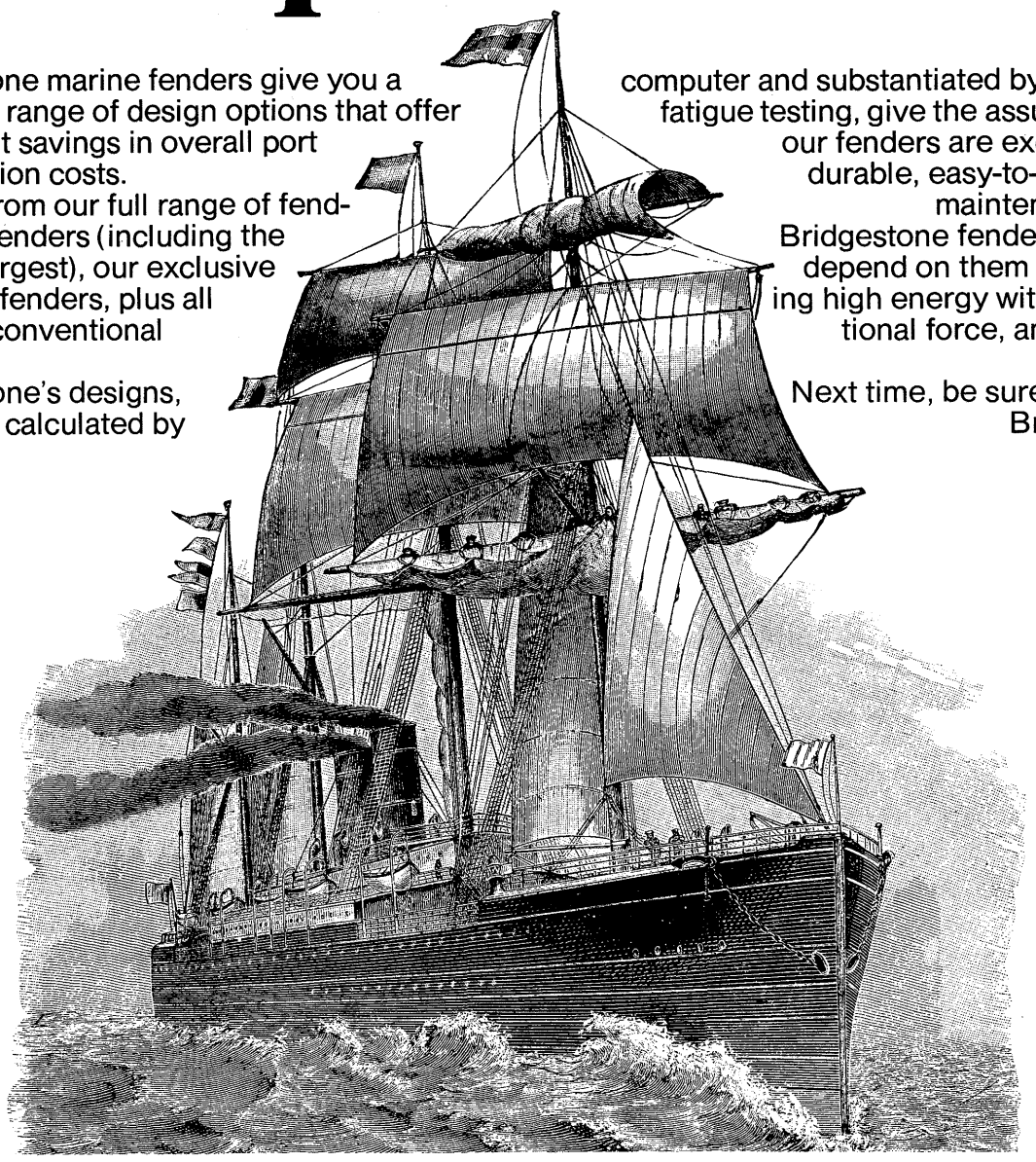

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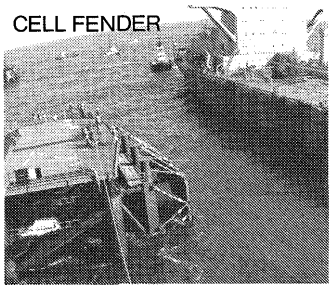

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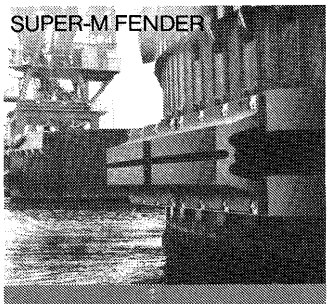

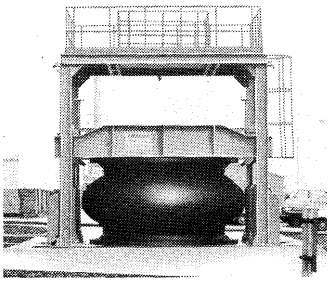

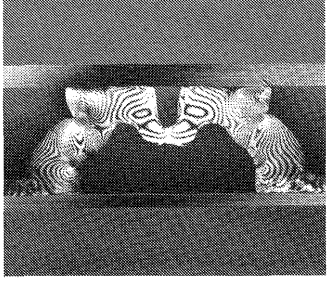

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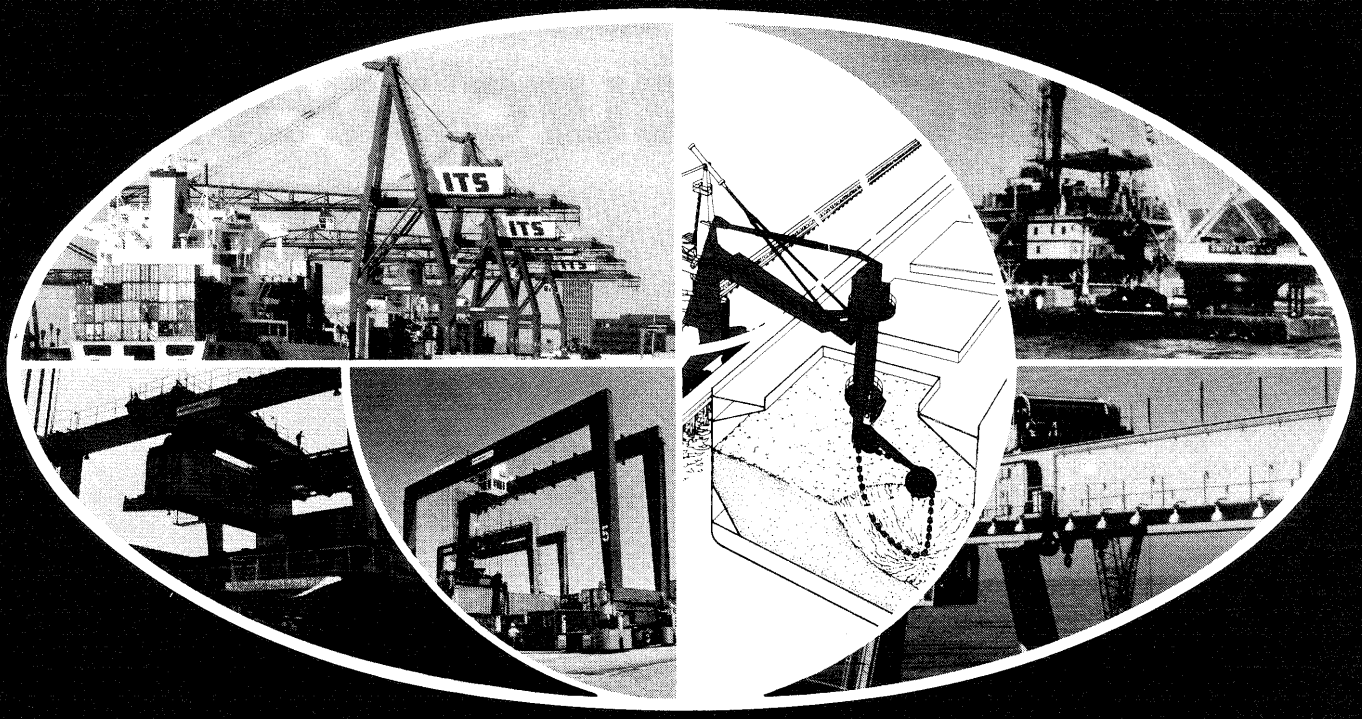

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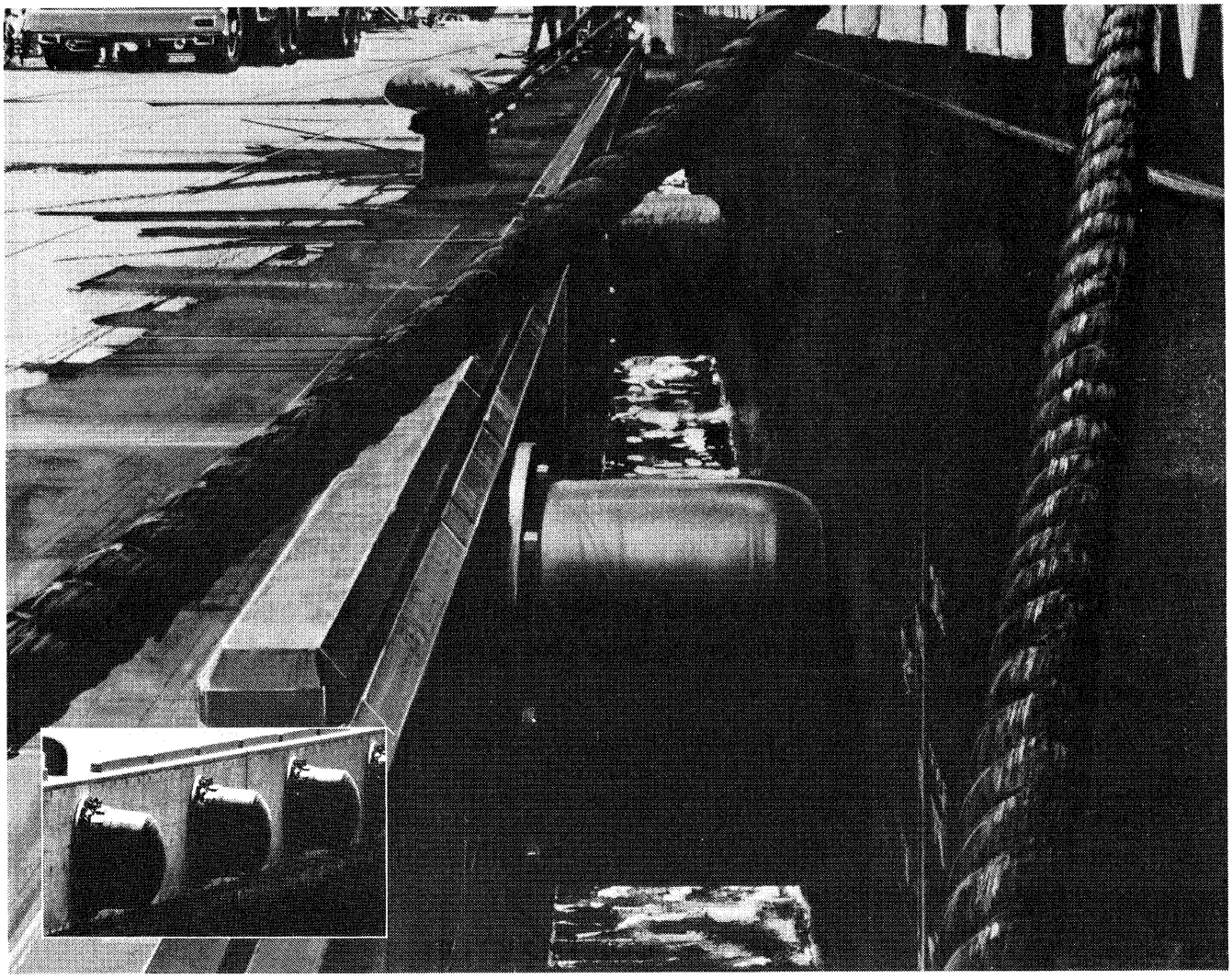

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PORTS and HARBORS

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Tel.: TOKYO (591) 4261
Cable: "IAPHCENTRAL TOKYO"
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September, 1979 Vol. 24, No. 9

CONTENTS

The Cover: **Haugesund, Norway: The main port (See also story on page 47.)**

Price US $3.50 per copy
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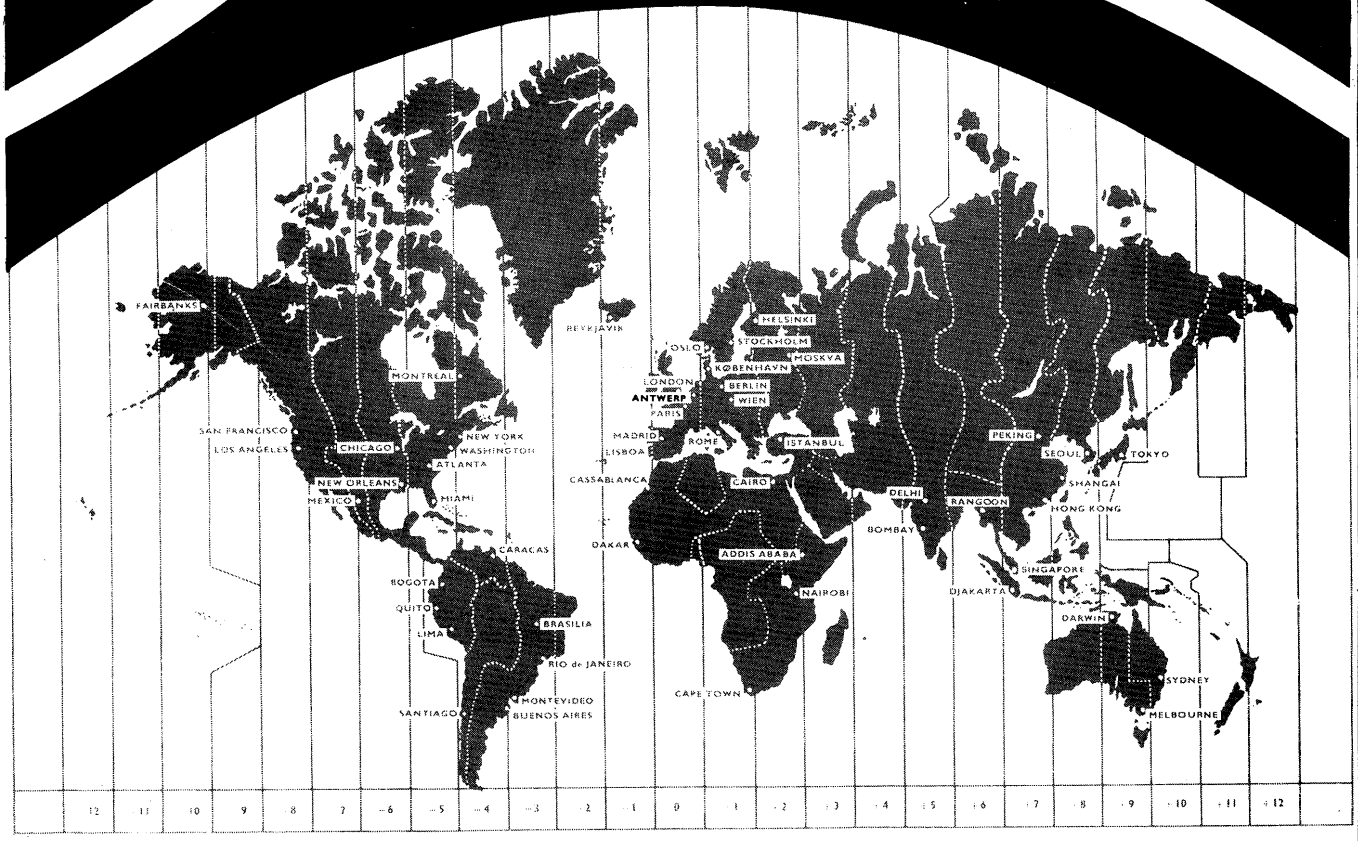
Port service must be multi-purpose and permanent



PORT OF ANTWERP

The multi-purpose and "round the clock and year" activities are some of the assets symbolized by the new P.R.-emblem, stressing the fact that the Antwerp service to port users **AT ALL TIMES** meets all requirements of international trade and transport.

Information: General Management of the Port, Town Hall, Antwerp, Belgium.

IAPH announcements and news

Prof. Leontief's Speech at Deauville

The Future of World Ports was the theme of Prof. Leontief's speech at the 11th Conference in Deauville. In response to an ardent request expressed by the Association, Prof. Leontief, in his July 19 letter, gave his authorization for reproduction of the paper, representing his collaborators, Mr. Carl Gray and Mr. Richard Kleinberg.

With the Association's thanks, the paper is reproduced in full in this issue. (rin)

Notification of Number of Membership Units

Secretary-General, in his July 2 letter, asked all regular members to file the number of membership to be subscribed by each regular member for the years of 1980 and 1981.

By-Laws provides that each regular member shall file with the Secretary-General, on the first day of July in each odd numbered year commencing with the year 1979, a report of the tonnage handled during the calendar year immediately preceding the filing of such report. Such tonnage report shall be used for the purpose of calculating the number of membership units to which that Regular Member shall subscribe until the succeeding tonnage report is filed as required, irrespective of any fluctuation in the volume of tonnage handled in the meantime.

The date of closing of registration of the report is set on October 31, 1979. (rin)

Temporary Levy by Regular Member

The Association, at its 11th Conference in Deauville in May 1979, adopted that a "Temporary Levy" should be collected from among Regular Members, under the voluntary basis, setting the amount of the levy equivalent to 25% of the dues payable by each regular member for 1979.

Secretary-General, in his July 2 letter, asked regular members to follow the suit. A proforma invoice for the remittance was sent to regular members. (rin)

Revised version of the Constitution and By-Laws in circulation

The Constitution and By-Laws of the Association underwent a sweeping revision at the 11th Conference following the long brushing up work by the Constitution and By-Laws Committee.

A copy of the newly amended Constitution and By-Laws was airmailed to all members of the Association. (TKD)

Report by recipient of IAPH Bursary

Submission of a report on what he learned from a training programme he received, was one of conditions of the IAPH Bursary Scheme, which was conducted under the auspices of Committee on International Port Development. In 1978, three bursaries were awarded to four recipients, as follows:—

Mr. Glover Hemans, Crane Superintendent, Ghana Ports Authority
(Attended "Operational Instructions Course" by Port of Singapore Authority, from May 3 to June 30, 1978)

Mr. Henry B. Tsuma, Commercial Officer, Kenya Ports Authority
(Attended "Port Administration & Operations Course" by Port of Singapore Authority, from September 11 to November 30, 1978)

Mr. Mathias Mbilla Binam & Mr. Abdou Mbohou, Port Operations Officers, Cameroon National Port Authority
(Attended "Port Operations Course" by Port of Rouen Authority, August/September, 1978)

Carried on and after page 23 of this issue is the report prepared by Mr. Henry B. Tsuma of Kenya Ports Authority, out of four reports submitted by each of recipient of the bursary. (rin)

Recent Movement of the SDR Unit

As reported by Secretary-General's letters of June 21 and July 2, the Association has adopted the SDR unit as the basis of the membership dues payment effective from

Table of Movement of SDR Unit

(Currency Units per SDR)

Currency	June 1	4	5	6	7	8	11	12	13
Australian dollar	1.14633	1.14612	1.14719	1.14719	1.14582	1.14693	1.14560	1.14590	1.14542
Austrian schilling	17.8780	...	17.8615	...	...	17.8588	17.8701	17.8970	17.8693
Belgian franc	39.0002	...	38.9469	39.0377	38.9792	38.9540	38.9421	39.0026	38.9362
Canadian dollar	1.47814	1.48928	1.49099	1.48765	1.49246	1.49007	1.49022	1.48972	1.48753
Deutsche mark	2.42695	...	2.42313	2.42714	2.42475	2.42339	2.42478	2.42753	2.42461
French franc	5.61337	...	5.60755	5.61368	5.60860	5.61059	5.61021	5.62021	5.61679
Iranian rial	89.3109	89.3101	89.4504	89.2805	89.2953	89.3574	89.3665	89.3743	89.4257
Italian lira	1083.52	1082.87	1082.35	...	1083.01	1082.50	1082.61	1083.65	1082.37
Japanese yen	280.954	280.825	278.600	279.592	278.878	278.881	278.212	277.095	279.158
Netherlands guilder	2.66063	...	2.65527	2.66100	2.65574	2.65441	2.65595	2.66125	2.65644
Norwegian krone	6.58220	...	6.57472	6.57933	6.57346	6.58943	6.60406	6.60526	6.60462
Pound sterling	0.610556	0.610052	0.610040	0.609585	0.612693	0.613119	0.613983	0.611992	0.605536
Saudi Arabian riyal	4.30238	4.30235	4.30910	4.30092	4.30163	4.30462	4.30506	4.30544	4.30792
Spanish peseta	83.6791	...	83.7921	83.8015	83.8496	83.8736	83.8822	83.9123	83.8882
Swedish krona	5.57155	...	5.56058	5.55256	5.55348	5.55670	5.56361	5.57018	5.56032
U.S. dollar	1.26727	1.26726	1.26925	1.26684	1.26705	1.26793	1.26806	1.26817	1.26890

1980. Consequently, members will be billed with the SDR unit for the payment of dues for 1980, instead of the US dollar unit.

In order to avoid any unnecessary mishaps for the payment, this office will carry regularly the data of the SDR unit. So, members are requested to get familialized with the system and be prepared to comply with the requirement.

Movement of the SDR unit against 16 currencies in the SDR system during the period of June 1-13, 1979 was as shown on the preceding page.

Notes: The value of the SDR in terms of any currency other than the U.S. dollar is derived from that currency's exchange rate against the U.S. dollar and the U.S. dollar value of the SDR.

For example, the following formula can be applicable for interpretation (converting) of any currency, as of June 13, 1979:–

SDR 000.00 ×
(Market Rate of Your Currency Against 1 U.S. Dollar) ×
(U.S. Dollar rate against 1 SDR unit, as of June 13 = 1.26890) =
(Amount Payable in Your Currency)

Case One: How much is SDR 660 in U.S. dollar?
1.26890 x 660 = US$837.474

Case Two: How much is SDR 660 in Japanese Yen?
279.158 x 660 = ¥184,244

Your ideas requested to improve Nagoya Conference

A questionnaire to all the participants in the 11th Conference and the Association members was circulated under the date of July 2nd requesting for their candid advice on how we could make more meaningful and attractive the forthcoming conference at Nagoya, Japan, May 23-30, 1981.

The recipients of the questionnaire are encouraged to contribute their frank views on the subjects so that their views will be reflected in time upon the Organizing Committee of the Nagoya Conference in their planning of the 12th Conference combined with the Silver Jubilee of IAPH.

(TKD)

IAPH QUESTIONNAIRE ON THE BIENNIAL CONFERENCE

The completion of this form will help organizers in planning the 12th Conference of IAPH which will be held in Nagoya, Japan, May 23-30, 1981. Your cooperation is appreciated. Please return the completed form to the following address by September 10, 1979.

IAPH Head Office
Kotohira Kaikan Building
2-8, Toranomon 1-chome, Minato-ku
Tokyo 105, Japan

Filled by _____

_____
(Name of Organization)
_____
(Address) (Country)

CONFERENCE:

Taking the 11th Conference as a whole:

1. Was it: satisfactory about right
2. Conference lasted 6 days. Was this
   too long about right
3. There was a working session on the theme "World ports of the future" by Prof. Wassily Leontief.
   a) Were you satisfied reasonably satisfied dissatisfied
   If dissatisfied, comment please:
   b) Do you think there should have been more, the same, or less number of this type of session:
   more same less
4. There were 4 group discussion style of working sessions on the IAPH Committees.
   a) Were you satisfied reasonably satisfied dissatisfied
   If dissatisfied, comment please:
   b) Do you think there should have been more, the same, or less number of this type of session:
   more same less
5. There were 2 Open Symposia simultaneously held.
   a) Did you participate in: Trade Facilitation / Legal Protection of Navigable Waterways
   b) If they were organized separately instead of simultaneously, were you interested in participating in: only one/the both
   c) Do you think there should have been more, the same or less number of this type of session:
   more same less
6. There were Panel Discussion style of working session in the past IAPH conferences (in Singapore and in Houston).
   Do you consider this type of session should be revived in the next conference ? Yes/No
7. Do you think there should have been more, the same or less emphasis on:

Working Session by Guest Speakers	more	same	less
Group Discussion	more	same	less
Open Symposium	more	same	less
Panel Disucssion	more		
Social Events	more	same	less

EXHIBITION:

There were exhibits. Were they:
very informative informative not informative

POST CONFERENCE TOUR:

1. Are you interested in joining the post conference tours organized by the host? Yes/No
2. If yes, shoud such tour be for . . . visiting different ports/sightseeing
3. If yes, about how many days the tour should be?
   less than 5 days one week more than a week
4. If no, is there any particular reason?
   Comments:

TRAVEL AND ACCOMMODATION

1. Did you use the official carrier (AIR FRANCE) and agent (AMERICAN EXPRESS) Yes/No
   Yes/No
2. If not, which airline/travel agent did you use?
   Name of Airline _____
   Name of Agent _____
   or other way _____
3. Were the hotel accommodation
   good satisfactory not good

GENERAL IMPRESSION

Please add briefly any other remarks you may wish to make relating to the conference, its procedures, programs. (Attach a separate sheet if necessary)
Comments:

IAPH co-sponsors MARINTEC Asia seminars, exhibition

IAPH this summer sponsored jointly with UNESCAP

and ICHCA the first phase of a 5-year series of "3 seminars and one exhibition" incorporated program organized in Singapore by "Dredging & Port Construction" magazine, U.K., each of three seminars drawing some 200 enthusiasts from all parts of the world and over 400 firms and organizations participated in the exhibition.

The 3 seminars conducted in the Conference Rooms of Hyatte Hotel and Shangri-la Hotel from June 11 through 15 consisted of Seatec II", "Shipcare 79" and "Inter Island Shipping" and Marine Exhibition which functioned as the visual supplement to the class-work was run in pararell with the seminars at World Trade Center, Singapore.

Among the papers delivered at the seminars were two interesting papers: they were "Restructuring of Existing Port Facilities to Suit Future Trade Requirements" by Mr. A.S. Mayne, IAPH First Vice-President and Chairman of Port of Melbourne Authority who took part as a session chairman; and "Asian Ports: a perspective for the 1980's" by Dr. Ross Robinson, UNESCAP, the text of which respectively are reproduced in this issue of the journal.

The organizer provided throughout this "Seminar-Exhibition" period a complimentary booth at WTC's exhibition hall for IAPH, with a view to making a full publicity and membership campaign of the organization to the visiting port people. Miss Kimiko Takeda stationed there to the job, despatched from the Tokyo Head Office.

The programs of the three seminars is printed on page 37 for the benefit of IAPH members and readers at large.

(TKD)

Mr. A.S. Mayne of Port of Melbourne and IAPH First Vice-President (center) chairs the "Cargo Handling" seminar, Singapore June 15, 1979.

Delegates from all parts of the world at Seatec II, Singapore. (Photos are courtesy of Port of Singapore Authority).

Visitors

- Mr. H.A. James, Chairman, and Mr. J.F. Stewart, General Manager, Wellington Harbour Board, visited the head office on June 11, and met Dr. Hajime Sato and his staff, on their homeward trip after attending the 11th Conference. Included in their three nights stay in Tokyo were visits to Ministry of Transport, Tokyo Metropolitan Government, two of shipping companies and an inspection tour of Port of Tokyo. They left Tokyo on June 13.
- Mr. Alan M. Smith, Dy. Editor of Containerization International magazine of London, visited the head office on June 28, during his two weeks business trip to Japan. He, in preparation of a special article featuring the containerization and related equipment in this part of the world, visited ports of Kobe, Nagoya, Tokyo, Keihin (Tokyo Bay) Port Development Authority and various shipping companies and manufacturers.
- Adm. Galal F. Abdel Wahab, Chairman of Alexandria Port Authority, as a guest of Japan International Cooperation Agency, visited the head office on July 3, and met Dr. Hajime Sato to discuss the possibility of his Authority's joining the IAPH. Adm. Fahmy did attend the 11th Conference in Deauville.
- On July 20, 11 delegates of the Hamilton Harbour Commissioners visited Port of Tokyo and inspected port facilities by Tokyo Maru. The delegation, headed by Mr. Oikawa, was on tour of S.E. Asian countries, including Thailand, Singapore and Hong Kong.
- Brig. G.G.A. Ally, Chairman, Mr. M.J. Ambe, Board Member and Mr. J.E. Kalu, Secretary, of Nigerian Ports Authority visited the Head Office on July 23, on a business trip to Japan and Korea, and were received by Secretary-General and his staff. At the luncheon reception on the same day, Brig. Ally remarked that NPA had more than doubled their port capacity during the last three years, by commissioning 16 new berths, including container handling facilities and ro-ro facilities as well, and by promoting the unified system for palletization. However, he further stated that those shipping companies should give more of attention for the NPA's requirements for palletization so that the efficiency of Nigerian ports be more increased.
  Brig. Ally and his party visited Bureau of Port & Harbours of Ministry of Transport and Japan International Cooperation Agency as well to exchange information of the present situation of ports and harbours.

Membership Notes

New Member

Regular Member

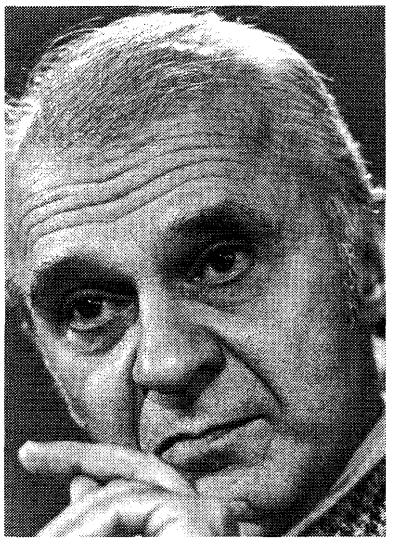
Chittagong Port Authority
Bandar Bhaban, Chittagong
Bangladesh
Office Phone: 201208, 203791
Cable: POTASRAYA-CHITTAGONG
(Mr. Syed Mansur-Ul Hag, Chairman)

Open forum:
Port releases:

The Future of World Ports

Professor Wassily Leontief in collaboration with Carl Gray and Richard Kleinberg

Institute for Economic Analysis
New York University



Professor Wassily Leontief

To provide a basis for general discussion of the great variety of forces that can be expected to determine the development of seaborne commodity traffic over the next two decades, my collaborators at the Institute for Economic Analysis at New York University and I have prepared a preliminary projection of the future growth of maritime traffic up to the year 2000 and an even cruder assessment of the magnitude and structure of investment in additional port facilities that will be required to handle it.

A report prepared for and published by the United Nations two years ago contained a number of rather detailed projections of the economic growth of the world economy from 1970 to the year 2000.[1]

The world economy was subdivided for purposes of these projections into fifteen regions (see Table 1) – eight developed and seven less developed – and the economy of each region was described in terms of six agricultural, twenty-eight manufacturing and service sectors, and nine primary resource sectors producing oil, ores, coal and other minerals. These latter make up the bulk of seaborne traffic. The levels of regional outputs, exports and inputs of all these goods and services were projected from 1970 through 1980 and 1990 to the year 2000.

Based on applications of the so-called input-output approach, these projections are internally consistent, in the sense that the production of each good in each region is balanced against the consumption, allowing for that good's exports and imports. On the global level, the projected sum total of the fifteen regions' exports of each good is equal to the sum total of the projected imports. Moreover, in each region the allocation of the total annual supply of each good takes account of the capital accumulation – that is, the investment in additional productive capacity – that will be required to support the anticipated rise in output. As we will see below, this includes construction of new port facilities to handle increases in oceanborne traffic.

An overall view of the projected growth of the world economy is provided by the three curves (plotted on a logarithmic scale) in Figure 1a. One of them traces the rise of the combined Gross Domestic Products of the **Developed Countries**; another, the growth of the combined GDP's of the **Resource Poor Less Developed Areas**; and the third, the increase in the aggregate GDP of that small group made up of the Middle Eastern and other **Resource Rich Less Developed Areas.** The corresponding changes in the levels of per capita income are shown in Figure 1b.

In the U. N. publication referred to above, emphasis is laid on what might be called optimistic scenario "X", which is based on the assumption that in order to accelerate their growth, both the Developed and the Resource Rich Less Developed countries will be ready to provide a very substantial amount of economic aid to the Resource Poor Less Developed Areas. The alternative scenario ("A") used for the present study is based on the more conservative assumption that economic assistance granted to the Poor Less Developed Regions will, in the coming years, continue to be governed by the same essentially commercial considerations that have determined its level in the past. Hence, while all economies will continue to expand, it can be seen in Figure 1b that the "gap" between the per capita income of the Resource Poor Less Developed and the Developed Areas will not diminish appreciably. The curve representing the projected per capita GDP of the small group of Resource Rich Less Developed areas is seen, as could have been expected, to be rising faster than the other two.

For purposes of this study, the fifteen regions, in terms of which the analysis of the future growth of the world economy was conducted, and in terms of which its results were presented, have been consolidated into the nine essentially continental regions listed in Table 1.

The combined **total exports** and **total imports** of countries included in each region in the year 1970, and their

[1] The English version of **The Future of the World Economy** is published by Oxford University Press, N. Y., 1977; the French is **L'Expertise de Wassily Leontief**, Dunod, Paris, 1977; the German, **Die Zukunft der Weltwirtschaft**, Deutsche Anstalt, Stuttgart, 1977; the Spanish, **El Futuro de la Economia Mundial**, Siglo Veintiuno Editores, Spain, 1977; and the Italian, **Il Futuro dell'Economia Mondiale**, Mondadori Editores, Milan, 1977. Other editions have been published in Japanese, Romanian and Portuguese.

Projected Gross Domestic Product
Future of the World Economy "SCENARIO A"
Logarithmic Scale

Figure 1a

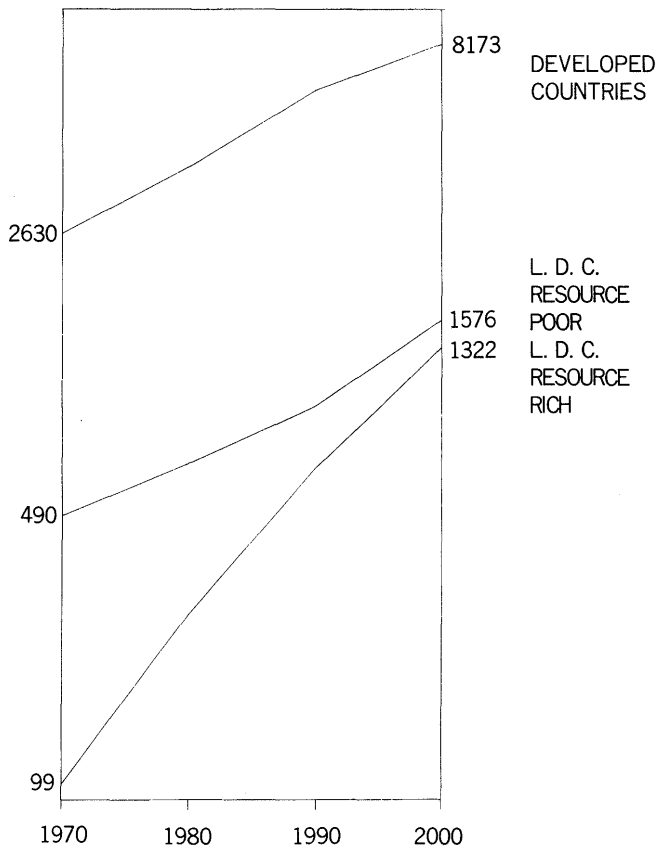
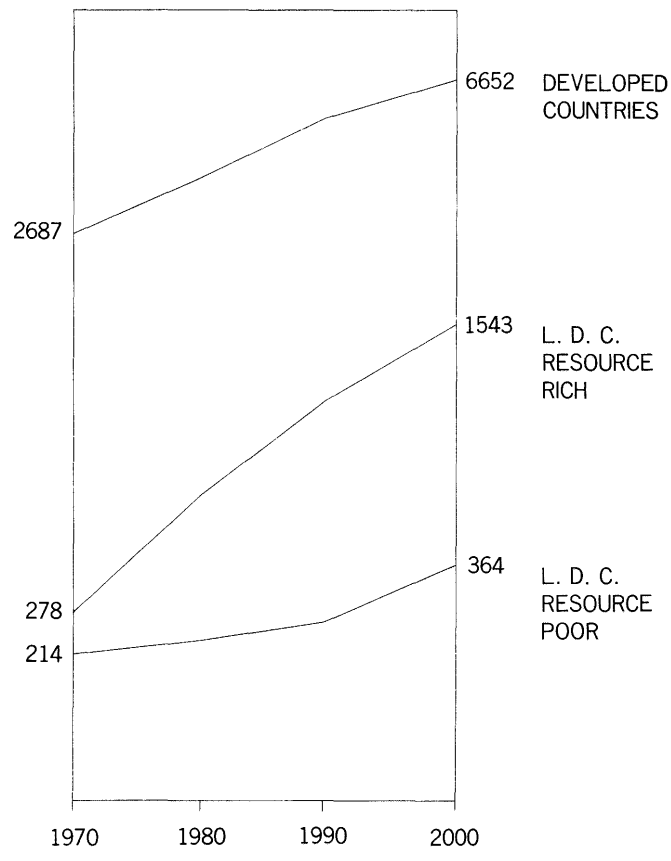


Figure 1b



levels as projected in the aforementioned study for the year 2000, are shown in Table 2. For purposes of comparison, each region's Gross Domestic Product is entered alongside with these regional foreign trade figures. The units of measurement are billions of dollars in base year (i.e., 1970) prices.

Only a part of the external commodity trade of the countries included in each region moves by sea. On the other hand, some seaborne traffic originates and terminates in the same country. By comparing the 1970 base year tonnages of various cargoes that actually moved through the ports of each region with the corresponding total export and import figures, we were able to construct nine sets of "conversion ratios" – each set covering the cargoes of one region. These ratios were then used, in turn, to translate projected regional import and export figures into the corresponding estimates of incoming and outgoing seaborne traffic. This is the traffic that the port facilities of each region should be capable of handling in the year 2000.

For manufactured goods, the "calibration" procedure referred to above was accomplished in two steps, since unlike raw materials, manufactures are generally measured in value terms. On the basis of the available trade statistics, a set of "weight per 1970 dollar value" ratios was computed that permitted us to translate both the 1970 and the projected 2000 dollar figures of each type of cargo into metric tons. These ratios, or rather ranges of ratios, used to convert dollar values to metric tons, are given for 19 groups of manufactured goods in Table 3. Next, these derived base year (1970) import and export tonnage figures were related to the corresponding quantities actually passing through the ports of each region. From this second comparison, we calculated sets of regional conversion ratios like those described above.

Thus we arrived at a tentative estimate of the tonnage of each type of cargo that will have to be handled by world ports in the year 2000. The projected increases from 1970 to 2000, grouped as Liquid Bulk, Dry Bulk, and General Cargo, are represented by the three bars in Figure 2. As can be seen from Table 4, the combined total tonnage can be expected to more than quadruple over a period of thirty years.

As explained above, the projection of oceanborne traffic flows was actually calculated separately for over thirty specific commodity groups, and only afterward were these combined to form the three cargo classifications. Table 5 shows, for instance, the breakdown of the projected rise in the Dry Bulk Traffic by eight commodity groups.

The projected increase from 1970 to 2000 in the total tonnage of General Cargo, broken down into the containerizable and non-containerizable parts, is presented in Table 6.

Table 1

Geographical Classification
Countries Included in the Nine Regions

Region	Principal Component Countries
North America	Canada, Greenland, U.S.A. (World Model Region 1)
USSR, Eastern Europe	USSR, Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania (World Model Regions 6 and 7)
Western Europe	All Other European Countries (World Model Regions 4 and 5)
Japan	Japan, Ryukyu Islands (World Model Region 9)
Mideast	Algeria, Bahrain, Democratic Yemen, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, Yemen (World Model Region 11)
Africa	All African Countries not included in Mideast Region Above (World Model Regions 12, 13 and 14)
Asia	All Asian Countries not included Above (World Model Regions 8 and 10)
Latin America	All of Central and South American Countries (World Model Regions 2 and 3)
Oceania	Australia, New Zealand (World Model Region 15)

Figure 2

Total International Oceanborne Traffic Sum of Imports and Exports of All Regions

Millions of Metric Tons

Category	1970	2000
Liquid Bulk	2395	9285
Dry Bulk	1310	5111
General Cargo	883	4033
Total	4588	18429

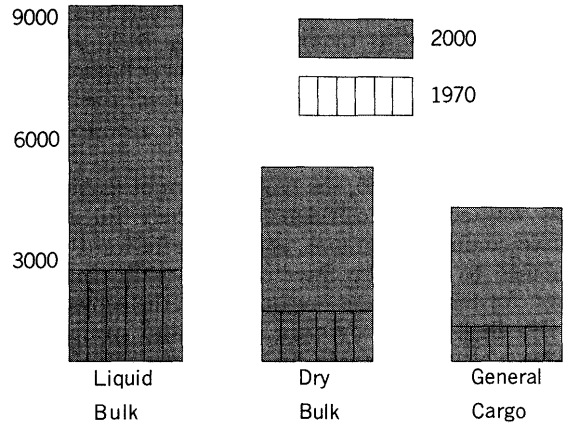


Table 2

Gross Domestic Product, Total Imports and Total Exports
Future of the World Economy
"Scenario A"

Billions of 1970 U.S. Dollars

1970 Region	GDP	Imports	Exports
USSR, Eastern Europe	599	30	30
North America	1059	69	67
Western Europe	804	162	159
Mideast	36	8	14
Asia	257	22	18
Japan	150	18	21
Latin America	154	18	18
Africa	68	13	12
Oceania	63	7	8
Total	3190	347	347
2000 Region	**GDP**	**Imports**	**Exports**
USSR, Eastern Europe	2752	133	174
North America	2374	192	219
Western Europe	2298	664	739
Mideast	989	234	103
Asia	874	85	83
Japan	865	107	139
Latin America	558	90	71
Africa	230	57	42
Oceania	136	27	19
Total	11076	1589	1589

Table 3

Factors of Conversion from Trade Value to Freight Tonnage*

World Model Sector	Metric Tons per 1970 $1,000	
	Low	High
Other Agriculture	2.30	5.40
Food Processing	2.10	3.80
Textiles	0.20	0.45
Furniture, Fixtures	0.40	0.70
Paper	3.70	7.40
Printed Matter	0.35	0.85
Rubber	0.45	0.90
Chemicals-Industrial	2.35	4.95
Chemicals-Other	0.35	0.50
Cement	25.0	50.0
Glass	2.80	5.50
Motor Vehicles	0.45	0.60
Other Transportation Equipment	0.70	1.05
Aircraft Parts	0.03	0.05
Metal Products	3.00	7.80
Machinery-Electrical	0.15	0.50
Machinery-Other	0.15	0.35
Instruments	0.05	0.12
Other Manufactures	1.20	3.50

*Calculated on the basis of detailed commodity trade data in **Yearbook of International Trade Statistics,** United Nations 1971.

Table 4

Port Traffic

Sum of Imports and Exports
Millions of metric tons

1970 Region	Bulk Cargo				General Cargo
	Liquid	Dry Mineral	Other Dry	Total Bulk	
Mideast	920	0	4	924	14
Western Europe	680	162	80	922	380
Japan	211	195	72	478	62
North America	196	136	98	430	180
Latin America	210	91	32	333	48
Asia	86	45	42	173	70
Africa	22	74	5	101	48
USSR, E. Europe	47	21	27	95	63
Oceania	23	67	9	99	18
Totals	2395	791	369	3555	883
2000 Region	Bulk Cargo				General Cargo
	Liquid	Dry Mineral	Other Dry	Total Bulk	
Mideast	3928	176	41	4145	392
Western Europe	2020	389	229	2638	1721
Japan	1119	925	375	2419	359
North America	520	578	305	1403	594
Latin America	706	429	85	1220	228
Asia	590	291	213	1094	239
Africa	135	278	49	462	177
USSR, E. Europe	144	72	110	326	267
Oceania	123	163	24	310	56
Totals	9285	3301	1431	14017	4033

Table 5

Compositon of Dry Bulk Traffic

Sum of Imports and Exports*
Millions of metric tons

Cargo	1970	2000
Iron Ore	393	1545
Coal	206	863
Timber	155	908
Grains and Feedstuffs	222	599
Fertilizers	123	526
Bauxite and Alumina	68	208
Scrap and Nonferrous Ores	53	210
Other Dry Bulk	111	272
Totals	1331	5131

*Includes some traffic not counted in regional totals.

Table 6

Estimated Increase in International General Cargo* From 1970 to 2000

Imports plus Exports
Millions of metric tons

Region	Contain-erizable	Not Contain-erizable	Total Increase
Western Europe	1090	251	1341
North America	308	106	414
Mideast	318	60	378
Japan	246	51	297
USSR, Eastern Europe	169	35	204
Latin America	146	34	180
Asia	143	26	169
Africa	107	22	129
Oceania	30	8	38
Totals	2557	593	3150

*Figures may vary up to ±25% with changes in the composition of trade within world model sectors.

The projections just described, broken down by regions, by types of cargo and by specific commodity groups, provide the basis for our assessment of the additional port facilities of particular types that will be needed to load and to unload the increased tonnages of the year 2000. The magnitude and composition of this traffic will determine the amount of capital that will have to be invested in construction of the new facilities.

If the projection of future traffic flows is difficult to make, the task of specifying the technical characteristics of future port facilities, and of deriving the corresponding construction costs, is still more complex. Without even attempting to describe in detail the procedures by which we have arrived at the final figures about to be presented, I limit myself to outlining the principal steps.

The amount of capital required for the construction of a modern port depends on the natural conditions of the site in which it is to be located, the annual throughput of different types of cargo to be handled, and the degree of mechanization of handling techniques to be adopted. It is, of course, this last factor which will largely determine the equipment costs for the facility.

To arrive at the appropriate range of investment costs per ton for each of several different types of new ports, we have examined actual investment figures for a great variety of recently constructed or enlarged ports. In doing so, we availed ourselves of the opportunity to consult some of the leading engineering firms engaged in planning and construction of large ports.

The "cost profiles" we derived for the various types of ports that will have to be built in the nine Developed and Less Developed regions over the next twenty years, are shown in Table 7.

Each line of that table presents what might be called the profile of a typical port of one particular kind – a port which handles a certain kind of cargo, or a particular cargo mix – and operates at a particular level of mechanization. The first column of the Table specifies the type of port facility by the kind of cargo it handles and by its degree of mechanization. The definition of what is meant by "low," "medium" and "high efficiency" is given in Table 8. Column 2 in Table 7 indicates whether the typical port in question is located in a Developed or a Less Developed

Table 7

Cost Profiles of Ports: Cost per Berth

Costs in Thousands of 1970 U.S. Dollars

(1) Type of Port	(2) Region Type	(3) Construction Costs	(4) Equipment Costs	(5) Total Costs	(6) Annual Throughput	(7) Cost per Ton
General Cargo: Break-Bulk	Developed	NA	NA	2825	125	22.6
	Less Developed	1870	550	2420	120	20.2
General Cargo: Container Terminal	Developed	NA	NA	14000	750	18.60
	Less Developed	NA	NA	5115	500	10.23
Liquid Bulk -Berth only -VLCC	Developed	36300	70100	106400	147000	0.72
	Less Developed	NA	NA	7000	14700	0.48
Terminals*	Developed	249600	NA	364700	147000	2.48
Dry Bulk: Minerals**						
A. Loading Terminal -Low Efficiency	Both	NA	NA	8000	3500	2.29
-Medium Efficiency		NA	NA	60000	36000	1.67
-High Efficiency		NA	NA	50000	60000	0.83
B. Unloading Terminal -Low Efficiency	Both	NA	NA	13000	5000	2.60
-Medium Efficiency		NA	NA	17000	12000	1.40
-High Efficiency		NA	NA	22000	24000	0.92
Dry Bulk: Multipurpose	Both	14000	10000	24000	2000	12.0

*Terminals designed to accommodate very large crude petroleum carriers. These include offshore terminals and deepwater piers.

**Three levels of efficiency are distinguished for dry-bulk terminals according to the rated capacity of cargo handling equipment installed at the port, the maximum size of ships that can be berthed and the annual throughput corresponding to the cargo handling equipment.

Table 8

Classification of Mineral Dry Bulk Ports

Category	Type	Capacity of Equipment (TPH)	Maximum Ship Size (DWT)	Annual Throughput (1000 Metric Tons)
High Efficiency	-Loading Terminal	20,000	Over 250,000	60,000
	-Unloading Terminal	6,000		24,000
Medium Efficiency	-Loading Terminal	12,000	80 – 250,000	36,000
	-Unloading Terminal	3,000		12,000
Low Efficiency	-Loading Terminal	4,000	Under 80,000	3 – 5,000
	-Unloading Terminal	1,000		

region. The total dollar investment (valued in 1970 dollars) required to construct such a port – one of the particular type and regional location – is entered in Column 5. Whenever information was available, that figure was split into Construction Costs and Equipment Costs which are shown, respectively, in Columns 3 and 4. The annual throughput, that is, the total tonnage that the particular facility is designed to handle, is given in Column 6. Finally by dividing the total costs by annual tonnage handled, we arrive at an estimate of "investment per ton of annual throughput," valued in terms of 1970 dollars.

The information contained in Table 7 was used, in combination with our detailed projections of the volume and composition of additional cargo that will have to pass through the new port facilities in the year 2000, to estimate the "investment per ton" for each of the five principal kinds of cargo in each of the nine continental regions. These regional "investment cost per ton" figures are shown in Table 9.

Multiplying these per ton investment figures by the

Table 9

Investment Expenditure in Port Facilities per Ton of Annual Throughput

1970 U.S. Dollars per Ton

Region	Liquid Bulk	Dry Bulk		General Cargo	
		Minerals	Other	Non-Containerized	Containerized
North America	2.48	1.54	12.0	22.6	18.6
Western Europe	0.72	1.40	12.0	22.6	18.6
Japan	2.48	0.92	12.0	22.6	18.6
USSR, E. Europe	0.72	1.67	12.0	22.6	18.6
Oceania	0.72	1.67	12.0	22.6	18.6
Latin America	0.48	1.67	12.0	20.2	10.23
Asia	0.48	1.67	12.0	20.2	10.23
Africa	0.48	1.67	12.0	20.2	10.23
Middle East	2.48	0.92	12.0	22.6	18.6

Table 10

Increase in Seaborne Traffic From 1970 to 2000*

Millions of metric tons

Region	Liquid Bulk	Dry Bulk		General Cargo
		Minerals	Other	
North America	324	442	207	414
Western Europe	1340	227	149	1341
Japan	908	730	303	297
USSR, E. Europe	97	51	83	204
Oceania	100	96	15	38
Latin America	496	338	53	180
Asia	504	246	171	169
Africa	113	204	44	129
Middle East	3008	176	37	378

* Figures derived from Table 4.

Table 11

Projected Regional Investment in Additional Port Facilities to Handle Increase in Seaborne Traffic from 1970 to 2000: By Region and Type of Port

Millions of U.S. Dollars

Region	Type of Port				Total Investment in Ports	Investment in Ports as a Percentage of Total Investment**
	Liquid Bulk	Dry Bulk		General Cargo*		
		Minerals	Other			
North America	804	681	2484	8248	12217	0.30
Western Europe	965	318	1788	26383	29454	0.75
Japan	2252	672	3636	5828	12388	0.72
USSR, E. Europe	70	85	996	4002	5133	0.09
Oceania	72	160	180	751	1163	0.26
Latin America	238	565	636	2330	3769	0.49
Asia	242	411	2052	2128	4833	0.51
Africa	39	341	528	1649	2557	1.14
Middle East	7460	162	444	7399	15465	0.73
World Total	12142	3395	12744	58718	86999	0.44

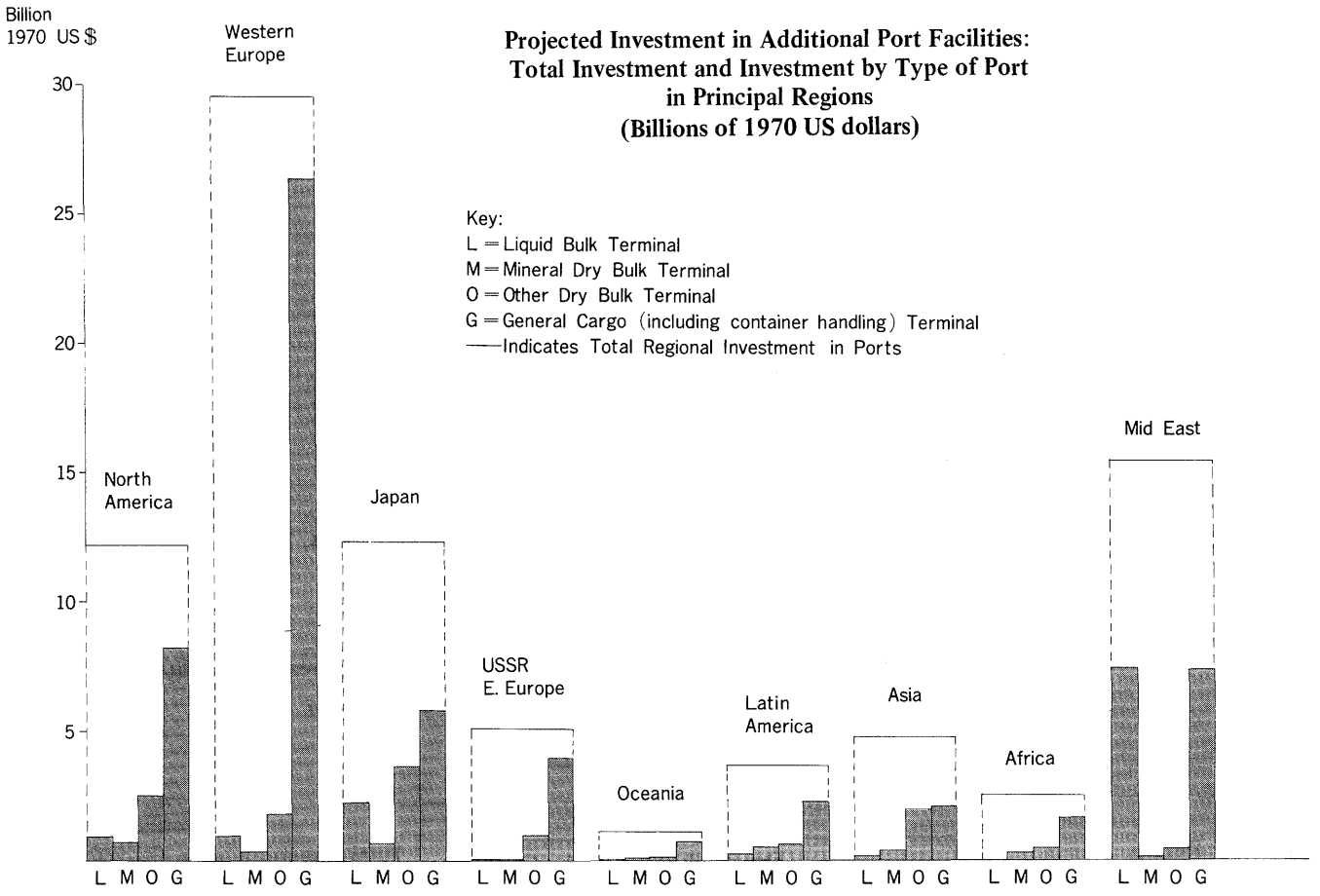
*General cargo port includes container handling materials.

**Total investment is the value of the incremental capital stock over the given period.

corresponding projected increases in annual traffic tonnage, for which figures are shown in Table 10, we finally arrive at estimates of the total amount of capital that will be needed in each region, and in the world as a whole, to provide the additional port facilities capable of handling the projected increase from 1970 to the year 2000 in international seagoing traffic. The figures, stated in 1970 dollars, are shown in Table 11. These investment requirements can be interpreted more meaningfully if expressed as percentages of the total investment that will have to be carried out over that thirty year period, in each region and in the world as a whole, according to the general growth scenario described at the beginning of this report. The highest percentage figure is shown for Africa, the smallest – for the USSR and Eastern Europe. For the world as a whole, according to these preliminary projections, construction of additional port facilities can be expected to absorb 0.44% of aggregate capital investment projected from 1970 to the year 2000. In Figure 3, the structured projection of port investment is presented region by region, in graphic form.

Figure 3

Projected Investment in Additional Port Facilities: Total Investment and Investment by Type of Port in Principal Regions (Billions of 1970 US dollars)



In conclusion, I must remind you again that all these computations were carried out with very limited resources in a very short time. In a sense, our enterprise was a "tour de force." If, in response to it, a more extensive study of the "Future of World Ports" were carried out by a more knowledgeable group of experts, our principal aim will be, to a large extent, attained. (End)

(Turned back from page 29)

3. Industrial Peace/Management/Union Role

In this subject, emphasis was placed on the importance of industrial peace at the port and how essential it is also to bear in mind that it is the Port that keeps the transport industry and trade moving in any economy, and that industrial unrest at the Port could damange the country's economy. Some remedial measures that can help maintain industrial peace at the port or any other work place were also discussed, e.g. Tripartite responsibility, which should comprise the Government, employers and trade unions, with the Government making available machinery for conciliation, arbitration and the right to take ultimate intervention in case of serious disputes, while the employer's role is to work within the legal frame-work and conciliation or arbitration machinery laid down by the Government and to exercise Management's prerogatives in a fair and just manner, so as to obtain profits without infringing the rights of the workers or depriving them of their fair share of profits, and the Union's role, besides working within the legal framework and conciliation or arbitration machinery provided by Management, is to protect the rights and interests of the workers and to undertake to use collective bargaining, with the Government acting on their behalf, while recognizing that the organization must be effectively and efficiently managed and its survival and progress/growth ensured.

Observations:

One of the best methods of maintaining peace at the Port, in addition to a bonus scheme an organization might have for its employees, is to educate the wrokers on the aims and objectives of the organization, and to make them feel that they, too, are part and parcel of the organization, and not just people working to earn a living; and that any stoppage of work or illegal strikes will, not only ruin the organization, but also the country's economy and the interests/welfare of the workers in terms of benefits and other privileges.

CONCLUSION

In conclusion, I would like to state that I am deeply indebted to the International Association of Ports and Harbors for having awarded me a bursary, which enabled me to attend such a valuable course, and also to the Kenya Ports Authority Management for nominating me for the above course, which has greatly enhanced my experience in Port operations and Administration procedures.

I hope to apply or put into practice, the knowledge and experience I have gained from the course to contribute towards the efficient running of our Ports. **(End)**

Asian Ports: Perspective for the 1980's

by Dr. Ross Robinson of United Nations ESCAP

Whether or not the 1970's have seen adequate funding made available for port development in the developing countries of the ESCAP region is, of course, an arguable point.

What is more certain, however, is that development funding agencies have been willing and perhaps more able to play an increasingly active role in the task of port development. Over the 5-year period 1973/1977 the International Bank for Reconstruction and Development (The World Bank) and its International Development Agency (IDA) made loan funds of $298.7 million available to the developing countries of the ESCAP region—an average of almost $60 million per year. The Asian Development Bank found $126 million for port projects over the 1974/1978 period—or about $25 million per year. (In addition it might be noted that the World Bank made available to the Philippines and to Indonesia in 1975 and 1976 respectively a total of $74 million for expansion of inter-island fleets).

No country can afford not to have efficient ports and developing countries have an even greater need, particularly those in which a large proportion of total export income earned derives from only one or two relatively low value, primary commodities with high price elasticity of demand and where there is a net outflow of foreign exchange for shipping services. In 1975, the latest year for which statistics comparing ESCAP region trade and world trade are available, ESCAP region countries accounted for 24.1% of world trade, 22.2% of world exports and 26% of world imports. The developing countries of the ESCAP region accounted for 10.8% of world trade tonnage, 14.6% of world imports and 6.9% of world exports. As one might expect, however, what appears to be fairly small percentage values are in fact represented by considerable tonnages—about 1.5 billion tons total trade for all countries in the ESCAP region and 624 million tons total trade for the developing countries.

A tentative estimate of the total ocean freight bill for the region in 1976 has been put at $28 billion whilst total export freight in the developing countries of the region is set at $7.3 billion. Of this $0.9 billion was received by national shipping lines compared with $6.5 billion by foreign shipping. For all ocean freight transactions in the developing countries of the ESCAP region there was for 1976 a net foreign exchange outflow of $4.2 billion.

In terms of the freight volumes, in 1977 fourteen major ports in the developing countries of Asia handled 178.4 million tons of cargo with Singapore the single most important port (64 million tons in terms of total cargo handled). In the same year the 9 largest ports in terms of container throughputs in developing countries of Asia handled 2.43 million TEU's half of which were handled by the port of Hong Kong alone, ranking it among the world leaders.

In terms of the amount of investment in port development, the volume of trade involved and in the significance of the maritime sector in foreign exchange flows the ports of Third World Asia clearly have a critical role to play in regional and national economic development. There are, of course, other bases upon which we can evaluate the significance of the ports but it is not necessary to labour the point.

We might ask, however, within the framework of development strategies and development generally, what problems face the ports of Third world Asia in 1980's? Have we in fact solved the infrastructural problems of ports? Do we look forward to greater operational efficiency with changes in technology on the scale which we have seen in the 1970's? Or will the 1980's see continuing inefficiency in the ports of the region?

The 70's . . . A quantum leap for Asian ports?

It has been the progressive and relatively rapid adoption of containerization on the major trade routes to and from Asia that has been the one factor most responsible for altering the shape and function of the major ports in the region.

In June 1972 and later in September, the arrival of purpose built cellular container vessels at the new East Lagoon Container terminal in Singapore and at Berth 1 Kwai Chung in Hong Kong were the events which pitched Third World Asia into a frenzy of shipping and port development. By the end of 1970's few of the major ports in the developing countries of Asia will not have specialised container terminals or specially equipped berths for container handling.

Quite apart from the introduction of this specialized new technology into the trades of Asia the 1970's have seen the emergence and consolidation of national merchant marines with expansion into new tornage and new routes. Thus Neptune Orient line in Singapore, the Malaysian International Shipping Corporation (MISC) and the Philippines International Shipping Corporation (PISC) have purchased vigorous policies of expansion. Private ownership too, has seen rapid development—OOCL, World Wide Shipping, and Wah Kwong for example in Hong Kong. And while the energy crisis and the events of October 1973—and somewhat depressingly at intervals thereafter—left much of the world fleet in mothballs, by and large Third World Asian fleets weathered the storm, largely under the protection of longer term contracts.

This considerable expansion of fleets and the new awareness of shipping and maritime developments in Asia generally through the 1970's, have made governments and individuals more aware of port problems and inefficiencies and has in turn led to more vigorous attempts to upgrade national ports. There has been not only development of new container handling facilities, but also the modification and upgrading of older and existing facilities, the construction of new berths, new bulk handling installations and the development of entirely new port complexes. Malaysia for example has pressed ahead with the development of Johore and Kuantan and with the upgrading of Port Kelang and Penang; in Pakistan, Port Qasim is still in the process of construction; in India, Haldia is now operational, Cochin is pressing ahead with its development and Visakhapatnam has major new facilities; in Philippines, the International Port has been constructed, in Thailand the East Quay project was finished in 1978 and became operational. In the Pacific, major new developments have taken place in Port Moresby. Lae and Suva for example and more projects are on the drawing board.

This is not to say that all is well in the ports of Third

World Asia as we shall see below. But the 1970's have seen major initiatives undertaken and completed and a period of concerted and constant effort to upgrade port facilities in order to handle increased volumes of trade and more sophisticated, high cost vessels.

There can be no doubt that the 1970's have seen a concerted attack on the need for new physical infrastructures in the ports of the region but the disquieting question is whether or not this is what port development is all about.

The simple answer is that it is not. It is a much more complex problem than one that can be solved by new hardware. It is instructive therefore to try and crystallize as clearly as possible some of the broader development issues for ports in Third World Asia through the 1980's.

PORT DEVELOPMENT–SOME ISSUES FOR THE 1980's

1. Cranes and quays . . . or the policy environment?

Within the broad framework of development strategies generally, Hirschman, one of the more influential Development Economists, has argued with considerable logic that it is not the scarcity of capital or resources which is the overriding factor in economic development but rather the means and ability to bring them into play. It is the inadequacy of the institutional organisational and administrative frameworks which is the most pressing problem in the development process. It is also the most intractable. For while it is quite apparent that the international capital market is willing to meet large proportion of the infrastructural capital requirements even for developing countries, it is quite clear that for a large proportion of them, their ability to change significantly the institutional framework is extremely limited.

It is not difficult to see the implication of this argument for ports. The improvement of the physical infrastructure of a port does not solve the adequacy or the efficiency problem. It is true, of course, that only in exceptional cases will there not be an improvement in port performance. And it is true also that without development of a port to handle its trade requirements. But the provision of new facilities is no guarantee of efficiency or of the proper development of a port for its trade.

Unfortunately, the ports of the developing countries of Asia–and elsewhere for that matter–have some way to go before adequate institutional, or perhaps 'structural', requirements are met. And since these are very largely matters for internal and national decision-making change may take some considerable time.

There are a number of pressure points within the broad framework of what might be called 'structural' problems in the ports of the developing countries but it will suffice to refer briefly to just two such problems.

Problem 1: Linking decision-making with adequate information systems

Ports in the developing countries of Asia tend to go about this task of data and information gathering either with evangelical fervour or with notable apathy. The result in the first case is a mass of figures which describe, or which have potential to describe, all sorts of interesting aspects of port operations; in the second case the lack of any meaningful data requires the decision-makers to proceed from one rule-of-thumb decision to another! Neither model is satisfactory.

We ought no longer to talk about port statistics but about port information systems–an informational framework which is keyed into decision making at every level of management, from the tally clerk and berth supervisor to the Chairman and for time frames from the immediate present to long term, management ought not refer only to the tasks performed by the chief executive. It is a task practised by everyone involved in monitoring or controlling the activities of the port.

In one developing country port in the region, the Chairman receives 16 beautifully typed sheets each week–perhaps at least ten thousand 'bits' of data. Unfortunately these 'bits' of information have bypassed the scrutiny of anybody with any decision-making role to play and if it is only the Chairman who is jumping up and down at some of the problems which the figures reveal, then the essence and meaning of the task of management has not been adequately grasped!

For the ports of some of the developing countries of Asia, the development of adequate data will be an important task through the 1980's but even more important will be the development of a streamlined management information system which properly links information into the decision-making structure.

Problem 2: Adequate pricing and tariff structures

There remains a good deal of work to be done yet before ports in developing countries have implemented adequate pricing structures. There are in fact two aspects of this problem. The first relates to what might be called 'substantive' issues in price and tariff determination and certainly within this area there are a number of difficult conceptual problems. How does the port charge for its services? Should it levy charges on ships and/or cargoes? Is charging on the basis of NRT or length of a ship or time alongside adequate? Should there be discriminatory charges on import vis-a-vis export cargoes? Or different charges for berths of different quality? Or under different seasonal conditions?

A related set of problems refers to the degree to which ports should be revenued financing or should receive public support, as they have tended to do in the past. To what extent can ports fully recover costs for example, whilst still competing for cargo? These are not simple problems and are ones which are receiving some research attention in the US and U.K. In the developing countries of Asia there is considerable evidence to suggest a degree of irrationality in port pricing and considerable under-pricing of port services. Through the 1980's these problems will need to receive a good deal of attention.

But the second and perhaps the more difficult problem related to port pricing refers not to the 'substantive' but to the legislative and administrative aspects. Thus in some situations the inflexibility of the legislative framework is such that port tariffs cannot be changed without reference to legislation–and therefore lack the responsiveness which is required in the changing circumstances of the commercial world. This of course raises the issue of the degree of autonomy which port authorities have and the degree of governmental control under which they must work. Thus in a number of ports in the developing countries of the region the current level of expenditure which the ports can authorise without reference to the central government is tied to amounts enshrined in Acts or decisions made in the 1920's or 1930's.

Clearly the solution to this sort of problem lies squarely within the policy framework.

There are, of course, a number of other problems which reflect inadequacies in the institutional and administrative frameworks rather than in the need for capital. In one developing country in the region for example, it requires 52 signatures to clear the cargo from the port. In others, difficult customs procedures which were adequate for conditions applicable in the immediate postwar years–if not before now only serve to increase the delays to cargo movement. This port clearance procedures, documentation, administrative structures and a host of other specific problem areas are indicative of the need for intensive and probably protracted attention to the policy environment of ports.

2. Right technology

To some extent the fascination among Development Economists and in the developing countries for technology as the panacea for all ills has taken on a more sobering dimension. There is much more attention being paid now to the need for 'appropriate' technology and an adequate mix of externally developed and indigenous technology.

Again the application of the more general developmental principles to the port case can be readily appreciated. The matter goes beyond the simple, if deplorable one, of bad advice. There are innumerable examples of manufacturers' representatives selling unnecessarily sophisticated machines to do unnecessary tasks in unnecessarily short times to unwitting port managers. There is no need to stress this point. But it is worth sounding a note of caution also to those consulting firms whose success within a western context leads them to assume that what is good in that context of workable in the Third World. Such is not necessarily the case.

It is wrong also to assume that the end product of a consulting or advisory exercise is the preparation of a several-volume, glossy report which presents in commendable details and with great skills the sort of port that might be needed. It is not. **It is the strategy for achieving an objective which is the most significant output of a plan, not the plan itself.**

It is not easy to lay the blame at anyones door–it simply underlines the complexity of the development process even within the relatively specific framework of port development. Certainly some of the blame must rest with those who frame the terms of reference–often Western educated indigenous personnel who, in their efforts to achieve progress, unknowingly adopt the western models and in so doing fail to break the vicious circle.

In the developing countries especially, the port is very clearly the interface not just between different modes of transport but between two conflicting socio-economic cultural and value systems. It is a place where a time-critical value system of meshing it with prevailing labour, social and administrative requirements. This puts the whole question of commercial activities, aid and assistance into a different ballgame and requires a complete re-examination of prevailing attitudes. It requires, too, a greater research and development effort to examine more carefully the dimensions of what might be a meaningful 'appropriate' technology in the ports of some developing countries.

Problems associated with the adoption of containers in the developing countries provides some concrete examples of these general principles. The Western model of containerization is one of a completely intermodal system. But in the developing countries there are many reasons why this is an unreasonable and inadequate model. In effect, the greatest savings are in the rapid turnround time of the high cost container vessels–so far developed or developing countries, all activities must be directed to the rapid handling of vessels. The proper model for developing countries may then be a fully intermodal operation at one end of the range and a quayside operation at the other. Also, in the trades of the developing countries and once again for numerous reasons, there is a high proportion of LCL cargo. Thus the proper model for the developing countries is one which provides significantly more storage capacity either at the port or in specially designed CFSs at appropriate locations away from the port, with the labour force retained for stuffing and unstuffing operations.

Unfortunately, neither the decision-makers in some of the developing countries nor their unwitting and western biased consultants have grasped these simple relationships.

A further problem is related to the selection of equipment for container-berths–is it straddles, or transtainers, or trailers or forklifts? The basic planning principle must of course be that each case will be judged on its merits but there are a number of points which ought to be borne in mind and bear specifically on the selection process for developing countries. How critical is time in the operation for example? Some straddle carriers have rather complex hydraulic systems–and many developing countries have little expertise in the maintenance of hydraulics. Downtimes in a developing country context can be astronomically high as some ports have found to their chagrin!

There will be much argument in this, as in other problem areas. But in the developing countries of Asia through the 1980's there must be continuing awareness of the problem of right or 'appropriate' technology and a constant search for the integration of technology into different social, economic and cultural systems.

3. Integrating ports into regional economic development

In the developing countries of Asia a number of new ports are either on the drawing boards or will have become partially or fully operational by the end of the 1970's. Thus Port Qasim in Pakistan, Chalna in Bangladesh, Johore, Kuantan and Bintulu in Malaysia, Sattahip or Laem Chabang in Thailand, Haldia in India and perhaps Bhava Sheva some time during the 1980's, will re-orient existing trade patterns or create new ones.

These new developments raise some very difficult questions related to the degree to which ports in developing countries contribute to regional economic growth and to national development plans. This is not a field in which the port managers are normally very expert nor are the technical problems related to port development well known to the development planners. Very often the result is that either very little serious thinking is done about the problem at all, or that those who think about it have very little grasp for the realities of decision-making in the developing country in question. So that we get back to the situation we referred to previously, that of having very elegant plans and proposals but no strategy to achieve the goals proposed.

To what extent do the ports in the developing countries have a role as growth centres? By and large it would appear that they have a relatively restricted potential as growth multipliers. Trade flows tend to comprise basic primary commodities out and manufacturing plus aid cargoes in. What bulk commodities there are tend to be handled at terminals which are increasingly spatially footloose so that

their locations may be away from existing ports and urban centres. This tends to be further emphasised by patterns of private ownership of facilities. The trend to containerization further suggests a lack of generation potential for economic activities and container facilities can also be specially footloose. On the other hand there may be increasing trend, for a number of reasons, for developing countries to retain basic processing of their primary products so that we may see a greater potential for the new ports to develop agllomeration economics. Moreover, ports are centres for employment, not only for port workers but also for employees of a range of service industries which provide ancillary services–such as freight forwarding, financing, ship servicing etc. There is still a problem however, that ports in the developing countries have a relatively low potential as multipliers for economic growth. If this is so then it can be argued that for proper and adequate regional and national economic development it is necessary to integrate the development of ports into the existing and proposed urban systems and to fully take account of intersectoral plans and programmes.

This, of course, raises all sorts of questions. It is necessary to intervene in the development of the urban system, for example? Do developing countries have the legislative and administrative frameworks to do this? Do they have the policy framework and the political stability and/or political will to be able to sustain an extended effort to fully integrate development activities?

These are complex issues and require rather more detailed discussion than we can enter into here. But it is worth noting that it is likely that in the 1980's much more attention will need to be paid to integrating new ports into regional and economic development strategies.

4. People . . . the basic resource

In 1973 Schumacher's book "Small is beautiful" was first published though it has achieved wider recognition only fairly recently. Subtitled "Economics as if people mattered," the book emphasizes the significance of people and human values generally in the development process and it is worth quoting some of his comments at length for they have relevance not only in the general context of economic development but in the more particular context of port development:

> "Development does not start with goods; it starts with people and their education, organisation and discipline. Without these three, all resources remain latent, untapped, potential.
>
> If the primary causes of poverty are deficiencies in these three respects, than the alleviation of poverty depends primarily on the removal of these deficiencies. Here lies the reason why development cannot be an act of creation, why it cannot be ordered, bought, comprehensively planned: why it requires a process of evolution. Education does not "jump", it is a gradual process of great subtlety. Organisation does not "jump" it must gradually evolve to fit changing circumstances. And much the same goes for discipline. All three must evolve step by step and the foremost task of development policy must be to speed this evolution. All three must become the property not merely of a tiny minority, but of the whole society.
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> If aid is given to introduce certain new economic activities, these will be beneficial and viable only if they can be sustained by the already existing educational level of fairly broad groups of people, and they will be truly valuable only if they promote and spread advances in education, organisation and discipline. There can be a process of stretching–never a process of jumping. If new economic activities are introduced which depend on special education, special organisation, and special discipline, such as are in no way inherent in the recipient society, the activity will not promote healthy development but will be more likely to hinder it. It will remain a foreign body that cannot be integrated and will further exacerbate the problem of the dual economy.
>
> If people are left out, if they are pushed around by self-styled experts and high-handed planners, then nothing can ever yield real fruit."

In port development, the education of port workers (including management) their organisation and their discipline must be of the highest priority for the 1980's. So too must education of Government and Ministry personnel who are responsible for port planning and development.

As Schumacher pointed out, the process of change is slow. Education is a long process, but one which is capable of being promoted and assisted within the national framework. The organisation and discipline of people, however, is a matter of national concern and must be taken up by national governments. Nevertheless, all three aspects are important to port planners and managers and require the formulation and implementation of imaginative policies. How many ports have well integrated manpower development policies, career training and the development programmes and other people-related policies?

AND SO . . . INTO THE 1980's!

The development issues outlined in the last section indicate the complexity of the development problem and the sort of goals which port planners and managers need to set themselves. They also imply of course, the direction which assistance agencies may take in their funding programmes and certainly indicate the priorities of an ESCAP programme.

At a somewhat more tangible level there are a number of trends which are discernible as we move from 1979 into the next decade and we may set these down very briefly.

(i) Continuing expansion though with 'steady state' characteristics among the innovators

For some countries in Third World Asia it has been argued that the quantum leap in port development has taken place in the 1970's. The construction of major container complexes in Hong Kong and Singapore, the rapid developments of Malaysian ports, the initiation of port Qasim in Pakistan, the development of major facilities in Pusan, the construction of the International Port in Manila all represent the major new thrust towards modern port facilities. It is likely that in these countries expansion and development will continue though in a somewhat less dramatic fashion. There may be some development of new ports–for example, Bhava Sheva in India is likely to be a new major development along with Sattahip or Laem Chabang in Thailand.

(ii) Rationalisation and new developments

With the construction of new ports it is likely that there will be some reduction in the pressure of utilization of some of the existing ports. There will be also some re-orien-

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Restructuring of Existing Port Facilities to Suit Future Trade Requirements

by A.S. Mayne, FASA, FCIS, FCIT, Chairman, Port of Melbourne Authority

I have been asked to act as Session Chairman for this segment and the theme "The Restructuring of Existing Port Facilities to Suit Future Trade Requirements" is one of importance to developing ports, in particular. I will only touch on the subject in a very general way because every item I will mention has been voluminously covered by others.

Introduction

The changes in shipping technology and cargo handling techniques principally over the last 10 years has had an enormous impact on the economy and welfare of the peoples of those countries which have been able to take advantage of these changes. Shipowners produced their new designs and looked to the ports to match them. For most ports, the restructuring of their facilities has involved a huge capital expenditure.

It is inevitable that shipowners will seek to introduce the new technology into ports which have not restructured for these changes. This, of course, is already happening. It is obvious that the large capital cost of container ships has made it vital for shipowners to minimise ship idle time and the number of ships necessary to carry a given amount of cargo in a given period of time. Hence both the shipowner and the port authority aim at reducing the turnaround time in port. This paper is intended to give a broad picture of the restructuring of existing port facilities which will be required in these ports.

Restructuring due to changes in shipping technology

The modern large tankers, bulk carriers, container ships, Ro-ro ships of all kinds, Lash and sophisticated conventional ships have all had their impact upon the restructuring of ports.

The tankers and bulk carriers have required dramatic deepening of approach channels. Often this has not been possible and the berthing facility has had to be relocated elsewhere closer to deeper water. Berthing structures have had to be made much more substantial. Expensive and sophisticated fendering systems have been developed to absorb the enormous energy of impact while berthing. However, these ships mostly carry special cargoes and their port facilities usually need special individual consideration.

It is, therefore, considered appropriate on this occasion to concentrate on the facilities required for handling general cargo which, if suitable for one port, would be more or less suitable for another.

The major port facilities dictated by the ship are:—

1. Channels—depth, width, radius of curves, swinging basins, etc.
2. Fendering systems.
3. Berth and facilities—length, width, depth of water, container and slewing cranes, ramps, wheel loading etc.
4. Tugs.
5. Port control—narrow channel approaches and movement priorities.

Channel design, fender design and tugs are also depend-

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tation of trade flows through new ports in Kuantan, Qasim, Sattahip, etc. This development may indicate some hope for increased efficiency in the older ports.

It is likely too that there will be continuing adoption to unit loads and containerisation with a likely increase in the RoRo component of trade. The increased use of containerization will lead to continuing demand for new equipment and is also likely to create some spare capacity in existing ports, though this is likely to be quickly absorbed.

(iii) Development of Regional ports

With the intensive development of infrastructure in the major ports it is likely that attention will be focussed on the regional or smaller ports. This is especially likely in view of the major developments of inter-island and domestic fleets and to some extent has already begun in the Philippines. Indonesia is also a likely candidate and certainly the implementation of recommedations for Thai gulf ports will be carried out in the early 1980's. We might see the progressive developments of domestic feeder container services and perhaps some RoRo development.

(iv) New attempts at port development

For one reason or another a number of countries which have to date not played a major role in Asian or international trade may in fact take major steps in port development in the 1980's. Thus China is likely to upgrade port facilities, Viet Nam has considerable dredging needs, developments may occur in East Malaysia, in Burma and in Irian Jaya.

(v) Bulk and specialised handling terminals

The continuing energy crisis will emphasize the need for greater efforts in the production of alternative sources of energy. It is likely that we may see major new developments in coal, natural gas and petroleum. As well, the rich resource base of some Asian countries will see a continuing expansion of exports of minerals, timber and other raw materials. It is likely that there will be, however, a strengthening trend towards the port processing of raw materials and tightening on the exploitation of some basic raw materials.

As a final note it might be ventured that the 1980's will be a decade in which there will be a marked improvement in the level of management skills in ports of the region. This is not to say that there are not some outstanding port managers in the region's ports, for there are. But what we might expect is that there will be a general appreciation that port management is part of general management and the ports are a complex and demanding business operation that require the highest levels of management expertise.

ent on local conditions, in particular, the conditions of exposure.

The largest container ships have design drafts of approx. 42 feet (12.8 m) which would require a guaranteed depth of approx. 46 feet (14.0 m) to provide an adequate clearance under the keel. However, it is unlikely that most developing ports would need to provide for these ships for many years. Provision of drafts of 36 feet (11 m) may be adequate provided channels can be deepened later if required. Care must be taken, therefore, to drive piles to a flexible depth to enable deepening at the wharf face.

In most instances, channel widths to 400 feet (122 m) would be adequate.

Swinging basins should be approximately 1.6 times the length of the largest ship. It would probably be reasonable to assume at first, ships of 750 feet (228.6 m) length and ultimately, 850 feet (259.1 m).

Large modern ships require good fendering systems if damage is to be avoided to ship and wharf. Rubber fenders appear to be the most favoured system. There is a large range of technical literature available on this subject.

Bigger ships will naturally require larger tugs. The size of tugs required will, of course, vary considerably from place to place according to the conditions of exposure to winds and currents. But because the average weight of 20′ containers is about 16 tonnes, there is a shortfall in deadweight of the order of 5 tonnes and, therefore the maximum draft is never reached in the general cargo trade. The 42′ designed draft vessel would carry about 2,200 boxes giving a total shortfall in deadweight of 11,000 tonnes for a reduction of 6′ in operating draft.

In Melbourne where conditions of exposure are moderate, four tugs with bollard pulls of 42 tonnes are handling container ships 850 feet (259.1m) long in most weather conditions.

When deciding the lengths of berths it should be reasonable to provide 50 feet (15.2m) between small ships and 75 feet (22.9m) between ships of 750 feet (228.6m) or more. Berths where possible should be constructed in a continuous straight line to enable the easy transfer of cranes from berth to berth and provide maximum viability in the berthing of varying lengths of vessels.

A major decision for many ports restructuring for container services is to decide on the type of cranes required. For cellular container ships, the decision is easy if large numbers of containers are to be handled. Gantry cranes are the only choice. However, for ro-ro ships carrying a limited number of containers on deck, slewing cranes may be the most economical solution or in the case of small ro-ro's with limited deck space, a derrick crane could be adequate. In all cases the cranes should have a lifting capacity of at least 35 tonnes to handle 40 foot containers. At least 7½ ton cranes would be desirable for handling cargoes out of lash barges.

For quarter ramp ro-ro ships, no special provision is required other than to provide a wharf of adequate strength to carry the mobile equipment passing off the ramp onto the wharf.

For stern loading ro-ro ships, special facilities are required being either a fixed ramp if the ship carries its own ramp, or a moveable shore ramp if the ship does not. Often it has been necessary to virtually tailor the ramp to a particular ship. This is undesirable as ramps tend to outlast the ships for which they have been designed. It is, therefore, wise to seek a design which will suit ships with different deck heights, door widths and beams.

If containers are to be loaded by forklift truck, the width of the ramp should be a minimum of 28 feet (8.5 m) and preferably about 32 feet (9.6m). The port of Melbourne has been designing its ramps for a wheel load of 40 tonnes from a forklift truck carrying a fully loaded 20 feet container on full side shift. However, we have been informed of a new machine which we understand will produce wheel loads in excess of 50 tonnes when carrying the same load. The big question is how far should we let manufacturers go with their new machines? Should we be calling a halt to these ever increasing wheel loads?

Restructuring due to changes in cargo handling techniques

So far we have looked at the main facilities to be restructured to suit the changes in shipping technology. The changes in cargo handling techniques require consideration of the following major items.

1. mobile equipment
2. terminal area
3. depot operations
4. wharf design
5. road and rail access

There is a large range of mobile equipment being offered for the handling of containers. They include straddle carriers, forklift trucks, front loaders, rail mounted gantries and rubber-typed gantries. It would be a subject on its own to discuss the advantages and disadvantages of the various types of equipment but this is done very well in an article entitled "Container Handling—Is there a key to selection" in the I.C.H.C.A. Journal "Cargo Systems" November, 1978.

The most favoured system at present appears to be straddle trucks. However, their capital cost is high and maintenance and consequent down time is high. Forklift trucks cost less and generally require less maintenance. However, they impose very high wheel loads on pavements especially in the side shift condition. Typical wheel loads with side shift and attachments would be 37 tonnes when handling a 20 foot (6.1m) loaded container and 39 tonnes with a 40 foot loaded container. The cost of constructing pavements for these loads can be very expensive.

Perhaps the biggest problem for many ports in moving into the container era, has been finding sufficient land to provide the back-up facilities necessary for a modern berth. The older ports only required a narrow back-up area sufficient for a transit shed and road access. In many cases, ports have had to relocate to find adequate area, for example, London to Tilbury and Marseilles to Fos. Others have had to reclaim large areas of water such as in Osaka and Long Beach, It has been estimated that approx. 50 acres (20.2 hectares) is required to provide adequate back-up area for one modern container berth. This would provide for a terminal, buildings depot and road and rail access. Terminal areas of approx. 15 acres (6 hectares) for Ro-Ro berths and up to 30 acres (12 hectares) for frequently serviced container berths, should be adequate. They must be located immediately behind the berths being serviced. Within the terminal it will be necessary to provide a pavement adequate for the mobile equipment being used and capable of carrying containers stacked two high. Other requirements of the terminal will be tower mounted working lights, office buildings, control rooms, gate house, workers amenities, car parking, maintenance workshops and in some

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Report on Port Training by Recipient of IAPH Bursary Scheme 1978 :

Port Administration and Operations Course held in Singapore from 11th September, 1978 to 30th November, 1978

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INTRODUCTION:

The Internatinal Association of Ports and Harbors awarded me a bursary from their Technical Assistance Fund for Training in the field of Port Administration and Operations. The majority of course participants who were connected with Port Operations included Managers from private Organizations, Port Managers, Planning and Development Managers, Traffic Officers, Commercial Officers and Army personnel (the last ones from the Ministry of Defence, Singapore), and were drawn from countries in Africa, Asia and the Middle East; to be specific, they were from India, Thailand, Malaysia, the Philippines, Indonesia, Singapore, South Korea, Fiji Islands, Solomon Islands, Gilbert Islands, Oman, Kenya, Liberia and Tanzania.

The course was designed to meet training needs for the Senior and Middle Management personnel who are engaged in port activities and to give them an overview of the Principles and practice of Port Administration and Operations. Lectures, discussions, film shows and programmed visits to operational areas within the port of Singapore were used to reinforce imparting knowledge on the course members.

Lectures were conducted by consultants from UNCTAD, Singapore and other speakers from the Port of Singapore Authority. The panel discussions on the last day of each part/section of the course gave participants an added opportunity to raise questions and exchange views with various representative countries and gave an opportunity for oral presentations by course members on various aspects of Port Operations in their respective countries.

ASPECTS COVERED:

(a) CONVENTIONAL CARGO HANDLING

The objective of the above part of the course was to provide comprehensive training on modern cargo handling techniques. The major areas covered during lectures were, the layout of a cargo ship, planning and preparation for a vessel's operations and safety at work place, details of which are given hereunder: –

1. Layout of Cargo Ship

Lectures on this subject were designed to give stevedores comprehensive knowledge of the ship's layout and its various fittings and how to move about whilst working on board vessels, and to provide them with the skills of identifying accident prone areas within the ship such as ship's gangways, hatches and hatch covers, ladder, bulwark, etc., in order to minimize accidents, to know some of the nautical, shipping, export and cargo symbols for the purpose of determining the nature of cargo on board the ship, and how to handle cargo through proper use of ship's gear supplied and how to avoid damage to cargo. A ship's model was used in the lecture room to demonstrate how to prepare a ship for its operation, such as setting of ship's

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instances, means to transfer containers into rail.

If a wharf is used for discharging and loading a mixture of break bulk and containers, then a transit shed will be required within the terminal close to the wharf. This will generally not be required for pure cellular ships but will usually be essential for Ro-Ro ships, both stern loading and quarter ramp.

Depots for the packing and unpacking of LCL containers may or may not be located within the port area. If located within the port area, they will increase the amount of traffic entering and leaving the port. On the other hand, if located away from the port, cartage costs are usually higher.

The design of the wharf will be mainly dictated by the height to which containers will be stacked. If stacked three high, the wharf will probably be of sufficient strength to accept any type of mobile equipment used to handle the containers, including forklift trucks. However, in many instances it will be adequate to design berths for two high stacking. If there is adequate terminal equipment to clear the wharf as the ship unloads and to feed the container crane as the ship loads, then three high stacking is not necessary. On the other hand, there have been emergencies when the terminal is congested and a quicker despatch of the ship has been obtained by stacking containers on the wharf.

Good road access is essential. If sufficient room for queueing of trucks is not available in the terminals, it is inevitable that trucks will queue on the roadways. Roads, therefore, should be wide and clearly marked for queuing and through traffic in the vicinity of the terminals.

If rail is provided, it should be kept off the wharf. All transfer to rail should be carried out within the terminal or at a rail transfer yard remote from the terminal. It would be a slow operation moving rakes of rail trucks under a gantry crane and to unload containers directly onto rail or vice versa, causing undue delay to the ship.

Conclusion

It will be clear that this paper has only covered the subject generally. The objective has been to draw attention to some of the main items which the port planner should study in depth when looking at the restructuring of his port to meet the needs of the future.

derricks, opening of hatches, use of signals, wires, and wire ropes. This was followed by a practical training Yard exercise at the Singapore Port Technical Training Yard on which operations, forklift driving and rigging, where all course participants took part.

2. Planning and Preparation for Vessels's Operations

Lectures on this subject were meant to provide training on the pre-planning and preparation for the vessel's operation before the vessel comes alongside. The pre-planning aspect includes collection of the relevant information from the vessel's agents such as the ship's arrival date, stowage plans, ships manifest, the last of which provides information to the planning officers to determine the type and nature of cargo handling equipment and gear required, the number of shore gangs, sheds and open space capacity, as well as to enable planners know the expected time for the ship to finish work.

3. Safety at Work

Lectures in this field were focused on the role of Management on safety measures necessary for the protection of Port workers and for ensuring that port workers perform their work under the best conditions of safety and health. The safety measures the Management is expected to take are to ensure that port workers are properly instructed about the hazards involved in their respective occupations, necessary precautions to avoid them, how to remedy any defects that may or are likely to cause damage/accidents, and how to ensure that safety devices issued to workers are put to proper use.

Whilst the objective of the above subject was to provide training on modern cargo handling techniques and appropriate safety measures, with the ultimate opportune goal of achieving high productivity for the benefit of both management and port workers, it was emphasized that it is essential that the pre-training of port workers should be established and encouraged and should not cover cargo handling techniques and safety measures only, but that workers should also be made to understand the Management goals in an Organization and be made to feel that they are part and parcel of the organization.

It is through training that Port workers will automatically dispel the old feeling that they are only working to earn themselves a living.

(b) PORT PRODUCTIVITY

Lectures on this subject were restricted to a discussion on cargo handling productivity, as well as the areas where a large proportion of operating problems and costs are experienced or incurred, and the subject was defined as the rate at which cargo flows from ship to shore and vice versa. The lectures also stressed the importance of improving efficiency in cargo handling by means of modern cargo handling techniques, equipment and trained manpower and the benefits derived from higher productivity.

The main subjects covered included: Productivity measurement and productivity indicators used to measure Port Productivity, details of which are appended hereunder:

1. Productivity Measurement

Lectures in this aspect looked at the difficult areas that make it impossible for the Ports of the world to have a single and effective measure of Port productivity which can be used for global comparisons. These included the complexity of numerous cargo handling operations undertaken from port to port, the highly variable resource inputs, and the degree of technology employed, all of which make it difficult to have a standard way of measuring productivity.

2. Productivity Indicators

Lectures on this subject examined alternatives to a single measure of Port productivity which include a series of Port performance indicators that collectively enable Port Management to monitor operational efficiency, such as the annual berth throughput in tons handled per linear metre of quay, tons handled per gang hour, tons handled per gang/shift, which is the quality of cargo moving across a berth in a given time, and the berth occupancy as a measure of the proportion of time a berth is occupied per year, which is usually influenced by the speed of a ship and shore operations, design of cargo ships and equipment aboard, and comprehensive cargo information well in advance.

Observations:

Good cargo handling and Labour are not all that matters. The high productivity a port should aim for will largely depend on the Port storage policy, flow of documents and security, so as to ensure that the rate of cargo flow into transit sheds is equal to the rate of dispatch of cargo from the sheds, thus, eliminating or reducing the risk of congestion and improving berth occupancy.

Where storage space in transit sheds is limited, backup sheds system should be introduced to facilitate quick despatch of cargo.

(c) PORT ADMINISTRATION

In this field, lectures featured on which functions of the ports are best provided by the Port Authority and which functions should be delegated to private organizations operating within the port so as to satisfy the demands of the shipping community.

The Lectures emphasized the need for co-ordination and better communication system between private companies and the Port Authority in view of the role private companies have to play, which companies in turn give added responsibility to the Port Authority as their number in the Port increases. The major areas of responsibility that should be taken care of by the Port Authority and those which should be run by private Organizations are appended below:—

Functions of Port Authority:

1. Pilotage Services:

Lectures on this subject stressed the need for the port Authority's overall responsibility for compulsory pilotage to ensure that the Port Authority by-laws for safe navigation of vessels are strictly observed, so as to avoid accidents and to provide training and examination procedures for pilots, to control recruitment of pilots and to establish disciplinary procedures.

2. Conservancy:

Lectures on this subject touched on the implications that always arise as a result of a body other than the Port Authority assuming the responsibility for conservancy and navigational aids services, and how this leads to ill-defined boundaries of responsibility and duplication of functions. The services considered as necessary to be run by the Port Authority as a Government body include the deepening of approach channels to accommodate larger vessels, provision of static as well as movable facilities, which investments private companies might find difficult to recover from Port users.

3. Cargo Handling Operations

Lectures in this field supported the theory that only the Port Authority could effectively control cargo handling operations and improve co-ordination, integration of Port functions, improve planning, have access to additional revenue control Tariff and have flexibility to avoid duplication of functions.

Functions of Private Companies

1. Towage and Stevedoring Services

Whilst the Ports of the world display a diverse pattern of cargo handling procedures, it was indicated during lectures on this subject that towage and stevedoring services should be undertaken by private companies, while the Port Authority should remain responsible for Cargo Handling Operations.

Observations:

Where a Port Authority is a Government parastatal body or Organization whose responsibilities are prescribed by enabling legislations which both created the Port Authority and govern its operations, it is essential that the Port Authority become the sole employer of the Port labour Community, to avoid duplication of services and Managerial functions.

(d) SECURITY MEASURES AT THE PORT

The objective of this subject was to provide training on how to combat property offences at the port. The subject covered aspects of regular security procedures, investigating cargo losses, strict checks and pass system, whose details are given hereunder:–

1. Investigation of Cargo losses:–

The above subject included lectures on the tactics of investigating reported cases of theft of goods from vessels' holds, transit sheds, goods cross-delivered with criminal intent. The tactics used in tracing goods lost under these circumstances include visits to suspected consignees' Warehouses for goods removed illegally from the Port and visits to trading centres for goods (attractive goods), some of which might have been stolen or pilfered from the port or from ships' holds.

2. Pass system

Lectures on this subject emphasized the need for strict control of entry to the Port by allowing only "bona fide" Port Users to enter the Port and keeping out all undesirable persons, so as to minimize theft of goods from the Port. A strict pass system that involves regular checks regarding the validity of passes issued should be followed, adequate licences should be issued only to individuals or firms that provide services within the port, and the Port Authority's by-laws should be enforced and action taken against those found guilty of contravening such by-laws.

Observations:

Whilst it is virtually impossible to completely eradicate the global problems of theft of cargo from the Port, the establishment of a permanent Port Police force is essential. Disciplinary and training aspects concerning such a police force should remain under the jurisdiction of the country's Commissioner of Police. Powers of such a Commissioner to transfer Port Police personnel to the National Police services robs most of the Port Authorities of Police Officers experienced in Port matters, particularly where such transfers to or from the Port area are frequent and/or erratic. The most important thing to bear in mind is that whatever theft preventive measures are employed, they should not be in such a manner as to impede efficient Port Operations.

(e) MANAGEMENT INFORMATION SYSTEM

The objective of the above subject was to provide comprehensive training for mangement Information system, which is a Management tool for dealing with the day-to-day problems, as well as long-term planning. The major topics covered, whose details are discussed below included, designing Management system, and the efficiency of service:–

1. Designing Management System

In this field was stressed the importance of designing an effective Management Information system, first, by a comprehensive study to evaluate the adequacy of the existing system and to effect any necessary improvements, taking into account the type of information on the available resources, the different levels of Management officials receiving the information, the source of information, bearing in mind the Organization's objectives.

2. Performance of Existing Resources

Lectures on this subject stressed the need to provide Management with reliable, accurate and prompt information with regard to the utilization and maintenance of fixed and movable assets, manpower and downtime of individual assets to assist Management in ascertaining whether both the equipment and manpower resources are being effectively utilized, establishing the possible causes of the breakdown and standby time, so as to enable Managment to reschedule the Organization's activities and ensure even spread of utilization of equipment and manpower resources, so as to increase productivity.

3. Efficiency of Service

In this respect, emphasis was placed on the need to monitor and control Communication and check side effects of excessive documentation, which in turn, results in loss of valuable time, and the effects of poor documentation system, all of which jeopardize/impede security measures to safeguard cargo under the custody of the Port Authorities concerned.

Observations:

Whilst Management information system cannot eliminate all the problems facing an Organization, such as inefficiency and resistance from other forces, a properly designed Management information system would be of great assistance to Port Management.

(f) WORK STUDY

The objective of the above subject was to provide training on the techniques of Work Study and methods of data collection that assist in conducting Work Study. On unproductive work, considerable case studies were involved in the field of method study and work measurement, both of which are covered in detail hereunder:–

1. Method Study

Lectures in this field discussed the best ways of tackling the problems of un-productive work that calls for Work Study exercises in order to improve performance. Some of the techniques were: first, defining the problems that affect the operation, in order to ensure that a clear understanding of the objectives is brought to the attention of everyone involved, and to record the activities of operation and examine data from the section's records and workers

who often furnish useful ideas from their operational experience, which ideas assist in the study. Secondly, by deciding the best solution in relation to other factors that may arise from data collection, and develop new methods where they are considered to be desirable/necessary.

Charts were used throughout the lectures to depict cargo handling operations, where we could see some areas of unproductive work that work study exercises could carry out to reduce or eliminate wastes so as to improve productivity.

2. Work Measurement

Tutors in this field stressed the importance of evaluating the time that is required to perform a job after having found the best ways of doing the job, and provide Management with the data for manpower planning, correct costs for the job and to highlight, with the aid of method study, some areas still requiring improvement.

Observations:

The Work Study Unit, whose principal responsibility is to recommend and/or suggest to Management the best ways or methods of improving performance, should be capable of conducting studies in various sections of the organization with the useful information based on their practical experience. The Work Study Senior Personnel should possess a fair knowledge of Production Engineering and Business Administration, to enable them to cover the organization's main sections and to detect hidden unproductive aspects.

Management, on the other hand, are expected to review Work Study Reports from time to time and implement recommendations where they are considered practical/useful.

(g) LEGAL LIABILITY OF PORT OPERATORS

The objective of the above subject was to provide training on the legal liabilities of Port Operators in the light of the variety of complex services and facilities which are necessary in order to satisfy the demands and needs of the shipowners, charterers, shippers and consignees, subject to the statutory or contractual exemptions or limitations and as prescribed in the enabling legislation which created the Port Authority.

The major areas covered in the lectures included liability of the port operators as bailees, stevedores, Pilotage Authority, occupier/owner and Conservancy Authority, details of which are given below:—

1. Legal liability as a Bailee:

Lectures on this subject discussed a range of the types of liabilities the modern Port Operator has to shoulder when, as a bailee, he accepts goods from a bailor for Warehousing or storage, and undertakes to keep the goods under safe custody and protect them against all available perils until the goods are finally delivered on demand and to be able to account for accidents or thefts other than casualties caused by an act of God or by war, fires, or tempest.

Through case studies, lectures on this subject made several references to court proceedings brought against bailees in the U. K. Ports, who, through their negligence, had caused goods deposited with them to deteriorate or get lost, ending up by paying huge sums of money as compensation.

2. Liability as a Stevedore

This entailed a focus on the stevedore's responsibility, which is to render his services in a proper and workmanlike manner, and which responsibility involves, not only the storage and handling of cargo, but also demands the use of equipment necessary for this work. It was, however, pointed out that the negligence of stevedores could be encouraged by poor supervision on board the vessels by the ships' personnel, which in turn could result in stevedoring accidents and, thus, create/necessitate protracted correspondence on the question as to who should be held liable for given stevedoring accidents, i.e. whether the ships' personnel or the stevedores.

Lectures on this subject also drew a straight line division between the shipmaster's responsibilities in cargo handling, on the one hand, and the stevedore's responsibilities, on the other hand, whereby the shipmaster is expected to properly care for the goods until they are discharged from his ship (tackle-to-tackle), while the stevedores' obligation is to bring goods to the ship for loading and remove goods away from the ship after discharge (tackle-to-tackle).

3. Liability as a Pilotage Authority

Tutors on this subject stressed the necessity for compulsory pilotage services, to avoid or minimize marine accidents that would arise if a shipmaster, with no knowledge of the local waters in or around the harbor, was allowed to bring his ship himself into the port without the help of the local Port Authority pilots. They also emphasized the Port Authority's obligation as the licensing Authority in ensuring that the pilots who are charged with the safety of the ships and all that they carry are competent and have the necessary qualifications, including knowledge about the local areas within their zone of operation/activities.

Other difficulties or problems that might arise as a result of a Port Authority's failure to strictly enforce its own by-laws for the traffic within its jurisdiction and to provide services in connection therewith were also dealt with. Other areas of responsibility for Port Authorities include maintenance of approach channels, removing obstructions, preventing pollution, providing and maintaining working facilities, lights and buoys.

4. Liability as Occupier/Owner

In this field, we covered areas of duties the Port Authority owes to Port users, ships owners and the public as a whole, all of whom frequent the port and its premises in the course of their activities in the port, and individuals who visit the port with the express permission of the Port Authority. The Port's responsibilities include taking reasonable steps/care to make the channel and harbour premises safe, and to ensure that all accident-prone areas are clearly marked for the information of the public and shipping community.

Liability as a Conservancy Authority

Lectures on this subject centred on the duties entrusted upon the conservancy authority, i.e. duties necessary to meet the demands of Port users. The major areas covered included constructing and maintaining Port facilities, improving Port facilities as demands arise, dredging, and reporting to shipping lines representatives all the defects along the harbor waters/channels, and being able to discover the existence of obstructions in the harbor channel and to remove such obstructions with reasonable speed, to avoid navigational accidents.

Observations:

In order to ensure that Port Operations are not impeded as a result of shared legal responsibilities between the port and the various companies operating within the Port, it is essential that only one Authority is made responsible for

the legal liability of Port operations, to accelerate decision-making on matters that call for urgent attention; that authority should be the Port Management itself.

(h) CARGO UNITIZATION AND ITS IMPACT ON PORTS

The objective of the above subject was to appreciate the economics of unitization and to identify its possible cargo handling cost-savings compared with break-bulk systems, and to examine the characteristics and Port requirements of the numerous unitized systems and the merits and demerits of alternative systems.

The main areas covered during the lectures included the impact and objectives of unitization, details of which are given hereunder:–

1. Impact of Unitization

Lectures in this field described how, initially, the Maritime Industry experienced unprecedented developments as a result of the introduction of unitization and palletization, and the fundamental system introduced in cargo handling methods and the design of terminal facilities, the cost involved in replacing the break-bulk cargo handling system, then considered to be capital-intensive, with the more sophisticated but cost-saving system which presented new problems to Ports and the Shipping Community.

The most noted problems, among many, experienced included: capital investments in specialized equipment, and need for highly qualified personnel who then required intensive training, determination of future land requirements, designs in terminals, equipment and the introduction of new working practices in a highly competitive and capital-intensive industry.

2. Objectives of Unitization:

As far as this topic was concerned, emphasis was laid on the need for eliminating low utilization of shipping capacity and poor performance, the need to improve the utilization of shipping capacity and the resultant benefits of economies of scale, improved cargo handling performance in Ports, itself resulting in lower unit costs, a reduction in labour costs, insurance premiums, packing costs, reduced transit time and elimination of damage to cargo.

Observations:

Before rushing to the unitization system, it is essential for the Port Authority to study the present working system, with a view to eliminating features associated with the handling of cargo, which study should cover documentation procedure to accelerate delivery of cargo, methods of reducing damage to cargo, and, finally, working methods.

(i) PLANNING AND MANAGEMENT OF A CONTAINER TERMINAL

The objective of the above subject was to provide training on the Planning and Management aspects of a container terminal. Lectures on this subject were supported by film shows on container Operations and also by tour of the Port of Singapore Authority Container Terminal, where all container Operations are carried out. The major aspects covered were: Planning, Management and Handling Systems, details of which are appended below:–

1. Planning:

Lectures on this subject were designed to provide guidelines to and recommendations for the Planning of a container terminal, taking into account a number of challenging factors to appreciate/bear in mind when contemplating the introduction of containerization. These factors include the impact of trade imbalances, between developed and developing countries, adequate facilities which will facilitate door-to-door deliveries of containers, the types of exports (locally produced goods) that are not suitable for containerization, and demand for space that should not be underestimated. Other factors to be borne in mind include the type of system that would minimize capital expenditure whilst at the same time remaining capable of handling the volume of expected traffic and keep operating costs to the minimum. The lectures also emphasized the necessity for making provision for receipt and delivery centres, which allow for good communication within operations centres, and also the fact that the container terminal design should incorporate a degree of flexibility to allow for further expansion of the terminal and the introduction of improved systems, provision for road/rail access facilities to reduce congestion and traffic interference, and adequate marshalling yard, backup system for moving containers within the terminal.

It was, during lectures, stressed that there is a need to develop an efficient and effective Terminal Management team, so effective as to minimize terminal Management delays that normally lead to considerable difficulties throughout and increase operational costs. Emphasis was placed on the primary Management needs for accurate information on the flow of containers, required equipment, performance, availability and utilization of equipment and documentation statistics, which would enable planning operations to be undertaken appropriately.

Other essential factors that Management should undertake in order to ensure flexibility are the development of a good communication system, establishment of a sound traffic control system and Port Security.

2. Container Handling System:

As far as this topic was concerned, a variety of the types of container handling equipment on the market, which include straddle carriers system, transtainers system, transporter systems and chassis system, whose range of advantages and disadvantages are listed below, were introduced/covered.

(1) Straddle Carrier System

Straddle Carriers are considered to be the most efficient of the carrier devices and the principal method of operation in container terminals, and their main function is to move containers from quay to storage areas. They are ideally suited to berth throughput of upto 30,000 boxes per crane per annum. Other advantages of the straddle carrier are:–

a) It can stack more boxes high than forklifts, etc. Hence, more efficient utilization of land/storage space is associated with the machine.
b) It is a flexible and versatile machine. But it has the following disadvantages:–
c) High cost, unable to serve rail trucks, land development cost is high, high maintenance and repair costs, oil spillage, obliteration of yard markings, high driving skills requirement, therefore, high labour training costs and difficult traffic control.

(2) Transtainers:

Transtainers are ideally suited to high throughput and are useful at storage parks and transfer terminals, and can be either rail-mounted or rubber-tyred, with reasonable

manoeuvrability. Other advantages are: they are suitable for big volumes of traffic, good access, and are ideal for transfer of cargo to road/rail vehicles.

The disadvantages of the transtainer system include high land utilization and very high investment.

(3) Transporter System

This system is ideal for small container terminals. It is capable of handling more containers direct to rail/road transport modes without going to storage areas, and can be used to move containers to storage areas when the berth is empty, and it can also reduce the amount of equipment required. The disadvantages of this system include high land utilization and poor accessibility.

(4) Chassis System:

With this system, the container is lowered from a crane onto a chassis where the container remains until it leaves the terminal.

The system has the following all round advantages:–

a) Low land utilization
b) Very good accessibility
c) Ideal for small terminals
d) Incorporates a great deal of flexibility
e) Comparatively cheaper than the other systems stated above
f) Reduces the amount of handling and, therefore, the risk of damage to cargo, and
g) Has low maintnance costs.

Observations:

Whilst containerization has many advantages, ranging from protection from losses, pilferages, cost-savings, fewer handling operations, to quick turn-round of vessels, etc., its economics rest on high utilization of specialist vessels built for the trade, and the sophisticated and expensive handling equipment, as well as highly skilled personnel. It is, therefore, important that before the Port Authority decides to go into containerization, the following salient factors should be considered first:–

a) Whether the volume of traffic is adequate enough to justify the heavy expenditure that has to be incurred on the construction of a container terminal, i.e. traffic that will ensure that the terminal will be able to repay its initial capital cost within its life span.
b) The demand for space should not be under-estimated; stacking yards for containers require a larger area than that for general cargo, and the berth or terminal apron should not be less than 150 ft in width, i.e. from waterfront to the sheds.
c) Pre-training of terminal operators to man operations rooms, freight stations, delivery centres, and, finally, mechanical handling equipment which requires highly skilled personnel. It is also important that the contract agreement for the purchase of container handling equipment should include a guarantee for availability and prompt supply of spare parts at short notices, so otherwise, the economies of scale connected with such an equipment will be lost if the equipment is kept idle for too long awaiting spare parts.

(j) WAREHOUSING AND CARGO STORAGE:

Lectures in this field examined, in great depth, the concept of Warehousing in relation to Port operations and the causes of cargo delivery delays. They also stressed the importance of providing sufficient and cheap warehousing services as part of Port functions and as a complement to Port operations. The two major topics covered during the lectures, details of which are given below, were: cargo storage in transit sheds and causes of delays in the delivery of cargo.

Cargo Storage in transit sheds/warehouses:

Lectures on this subject stressed the importance of cargo storage in transit sheds, a backup system that acts as a buffer between ships discharging and those loading, both of which allow time for certain administrative formalities to be carried out, such as Customs clearance, and elaborated on how the growth of Warehousing services and distributions of activities related to Port Operations can put continuous pressure on the Port to expand and upgrade its facilities. The lectures also described how Port open yards/spaces could be put to better use by constructing backup sheds and leaving space sufficient for the storage of open yard cargo, such as, machinery and other steel products that are not prone to damage by weather elements.

(k) CAUSES OF DELIVERY DELAYS

Lectures on this subject centred on delivery delays caused by those port users who deliberately decide to use transit sheds as Warehouses not realizing the impact of such delays on the Port operations, which to some extent, contribute to Port congestions. The two principal causes of delays in delivery of cargo are: Customs delays and consignees' delays. Recommended or suggested remedial measures that could reduce such delays were given. These remedial measures include frank and regular discussions between Customs Authority, Port Authorities and Port Users, especially with those known Port users who habitually choose to have their cargo in the Port areas to avoid high private Warehousing services charges.

Observations:

With the rapidly growing volumes of consignments being handled from third generation vessels, the demand for Warehousing services and transit shed facilities arises. Warehousing which is part of Port functions, can promote Port efficiency and attract shipping; it is essential, therefore, that planning of Warehousing should take place along with the general development plan of the port.

With regard to Customs delays, which to-day present problems to the smooth delivery of cargo from the Port, as a result of the need for Customs examination/Verification of some goods in transit sheds and yards, I observed that both Customs examinations and Verifications are Customs requirements that have nothing to do with the Port Authority after cargo has been made ready for delivery, and therefore, such formalities should be carried out at the consignees' premises after the cargo involved has been delivered by the Port. This will, no doubt, minimize delays in the clearance of goods from the Port area, thus, avoiding storage rent and ensuring better utilization of Port transit facilities, i.e. yards and sheds. If this suggestion is put into practice, it will reduce correspondence on requests for refund of storage charges raised against consignments which, having been made ready for delivery, attract storage charges due to Customs Verification delays.

(l) PORT LABOUR MANAGEMENT

The objective of this topic was to enable course participants gain knowledge about Port Labour Management and its principles, as well as for participants in the course to share the Port of Singapore Authority's own experience in

(Continued on next page bottom)

Technological change in shipping and its effects on ports: (2-concluded)

Current developments in sea-going barges and barge-carrying vessels

Report by the UNCTAD secretariat (TD/B/C.4/129/Supp. 6)

CONTENTS

VII. PORT REQUIREMENTS FOR BARGE-CARRYING SHIPS

44. The initial concept of the barge-carrying ship was that there should simply be a safe anchorage outside the port where the mother-vessel would be moored while the barges were discharged from and loaded on to it. As far as the handling of cargo on and off the barges was concerned, it was thought this could be carried out at any shallow-draught berth, while the tug-boats used for towing ships could be used for the manoeuvring of the barges within the port. Thus, no special new facilities would be required.

45. On the basis of these hypotheses, the port requirements for barge-carriers are extremely small and, particularly where the barges move door-to-door, this method of transport offers a considerable advantage over other unitized systems.

46. After some nine years of operation of LASH and SEABEE and limited experience of other systems, these theoretical requirements have been modified. The taking on and discharging of barges outside a port area has not generally materialized and the necessity for the barge-carrying vessels to be loaded and unloaded in a sheltered port has been clearly recognized.

47. There are three main elements needed for the successful provision of port facilities for barge-carrying vessels:

(a) facilities for the mother-vessel;
(b) the marshalling of barges;
(c) the loading and unloading of the barges.

48. The mother-vessel visits a port to take on and discharge barges and requires:

(a) a suitable mooring or berth;
(b) adequate shelter;
(c) adequate depth;
(d) an access channel capable of receiving vessels of this size and draught, under all conditions and with minimum delay.

49. The water depth at the operating area should be at least 37 feet (the operating draught of the mother-vessel type LASH or SEABEE), plus additional feet to allow for trim changes during the loading and unloading operations, and for other reasons such as: any pitching and rolling of the vessel (despite its sheltered location); predicted exceptional low water level; under keel clearance.

50. The size of the free water surface depends on the type of mooring. The following indicative figures have been worked out:

- Approximately 49,000 m² (12 acres) for a barge-carrying ship berthed alongside;
- Approximately 81,000 m² (20 acres) for a barge-

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the same field, which knowledge could be used for the advancement of developing Ports.

The major areas covered during the lectures were: Human Resources, Management styles, Industrial Peace/ Management/Union Roles, details of which are as given hereunder:–

1. Human Resources

We examined critically how an Organization could rely on human, material and machine resources as instruments for profits, and the characteristics any organization must be geared to in order to encourage individual Port workers to give their best performance, by recognizing special characteristics of human resources, which are distinct from the other resources, namely: the elements of motivation, which include psychology, safety, love, esteem and self-actualization. Also covered during the lectures was the development of human resources in the Port Industry, which has shown a marked change in recent times as a result of the rise in educational levels and expectation of workers whose skills have been upgraded, with a view to making them multi-purpose and more productive, so as to improve efficiency in ports.

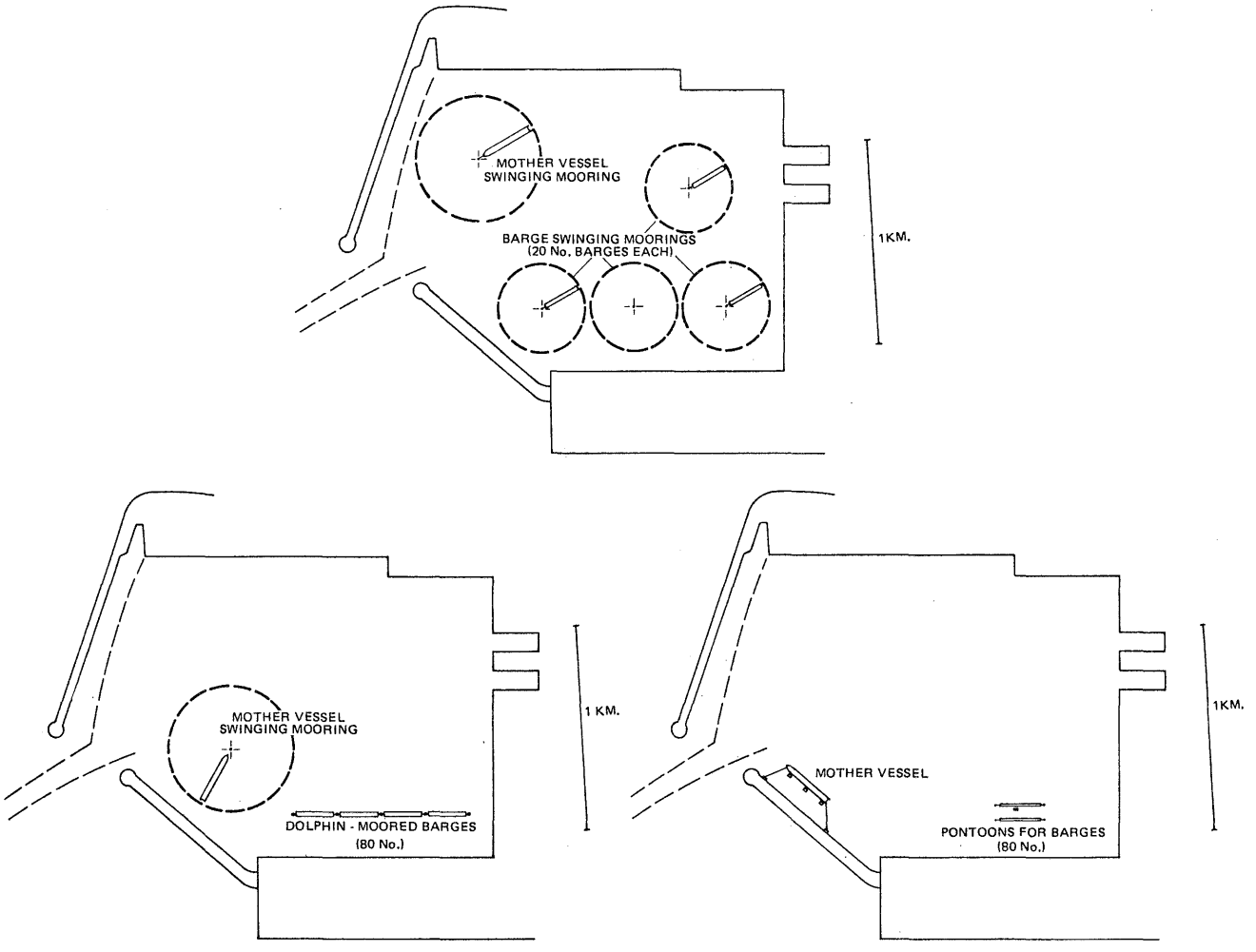
2. Management Styles

Lectures on this subject stressed the need for port Management to recognize the employees' basic needs by applying incentives, examining their day-to-day activities, and leadership styles that the Managerial and Supervisory staff should display in relation to the manner the employees commit themselves to their work. The incentives considered essential are: wages, allowances, medical facilities, housing, awards, good working environment, friendly attitudes, when necessary but not otherwise, respect and minimum supervision, except where this is subject to abuse by the workers.

(Turn back to page 16)

Figure 15

PORT REQUIREMENTS FOR BARGE CARRYING VESSELS



carrying ship moored on four mooring buoys;

- Approximately 283,000 m² (70 acres) for a barge-carrying ship on a single mooring buoy in a tidal river, with tug assistance available at the turn of the tide;
- Approximately 566,000 m² (140 acres) for a barge-carrying ship on a single mooring buoy in a tidal river, with no tug assistance available at the turn of the tide.

The indications listed are calculated for a standard 30,000 ton deadweight LASH vessel.

51. The port requirements imposed by barge-carrying ships are thus relatively modest. Nevertheless, for some ports, especially in developing countries, they alone might place a heavy strain on the port's over-all operations. This is certainly true of the required water-depth in the entrance channel, the necessary safety precautions (in view of the high value of the mother-ship, the barges and the cargo on board), and particularly the free water surface. The latter factor could, in fact, lead to a switch from congestion on the landside to congestion on the waterside. In other words, in ports where no extensive free water areas are available, the operation of a barge-carrying vessel might interrupt or at least impede the normal in-going and out-going operations of the other vessels calling at the port. This problem certainly becomes crucial when the number of barge-carrying services increases and the probability of the simultaneous presence of two or more mother-ships in the port becomes higher.

VIII. BARGE-HANDLING REQUIREMENTS

52. Handling the barges within the port calls for special facilities. The "fleeting areas" are large water surfaces, well separated from the other water-based traffic in the port, where laden export barges await shipment, fully laden import barges stay until such time as they are sent inland or can be discharged in the port area, and empty barges are kept in stock to be put at the shipper's disposal if he so requires.

53. The size of such a "fleeting area" can be quite considerable and depends on the number of barges to be handled, since the inland penetration of the barges is at present extremely low. Depending on a geography of the port, the provision of an adequate "fleeting area" may pose problems. Although large water areas may be available in river ports, in breakwater ports (e.g., some Mediterranean ports) the lack of water area proves a major impediment to the smooth functioning of the barge-carrier service. Some smaller ports have found no alternative to utilizing a break-bulk berth as the fleeting area, thus immobilizing otherwise

productive facilities. The net area of 150 barges is some 3 hectares, but with manoeuvring and access space an area of at least 6 hectares is needed. If the barges were arranged two abreast they would require a lineal distance of 1,370 metres. To illustrate the point about provision of sufficient area Figure 15, which is based upon recent projects, shows various configurations for mother-vessels and barges in a proposed new harbour within breakwaters (roughly 1.25 km x 2 km) using the mother-vessel's mooring and space for 80 marshalled barges:

Case 1. All swinging – no room at all for normal port uses.
Case 2. Mother-vessels on swinging moorings and barges on dolphins – much more room.
Case 3. Mother-vessel on a berth and barges along pontoons – minimum space used.

The marshalling area requires a system of buoys or pontoons or dolphins or shallow draught berths to secure the barges and to enable them to be arranged in an orderly fashion.

54. In ports where the necessary fleeting areas are provided, significant investment costs have been involved. One example is the port of Bremerhaven, where a total of 31 pontoons have been constructed, offering mooring space for 140 barges at a time. The total length of the pontoons, however, exceeds 650 metres, and the total cost of the project was almost $4 million. Another example is the United States Gulf port of Galveston, where the Pelican Island facilities will include a fleeting area of 840,000 m² and another 200,000 m² for a marshalling yard.

55. Barges can be loaded and unloaded at shallow draught berths, existing break-bulk berths, existing berths at inland riverside factories or plants, or special barge terminals. Several ports have decided to provide special handling facilities for the barges for a variety of reasons. These include:

(a) Existing facilities are considered inadequate, since they do not provide weather protection or sufficient space for groupage service;
(b) The distance between the fleeting area and the existing break-bulk berths is considered excessive;
(c) A combined terminal for container/barges is preferred from a cost-effectiveness and operational point of view.

56. The higher the relative cost of labour in a port, the greater will be the need to build well-equipped and purpose-built barge-handling facilities. It is only such installations which can be expected to provide the considerable increase in productivity which is an essential requirement if port cargo-handling charges are not to become prohibitive. Similar reasoning provides an incentive for the increased use of pallets, bundled units and pre-slung units in barge-carrier operations.

57. In conclusion, it is now clear that the introduction of barge-carrying vessels has generated a need to invest in specialized facilities sometimes combined with, sometimes indpendent of, break-bulk or unitized berths. The degree of new investment required will, however, depend on the conditions prevailing in a given port: this is true for the provision of mooring points, fleeting areas, and facilities for the loading and discharge of cargo into and from the barges. Wide variations in the investment costs related to facilities for barge-carrying ships are therefore likely to occur between individual ports.

58. In order to give a better idea of the physical requirements, indicative figures are provided below for annual barge traffic of 1,000 units with an average cargo load of 250 tons per barge (total throughput = 250,000 tons).

– Number of mooring points	1
– Number of buoys	4
– Required working area for mother-vessel	81,000 m²
– Required fleeting area (assuming a peak of 50 barges at one time)	20,000 m²
– Number of tugs required to operate the mother-vessel	3
– Number of pontoons (assuming an inland penetration of less than 10 per cent)	20
– Number of break-bulk berths required to load and discharge the cargo of the barges in port	2 equivalent break-bulk berths

59. The above requirements may seem not too demanding, but it should be borne in mind that only a relatively small traffic flow has been considered. An increase in the number of barge-carrier services could generate a need for additional mooring points, fleeting areas, and barge berths.

IX. PORT OPERATIONAL PROBLEMS IN RELATION TO BARGE-CARRYING SHIPS

60. Since the introduction of barge-carrying ships on major deep-sea routes in 1969, surprisingly few studies have been published dealing with the port operational problems for this type of vessel. The paucity of such studies does not, however, signify the absence of operational problems or the full realization of all the expectations of the promoters of the system. It is appropriate to make a distinction between the problems related to the barge-carrying vessel and those related to the barges themselves.

A. Problems related to servicing of the barge-carrying vessel

61. As already noted, the concept according to which a barge-carrying vessel could drop its barges somewhere off the coastline as a standard operating procedure has not been realized. How much of the existing port facilities will be used depends on the type of barge-carrying ship, local conditions in the port, and the cargo-mix which is carried. The actual discharge of the barges from the mother-vessel into the water does not pose any serious problems if the crane (or elevator) work properly. Problems can be encountered, however, with the ship's crane on board LASH vessels where, following the sea voyage, time can be lost because of difficulties in putting the crane into operation. The ship operation requires assistance from tug-boats to ensure the transfer of the barges to the fleeting areas. The resistance of the barges in the water has led the operators to develop special devices which are put in front of the barges to permit a higher transfer speed. This device is, however, more necessary for the longer inland hauls.

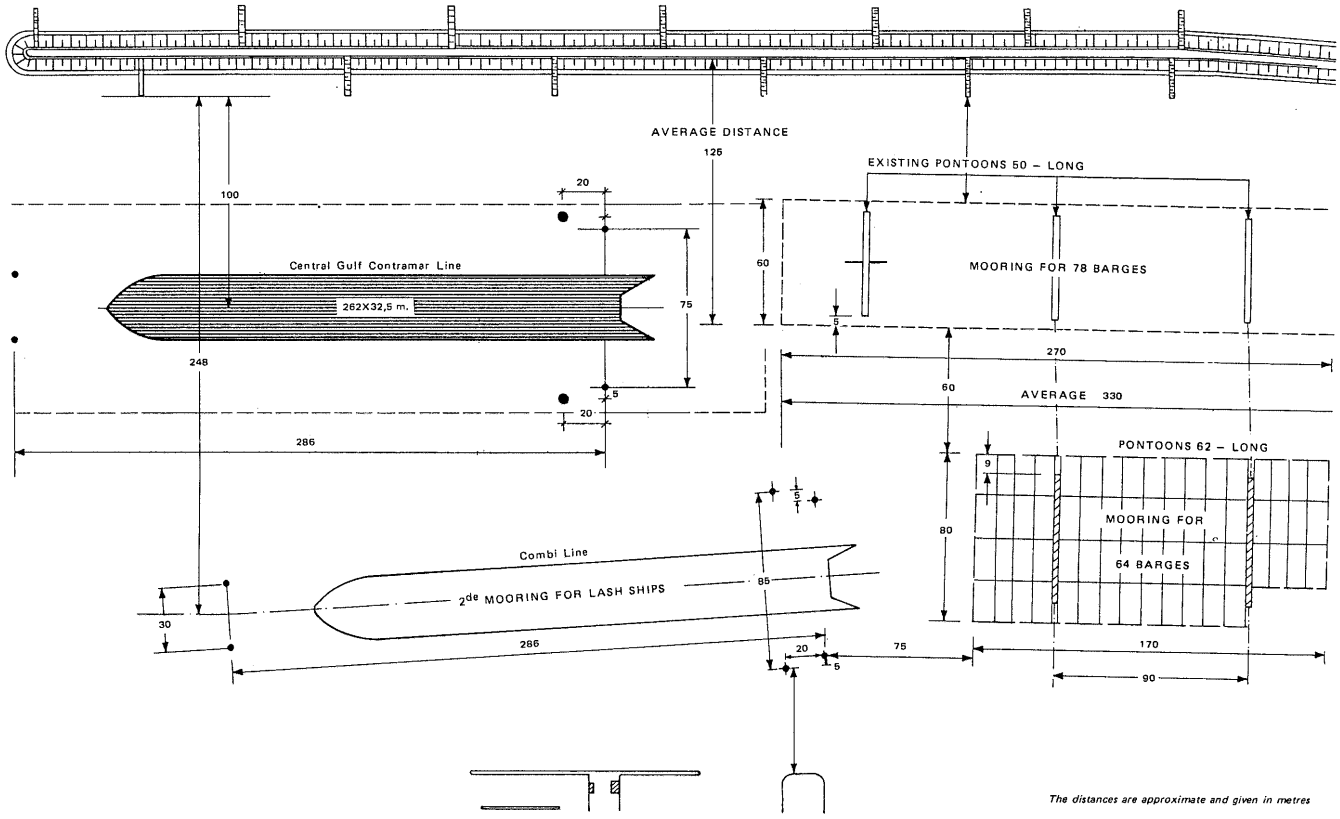
B. Problems related to servicing of the barges

62. The severity of the problems related to servicing of the barges in a given port will depend primarily on the number of barges to be handled and the proportion of them that remain in the port area. The extent to which barge-carrying ships are successful in attracting traffic will entail a proportional increase in the number of barges handled in the ports they service. The port of Bremerhaven provides an example of the sort of growth which a port that handles barge-carrying vessels could expect. Although not a major port of call

Figure 16

Port of Rotterdam

Facilities for Barge Handling



for barge-carrier operators in N.W. Europe, the port is served by Lykes Brothers Steamship Company's SEABEE vessels, Combi Lines LASH-ships and Central Gulf Contramar Lines LASH-ships. Barge traffic in Bremerhaven developed between 1970 and 1974. For a fairly low number of calls (155 calls or approximately one per week on average over the 45-month period), the total number of barges handled was 5,179, or an average of 33 barges in and out per call. This is not an exceptionally high figure and might be typical of the number of barges handled in developing ports once a number of services have been introduced. However, the port authority of Bremen and Bremerhaven has found it necessary to provide specialized facilities even for this rather modest traffic, and there is little doubt that a similar barge flow could cause problems in ports in developing countries, if not catered for in due time. It should be borne in mind that almost all barges remain in the Bremen/Bremerhaven area.

63. The second factor which will largely determine the difficulties a port may experience with barge traffic is the proportion of barges that remain permanently in the port and for which a fleeting area must be provided. Thus, the question arises of the degree of inland penetration of the barges. As this question is also of great importance for determining the probable loss of cargo-handling activity in the port area caused by door-to-door barge traffic, it deserves some analysis.

64. The following are some examples of terminals which have been specifically designed for barge traffic:

(a) **Pier 96 in San Francisco** was inaugurated in May 1972. This pier represented a total capital investment of $22 million. Among some of its outstanding features are:
- A total terminal area of 202,000 m²;
- A container yard with space for 2,000 20-foot boxes;
- Two shore-side container cranes with a capacity of 30 long tons;
- A 21,000 m² lighter freight station and an additional container freight station;
- Five barge-loading 5 ton stacker cranes;
- The possibility of handling barges under shelter.

(b) **Barbours Cut terminal**: Port of Houston (combined container/barge facility). The Port of Houston's Barbours Cut LASH and LASH container terminal offers the following facilities (for barge-carriers) two LASH berth: a U shaped pier for LASH and LASH container vessels and a dolphin system LASH berth across from it on the Barbours Cut channel. There is fleeting area for 100 LASH barges nearby. Alternatively, the barge-carrying ships may use the 1,000 foot container ship wharves recently completed.

(c) **The Pasir Panjang complex in Singapore**: A large warehousing complex (providing 200,000 square metres of covered storage space) at Pasir Panjang, which was built independently from the barge-carrier development, has now been partly set aside for the receipt of cargo from barge-carriers. This has made it necessary for the Port of Singapore Authority to construct in the Pasir Panjang area six mooring buoys which will permit the safe anchorage of 120 barges. The buoys are approximately 700 metres apart and all are in line thus stretching out

over 4,200 metres.

(d) **The Combi-Line Terminal, Rotterdam**: The ship is moored to 6 buoys, 2 at the bow and 4 at the stern. The barges are moored alongside two floating pontoons, 62 metres long, 4 metres wide and 90 metres apart, which provide space for 64 LASH barges (see Figure 16).

(e) **The Central Gulf Terminal, Rotterdam**: The ship is moored to 4 buoys. The barges are moored to 3 pontoons, 50 metres long and 90 metres apart, which offer mooring space for 78 barges.

(f) **The Lykes Lines Terminal, Rotterdam**: The ship berths at the Europe Container Terminal. The barges moor at 2 pontoons, 55 metres long and 4 metres wide, which can accommodate 20 SEABEE barges.

(g) Other examples include, the port of Los Angeles new LASH terminal, the special terminal for LASH barges in Keelung and the terminal of Bremerhaven (see Figure 17).

(h) New port facilities under construction in the Danube estuary area are to serve the recently built Super Seabee ships.

65. It should be pointed out, nevertheless, that in many cases barge-carrier vessels, some of which are in fact hybrid barge and container vessels, are handled not at a special terminal but at one designed for container vessels.

66. Other features of barge-carrier and barge operations are that:

(a) the duration of the barges' stay in port varies greatly from one port to another, ranging from a few hours to 30 days or even 45 days;

(b) the proportion of barges which are empty when discharged or loaded varies considerably, and in very few cases are the proportions comparable;

(c) the proportion of barges which are merely in transit in the port is generally low;

(d) few ports allow reduced crews to handle cargo in or out of barges;

(e) the goods most commonly carried by barge are general cargo, bulk (mineral, grains), rubber, timber, paper pulp, machinery, iron and steel products.

X. A GENERAL VIEW ON FACILITIES FOR BARGE CARRIERS

67. In 1977, the UNCTAD secretariat sent a questionnaire to a number of major ports receiving barge-carriers on a regular basis.

68. The answers to this questionnaire may be summarized as in Table 4; they correspond to the following questions:

A. Type of barge-carrier attended in the port:

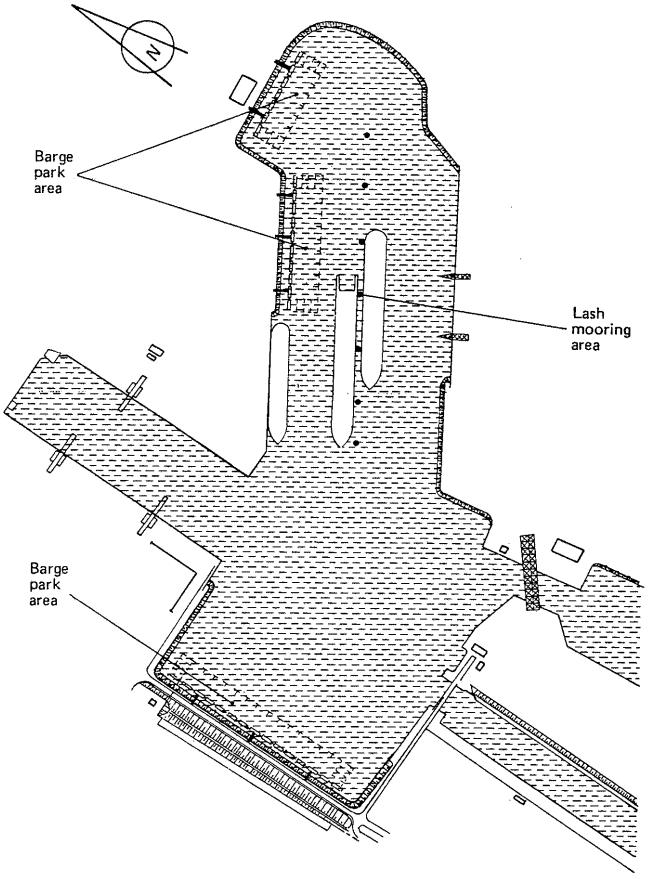
(1) LASH integral barge-carrier
(2) Combined LASH barge/container carrier
(3) BACAT
(4) SEABEE
(5) FLASH

B. What are the facilities offered to the barge-carrying ships?

(1) None – they are anchored within the port limits
(2) One-buoy mooring
(3) Two-buoy mooring
(4) Four-buoy mooring
(5) Alongside conventional berth
(6) Alongside specialized berth

Figure 17

LASH FACILITIES AT BREMERHAVEN



Source : Bremer Lagerhaus-Gesellschaft. *Scale : 1 : 7,600*

C. What facilities are offered for barges remaining in the port?

(1) Natural fleeting area
(2) Specially provided fleeting area
(3) Mooring buoys
(4) Berthing alongside existing berth
(5) Berthing alongside specially provided barge-carrier terminal

D. If the barges only transit through the port, what type of on carriage is used?

(1) Pushed or towed on inland waterways
(2) Pushed or towed over the open sea
(3) Carried by feeder ships (specify type)

69. **Port dues for barge-carriers and barges**: From a survey conducted by the UNCTAD secretariat, it appears that, in the case of the 35 ports which replied, the port charges are applied against mother ships, feeder ships, barges and cargo.

70. **Port charges against ships**: A large number of ports do not make any distinction between the different types of ships. Therefore, their pricing system does not take into consideration any specific charge for barge-carriers. In the ports where a specific charge is applied for barge-carrying ships, there is no difference in the assessment with the general tariff, the ships regulations, but only in the level of the due. (Thus, charges may be based on gross registered tons, net registered tons or length of ship-berth occupancy charges on GRT, NRT, ship length and/or the time factor).

Table 4 Summary of answers to UNCTAD questionnaire*1

REGION	COUNTRY OR TERRITORY	PORT	A. Type of barge-carrier attended by port *2					B. Facilities offered to the barge-carrying ships *2						C. Facilities offered for barges remaining port *2					D. Type of carriage used for barges in transit only *2		
			(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
NORTH AMERICA	USA	NEW ORLEANS	X	X		X					X	X							X		
	(West Coast)	CHARLESTON	X								X				X		X		X		
		NEW YORK/JERSEY	X								X						X		X		
		HOUSTON	X	X		X					X	X			X				X		
		MOBILE	X			X					X				X		X				
	USA	LOS ANGELES		X							X						X				
	(Pacific Coast)	SAN FRANCISCO		X							X	X					X	X	X	X	
		OAKLAND	X					X									X				
	CANADA	VANCOUVER		X							X						X				
WEST INDIES	JAMAICA	KINGSTON		X				X									X				
CENTRAL AMERICA	HONDURAS	PUERTO CORTES		X				X						X			X	X			
SOUTH AMERICA	ARGENTINA	BUENOS AIRES		X							X						X		X		
EUROPE	NETHERLANDS	ROTTERDAM	X			X	X				X				X		X		X		
	BELGIUM	ANTWERP	X			X	X					X					X		X		
	FRANCE	LE HAVRE					X				X				X		X	X			
		MARSEILLE	X														X				
	SPAIN	BILBAO					X					X					X		X		
	UNITED KINGDOM	SHEERNESS	X						X								X		X		
	GERMANY (Fed. Rep.)	HAMBURG					X					X			X						
	GREECE	PIRAEUS		X								X					X				
CENTRAL ASIA	INDIA	BOMBAY	X					X									X				
		CALCUTTA	X					X									X		X		
		MADRAS	X					X									X				
		COCHIN	X					X									X		X		
		KANDLA PORT	X					X						X		X	X		X		
ASIA (Far East)	MALAYSIA	KELANG	X				X	X								X				X	
	HONG KONG	HONG KONG	X				X					X	X				X				
	JAPAN	KOBE		X								X			X				X		
		TOKYO											X		X				X		
PACIFIC ISLANDS	NEW GUINEA	RABAUL		X				X								X	X				
		LAE		X				X	X							X	X				X
	PHILIPPINES	MANILA		X								X					X				
	TAHITI	PAPEETE		X								X					X				
	NEW ZEALAND	AUCKLAND		X				X				X					X				
	TASMANIA	HOBART		X				X				X				X	X		X		

*1 See paras. 67 and 68 above.
*2 The questions are explained in detail in paragraph 68.

Some ports have special tariffs or reductions on existing tariffs for the ships moored off shore. Generally, the tariffs for berthing and unberthing and pilotage and towage follow the general tariff rules of the port.

71. **Port charges against barges:** The results of the UNCTAD survey relating to charges for the barges are less uniform. Some ports apply the rules established for sea-going vessels against barges and collect port dues and berth occupancy tariffs under the same conditions. Thus, the port dues are calculated on GRT or NRT, and the berth occupancy tariffs, on GRT, NRT, length of the barge and the time factor. Few ports have introduced special charges for the barges. At least one port is collecting dues if the barge is towed when entering the port, but not if it is unloaded from a ship. Several ports apply tariffs for mooring the barges and for each day of their stay (possibly with an allowance of a free period). One port applies an annual special charge to moor a buoy to be used by the barges.

72. **Port charges against cargo:** In virtually all cases, there is no special tariff for cargo handling and storage of cargo loaded on or unloaded from barges. This may be explained by the fact that few of them change the manning of the gangs in this type of handling. However, in one case, a reduction of 20 per cent on the standard tariffs is offered for barge cargoes.

73. **Latest trends and tendencies:** A certain number of projects have been designed in order to facilitate the barge handling system, and to improve this type of operation in ports. Among them is the VIP 40 offered by Valmet OY (VALMET LIGHTER PORT). This is a movable port-cargo handling unit intended for loading/unloading barges or other similar vessels. The unit comprises a 40T mobile gantry crane and floating pontoons on both sides of the vessel to be loaded. Pontoons are tied to each other at the ends. The mobile gantry crane is able to drive on/off the pontoons, thus also covering the operations at the quayside. The crane is able to handle all kinds of dry cargo such as general cargo, containers, bales, packaged timber, and also bulk cargo with a grab.

XI. CONCLUSIONS

74. From the developments described above, it is obvious that the last word has not yet been said in this field. New systems of barges and barge-carrying vessels may evolve and strongly influence shipping and ports.

75. It is very probable that the barge size in terms of cargo space will range from 159 m^3 (BACAT lighter) to 2,178 m^3 (European barge). This means from 148T to 2,540T capacity.

76. However, even though larger barges may be built for

(Continued on next page bottom)

International maritime information: World port news:

5th session of UNCTAD closes as a stepping stone along the direction of a restructuring of the world economy

Speaking to the press prior to his departure two days later, Mr. Corea mentioned some of the more important decisions that had emerged from UNCTAD V. He referred specifically to the consensus reached on protectionism, the "very good" resolution on commodities (apart from announcements of intended contributions totalling some $100 million to the Second Window of the Common Fund), the unanimous acceptance of the resolution calling for expanded action in favour of economic co-operation among developing countries, and the endorsement of a special programme for the least developed countries "bigger than we have ever had before". He also cited the consensus achieved both on the need to step up the transfer of resources to developing countries and on lines of action to augment their technological capacity. Finally, there was unanimous support for the need to strengthen UNCTAD.

While expressing regret that there had not been enough time to agree on a decision on the overall item dealing with an evaluation of the world trade and economic situation and how structural change might be facilitated, he stated that the participants had come "extremely close" on this difficult topic and that discussion of the issue would be continued in the Trade and Development Board. This was also true for the draft resolution on guidelines for future debt operations for developing countries, where, he said, there had been agreement on the substance but not on the mechanism.

"What will stand out in the long run even more than the specific action taken", Mr. Corea stated, "will be the fact that the international community has just devoted an entire month to considering the fundamental question of restructuring the world economy. With perspective, UNCTAD V will be seen to have been a necessary stepping stone along the journey that will lead to restructuring."

In his concluding remarks, the President of the Conference, Carlos P. Romulo, Foreign Minister of the Philippines and a former President of the General Assembly, said: "There have been no victories and no defeats at UNCTAD V. We have not been fighting each other here. We have been seeking to agree even if in some cases we have only agreed to disagree."

"Confrontations can make headlines. But, as you very well know, although those on the outside may not always have realized it, we have been engaged in these wearying weeks, in the much more arduous but also much more meaningful and fruitful process of adjustment, the adjustment, on a realistic and equitable basis, of the vital economic interests of the nations represented here."

"What must be realized", the President explained, "is that UNCTAD is a continuing Conference, not a one-shot affair. Its value lies precisely in its continuity, in keeping alive and mutually simulating – I shall not say a dialogue, which implies only two parties, but a conversation, an open-ended discussion by peoples in various stages of development, on what they need, on what they want, on what they hope to get. It is an exchange of ideas, an adjustment and accommodation of national economic interests. UNCTAD, let it be said now clearly and unequivocally, is not an arena of confrontation between the rich and the poor of our world, between the industrialized and the developing nations between the Group of 77 and Group B and Group D, between the so-called North and the so-called South".

The Manila session was attended by representatives of 144 out of UNCTAD's 159 member States.

(Continued from page 34)

special purposes, for combined river/ocean traffic the growth rate may be expected to be stabilized at the level of the largest barges in service or on order, which for the time being are the Europa II barges. The opening of new waterways and the development of extended river hinterlands will greatly favour the development of barge-carrying vessels since new areas will be added to the traditional port hinterlands.

77. The trend towards increasingly transporting cargoes in bulk and semi-bulk form and towards reducing the operating costs will most probably lead to an increase in the traffic by sea-going barges as well as carried barges. Barges make it possible to reduce considerably the ship's time in port, a fact which will tend to promote their development still further. It has been observed that certain problems still exist, such as problems related to engineering aspects (both for carried barges and pushed/towed barges). Although many designs may never be built, other new concepts are actually under construciton and will possibly open up new potential developments.

78. In conclusion, barges seem to offer an economic means of transporting cargoes to and from developing countries, especially where a link-up exists with an important inland waterway system at one or both ends of the voyage. But careful examination of the many implications of their introduction is needed before any firm decision can be taken.

Outcome of UNCTAD 5th Session on shipping

Supporting a suggestion expressed by Mr. J.K. Stuart, IAPH Liaison Officer with UNCTAD, and in view of the significance involved, this office reproduces hereunder a section on the press release on shipping issued by UNCTAD at the end of their 5th Session in Manila:

SHIPPING

Liner shipping: the Conference invites States to consider adhering to the 1974 Convention on a Code of Conduct for Liner Conferences, which contains specific provisions for

the participation of developing countries in liner shipping. During the Manila session it became apparent that this instrument would soon enter into force, as the members of the European Economic Community, as well as the German Democratic Republic and the Soviet Union, announced plans to become parties to it.

The Conference urges the States adhering to this convention to facilitate application of the consultation machinery of the code, which is aimed at bringing together liner conferences (shipowners' organizations) and shippers' organizations to discuss such matters as freight rates and surcharges. It urges non-parties to encourage an equally effective pattern of consultation.

The resolution on this subject includes provisions aimed at enhancing the position of developing countries as both providers and users of liner shipping. To increase the competitiveness of their own fleets, it urges developing countries to pool information regionally on cargo movements and service requirements. To ensure a balance of interests between shipping lines and their customers, it urges developing countries to ensure the establishment or strengthening of national and regional shippers' organizations.

The UNCTAD secretariat is requested to assist developing countries in putting the code into effect and to report periodically to the UNCTAD Committee on Shipping regarding experience in implementing the convention. It is also asked to update previous studies on the level and structure of liner conference tariffs.

Participation of developing countries in world shipping: the Conference was unable to reach consensus on a text spelling out ways of enabling developing countries to obtain a larger share of the world's shipping tonnage. Instead, it adopted a resolution on this subject submitted by the Group of 77. The vote, by roll call, was 81 in favour to 22 against (Group B), with 9 abstentions (Group D and Mongolia).

The resolution contains a set of principles for "equitable participation" in bulk shipping, and calls for a programme of studies by UNCTAD to help developing countries create and expand their own shipping services. It also requests studies on the controversial issue of open-registry shipping.

Governments are called on "to take steps to ensure for developing countries equitable participation in the transport of all cargoes, and more specially bulk cargoes generated by their own foreign trade, by national vessels of the respective trading countries or by vessels otherwise operated by them".

The Conference recommends the application of three principles in this regard: first, there should be "equitable participation" for each pair of trading countries in regular bulk and refrigerated cargo transport. Second, in the case of other such cargoes not shipped on a regular basis, bilateral agreements should provide for equitable participation. Third, until the developing countries achieve an equitable share of world tonnage, shipping contracts between developed and developing countries should stipulate that the vessels of the third world should carry "a substantial and increasing portion of cargoes".

As another means of stimulating the development of third world shipping in the framework of economic cooperation in developing countries, the UNCTAD Secretary-general is requested to call an intergovernmental meeting aimed at ensuring that developing country vessels should carry all bulk cargoes between third world trading partners, as far as feasible.

The UNCTAD secretariat is asked to identify the movements of bulk cargoes between developing countries that might form the basis of joint fleet development within the third world. It is also requested to produce several other studies on the possibility of expanding developing country fleets on specific trade routes, on controls exercised by transnational corporations over bulk movements of commodities, on ways of increasing the participation of developing countries in the refrigerated cargo trade, on guidelines for containerization and other shipping and port improvements and on ways to increase the air transport fleets of developing countries (in cooperation with ICAO).

The UNCTAD Committee on Shipping is asked to review the question of developing country participation in world shipping, and the development of their merchant fleets.

Studies on open-registry shipping, with a view to eventual decisions by the Trade and Development Board, are also called for in this resolution. The UNCTAD secretariat is asked to study "the repercussions of phasing out open registries, its economic and social impact on the economies of developing countries, its effect on world shipping, and how the phasing out of open registries would ensure simultaneous development of the merchant fleets of developing countries, with a view to taking a decision on the desirability of phasing-out". It is also to study the feasibility of establishing a legal mechanism for regulating the operations of open-registry fleets. These studies would go to an intergovernmental working group which would submit its recommendations to the Trade and Development Board.

Group D, explaining the abstention of its members on this resolution, said shipping monopolies operated by transnations under open-registry flags continued to expand.

Unilateral action on shipping policy could only lead to protectionism and restrictive business practices. UNCTAD should continue to seek a universal solution to the problem.

Group B said its members had voted against the resolution because the text was in direct opposition to the fully competitive environment which was an essential feature of the bulk market. Liberia said it supported the resolution on the understanding that it gave the UNCTAD secretariat a mandate to study the feasibility of establishing a legal mechanism to regulate open-registry fleets, but not a mandate to set up such a mechanism. Liberia would change its laws if open registry was proved to be detrimental to developing countries.

Ship financing and technical assistance: The Conference could not reach agreement on this subject in Negotiating Group V. Instead, it voted approval of a resolution submitted by the Group of 77 proposing various ways of helping countries to obtain finance for their merchant fleets and calling for the extension of technical assistance in this field. The vote, by roll call, was 91 in favour to none against, with 23 abstentions (Group B).

In the area of financing, the resolution urges governments to consider third world proposals at UNCTAD V for easier financial terms for ship purchase. It requests governments and international financial institutions to help developing countries obtain access to ship financing, and it asks these institutions to provide such financing. It also seeks to encourage joint ventures by shipping companies of different countries, as a way of enabling developing nations to ac-

quire vessels and expertise, and it requests the UNCTAD secretariat to establish a unit that would assist developing countries with feasibility studies for ship acquisition.

As to technical assistance, developed countries are asked to provide this form of aid and UNDP is invited to consider providing resources as well.

Explaining the abstention of its members on this resolution, Group B expressed regret that a decision by consensus had not been possible. The group strongly supported the principle of financial and technical assistance to help developing countries participate in bulk shipping, and had submitted a proposal to that effect. But Group B members did not support the resolution that had been adopted because of its provisions on cargo sharing in the bulk trade.

The Netherlands, Norway and Sweden said that though they could not support the resolution, they favoured financial and technical assistance in this field.

MARINTEC ASIA 79 Programme

SEATEC II – SEMINAR PROGRAMME

(See article on Marintec on page 8.)

June 11-15, 1979

Monday 11/6/1979 – Session 1 – 09.00 hrs.

Chairman: Prof. Ir. P. Th. Velzeboer.

1.1 Asian Ports: a perspective for the 1980's.
Dr. Ross Robinson–United Nations ESCAP, Bangkok.

1.2 The role of finance bodies.
Sheila Farrell–Cooper & Lybrands, U.K.

1.3 The economic efficiency of seaports.
Richard Goss, British Government Economic Service.

Tuesday 12/6/1979 – Session 2 – 09.00 hrs.

Chairman: Dr. Ross Robinson

2.1 "Human Engineering"–The Selection, training, motivation and evaluation of human resources.
Simon Feldman, World ORT Union, Geneva.

2.2 Development of human resources for the dredging industry.
F.C.H. Neervoort, Nirwa Assoc.

2.3 Technological requirements for port works in developing economies.
Abraham Mathew, Port of Cochin, India.

2.4 Can civil engineering contractors contribute long term benefits to a developing country's construction or port industry?
E.B. Osoba, Nigerian Ports Authority.

Wednesday 13/6/1979 – Session 3 – 09.00 hrs.

Chairman: Prof. Ir. J. de Koning

3.1 Hydraulic Research–a key to innovation.
R. v.d. Veen, Physical Engineer research and innovation in dredging and navigation, Netherlands.

3.2 Operational aspects of dredging fleets–port services viewpoint.
Brig. Narula, Ministry of Transport, India.

3.3 Reclamation for Port Development and other works–The Singapore experience.
Peter Chia, Port of Singapore Authority.

Wednesday 13/6/1979 – Session 4 – 14.00 hrs.

Chairman: A.S. Mayne.

4.1 Restructuring of existing port facilities to suit future trade requirements.
A.S. Mayne, Port of Melbourne Authority.

4.2 Re-training of labour and management to suit new facilities.
Loh Heng Kee, Port of Fiji.

4.3 Project optimization.
Ir. J. van Dixhoorn, Directory of Public Waterways, Netherlands.

4.4 Frame contract as a means of long term port development–dredging contractor's view.
Ir F. Roelofsz, International Assoc. of Dredging Companies.

4.5 Frame contract as a means of long term port development–Port Authority view.
R. Bawajee, Port of Singapore Authority.

Thursday 14/6/1979 – Session 5 – 09.00 hrs.

Chairman: Dr. Ross Robinson.

5.1 Technology Transfer,–a general perspective.
Prof. Ir. J. de Koning, Delft University, Netherlands.

5.2 Technology Transfer,–developing country's viewpoint.
Dr. S.K. Bhattacharya, Ministry of Sea Communications, Indonesia.

5.3 Technology Transfer,–dredging contractor's viewpoint.
Ir. J.U. v.d. Wal, Zanen Verstoep N.V., Netherlands.

DREDGING FOR NATURAL RESOURCES.

Friday 15/6/1979 – 09.000 hrs.

Chairmen: Prof. Ir. P. Th. Velzeboer, Delft University
Ir. Simatupang, P.T. Timah

1. Latest developments in offshore dredging techniques.
C. Biemond, Royal Volker Stevin, Netherlands.

2. Offshore exploration for natural resources.
Dr. G.J.J. Aleva, Billiton Geological Consultants, Netherlands.

3. Tin dredging, a marginal venture–considerations in project planning and project appraisal.
Ir. K. Reksoprodjo, P.T. Timah, Indonesia.

4. Trailer dredging for winning of aggregates and mining purposes at sea.
R.W.E. Jansen/S.E.M. de Bree, Royal Bos Kalis Westminster Group.

5. Offshore Tin treatment plant.
Ir. M. Simatupang, P.T. Timah, Indonesia.

INTER ISLAND SHIPPING – SEMINAR PROGRAMME

June 11-15, 1979

Monday Session 1 – 09.00 hrs.

Chairman: M. Husseyn Umar.

1.1 International aid to developing island countries.
Eric Khoo, United Nations ESCAP.

1.2 Planning for island development.
Prof. Harold Brookfield, University of Melbourne.

1.3 Oceangoing and domestic shipping problems for island countries.
Prof. Alistair Couper University of Wales.

1.4 The economics of an ASEAN intra-regional shipping policy.
Dr. H.J. Molenaar, Netherlands Maritime Institute.

Tuesday – Session 2 – 09.00 hrs.

Chairman: J. Roilo S Golez.
2.1 The necessities of trade–its influence on shipping development.
Prof. Dieter Sartori Flensburg Technical High School.
2.2 Ship types–new Development for inter island shipping.
Capt. George A Veres, Shipping Consultant.
2.3 Modern conventional cargo ships.
Johan H Mohr Jr., Lund Mohr & Glaever-Enger A/S, Norway.
2.4 BACAT specialised design for inter island shipping.
G. Drøhse, Barge Systems A/S.

Wednesday – Session 3 – 09.00 hrs.

Chairman: Dr. Howard Dick.
3.1 Development policies for inter island shipping.
Dr. Howard Dick, University of Newcastle.
3.2 The Indonesian case–shipowners viewpoint.
M. Husseyn Umar, P.T. Pelni Lines.
3.3 Navigational aids to suit hazards associated with inter island shipping.
Somboon Somabha/Capt Ditmar of Mekong Secretariat.

Thursday – Session 4 – 09.00 hrs.

Chairman: to be appointed.
4.1 The Filipino case–planning and finance.
J. Roilo S. Golez, Maritime Industry Authority, Philippines.
4.2 The Filipino case–shipowners viewpoint.
Jesus P. Cardenas, Aboitiz Shipping.
4.3 The Filipino case–shippers viewpoint.
Alfonso Villaverde, Philippines Shippers Council.
4.4 Retraining of labour and management to suit new port facilities.
Loh Heng Kee, Port of Fiji.

CARGO HANDLING

Friday – 09.00 hrs.

Chairman: Patrick Finlay.
1. Chairman's address–Cargo Handling against a background of change.
Patrick Finlay, ICHCA.
2. Interface between ports of industrialized and developing countries.
Melvin Shore, Port of Sacramento.
3. Cargo handling requirements in the Asia/Pacific Region.
a) Port Authority's viewpoint.
John Costelloe, Papua New Guinea Ports Authority.
b) Shipowners viewpoint.
Victor Chiongbian, William Lines.
c) Shipper's viewpoint.
Chua Tiak Siang, Singapore National Shippers Council.
4. Coordination of ship and port in cargo handling.
Vladimir Brnicevic, Navire Cargo Gear AB.
5. Dockside equipment selection.
Dr. Koh Yong Kng, Institute of Materials Handling.
6. Cargo handling procedure and administration.
Alan Harding, Consultant.

SHIPCARE 79 – SEMINAR PROGRAMME

June 11-15, 1979

Monday – Session 1 – 09.00 hrs.

Chairman: C.A. Sinclair.
1.1 The effects of changing patterns in world trade on the shiprepair industry.
Chua Chor Teck, President SASAR.
1.2 Repairers view on how shipowners can optimize repair and maintenance.
C. Neville Watson, Sembawang Shipyard.
1.3 Writing a tight shiprepair specification.
a) Shipoperator's viewpoint
– G.D. Kinrade of Straits Steamship/Ocean Fleets.
b) Salvage Association view
– W.C.C. MacKenzie, The Salvage Assn.
c) Repairer's viewpoint
– K.F. Steen, Blohm + Voss A.G.

Tuesday – Session 2 – 09.00 hrs.

Chairman: Chua Chor Teck.
2.1 Experience of maintenance planning and manning levels.
O. von Maydell, Hapag Lloyd A.G.
2.2 Future trends of shipboard automation.
K. Imai, Nippon Kaiji Kyokai.
2.3 Sea-going maintenance of cargo access equipment.
M. Turnbull, MacGregor Centrex.

Wednesday – Session 3 – 09.00 hrs.

Chairman: C.A. Sinclair.
3.1 A solution to oil leakage from stern tube seals.
Seiji Yamajyo, Kobe Steel.
3.2 Marine Hydraulics and planned maintenance for optimum reliability.
Speaker unable to be present.
3.3 Shipoperator's viewpoint of Classification Societies role in ship operation, maintenance and repair.
W. van den Berg, Nedlloyd Fleet Services.
3.4 Forum–Classification Societies to discuss above paper.
Representatives of ABS, B.V., DnV, G.L., L.R. and N.K.

Thursday – Session 4 – 09.00 hrs.

Chairman: C. Neville Watson.
4.1 Experience with the use of inert gas in repair yards as an alternative to gas freeing.
F.M.J. van de Laar, Dock Labour Inspectorate Rotterdam of the Ministry of Social Affairs.
4.2 Insurance and shiprepair.
a) Loss prevention–G.G. Howard, The Salvage Association.
b) Claims adjustment.

Thursday – Session 5 – 14.00 hrs.

Chairman: S. Speed.
Paints and coatings forum.
5.1 Quality control of protective coatings.
H. Bray, British Inspection Engineers.
5.2 Specification and selection.
John Bridges, Three Quays Marine Services Ltd. (P & O Group).

5.3 Discussion panel:
S. Johnson (Hempels); K. Brockmueller (Camrex);
S. Clitheroe (International);
N.M. Davies (W. & J. Leigh); J. Aubert (Jotun).

Friday — Session 6 — 09.00 hrs.

Chairman: S. Speed.

Diesel Clinc:

6.1 Problems of running diesels on fuels of inconsistent quality.
T.C. Wiborg, Det norske Veritas.
6.2 Comparing and copying with different maintenance characteristics of slow, medium and high speed diesels.
Prof. S.G. Christensen, U.S. Merchant Marine Academy Kings Point.
6.3 Spares and maintenance problems of operating second-hand tonnage.
R.B. Taylor, Pacific International Lines.
6.4 Forum: T. Bakke (B & W); W. Baer (Sulzer);
M. Bontour (Pielstick);
to discuss above papers.

Conference news

"INTASAFCON 4" The 4th International Tanker Safety Conference sponsored by the international Chamber of Shipping
Hotel Metropole, Brighton, Sussex, England, 1-2 November 1979
Registration fee: £108 (inclusive of VAT at 8%)
Contact: Conference Secretary, INTASAFCON 4,
International Chamber of Shipping,
30/32 St. Mary Axe, London, EC3A 8ET, U.K.
Tel: 01-283 2922 Telex: 884008

Potentials of a national cooperative system for reporting shipping traffic to be reviewed

Results of a 30-day test earlier this year of a prototype of the proposed system will be demonstrated at the technology transfer conference to be held at the National Bureau of Standards in Gaithersburg, Maryland. The trial program involved four industry ship reporting agencies, in New York, Philadelphia, Portland (Oregon), and San Francisco, utilizing a time-shared network.

Under auspices of the U. S. Maritime Administration, the conference is open without charge to all interests involved with traffic of over 50,000 vessels calling annually at American ports, which carried over 2 billion tons of cargo last year, valued at more than $300 billion.

The concept originated with a joint industry-government study two years ago, involving survey of 27 U.S. ports and their methods – and needs – for anticipating, reporting and utilizing ship traffic information. From apparent lack of common exchange of such reports – and increasing operating costs due to delays or other expenses resulting from inadequate data – the model system was designed and tested.

It is hoped that following the conference and demonstration, port, shipping, trade, labor and other industry participants will agree upon steps leading to formal organization of a cooperative effort to continue the common, central computer reporting system, on a self-sustaining basis. If so, it will mark the first such departure ever from present highly-localized, unique methods of reporting shipping traffic.

Brasilian ports news in brief

"Portos e Navios"

- In 1978, the Port of Santos has cut all its records of cargoes handling, totalizing 19,695,000 tons.
- Companhia Docas do Pará is enlarging the installations of the Port of Belém, to cope with the increasing cargo movement.
- The Port of Sepetiba has already 60% of its works completed; the port is to handle, after its completion, 8.6 million tons of charcoal, 18 million tons of iron and 500,000 tons of aluminium, besides heavy cargoes and other bulks.
- Companhia Docas do Rio de Janeiro has signed a contract with Nacional Companhia de Seguros, for life and accident insurance for all its employees.

Port of Halifax cosponsors Canada's first marine fire protection seminar

A two-day marine fire protection seminar, was presented in Halifax on June 19 and 20 by the Port of Halifax and the Halifax Fire Department.

Port manager Ray Beck said it was the first time in Canada such a seminar has been held and brought together representatives from all organizations that could become involved in a marine fire incident at the port.

The seminar was held at the Nova Scotia Technical College and representatives were from the Halifax and Dartmouth fire departments, the Port of Halifax, the Canadian Coast Guard, the department of national defense, the Queen's harbour master's department, the Shipping Federation of Canada, the departments of justice and the environment and the Atlantic Pilotage Authority.

The Halifax seminar has covered various aspects of marine fire protection including legal considerations of marine fires, pre-planning, marine fire tactics, and ship stability in fire fighting operations.

The seminar leader, Captain Bob Hansen, president of Diversified Fire Services Corporation; Lynnwood, Wash., pointed out that because of the many different individuals and organizations involved in the event of a marine fire, it is essential to co-ordinate the activities of each and ensure that they will work together successfully.

"There are legal differences between a fire on shore and a fire aboard ship. If it is on shore, it is the responsibility of the city fire department. If it is aboard ship, however, the fire department is one of many involved. The harbour master, Coast Guard, ship's master and the harbours board are also involved."

Legal difficulties arise because the vessel is usually in two or three different jurisdictions.

"If the vessel is tied to a pier, it is under the jurisdiction of the city and the fire department. It would also be in national waters and therefore, under the jurisdiction of the federal government and the Coast Guard. There are complications when somebody exercises their full authority alone," he said.

It is because of these legal pitfalls that pre-planning is

so important, said Capt. Hansen.

"Problems occur when someone is negligent in their duties. There would not be negligence in duties if accepted practices are followed which includes planning for the incident, identifying the resources at hand, training the people, and carrying out what you have been trained to do."

Planned marketing effort vital: Chairman of Saint John Port Commission

"A combination of modern equipment, expertise, a willingness to progress and good business instincts ensure a port's place in the future of world trade," said Thomas L. McGloan, Q. C., chairman of the Saint John Port Development Commission, in a by-line article appearing in a leading international transportation magazine, American Import Export Bulletin.

Mr. McGloan discussed the necessity of a planned marketing effort, vital among the keen competition which exists between ports for ships and cargo.

"It is true that some ports, including the Port of Saint John, do have geographic characteristics that do result in captive cargo. Nevertheless, a port still cannot afford not to market, because some other port is probably eyeing that cargo and is going to try to come up with a better way to serve those shippers," he stressed.

How the Port of Saint John gets its message across to potential customers is the job of an aggressive marketing effort of the Saint John Port Development Commission and the National Harbours Board, McGloan said.

Underlying their marketing concept is the basic premise that the Port of Saint John exists for the efficient transfer of goods between the vessel and other carriers, an intermediary between point of origin to final destination.

Mr. McGloan outlined the principles on which the operation of the Port of Saint John is based:

(A) the ship must be unloaded, reloaded and made ready for sea in the least possible time

(B) cargo must be handled efficiently and economically, and

(C) personnel and cargo must be protected from injury while in the terminal area.

"Therefore, the port attempting to fulfill its objectives, is working to find better ways to perform its function, and attract additional cargo, and thereby attract additional ocean carrier services," he said.

"Port marketing experts do not believe in relying on history, geography or proximity as a way of reserving these services. Instead port officials make every effort to discover the customer's needs or determine better ways to satisfy them." In discussing the people who sell the port, Mr. McGloan said:

"Our marketing team is aware that in this dynamic, fast changing world the shipping industry in particular has undergone rapid change. We, therfore, must be receptive to these changes and be willing to make every effort to enhance the efficiency of the port."

He commented on the port's contract with Fenco Consultants Ltd., with the assistance of Crandall Associates of Moncton, N.B., to develop an overall master plan of the port up to the year 1990. The progress which has taken place in the past requires taking a fresh look at the port and reflecting upon its potential to best serve their customers, he said.

"Planning therefore, becomes the key word in our marketing effort. Looking ahead ... and also looking back. We want Saint John to be a constant marvel of facilities and services in Canada, indeed, in North America," Mr. McGloan explained.

In addition, several trips are made each year to the Canadian interior markets of Toronto and Montreal, where there is employed a full time marketing representative for the port, and to New York where much of the North American shipping industry are situated, the article says.

Through the years representatives have made annual visits to South America, Europe, the Far East and other parts of the trading world "selling Saint John." McGloan added.

Board votes for October 1 hike in Panama Canal tolls

("The Panama Canal Spillway"): – The Board of Directors of the Panama Canal Company has voted to seek an increase in Canal tolls.

Citing the anticipated increase in the cost of operations of the Canal after entry into force of the Panama Canal treaties on October 1, 1979, the Board said that a study had been conducted to evaluate the adequacy of tolls to cover the costs of operation of the Canal over a three-year period starting with fiscal year 1980.

Conclusions of the study were –

... In fiscal years 1980, 1981, and 1982, revenues will be insufficient to cover the costs of operation of the Panama Canal and related facilities,

... To recover over a three-year period the full amount of these revenue deficiencies would require increasing toll rates by 21.8 percent as of October 1,

... An increase in the rates of tolls of up to 25 percent would have only a negligible effect on cargo shipped through the Canal and on the amount of additional revenues derived from the rate increase,

... An increase in the rates of tolls in the amounts recommended would not have a significant impact on the quality of the human environment within the meaning of the National Environmental Policy Act of 1969.

Increases called for in the proposal would bring the rate per Panama Canal ton (equivalent to 100 cubic feet of revenue cargo or passenger capacity) from $1.29 to $1.57. Ships in ballast would pay at the rate of $1.25 a Panama Canal ton instead of the former $1.03. The tolls for vessels such as warships and hospital ships, which pay on a displacement ton, would be increased from the present 72 cents to 88 cents.

The study was based on current law (which requires interest payments to the U.S. Treasury) as modified by the Panama Canal Treaty of 1977.

After considering the study, the Board voted and passed a resolution to announce the increase in rates, subject to the approval of the President of the United States.

Ship agents have access to port's computer at Barbours Cut Terminal

(By Middy Randerson, "Port of Houston Magazine", April, 1979): – The Port of Houston Authority is now offering a special computer service to any steamship line

utilizing Barbours Cut Terminal for container movements.

The Authority has provided a straight, dedicated telephone line to downtown Houston, and by leasing a cathode ray tube video display and printing unit line representatives can have direct access to the Computer Information Control System program in the Port's IBM 370 series computer.

Line agents can request and enter data on their shipments, and the program provides features for export, import and empty containers. Strict security on the system, including both code and device control, means that all information will be protected and only data pertinent to that line is accessible to any user.

By using this system, Bruce Lyle, Port Authority Data Processing Manager, says that any line representative "can be as up to the minute on information pertinent to his containers as if he were on the site. Anything that happened 30 seconds ago at Barbours Cut is just as available to him as it is to us."

The Port Authority provides an operating manual and instruction book and Lyle says he can train someone to use the system "in 15 minutes."

Bruce Lyle said he believes this is the only Port system in the United States that allows customers to request AND enter data on a computer program.

Features of the system include:

EXPORT: customer can set up his own booking number and indicate the number of boxes expected for a particular booking; can find out which boxes have arrived and which haven't; can request details on individual boxes such as the shipper, what truck it arrived in, contents, condition, location in the marshalling yard; when boxes are loaded he can get a hatch and cell location list of his containers.

IMPORT: Customer can enter data on expected containers by hatch and cell number and point of origin; can determine which boxes he was expecting that may not have arrived; once in the yeard, he can get a list of the containers in the yard which have and have not cleared Customs; on a daily basis he can request data on the time any container left the Terminal including the license number of the truck carrying it inland.

EMPTIES: Customer can request a list of all serviceable or unserviceable empties in the yard by type, such as 20 ft. opens, 40 ft. containers, etc.

Everglades celebrates Fairwind's 250th voyage

Sitmar's T.S.S. FAIRWIND celebrated its 250th sailing from Port Everglades on Wednesday, July 18, 1979. Activities slated for the occasion include a traditional water display and tugboat escort, a gala commemorative ceremony by Port officials and local dignataries, and the 250th embarking passenger were given a rememberance of the voyage.

The luxury cruise vessel began regular service at the Port in January, 1973 and has sailed without interruption to date. The 25,000 ton vessel has cruised out of the Port with over 900 passengers, operating at full capacity.

Los Angeles budgets a record $112 million for 1978-80

This year's $112,443,583 spending program reflects a 15.94 percent increase over last year. The total operating

budget of $27,112,329 includes funding of 650 positions.

Total projected revenues for 79–80 are $63.1 million, an increase of $2.9 million over 78–79. The principal sources of revenue are from shipping services, $41.2 million; rentals of property, $12.6 million and miscellaneous, $9.3 million.

A total of $66.8, which includes $27.3 million for dredging the Main Channel, has been earmarked for Capital Improvements to be made in 79–80. This expenditure is part of an ambitious, $405 million capital construction program which the Board adopted to modernize and upgrade present Port facilities and to construct new ones. The Department plans to issue $10,000,000 of previously authorized revenue bonds during 79–80 to help finance the capital construction projects.

The Harbor Department receives no funds from taxation; the entire budget is financed from revenues derived from port operations and a $1 million Economic Development Administration grant.

Port of Los Angeles starts the largest advertising campaign

The Port of Los Angeles has embarked on the largest special advertising campaign in its history. Focusing on the Port as the "export experts", the thrust of the $128,000 campaign is twofold: to promote more cargo traffic through the Port and to counteract the Nation's imbalance of trade by encouraging American businesses to export their products.

The campaign was created by Marsteller Inc. advertising agency in Los Angeles to promote exporting through the Port. Jack Wells, Harbor Department General Manager, says the campaign is designed to assist manufacturers in the Los Angeles community who are ready but unfamiliar with procedures to sell their products in the world marketplace. Increased exports would also enhance business in the Port of Los Angeles, he adds.

Wells points out that the "export experts" campaign is taking a radical new direction from past advertising efforts which have been aimed largely at advertising in maritime trade publications.

"This campaign is very unique and involves a direct publicity effort to reach business leaders through metropolitan newspapers and major business magazines. Outdoor advertising and direct mail pieces will further create public awareness of the Port's contribution to the correction of the U.S. trade deficit and the stimulation of the nation's business. The ad program positions the Los Angeles Harbor Department's trade development personnel among the experts in export financing, distribution and overseas marketing, adding their particular expertise in port and transportation facilities and cargo routing."

Los Angeles Mayor Tom Bradley kicked off the seven month export campaign during 1979 World Trade Week activities in May. The Mayor gave a taped message about the export campaign on business news segments of Los Angeles' all-news radio stations. Los Angeles Harbor's trade development division received over 120 phone calls on the Port's special "Export Hotline" as a direct result of the radio message. The trade development staff is also receiving about five inquiry letters about exporting per day.

New Orleans' trade with the world —1978 statistics

Statistics released by the Board of Commissioners of the Port of New Orleans recently revealed that the Port's trade with the world, including both imports and exports, totaled more than ten billion dollars in value in calendar year 1978, with 38.1 million tons of foreign waterborne cargo moving through the Port.

Dollar value of cargo moving through the Port increased by 1% over the previous year, while total tonnage was down some 13%. Principle contributors to the tonnage loss were declines in grain exports and petroleum imports.

Grain statistics continue to reflect major losses caused by the tragic explosion of Continental grain Elevator in December of 1977. Grain exports in 1978 weighed 57% less than in 1977. While these statistical losses are mitigated somewhat by Continental's interim barge-to-ship operation, full recovery of the firm's former volume is not expected until the fall 1980 crop, at which time the company's new elevator is scheduled for completion.

General cargo in containers and in breakbulk form were up 15% in tonnage over 1977. These higher value cargoes have a greater per ton effect on the local economy than bulk cargoes do, because they call for more manpower and more service than the latter. A study conducted by an agency of the federal government estimates that each ton of general cargo generated **$36** in direct benefits to the community, while a ton of bulk cargo generates about **$12** in similar direct benefits. 1978 was the second highest tonnage year for general cargo in the Port's history.

Foreign trade shows a significant gain for 1978: NY & NJ Port

According to an analysis of the port's foreign trade, issued by The Port Authority of New York-New Jersey, general cargo movements increased by 10% from the previous year to reach a volume of more than 15,700,000 tons.

The port's oceanborne foreign trade – bulk and general cargo – was valued at $36.5 billion in 1978, up 17.2% from 1977. Exports accounted for $12.0 billion and imports $24.5 billion.

Foreign oceanborne general cargo exports of the New York-New Jersey Port rose 9.1% to 5,305,000 tons in 1978. Although severe winter weather and rail congestions along inland routes hurt exports in the first half of the year, the absence of these factors in the second half of the year, combined with recovery from the eight-week dock strike in the final quarter of 1977, enabled the port to register a significant gain for the year.

The port's foreign oceanborne general cargo imports rose 10.4% to almost 10,403,000 tons in 1978. The strong performance on the import side reflects the buoyant national economy, record levels of personal income, the continued strong demand of American consumers for foreign goods and the fact that within 200 miles of the New York-New Jersey Port lies America's largest and wealthiest consumer market.

In contrast to the upbeat in general cargo, the port's bulk cargo fell 10.2% to 44.9 million tons in 1978, reflecting a temporary decline in this region's demand for imported petroleum.

World Trade Institute to offer an expanded schedule of seminars

The World Trade Institute of New York's World Trade Center, will offer an expanded schedule of seminars, courses and conferences this fall and winter. The Institute, an educational service of The Port Authority of New York and New Jersey, conducts the most diversified program of seminars and courses on international business and finance available anywhere. During 1978, over 7,000 American and foreign businessmen and students participated in Institute-sponsored programs at its headquarters in New York or in various cities throughtout the United States.

Among the new programs to be introduced by the Institute meetings between October and December 1979, in the area of International Transportation and Distribution are as follows:

INTERNATIONAL TRANSPORTATION AND DISTRIBUTION

Meeting Title	Date	Location
Letters of Credit for Import and Export	12/10-12	Miami
Petroleum Tankship Operations	10/29-11/2	New York
	12/10-14	New York
Export Documentation and Traffic	10/10-12	Houston
	11/28-30	New York
Evaluating Shipping Transactions: Liquid and Dry Bulk Movements	11/28-30	New York
Import Documentation and Procedures	10/2-4	New York
Shipping Transactions: Securing the Financing	10/24-26	New York
Introduction to Automation for Export	10/24-26	New York
U.S. Customs Law: A Problem-Solving Approach	10/29-11/1	Chicago
	12/11-14	Miami
Protective Packaging for International Shipment	11/5-9	New York
Marine Cargo Insurance	11/7-9	New York
Automation for International Documentation and Transportation Information	11/13-15	New York
Hazardous Materials Workshop: Application of International Shipment Regulations	12/12-14	New York

For further information contact:
The World Trade Institute, One World Trade Center, 55th Floor, New York, New York 10048

Oakland plans a three-year Capital Improvement Program costing $120 million

The Oakland Board of Port Commissioners has approved a budget for the fiscal year 1979-1980 with operating revenues estimated at $34.6 million, an increase of 13.7 percent over the estimated operating revenues for the previous year, it was announced by the President of the Board.

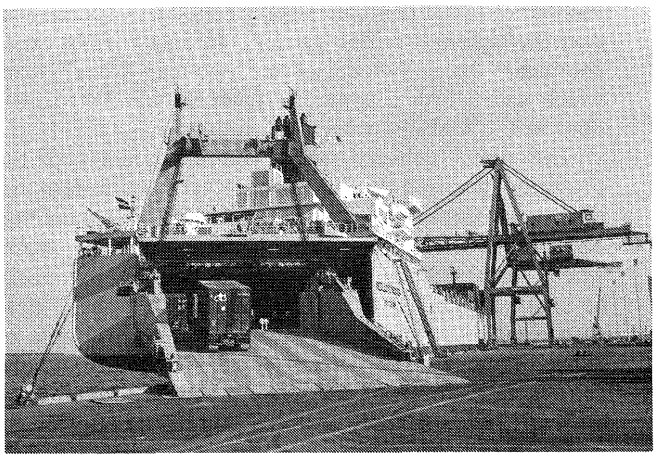
Of that figure, $17.2 million are expected to be derived from the operations of the Port's marine terminals, while $11.5 million will come from the operations of the Port's aviation facilities.

Other revenues are expected to be derived from the Port's properties and utilities.

For the coming year, the Port's operating expenses are expected to total $16.9 million, an increase of 8.5 percent over the previous year.

The Port plans a three-year Capital Improvement Program costing $120 million. This program will include the completion of the Outer Harbor Container Terminals, construction of the new 43-acre Charles P. Howard Container Terminal, and other marine terminal improvements estimated to total $47.5 million; and new construction at the Oakland International Airport at an estimated cost of $50.6 million.

The President said that the ability of the Port to finance this three-year program is dependent upon net revenue derived from Port operations and the ability to raise capital funds at minimum cost through the issuance of revenue bonds.



"STERN MEASURE" is taken as a better idea in roll-on, roll-off cargo handling at the Port of Charleston. Nedlloyd Lines' new generation vessel, "Nedlloyd Rouen" utilizes a fantail loading ramp that adjusts to changing tides and permits efficient ro-ro loading and off-loading at a linear berth, eliminating need for a special seaport ro-ro ramp.

Seattle "TRADELINES"

- **Highway carriers save time, money for shippers**

Since the inception of the Port of Seattle consolidation program, intact steamship line containers have usually been handled by the railroads to inland Overland Common Point destinations.

The major reason for this has been economics. Normally, if the only factor to be considered is the transportation charge, railroad rates on intact containers are cheaper to most OCP destinations than any other mode of transportation. However, since "time is money," another important factor is transit time.

The importance of time is evidenced by the increasing

number of intact containers being handled by specialized, over-the-highway motor carriers. In many cases some companies have introduced a "two-man-driver" team which can deliver a container from Seattle right to the door in the Midwest within 48 hours.

This direct delivery service eliminates many of the problems involved in the normal terminal-to-terminal operations utilized by the railroads and other common carriers. (During the recent midwestern snow storm when containers and trailers were tied up for weeks at many terminals, or rail embargoes in effect, these specialized over-the-highway carriers were still able to deliver cargo direct to the door.) They can also handle containers from or to the western states. Since the rail OCP rates do not apply to these points, the transit time is faster and the rates – in many cases – are cheaper than the applicable rail-commodity rates.

- **Terminal 37 equipped for rising demand**

Colossal, sophisticated, a model of preparedness with the most modern equipment available to handle heavy volumes of cargo – these superlatives have been used to describe the Port of Seattle's new Terminal 37.

The dedication of the terminal in late March marked the opening of one of the largest container terminals in the United States. Scheduled for compleion in mid-1980, the complex will cover 88 acres of the former Piers 37, 38, 39, 42 and 43. The north section will join Terminal 46, which will be remodeled and included in the ultimate total complex.

The approximate cost of $50 million includes construction and major equipment at the Terminal 37 area. The cost does not include the existing Terminal 46's eventual modifications, costs of previous piers or land value of the Pier 37-43 area.

The entire complex initially will be known as Terminal 37 South, with an area of 38 to 40 acres housing the first tenant and extending from Pier 37 to the old Pier 42 area. Terminal 37 North will cover the area from the former Pier 42 to the south boundary of Terminal 46, and Terminal 46 will form the north "cap" of the entire complex.

From "Hinterland", Antwerp

- **Traffic evolution gives cause for a relative satisfaction: Antwerp in 1978**

Taking into consideration all factors, and especially the present situation of world-trade, there is reason for satisfaction as regards the manner in which the port stood firm last year. Two basic figures give occasion to this satisfaction: **17,382 ocean-going vessels** and **72 million tons of goods.**

As far as goods traffic is concerned the provisional statistics and calculations show that 1978 was closed with a margin of profit. The total quantity of loaded and unloaded goods increased from 70 (in 1977) to 72 million tons.

Divided into general cargo and bulk cargo the figures are showing an increase especially of the first category which once more gives proof of the possibilities offered by Antwerp in the matter of the general cargo traffic.

If traffic in the port progressed favourably in 1978, it must be said of last year, however, that as regards the extension works there's another side to the picture. Positive factors undoubtedly were that more than 75.000 m^2 of new covered storage accommodation was put into use, that the works on the New Harbour Dock (3rd phase) could be put out to contract, that 12 new municipal high-powered harbour cranes were ordered, that contracts were concluded for the dredging works in the canal linking the 5th Harbour Dock to the Amerika Dock, and also for the new harbour dock, and, not in the least, that at long last a solution could be found for the lingering problem of the form of management of the harbour installations on the left bank of the Scheldt. Less encouraging for the city authorities and trade and industry was the repercussion of the retrenchment measures taken by the government which have led to a reduction of certain credits – among other things for other dredging and deepening works.

In concert with the employers' and workers' organizations the municipality has reacted by presenting a five-year plan (1979-1983) of works and investments as a guide-line for the further extension and improvement of the harbour complex. It comprises three parts relating respectively to the maritime accessibility, the harbour installations on the right bank and those on the left bank. The plan is under investigation with the National Harbour Policy Committee set up in 1978; this five-year plan as well as the demands of the other Belgian harbours are being dealt with by this committee with a view to come to a co-ordination on the national level and to advise the government.

The port of Antwerp has closed 1978 with a credit balance and remains (with more than 70% of the national traffic) by far the most important port in Belgium and one of the largest in the world. The continuation of this positive trend is the direct result of real efforts made by the port authorities and the private enterprises in order to be able to offer shippers and transporters attractive conditions.

Logic demands that these efforts should be supported and strengthened by the central authorities.

Liverpool news

- **Trading profit for third year**

The Mersey Docks and Harbour Company has made a trading profit for the third year running. The Preliminary Results for 1978 show a figure of £1,242,000.

But the continued downturn in general cargo has led to the Company reducing the book value of the docks used for the declining conventional trade by £10,000,000.

However, Chairman Sir Arthur Peterson stressed that the adjustment did not effect the Company's operating ability or cash resources.

"The changing nature of the shipping industry means that facilities built for another age no longer have the same capital value", explained Sir Arthur.

"Port Users can be assured that the Company will continue to offer a first class service. We are simply re-assessing the value to the Port of our docks, warehouses and other facilities. We have to give a true and fair view both to our employees and our shareholders

as to the value of what we own".

Realism was the theme throughout Sir Arthur's brief statement. He pointed out that despite trading profits of £5,180,000 in 1976 and £4,705,000 the following year, he had predicted that 1978 would be tougher. And at the half-way stage when the Dock Company was showing a trading profit of £1,780,000 he had warned of the marked downturn likely to take place in the second six months.

"This is mainly due to the substantial loss of general cargo during that period," said Sir Arthur. "Although it is a trend effecting every port, it is one that must give cause for concern and we are pursuing an aggressive marketing policy".

The Dock Company had also adopted a constructive business approach to the Port's manpower situation in the light of changing demand. Not only was voluntary severance being offered to Registered Dock Workers to produce the right size of workforce for the job, but £2,712,000 had been provided in 1978 for the cost of voluntary severance offered to other employees who had already been released before December 31st or could be expected to leave during this year.

Sir Arthur added that the Dock Company would not be able this year to make any payment as a partial capital redemption to the holders of the redeemable subordinated unsecured loan stock.

- **Port gets special customs clearance facilities**

H. M. Customs and Excise have granted the Port of Liverpool special clearance facilities which will speed up the movement of export containers and cut costs to shippers.

Royal Seaforth Dock and Trafalger Dock have been given similar status to Inland Clearance Depots so that containers being packed at the Port can be sealed by Customs officials for swift export through any other Port without further inspection.

General Manager of Operations Mr. Trevor Furlong said: "Until now containers stuffed at our facilities and shipped through another Port have been subject to inspection by H.M. Customs before being loaded abroad a vessel. If a box has to be stripped and then stuffed again time is lost and the shipper has to bear the additional labour costs.

"With our special status at Seaforth and Trafalgar a container can be sealed by H.M. Customs, then shipped via any other port to Northern Europe, Scandinavia or any worldwide destination without further interference".

Southampton mounts marketing drive for continental Ro/Ro freight

The British Transport Docks Board is stepping up its campaign to boost roll-on/roll-off freight traffic through the Port of Southampton. During 1978, 713, 645 tonnes of freight were carried by the port's three principal services to Continental destinations, and with 36 sailings a week, there is clearly scope for a significant increase in throughput. Townsend Thoresen and P & O Normandy Ferries offer up to four sailings every day to Le Havre; Townsend Thoresen have a daily sailing to Cherbourg; and MacAndrews operate a weekly crossing to Bordeaux and Bilbao.

As the port authority, the BTDB are now joining the ferry operators in taking a more active part in the day-to-day marketing of the Southampton routes. The port management in Southampton have, for example, set up a close liaison with the Port of Le Havre's marketing team, and the consequent pooling of knowledge and resources has already led to the development of several new traffics on the Southampton/Le Havre route. Together the two port authorities are planning a 'Trans-Channel Freight Symposium' to be held in Southampton in the autumn.

The BTDB have found that by concentrating marketing efforts on major commodity movements, and tailoring port services to meet the requirements of particular trades, significant additional business can be gained.

In view of recent successes, this approach seems likely to be a continuing feature in the marketing of Southampton's ferry routes with further expansion of trade expected in the near future.

Development and investment policy for the next 5 years: Port of Le Havre

The overall policy of the port during the next five years was defined at a recent meeting of the Board of Administration, when it was decided that the main emphasis between 1979 and 1983 should be placed on developing the trade in general cargo, particularly the container trade, with a special effort to recover traffic that has moved elsewhere, step up the international transit trade, develop the schemes for industrial/commercial bridgeheads and consolidate Le Havre's position as a major centre of world trade.

The policy is based on a number of assumptions, particularly that of an increase in traffic to include a 2% rise in the oil trade, a strengthening of the bulk trade in commodities other than coal and aggregates, and an annual improvement of 7% in non-bulk general cargo. If this forecast is right, total traffic in 1983 could be in the region of 84 million tonnes, with general cargo rising from under 7 million tonnes in 1978 to nearly 10 million tonnes in 1983. The new works and equipment needed to cope with the extra traffic would amount to about 1,830 million francs over five years, i.e. about one and a half thousand million francs at today's prices.

Marseilles/Fos expects better results in 1979

- For the Port of Marseilles, 1978 was a patchwork of light and shade: the activities affected by the international economic situation suffered (oil traffic, ship repairs), whereas those more directly affected by the efforts of the port and shipping professions prospered (bulk traffic and general cargo).

One cannot help remarking that during the previous year (1977), all sectors of the port and shipping professions, employers and labour, had worked together in harmony, showing what Marseilles could do when everyone pulled together.

Unfortunately, the same thing cannot be said of 1978, when the already vulnerable sectors (oil traffic and ship repairs), as well as the general activity and image of the Port as a whole, were adversely affected by strikes and protest movements.

Marseilles-Fos enters 1979 with its oil traffic reduced (like that of all European ports), its bulk traffic increasing steadily, its general cargo traffic climbing fast (especially over the last two years, due to its strategic geographic position), and its industrial zone working

at nearly full capacity and attracting new investments. In spite of the deep wounds to its ship repair industry, this is still a very solid basis on which to work side by side for improved results in 1979.

- **Traffic through Marseilles-Fos in 1978:**

(in tonnes)

IMPORTS	EXPORTS	TOTAL
81,272,769	12,359,258	93,632,027

The Port's total traffic has therefore dropped slightly (by 3.9%), this drop is entirely due oil traffic. Dry bulk traffic has increased by 7%, liquid bulk by 22.1%, and general cargo by 6.6%.

In conclusion, although 1978 was marked by a slower increase of general cargo traffic than had been hoped for (for the reasons mentioned above); nevertheless, excluding oil products, the rest of the Port's traffic increased substantially to reach 20,151,744 tonnes, and increase of 7.4% over 1977.

Bremen International

- **Over DM 2.5 billion to be invested by 1983: Bremerhaven**

The extension, in August/Sept. 1979 of the Bremerhaven container-terminal southwards (up-Weser), to then give a Weser-river quayage of 1.5 km and a depositioning area of some 1 million sq. meters (at a cost of DM 180 millions) is already to be followed in mid-1980 with a 4th-extension of the river-quay, this time northwards (Weser-downwards towards the sea), by another 700 m. and 700,000 sq.m. storage area (at a cost of some DM 350 millions) so that by the end of 1983 the Bremerhaven container terminal will be the largest unified container installation in Europe – with 2.2 km of quayage and 1.7 million sq-metres dispositioning area. Bremen therewith will have invested more than DM 2.5 milliards over the past 3 decades in extensions to the most modern port installations. Purpose: Port Senator Oswald Brinkmann anticipates container-handling to reach 5 million tons in 1979, over 8 in 1985 and about 11.3 in 1990.

Cargo handling rose to 55 million tons in 1978: Port of Hamburg

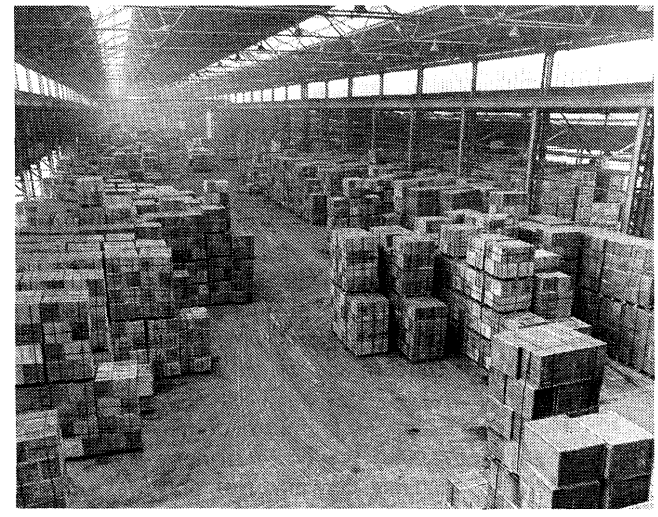
The Port of Hamburg also benefited from the Federal Republic of Germany's business upsurge in 1978. A new top figure was chalked up with a total of 54.9 million tons of goods of all kinds handled. This corresponds to a rise of some 800,000 tons or 1.5 per cent. Suction-type goods accounted for 8.8 million tons (plus 0.6 per cent), grabbable cargo 11.0 million tons (plus 5.9 per cent), liquid cargoes 18.1 million tons (minus 5.4 per cent) and general cargo 17.0 million tons (plus 7.3 per cent).

The outstanding results in the general cargo sector were primarily due to a rise in exports (plus 9.8 per cent). 9.3 million tons of goods were exported all over the world last year via the installations of the Port of Hamburg. On the import side – despite the price-reducing effects of the continual higher evaluation of the DM – with 7.7 million tons handled there was a rise of "only" 4.5 per cent.

The growth in container traffic via the Port of Hamburg has by no means come to an end yet. With a plus of 27.3 per cent, 600,084 containers (20-ft basis) totalling 5.2 million tons in weight were handled last year. The container share in overall general cargo handling (containerization degree) now lies at over 30 per cent.

For the present year the Hamburg port economy expects neither spectacular growth impulses nor significant inroads into existing transport developments.

In the general cargo sector there are hopes of being able to maintain the level of the past year, while at the same time the trend towards containerization is likely to continue. Due to favourable European harvests, a downward trend has to be expected in the suction cargo field. In the grabbable and liquid cargo sectors, the quantities handled in 1978 are likely to be achieved.



NEWPORT HANDLES MORE TEA: Bad weather and the lorry driver's strike notwithstanding. BTDB figures for Newport show that the port has succeeded in handling almost 50 per cent more tea imports in the first eleven weeks of 1979 than it did in the whole of last year.
Mr. Alf Pidduck, Newport's Docks Manager, said that the lorry drivers strike had caused severe problems for the ports, but Newport had been able to offer the tea trade extra back up in the form of additional shed accommodation.
"At one time in early February we had a total of 57,131 chests of tea in our Atlantic shed awaiting distribution, a facility not previously used for the storage of tea", Mr. Pidduck said. "I think it is fair to say that our ability to absorb this level of traffic at short notice was of considerable help to the tea trade and the shipowners".
Since 1973 when Newport dealt with its first tea cargo nearly 66,000 tonnes of tea have been imported through the port.

Haugesund—The North Sea Port

See front cover also.

The city of Haugesund is the natural centre of the northern part of the county of Rogaland, a region with a population of more than 100,000. The city was founded 125 years ago and has today 28,000 inhabitants. The city of Haugesund is situated very close to the sea almost half way between Stavanger and Bergen, and the city may be rightfully said to have the most centrally located harbour in the North Sea.

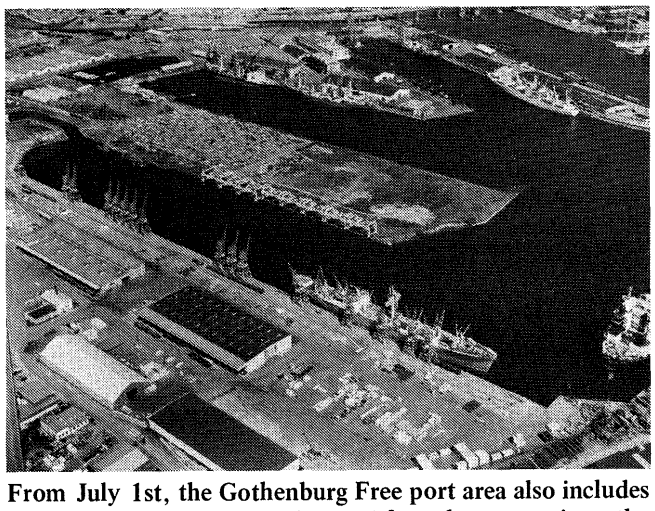
The Port

The city of Haugesund's natural centre and most important point of connection with the outside world is, of course, the Port. The open sea is just two nautical miles away, but the basin is well protected against rough weather and is open all the year round.

The Main Port

The area around "Garpeskjær" represents the old established part of the port. This section of the dock absorbs most of the goods traffic, and from its development it is quite evident that the handling of goods has been given top priority. Today the area comprises well over 60,000 square metre including a quayage of 1,200 metres belonging thereto. Towards the west there is a deepsea quay having a depth of from 30 to 34 feet, while the northern and eastern depths vary from 20 to 25 feet.

Development work in this area has today been largely completed, except for a terminal/warehouse, which is in the planning stage. Further there is at the southern end of the quay a hydraulic ferry bridge 8 metres wide, with a maximum axial pressure of 18 tons. To the north there is a roll-on/roll-off installation 19 metres wide and with a maximum axial pressure of 65 tons, and depth 20 feet. These installations have been built to make it possible for the port to cope with the ever-increasing traffic due to the roll-on/roll-off system.



From July 1st, the Gothenburg Free port area also includes the adjacent Lundby Harbour. After the expansion, the Free port covers some 280,000 m², and there are 75,000 m² of storage space in the sheds and ware-houses.

The Inner Harbour

This quay area of well over 400 meters is mainly used in handling passenger traffic, and here the speed boats have their passenger terminal.

Offshore Base

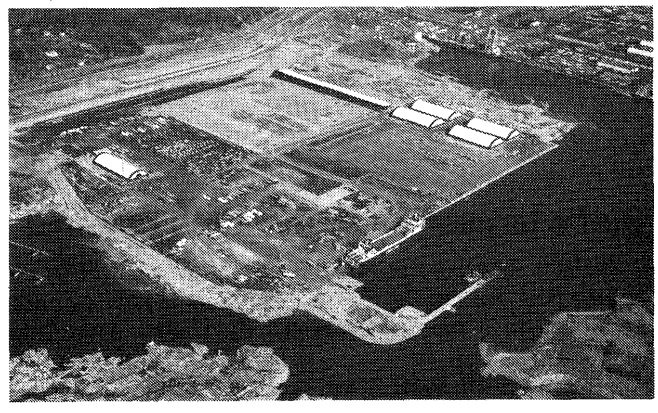
The Haugesund Deep Water Base is a new offshore base now under construction, at 1 km north of the city centre. The work consists in levelling an island and in constructing quays with the requisites that go with it: cranes, warehouses, etc. When these installations have been completed in May or June 1979, they will represent a valuable addition to the port and a good offer to companies wishing to establish themselves in offshore activities at Haugesund or in "Nord-Rogaland". Completed the base will consist of 25,000 square meters of levelled ground with a deep-sea quay of 160 meters and a depth of 50 feet, and also 230 meters with a depth of 22 feet. The deep-sea quay will be completed this winter and will enable ships drawing very deep to call at the port.

Gothenburg's Älvsborg harbour renamed, included in the Skandia harbour

The Port of Gothenburg's new Älvsborg harbour, recently inaugurated by Sweden's minister of communication, Mrs. Anitha Bondestam, has been renamed and included in the Skandia harbour which lies upstreams the Göta River close to the new harbour.

The name after the inclusion into the Skandia area is now the Älvsborg terminal except for that part of the harbour which is specialized on the North Sea traffic by Volvo, Oden Line and Broström. This part of the harbour has now got the name Nordsjöterminalen [the North Sea terminal].

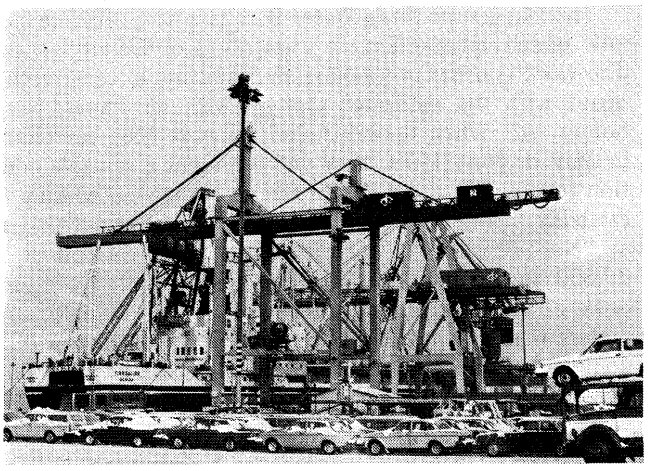
The main reason for the change of name was the fact that the Gothenburg river-mouth dry-cargo harbours form one unit operationally, and that the Skandia name is already well-known.

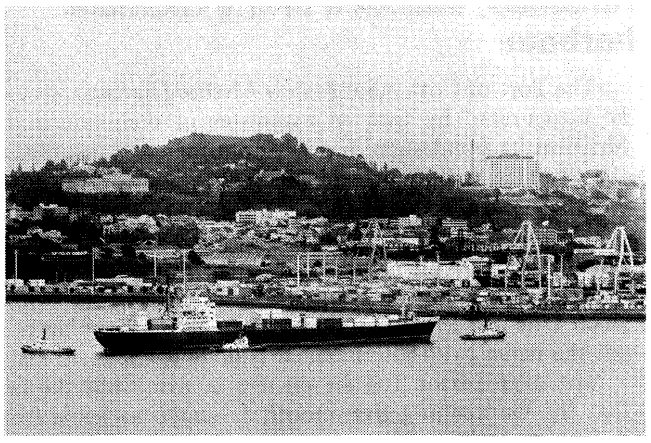


Crane record?

No less than five large cranes were recently simultaneously engaged in the loading of Atlanticargo's M.S. "Finnsailor" at Gothenburg's Skandia harbour.

The reason for this massive crane concentration was that some heavy industrial units had to be lifted on board in the shortest possible time. Two container cranes with a lifting capacity of 40 tons each, two "combination" cranes of 30 tons each and one of the port's pontoon cranes lifting 215 tons were thus directed to the ship, and the loading was performed in a minimum of time.



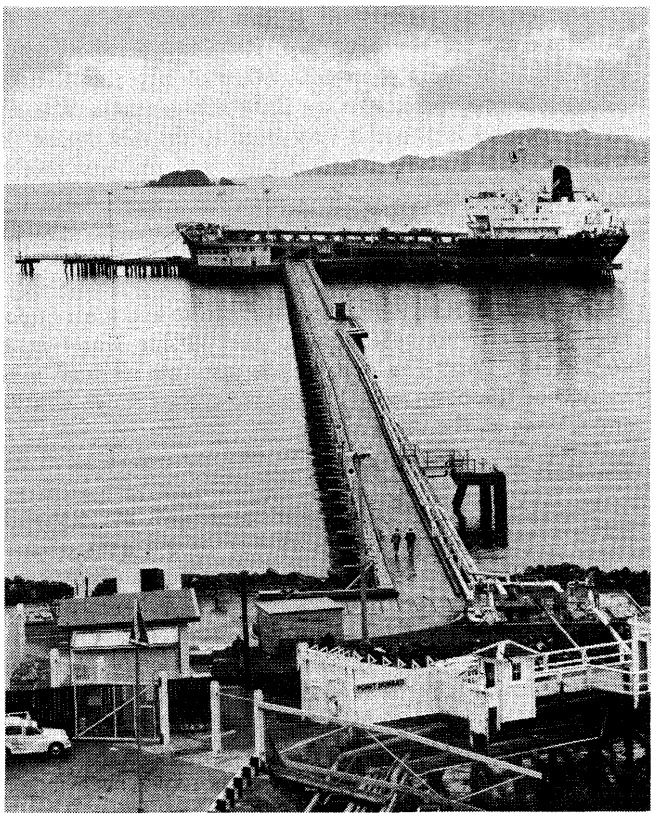


Austral Endurance, a Farrell Line Inc ship in the East Coast North America trade, and the 1,000th container ship to work the Port of Auckland, NZ, terminal since it became operational in June 1971, being moved toward its berth at the terminal by three Auckland Harbour Board tugs.

Gulf's largest new port now manned

Dubai's new port at Mina Jebel Ali, which will be the largest port facility in the Arabian Gulf is now manned, according to a report just issued by United Arab Shipping Co.

Mina Jebel Ali, some 35 km southwest of the $1.6 billion Jebel Ali industrial center, is intended to have some 68 berths when fully operational. The aim is that the number of berths will grow with activity at the nearby industrial center which, together with an industrial zone Abu Dhabi is now building at Ruwais, will give the United Arab Emirates the infrastructure necessary to become a dominant industrial force in the Arabian Gulf.



Wellington, New Zealand:—24 May 1979, M.V. "Kotoku", first ship to berth at Seaview Wharf.

Record cargo movement in Gladstone

Cargo throughput at the Port of Gladstone for the year ending 30th June, 1979 was an all time record. Total cargo handled was 16,067,933 tonnes, an increase of 1,135,749 tonnes over the previous year and 336,562 tonnes above the previous record set in 1974/75.

The major commodities handled were:

COAL	6,729,436 tonnes
BAUXITE	5,334,538 tonnes

A record number of 442 cargo carrying vessels visited the Port during the year. This was 39 vessels more than in the previous year and 12 vessels above the previous record established in 1974/75.

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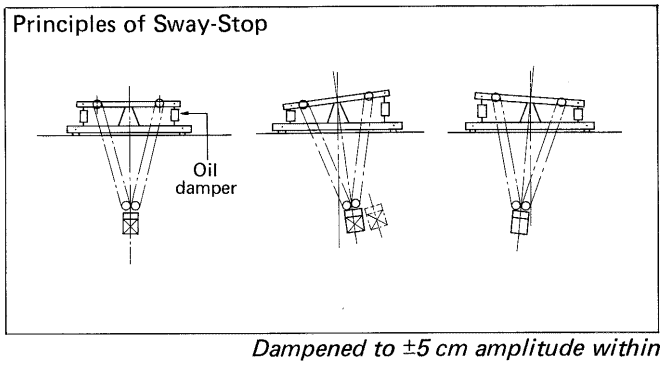

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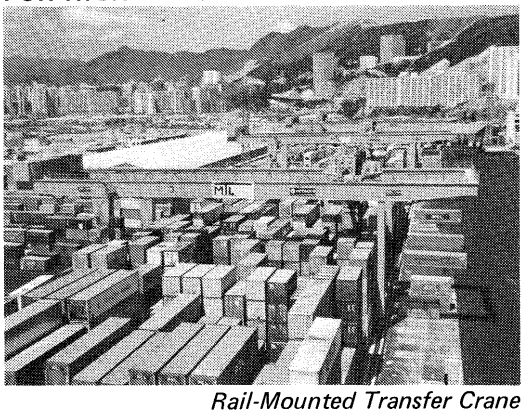

Rail-Mounted Transfer Crane

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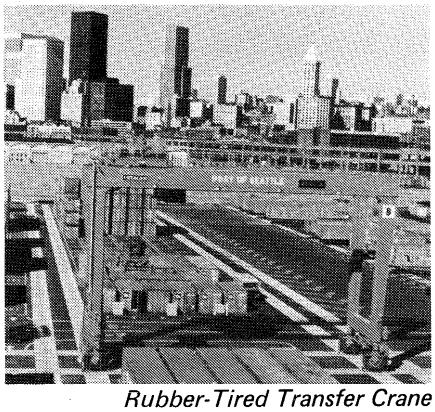

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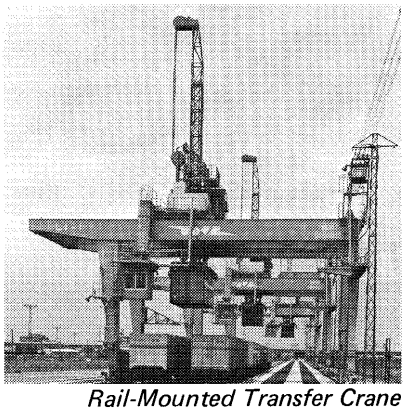
FOR FREIGHT CAR SERVICE



Rail-Mounted Transfer Crane

CONTAINER TERMINAL CONTROL SYSTEM

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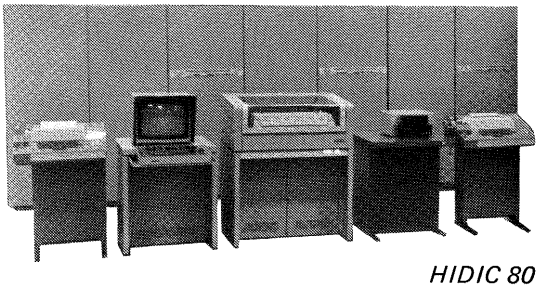
- Control Computer System (HIDIC 80 Series)
- Data Processing Computer System (HITAC M, L Series)



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