

# PORTS *and* HARBORS

June, 1972 Vol.17, No.6

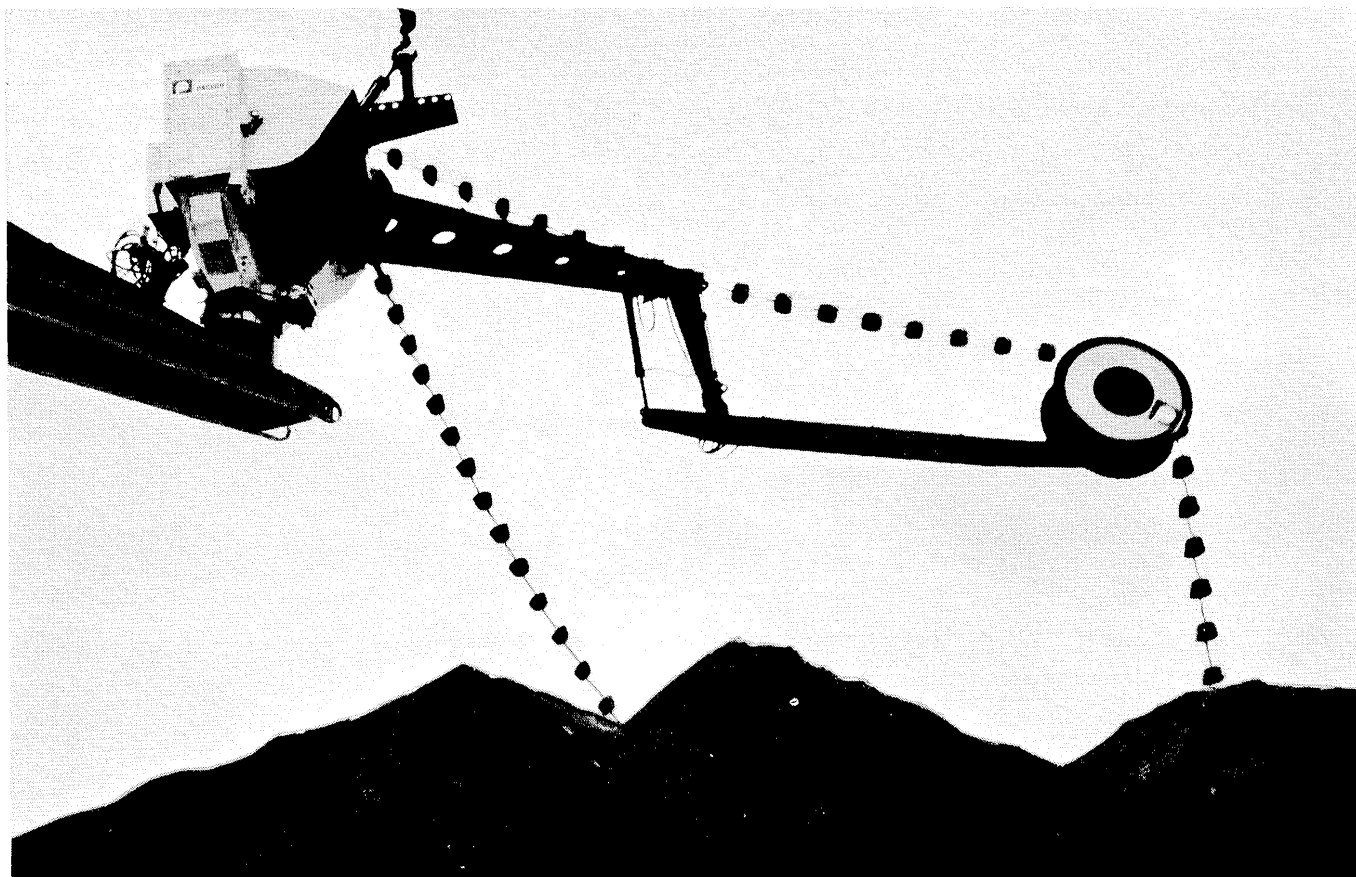
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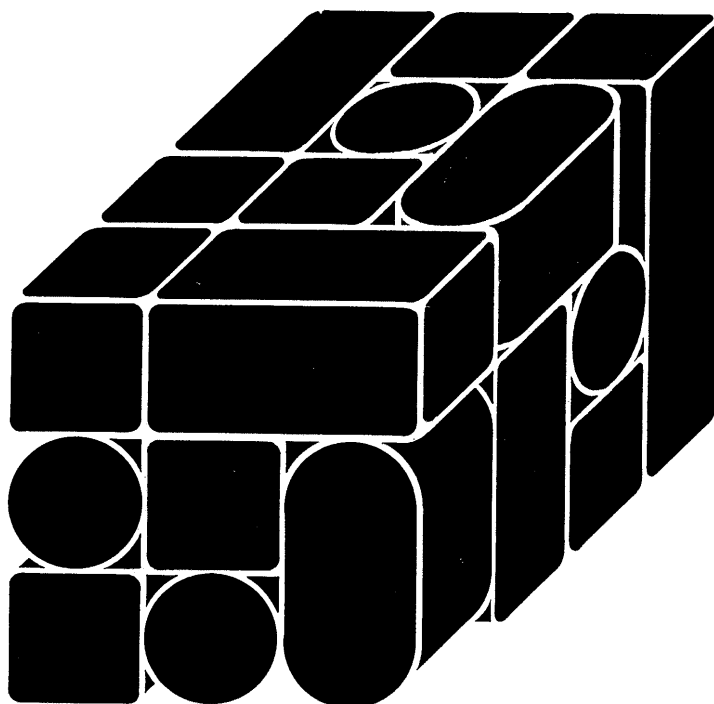
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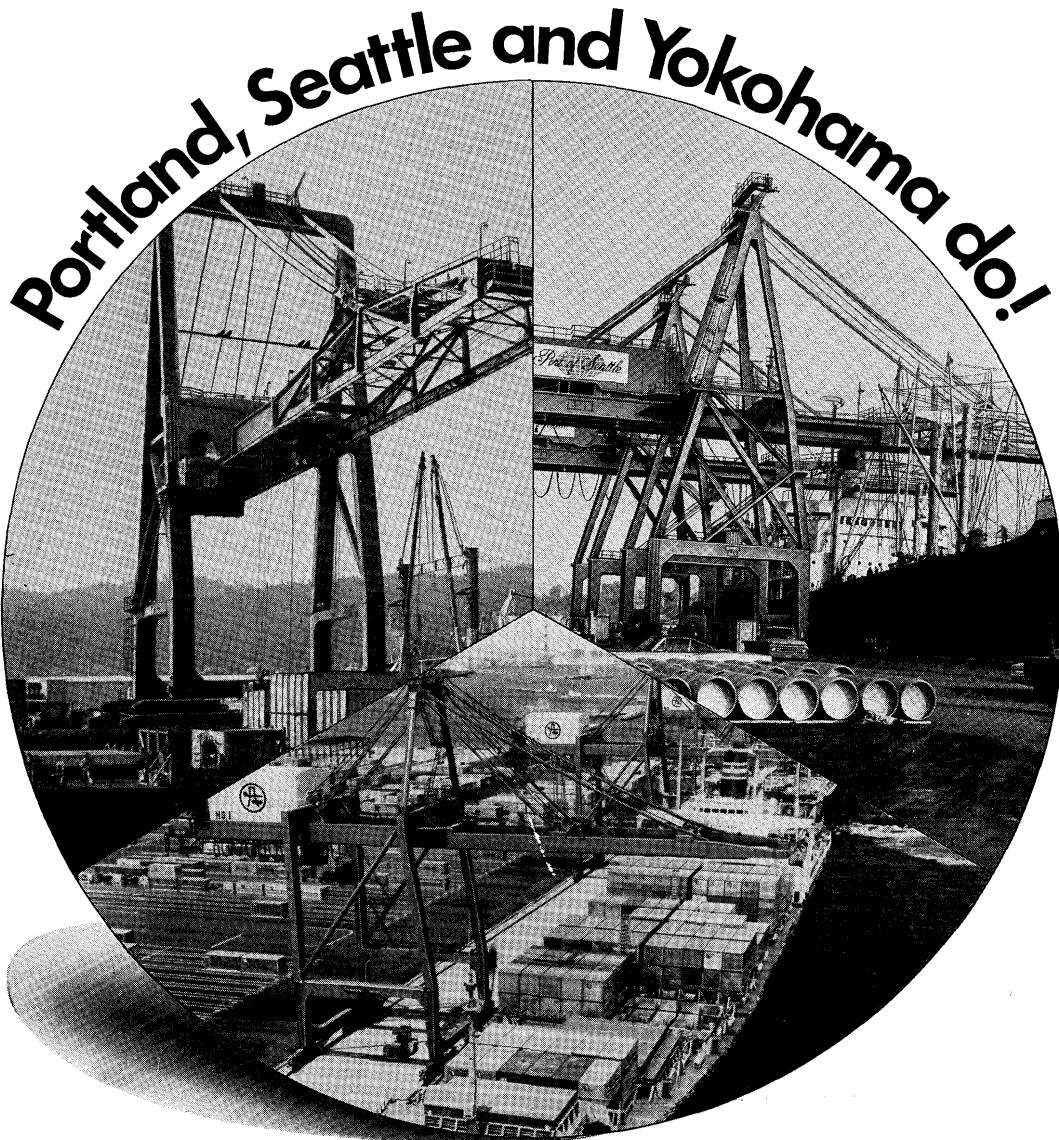
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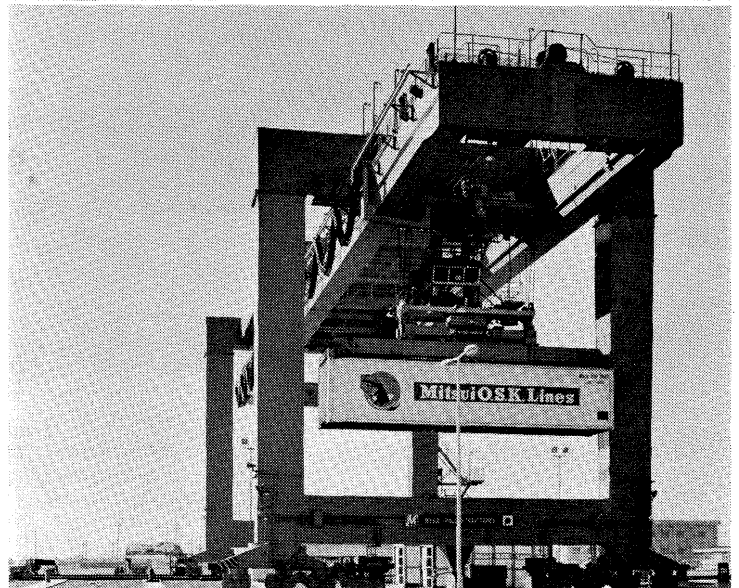
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**The Cover:**

Marseilles Fos, container terminal at Dock 1. To the right is seen part  
of the adjacent ore berth.

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(16)

## THE PORT OF TOKYO UNDER DEVELOPMENT AND LONG DISTANCE CAR FERRY

BY

**TAKEMASA OKUMURA**

DIRECTOR

BUREAU OF PORT AND HARBOR

TOKYO METROPOLITAN GOVERNMENT

### **History of the Port of Tokyo**

The history of the Port of Tokyo dates back to about 500 years ago when Ohta Dokan built a castle in Edo, at the mouth of River Sumida utilizing the surrounding area as a harbor. In those days, the area was called Edo Minato, meaning "The Port of Edo." In 1868, Edo was renamed Tokyo and was made the capital of Japan. Since then Tokyo has prospered as the nation's political, economic and cultural center. On the other hand, as the Tokyo Port which was charged with the responsibility of physical distribution for the citizens of Tokyo was geographically located at the mouth of the River Sumida, the day had shallow water for quite some distance. Consequently, a large amount of money was needed to make it deep enough for ships to come in or go out. Moreover, due to its being an estuary port, dredging and other maintenance works had to be carried out constantly.

On top of that, because of the preference given to the development of the Port of Yokohama nearby as a national port and the railroad expansions, the improvement of the Port of Tokyo was rather neglected. However, the full scale construction of the port was started in 1906 when improvement works on the River Sumida were taken up.

Accidentally, the Great Earthquake of 1923 wrought a great damage to Tokyo and its vicinity completely disrupting land transportation. The relief goods sent from various other districts of Japan and from foreign countries, therefore, had to be transported to Tokyo by ships. However, because of the poor facilities of the Port unloading of the cargo was not carried out very smoothly, and the necessity of improvement of the port facilities was acutely felt. As a result, the Hinode wharf was constructed two years later, followed by the Shibaura wharf which was completed in 1932 and the Takeshiba wharf in 1934, making

it possible to moor 15 3,000 to 6,000 ton ships at the same time. Afterwards, the Port of Tokyo was opened as a port for foreign trade only with the Far Eastern regions in 1941. It was the first step of Tokyo as a foreign trade port.

### **The present condition and characteristics of the Port of Tokyo**

The Port of Tokyo is a big port for the capital city which has an immense population of 11 million. The demands of this great city are widely varied and its function extensively distributed on the coast of the Tokyo bay. That is, the coastal centers of industrial production are in Chiba, Kawasaki and Yokohama districts and foreign trade, particularly, regarding exports, and imports of industrial products, is mainly handled by the Port of Yokohama, while our Port is remarkably characterized as a port of unloading cargo closely connected with the daily life for great many citizens of Tokyo.

When we take the total of both out-going and in-coming cargo as 100, the volume of in-coming cargo has been 86 occupying the overwhelming majority for the past 20 years. Moreover, being the capital port, there are many foreign warships and various other kinds of ships beside cargo ships to come in. On the other hand, there is only an Australian route as a foreign line except for the one to Okinawa as far as foreign passenger lines are concerned and the passengers transposed in a year have been very few being approximately 5,000. Therefore, the Port is strongly characterized as a commercial port. Under the character, the volume of cargo handled in the Port has increased to about 2.5 times in the past decade. Now to show the strength of the port numerically, 70,000 ships carrying 8.66 million tons of foreign and 34.53 million tons of inland cargo, totalizing 43.19 million tons entered the Port in 1969. In terms of volume, thirty five per cent of the total was construction materials, thirty one per cent energy, seventeen per cent industrial materials, sixteen percent food and the rest others. They were astonishing increases of 2.6 times, 2.5 times respectively as compared with 27,400 ships and 17.49 million tons ten years ago in 1959.

With the arrival of a foreign container ship that came to Japan, the first of its kind and a Pacific North West liner which entered the Port of Tokyo on September, 1969, the Port of Tokyo entered an era of rapid growth as a liner port. On top of that, when No. 13 berth of the container pier Keihin (Tokyo Bay) Port Development Authority is constructing at present at Ohi and No. 13 reclaimed land is completed, the Tokyo Port so far handling only trampers will suddenly emerge as an international import-export port, instead of one sided import port. In particular, the port is expected to become a typical international trade port dedicated for containerized ships.

### **Background of emergence of Inland Long Distance Car Ferrys**

It is expected that demand for inland transportation in Japan, both in its volume and nature will greatly change because of the economical growth and industrial structural changes. That is, transportation will increase by 4 or 5 times from the present scale in 15 years consisting of the products of higher added value. And it would be natural to anticipate that both cargo and its pattern of transportation will also change.

On the other hand, transportation facilities will not always be sufficient. Therefore, the tendency of the excessive transportation demand will become more and more acutely felt. Moreover, it will have to be anticipated that a new system for different from the present one of physical distribution system, will be put into practice as the trend of worker shortage under the present system will become more apparent. The change has to be carried out in a hurry, because worker shortage is a bottleneck in field of general cargo in Japan to-day. So, reexamination of the Intermodal Transportation System is urgently required. A Long Distance Car Ferry thus appears as one of the new systems to meet the needs of the times.

As for other new systems, there are large-scale trailers, Freight Liners of railroads and inland container ships which have become to be already partially operated. All this is looked on as a link in the chain of the serial transportation systems of general cargo. The ferry taking upon itself the function of a bridge had been in practice in the Kanmon Straits as a railroad ferry starting from 1919. But it has been in these few years for it to appear as a competitor in transportation with that by inland highways and railroads. A Long Distance Car Ferry was started between Kobe and Kokura (552 km) in 1968. With this as a turning point, catching the eyes of the public, the time has been getting ripe for a Long Distance Car Ferry network to be materialized all over the country.

### **Economy and function of a Long Distance Car Ferry**

A Long Distance Car Ferry carries trucks, cars and busses at a time, but it is particularly significant in when loaded trucks are carried. Whether or not a ferry can be economical depends on how advantageous ferry transportation can be against trucks, because, the four main islands of Japan extend oblong from north to south making competing land transportation almost parallel in case of Long Distance (over 300 km) transportation, and the general cargo which comprises the ferry's main item and which has been taken over by trucks from railroads moreover, the advantage of time a truck has over other means of trans-



portation is disappearing because of the traffic jam. In comparison of the ferrys with trucks, we may say the following:

- 1) A Long Distance Car Ferry is not always inferior to trucks in its speed. Even if we consider the possible competition from trucks bigger, speedier and trailerised, with the equipment of the highway network in the future and local and route trucks may be divided, the average speed of a truck would be approximately 50 km/h from door to door, while a ferry is not particularly slow at 20 to 25 knots (about 35 or 40 km/h). The latter will be highly valued as a superior means of short cut transportation from Tokyo to Kyushu (1055 km) or from Tokyo to Hokkaido (1026 km).
- 2) In case drivers are assigned at the ports of origin and destination instead of letting them go along, the ferry can be very economical and saves labour. If they are carried along, it has a merit of offering them time for rest.
- 3) The ferry will render you the door to door service that trucks have so far exclusively enjoyed.
- 4) The ferry could be useful as a relief of traffic jam on roads as a bypass by sea.
- 5) The ferry will play a big role by performing the feeder service to the international container transportation expected to increase from now on.

### **Importance of the Port of Tokyo**

A Long Distance Car Ferry which makes use of the Port of Tokyo will be mainly 8,000 gross toners, and its carrying capacity approximately 150 trucks in terms of 8 ton trucks. The time at present required for them to be moored will be at most 3 hours per ship, which means surprisingly an ability of 2.4 million tons per berth a year, without taking into account of the many limitations of foreign trade. The ferry system which offers a means of a very high standard of efficiency promises to materialize handling rationalization because we have rather a simple shore line for the volume handled. This is a point on which we attach a great significance of the ferry in Tokyo.

### **Long Distance Car Ferry Wharf plan**

Time of construction	From 1971 to 1975
Total estimated construction cost	— 10,000,000,000
Number of berths	4 for 8,000 gross ton class ships 2 for 5,000 gross ton class ships
Total	6
Depth	A.P. -7.5 metres
Total area of wharves	about 130,000 square metres
Other facilities	6 movable bridges 5 side ramps 2 passengers' waiting rooms

### **Conclusion**

When the six berths of the ferry wharf take care of over thirteen routes as so far applied to us has been accomplished, it will probably be the largest ferry terminal in Japan in regard to the scale of its facilities, and the number and volume of passengers and the cargo. And the port of Tokyo which has so far been little familiar with the citizens of Tokyo will become one of the central elements of Tokyo giving a similar impression to them as if a new great central railroad station had been built.

**TAKEMASA OKUMURA**

Director

Bureau of Port and Harbor

(17)

# PERFORMANCE OF STRUCTURES FOUNDED ON RECLAIMED SOIL UNDERLAIN BY MARINE CLAYS IN VISAKHAPATNAM PORT

BY

**G. S. RAMAIAH**

CHIEF ENGINEER

VISAKHAPATNAM PORT TRUST

## SYNOPSIS

The Port of Visakhapatnam is one of the four Major Ports on the East Coast of India. This Port deals only in commercial trade, which has been registering a fast growth in trade with other Countries. Consequently, the construction of ancillary structures like Ware Houses, Sub-station buildings, Office buildings, Repair sheds etc., had to be carried out in the proximity to berths. The land in which this construction activity is to be taken up is marshy and subsoil is marine clay of varying depths from 40' to 60'. The marshy land is reclaimed with sand dredged in the course of formation of Entrance Channel and other radiating arms for providing berthing facilities. This article gives the design and data on settlement of buildings with various length to height, length to breadth and slope control rules and their performance. Failure of soils, due to slip from ore stacks is briefly touched upon to illustrate the behaviour of marine clays. Settlement curves of buildings with L/H less than 8 are appended to show the rate of settlement for no damage criterion.

## FEATURES OF PORT:

The Major Port of Visakhapatnam lies on the East Coast of India along lat 17°41'31" N; long 83° 17' 35" E; and is almost midway between Calcutta and Madras. The harbour was formed inside a land locked basin, surrounded by hill ranges by dredging a river course joining the Sea and forming waterways and providing waterfront structures for berthing ships. As developed to date (1970), there are 3 main arms namely the Northern Arm, N.W.Arm (the course of the river Meghadrigedda) and the Western Arm. There are eighteen berths including four mooring berths (Plate I). The following construction periods of berths indicate the rapid growth of overseas trade from this Port.

	Year	Purpose
Three berths.	1933	General Cargo and Manganese Ore.
One berth.	1955	
Two berths.	1958	For Oil Refineries.
Two berths.	1965	Iron ore exports.
One berth.	1966	Fertilizers imports.
Two berths.	1966	General Cargo.
	—67	

This rapid expansion of trade has necessitated the construction of ancillary storage structures, repair sheds, office buildings in the Port area and in close proximity to the berths. The plan of the Port with the various arms and berths may be seen in Plate I.

The salient features of the Port are given below:

Tidal variation .....	6 ft.
D.W.T. of ships permitted .....	33,000 T.
Draft at high tide .....	33 ft.
Diameter of turning basin .....	1,200 ft.

The entrance channel is protected from waves by an island breakwater formed by two sunken ships.

In passing, it may be mentioned that for exporting iron ore, an Outer Harbour for deep drafted berths for vessels up to 200,000 DWT is under construction.

The area, where ancillary structures are constructed and would be constructed in future is shown in Plate I.

The subsoil particulars of a typical bore hole are given below:

Original ground level .....	+5.00'
Depth of reclaimed sand. ....	6 to 7'
Depth marine clay below ground level	40 to 60'
L.L. ....	80 to 120
P.I. ....	55 to 80
Natural moisture content .....	70 - 90
Initial void ratio .....	1.9 to 2.3
Dry bulk density .....	50 to 60 lbs/cft.
Number of blows by standard penetration test. ....	0 to 4 in clay of soil.
Sensitivity .....	2 to 4 (insensitive to moderately sensitive)
Coefficient of consolidation CV. ....	0.05 Sft/day.
Shear strength by in situ vane test. ....	Varies from 150 lb. to 600 lb.
History of loading. ....	Normally loaded.

The foundation of the structure transfers the structural loads to the underlying soil, which tends to deform the soil structure by relatively displacing the soil particles from their original position or by bringing the soil particles together resulting in a decrease in volume of the soil. If a clayey saturated soil is to carry the loads induced by the foundation of the structure, then the volume change in the soil is attributed mainly to the squeezing out of water from the pores of soil. The resulting volume change in the vertical downward direction causes settlement of the soil and the structure along with it.

Settlement is sinking of structure due to compressive deformation of the underlying soil. Settlement of the structure may be uniform; if the contact pressure coming on the soil at the base of the footing is uniform or will be at variance in case of non uniform pressures resulting in a differential settlement.

Non uniform or differential settlement of certain type of structure beyond permissible limits, may be disastrous resulting in cracking at various parts of the structure leading to loss of structural rigidity and eventually to its collapse. Building on strip foundations do not show as much distress as statically indeterminate structures such as continuous beams with supports, arches, vaults and others. In these structures due to differential settlement additional moments are induced and if the members are not proportioned to take such moments, the members may show up the distress through cracks. Buildings go out of plumb due to excessive differential settlements and mutual interference of foundation pressures of adjacent structures may also result in differential settlement and either cause distress to the structure or lean towards each other.

Settlement is due to

- a) Static loads on soil;
- b) Dynamic loads from moving trains (traffic), pile driving, earthquakes, machinery working nearby; (Dynamic loads effect particularly the non-cohesive soils).
- c) Variation of ground water table (tidal, Seasonal, artificial by pumping);
- d) and other possible factors from refrigeration.



For structures founded on non-cohesive soils practically the settlement reaches its maximum value immediately after the construction period is over, whereas for structures founded on cohesive soils or where an intermediate clay layer is influenced by the foundation pressures, the settlement follows the consolidation characteristics of the soil under load which in turn, depends on the expulsion of pore water and path of drainage for pore water.

The differential and intolerable settlements are mainly due to nonuniformity in soil characteristics, depth of strata, clay lenses in sand, admixture of organic matter, as in marine clays. Other causes may be due to overstraining of adjacent soil, overlap of pressures and variation of water table.

From the foregoing it can be observed that design of foundation is a very complex problem and more so, when cohesive soils are encountered, as in the Port, over an extensive area and in large depths.

The allowable settlements prescribed in some of the countries are:

Auxiliary structures for Industrial plants.	20 - 40 cm.
Statically determined structures with massive foundation	12 to 20 cm.
Apartment houses of bricks and structures with statically determined girders.	8 to 12 cm.
Apartment houses and industrial structures of statically indeterminate systems.	5 to 8 cm.
Sensitive industrial structures subjected to dynamic stresses	3 to 5 cm.

#### Differential settlements:

For factories, stores, apartment buildings, hotels, warehouses, schools, the differential settlement under working load should be not more than  $\frac{1}{2}$ ".

Alex W. Skempton and Douglas H. Macdonald, from observation, reported on 98 buildings, 40 of which suffered damage, evolved a criterion with the ratio of differential settlement to the distance between observation points. A ratio of 1/300 will fracture walls and partitions and 1/150 will cause structural damage. Of the 30 building that were built on clay 21 were damaged, a 2" settlement was always accompanied by damaged wall.

After observing 100 structures, D. E. Polshin and R. A. Toker summarized the maximum allowable non uniform settlement of structures and prepared the U.S.S.R. Code of 1955.

Assuming 'f' as the slope of settled structure, 'L' length of structure and 'H' it's height —

Brick dwelling tolerance — f	0.003 for L/H below 2
	0.001 for L/H at 8.

Permissive settlements by USSR Code for structures on plastic clay:

Structure	On Plastic clay
Steel and concrete frame	0.002 L
End rows of brick clad frame	0.001 L
Where auxiliary strain does not occur	0.005 L
Multi story brick wall L/H to 3	0.004 L
Multi story brick wall L/H over 5	0.001 L
One story mill building	0.001 L

M. Bozozok summarized his findings of behaviour of structures where the subsoil is a layer of 4' to 6' of sand on Marine clay highly sensitive with high water content.

Hair line cracks — with less than 2" settlement.

$\frac{1}{4}$ " wide cracks in bricks — 2" to 4" settlement.

Distortion of windows and cracks wider than  $\frac{1}{4}$ " — 4" to 6" settlement

Walls out of plumb and cracks up to 2" wide — 6" differential settlement.

Relating to the slope control rules, he has summarized into the following groups:

Damage	Slope
1. No damage	1 : 180
2. Slight	1 : 120
3. Moderate	1 : 90
4. Heavy air sense	1 : 50

The damage is also a function of rate of settlement-slower the rate lesser the settlement-and type of construction.

U.S. Bureau of Standards tests for masonry walls show the permissible angular distortion as 1/500 to 1/1000.

#### **Observation in Visakhapatnam Port:**

Quite a large number of buildings have been constructed in the Port on reclaimed soil underlain by marine clay in addition to utilizing part of this land as iron ore stack yard. Plates 2,4 and 5 show the plans of some of the various structures constructed on marine clay foundations. Table 1 gives the sizes of structures, maximum settlement differential settlement and damages caused. Plate 3 shows settlements of two different corners of each building with respect to time.

#### **Design of foundations:**

The footing widths for all buildings are so proportioned so as to induce a pressure on soil of 1 to 1.5 Kips. per Square foot. The strip foundations are of R.C.C. sizes of which are shown in the Plate No. 2. For very small structures however, say of size 10' x 15' only plain concrete foundations are provided as no differential settlements would occur. For large sized structures initially R.C.C. bands were provided at plinth level and at lintel level to localise cracks and impart rigidity to the structure. However, for very long sheds like warehouses, which have a high ratio of length to height distress cannot be avoided unless the sheds are founded on piles. As piled foundation would be very costly, such long sheds one measuring 660' x 180' and the other measuring 660' x 135' were constructed providing strip foundations. The predicted settlement is 10" and the observed settlement is 8". Cracks were observed upto 1/4" in the longitudinal walls and about 1/2" in cross walls. In all the buildings, no separation cracks along the periphery of the floor inside the buildings were observed indicating that the fill material is the primary cause for settlement rather than the pressures from strip foundations of the building. However, in the case of buildings with verandahs, the floor level of the verandahs was settling less than the main floor causing a reverse slope for drainage, which shows that there appears to be a correlation of foundation pressure and the fill height above ground level to floor level. In all these buildings, the foundation pressure was varying between 1 to 1.5 kips per square foot and 0.25 to 0.4 kip/sft. of fill load (between ground level and floor level). As this area is reclaimed with dredged sand, the depth of foundation both single and double storeyed structures is maintained at 0.9 to 1 m below ground level.

The settlement in all the buildings is due to two causes; (1) settlement of the reclaimed fill and (2) that due to superimposed foundation loads. As the reclamation with sand fill was carried out about 10 years prior to the construction of buildings, its contribution is considered to be a small proportion of the total settlement. The settlement curves (plate 3) reveal that greater settlement occurred on the sides where roads are located and the average rate of settlement is .251/year, which may be one of the contributory factors against damage in spite of large differential settlement.

A 100 Ton Weigh Bridge with a maximum allowable settlement of 1/2" and without any differential settlement was to be constructed where the sub soil is clay for a depth 30 to 40'. This was designed as a floating foundation with cinder fill in replacement of clay fill for about a meter depth. The structure has been performing satisfactorily.

Again, for housing 2 Nos. D.C. generators, 2 Nos. beetle generators and motors for operating wagon dumper, a raft of size 36' x 23' was required, where gravel fill to a height of 4' was laid above the 6 to 7' of dredged fill underlain by 60' marine clay. As the gravel fill would induce settlements of the raft foundation, pile foundations were first considered. As the piles are to be taken to hard stratum at a depth of 70' below fill level and the Wagon Dumper had to be commissioned soon, a calculated risk was taken in providing a R.C.C. raft 1 m. thick to act as a rigid foundation. The maximum settlement recorded is 1'-3" in 4 yrs. with a slight tilt and there were no undesirable effects either with the superstructure or with the generators.

Part of the land where marine clay is 60' deep was utilised for iron ore stacking yard (plate 4).

There are eight ore stacks each measuring 510' long 120' wide. These are located in a row of four each on either side of stacker track running in the middle. Two grades of ore are stacked with unit weights of 160 lb/cft and 140 lb/cft. The safe heights of ore stacks for 160 lb/cft were fixed at 14' and 16' for 140 lbs/cft. ore from consideration of slip failure.

The ore stacks were gradually raised from 9' to 14' over a period of one year and raised to 19' in a very short period, when a slip had occurred. Heaving was observed on either side of track. The stacker track was displaced vertically and laterally and the heaving of ground was as much as four feet. Another heaving even when the ore stack was at height of 14' took place after a cyclone with heavy rains causing

again displacement of stacker track and ground heave, this time due to the increase in the weight of wet ore and high ground water table. Tests of soil however revealed that considering the one dimensional drainage of clay stratum, the factor of safety for a 14' high stack, computed by the method recommended by Raymond in Geotechnique Vol. 17 No. 1, March, 67 was found to be 1.1.

The plates 4, 5, 6 and 7 enclosed give the layout of stacks, soil profile, shear strength characteristics and the size of stacks.

It is obvious from the above failures, that the capacity of ore stacks had to be limited to a height varying from 14' to 16'. The obvious answer to increase the heights of ore stacks lay only in the treatment of the soil by way of providing sand wicks or sand drains for a speedier consolidation and increase in the shear strength of the soil. However, sand drains are to be preferred to sand wicks or paper drains due to the smallness of the bore of 5 to 8 cms., which may not function effectively as a drain medium.

From the initial experiments conducted, it was seen that the clay is of an organic nature, since the reduction in volume by oven drying process is as much as 70% of the original volume. The clay is found to be moderately sensitive. In view of these, the soil is prone to get disturbed either by banking of the consolidation load or during the process of sand drain itself while in the various construction stages.

If this soil were to be treated by sand drain construction by a proper design of sand drain, i.e., the diameter, spacing, preloading etc., the 80% settlement would occur in a matter of months and very near complete settlement of soil would be in a few months thereafter as shown in Annexure 1.

#### Conclusions:

Buildings of solid masonry walls constructed on marine clay deposits with low shear strength behaved satisfactorily without showing any damage with a slope of 1 in 150 and excessive differential settlements up to 6" had not produced any damage for a slope of 1 in 315. However, slight to moderate damage has been caused for structures with far less differential settlement when L/H ratio is about 24. Buildings with L/B ratio upto 6.5 have been settling along with the interior floor between foundation. Elimination of R.C.C. bands at plinth and lintel levels for structures with L/B ratio less than two and L/H less than 8 has not resulted in any damage to the masonry superstructure.

Costly foundations can be avoided for long sheds like warehouses with high L/H ratios upto 24, if slight to moderate damage is permitted without impairing functional utility subject to carrying out repairs, which cost much less than that of providing costly foundation, such as piles or by constructing small sheds with L/H less than 8. It is shown that it is possible to reduce settlements by replacement of lighter foundation material like cinders. Failures can be triggered by a combination of factors like faster loading rate, increase in weight of overburden by saturation as in ore stacks in rainy season, synchronizing with rise in water table. Marine soils can carry high over burden pressures, such as from ore stacks in a very short period by providing sand drains suitably designed.

#### Annexure-I

##### CALCULATIONS FOR TIME OF CONSOLIDATION, SIZE AND SPACING OF SAND DRAINS

In the ultimate stage, the stacks are required to be built upto 30' height. The load per sq. ft. due to the ore stacks coming over the stacking area can be calculated as follows:

$$\begin{aligned} \text{Pressure at mid depth of clay layer} &= 30 \times 50 + 7 \times 100 + 30 \times \frac{160 \times 90 \times 510}{110 \times 540} \\ &= 1500 + 700 + 3720 = 2920 \text{ lbs/sq.ft.} \\ &\quad \text{(neglecting dispersion of load)} \end{aligned}$$

(assume the stack 90' x 510', the ore weighing 160 lbs/cft.)

Assuming  $C_O = 2.0$ ,  $LL = 90$ ,  $C_C = 0.72$

$$\text{Settlement} = \frac{C_C}{1 + C_O} \frac{H}{P_O} \log \frac{P_O + P}{P_O}$$



$$\begin{aligned}
&= \frac{0.72 \times 60}{3} \log \frac{1500 + (700 + 3720)}{1500} \\
&= 14.4 \log \frac{5920}{1500} = 14.4 \times \log 3.94 = 14.4 \times 0.596 \\
&= 8.6 \text{ ft.}
\end{aligned}$$

If the ore is continued to be stacked on the untreated soil as it exists now, it should take 46.5 years for settlement for 80% consolidation as shown below.

$$t = \frac{2000^2 \times .2}{.033} = 24000000 \text{ (min.)} \quad C_V = 0.05 \text{ sq.ft./day or } 0.033 \text{ sq.cm./min.}$$

or 45 years 6 months for 80% consolidation.

( $T_h$  is .2 for 80% consolidation Fig. 1)

Further it should take 76 years, for 90% consolidation as calculated below:

$$t = \frac{2000^2 \times .33}{.033} = 40,000,000 \text{ (min.)}$$

or 76 years 1 month for 90% consolidation.

( $T_h = .33$  for 90% consolidation)

Assuming that the spacing of drains is 2.0 m in a triangular pattern, let the diameter be 45 cms.

$$n = \frac{de}{d} = \frac{2.0 \times 1.05}{0.45} = 4.6$$

from Fig. 1,  $T_h = 0.16$

$$\begin{aligned}
\text{Time of consolidation} \quad t &= \frac{210 \times 210 \times 0.16}{0.033} = 220500 \text{ minutes} \\
&= 147 \text{ days} \\
&= 5 \text{ months}
\end{aligned}$$

for 80% consolidation  
ie., first stage of  
consolidation.

The spacing of 45 cm. diameter sand drain at 2 metres spacings is quite suitable and effective.

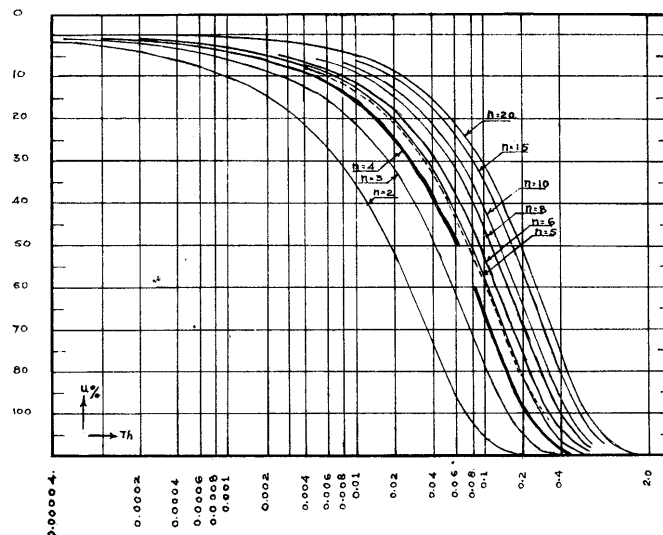
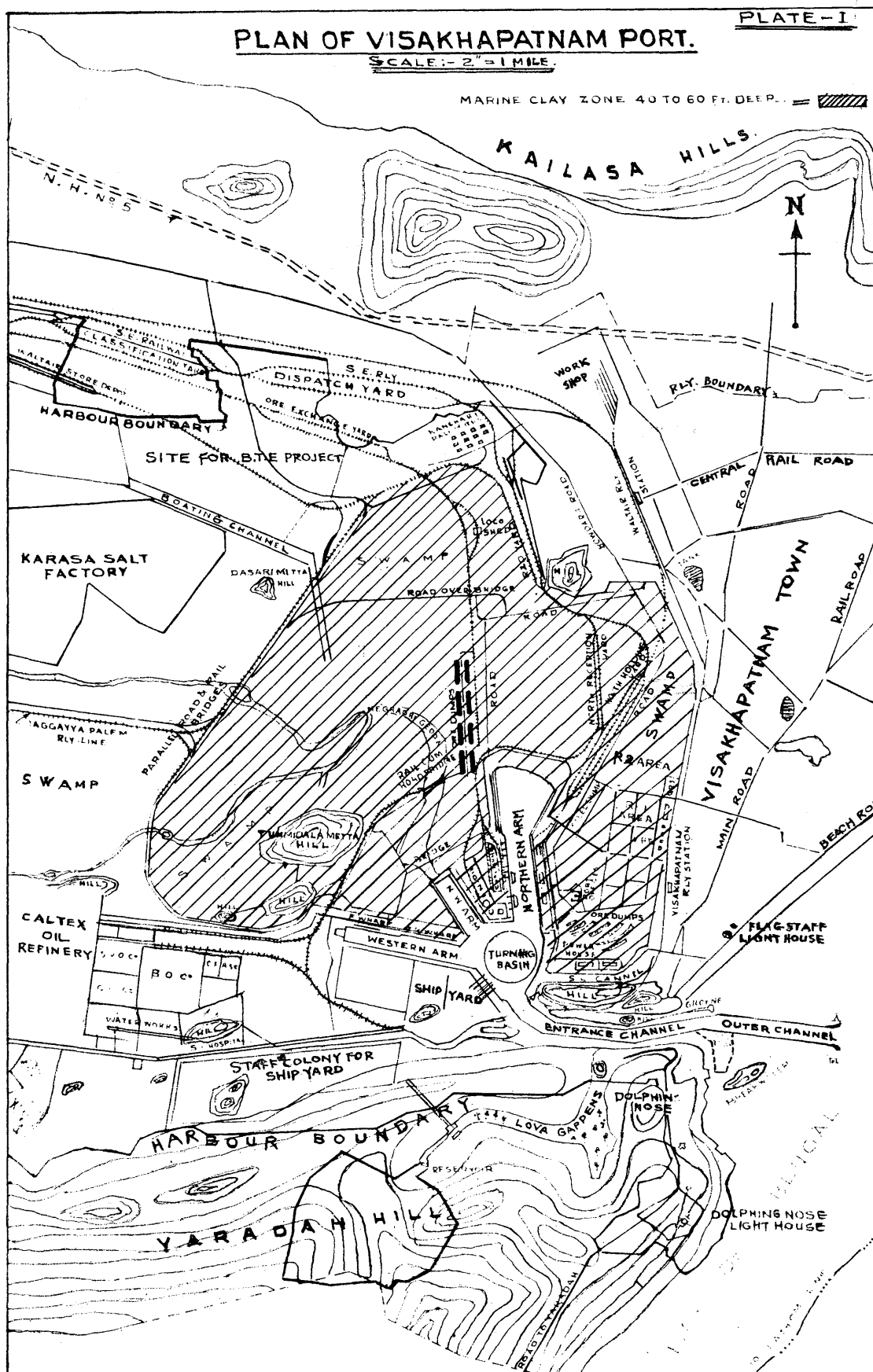
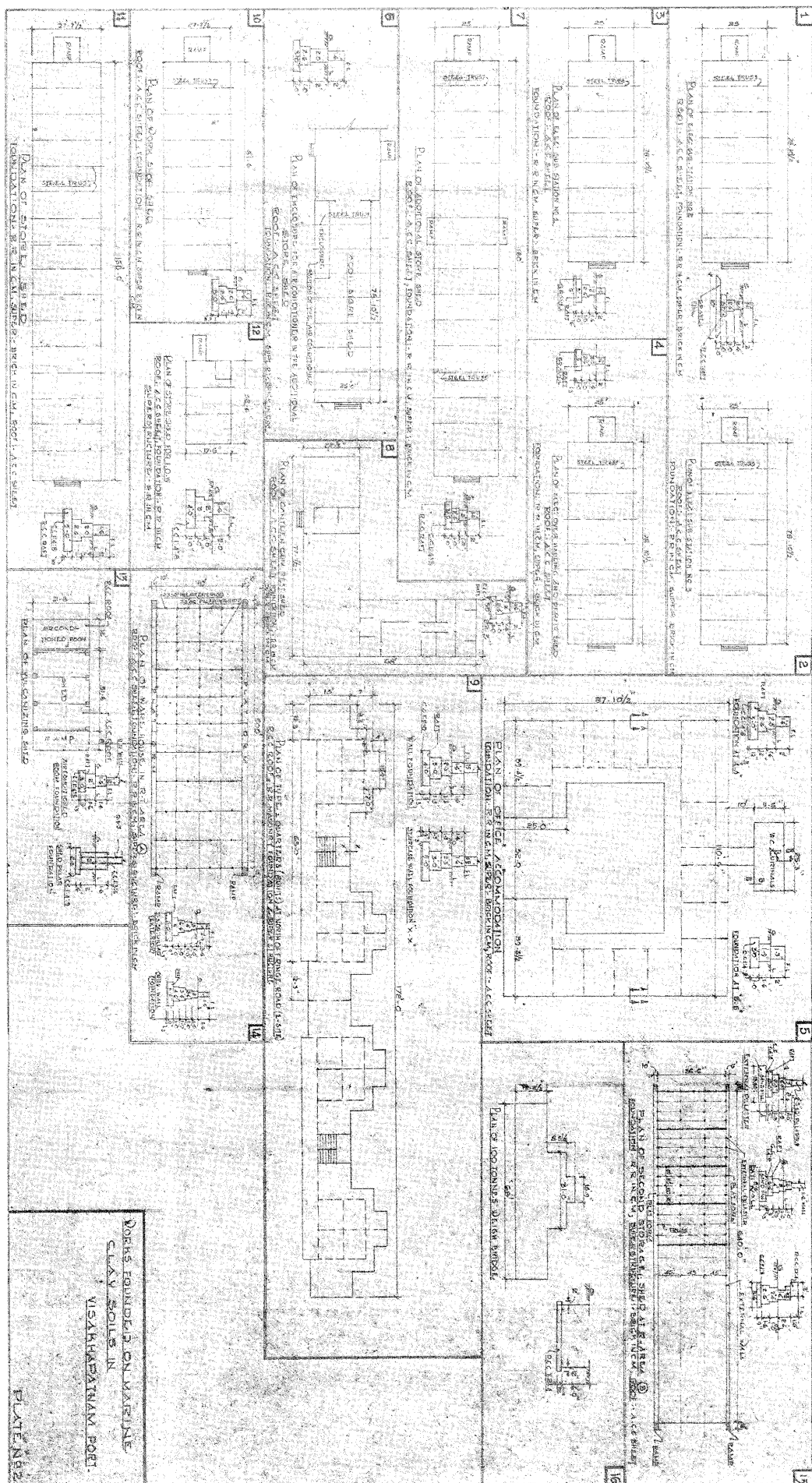


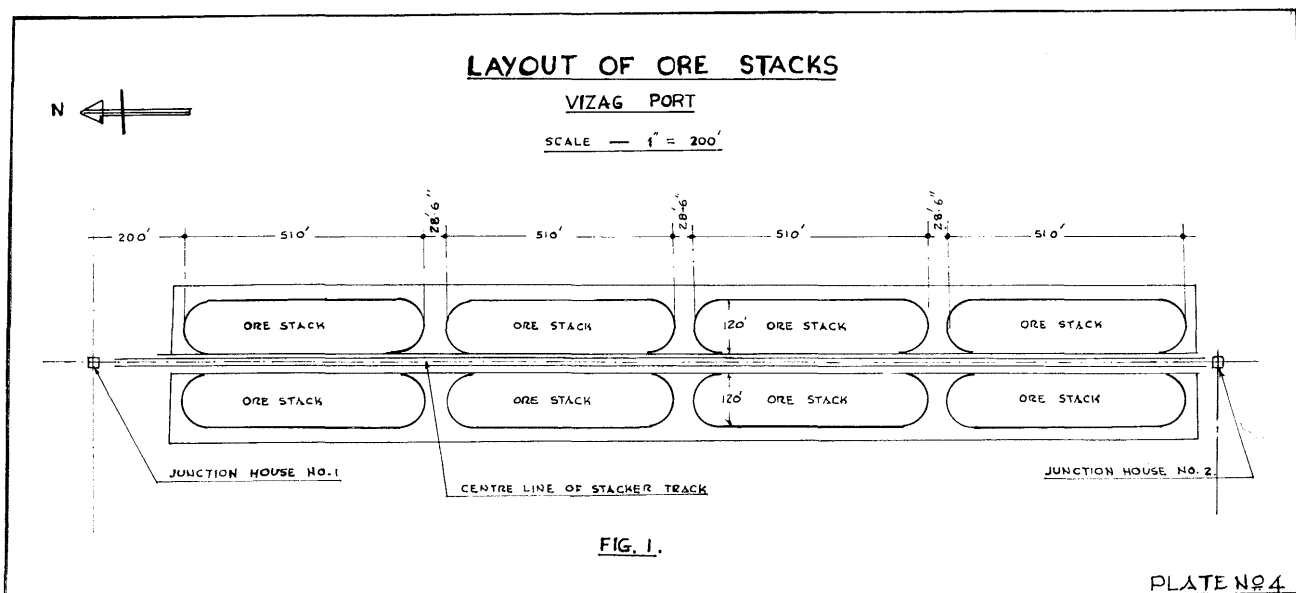
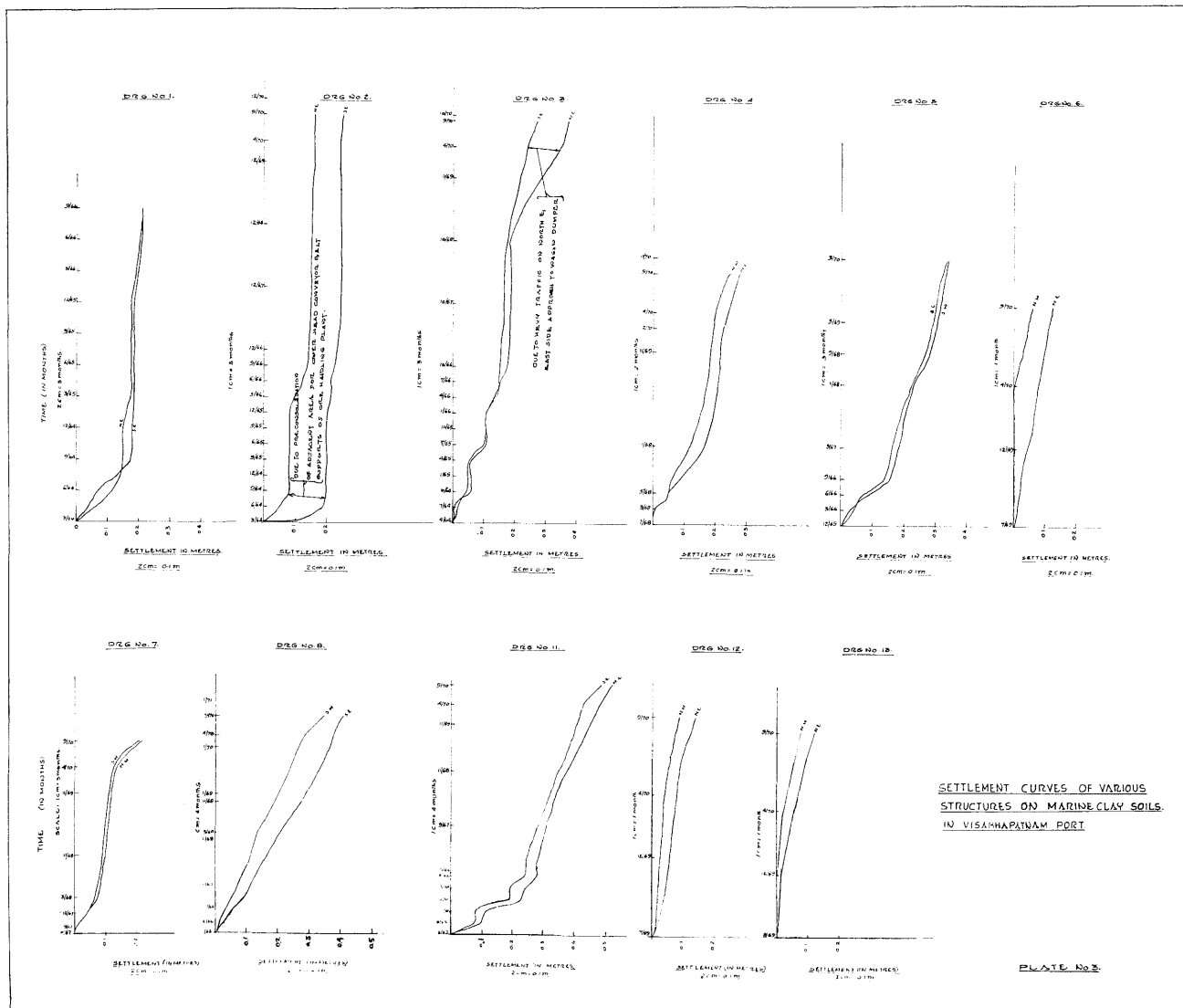
FIG-1 RELATION BETWEEN CONSOLIDATION AND TIME FACTORS

**SETTLEMENT DATA OF STRUCTURES CONSTRUCTED ON MARINE CLAYS**

S1 No.	Name of Building	Plan Size	L/H	Type of Structure	Total Settlement	Differential Settlement	Time Elapsed	Slope	Remarks on Damage
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	Sub Station No. 2	79' x 25'	4.05	Brick Masonry in Superstructure Stone Masonry in foundations.	0.243 m	0.042 m	2 yrs. 6 months	1 in 565	Cracks in main wall and partitions.
2.	Sub Station No. 3	79' x 25'	4.05	" "	0.29 m	0.14 m	6 yrs. 6 months	1 in 172	
3.	Sub Station No. 1	79' x 25'	4.05	" "	0.375 m	0.055 m	6 yrs. 5 months	1 in 438	
4.	Overhauling and repairs shed.	79' x 25'	3.36	" "	0.34 m	0.12 m	2 yrs. 8 months	1 in 63.5 in the short direct 1 in 370 in longer direction raft	
5.	Office accommodation.		7.10	" "	0.405 m	0.13 m	4 yrs. 9 months	1 in 148	
6.	Air conditioned Storage shed.	79' x 25'	4.4	" "	0.13 m	0.10 m	1 yr. 2 months	1 in 241	
7.	Addl. Store shed for O.H.F.	160' x 25'	8.2	" "	0.23 m	0.135 m	3 yrs. 1 month	1 in 362	
8.	Canteen at O.H.P. 'L' Shape.		4.88	" "	0.405 m	0.085 m	4 yrs. 8 months	1 in 280	
9.	Type I Quarters Two story structure	190' x 24'	8	Stone Masonry.	—	—	—	Nil	
10.	Work Shop	82' x 25'	4.1	Brick Masonry in Super-structure; Stone Masonry in foundations.	0.365 m	0.03 m	4 yrs. 9 months	1 in 835	
11.	Store Shed	160' x 25'	8.2	" "	0.575 m	0.155 m	5 yrs. 4 months	1 in 315	Cracks in main wall and partitions.
12.	Store Shed for IOW	33' x 15'	1.94	Stone Masonry.	0.15 m	0.065 m	1 yr. 2 months	1 in 155	
13.	Vulcanizing Shed.	32' x 22'	2.28	G.I. Sheet cladding with R.S. columns.	0.135 m	0.06 m	1 yr. 1 month	1 in 160	
14.	Storage Shed 'A'	660' x 180'	24.9	Brick Masonry in Super-structure; Stone Masonry in foundations.	0.270 m 0.210 m	0.13 m 0.09 m	1 yr. 9 months 2 yrs.	1 in 244 Rly. Platform side 1 in 405 Truck Platform side	
15.	Storage Shed 'F'	640' x 135'	24.1	" "	0.180 m 0.145 m	0.080 m 0.075 m	1 yr. 6 months 1 yr. 5 months	1 in 305 Rly. Platform side 1 in 810 Truck Platform side	
16.	Dressing room for OHP Staff.	35' x 23'	2.4	Stone Masonry	0.30 m	0.07 m		1 in 152	
17.	Watch. & Ward Office.	25' x 12'	1.92	Stone Masonry	0.17 m	0.11 m	1 yr. 10 months	1 in 68	
18.	Smithy Shed.	33' x 15'	1.69	Brick Masonry in Super-structure; Stone Masonry in foundations.	0.25 m	0.075 m	2 yrs. 3 months	1 in 134	
19.	Control House of Wagon Dumper.	36' x 23'	2.77	G.I. Sheet cladding with R.S. Columns.	0.387 m	0.137 m	1 yr. 9 months	1 in 80	

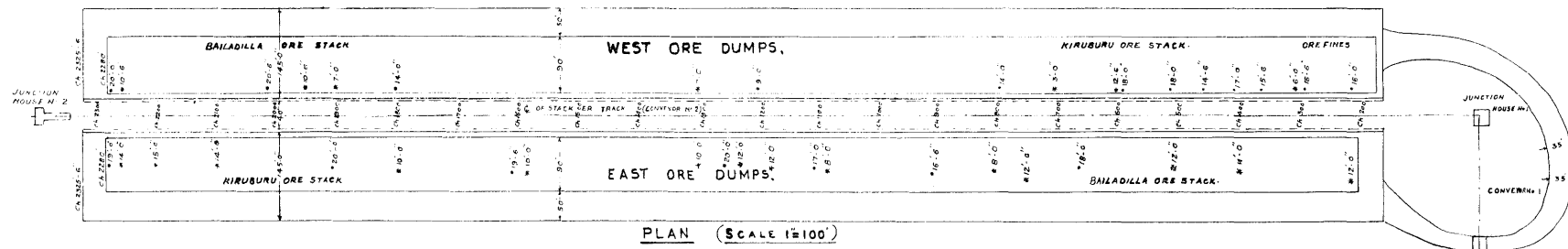




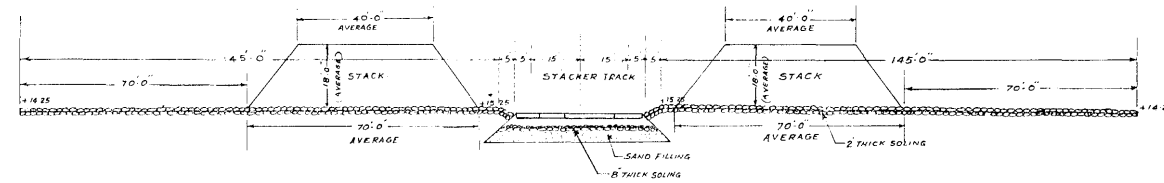




# PLAN SHOWING THE ORE STACKS IN O.H.P.

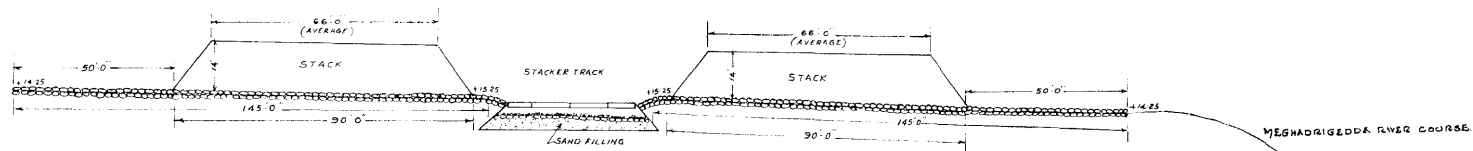


PLAN (SCALE 1"=100')



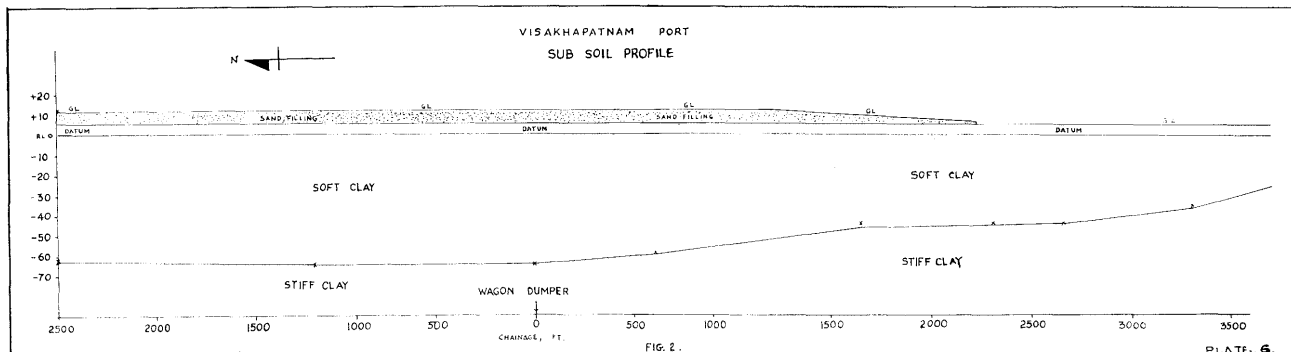
CROSS SECTION SHOWING STACKS BEFORE FAILURE.

**INDEX**  
 HEIGHTS OF ONE STACK BEFORE FAILURE  
 (FAILURE TAKEN PLACE ON 10-11-67)  
 \* HEIGHTS OF ORE STACKS AT PRESENT AS ON 14-3-1968



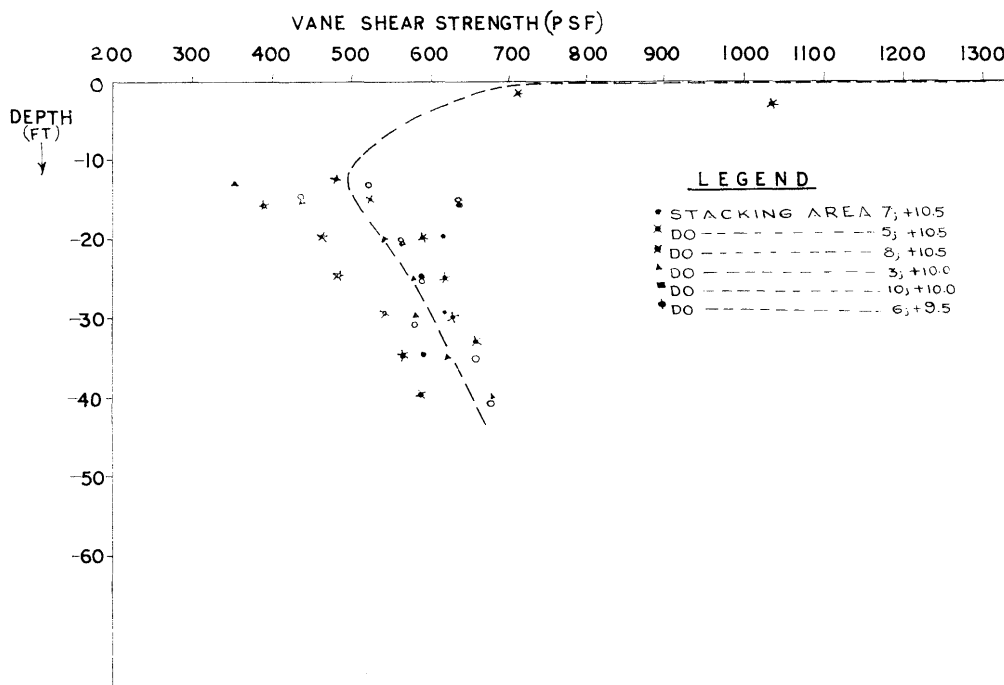
\* CROSS SECTION SHOWING STACKS AT PRESENT.

Fig.1a.

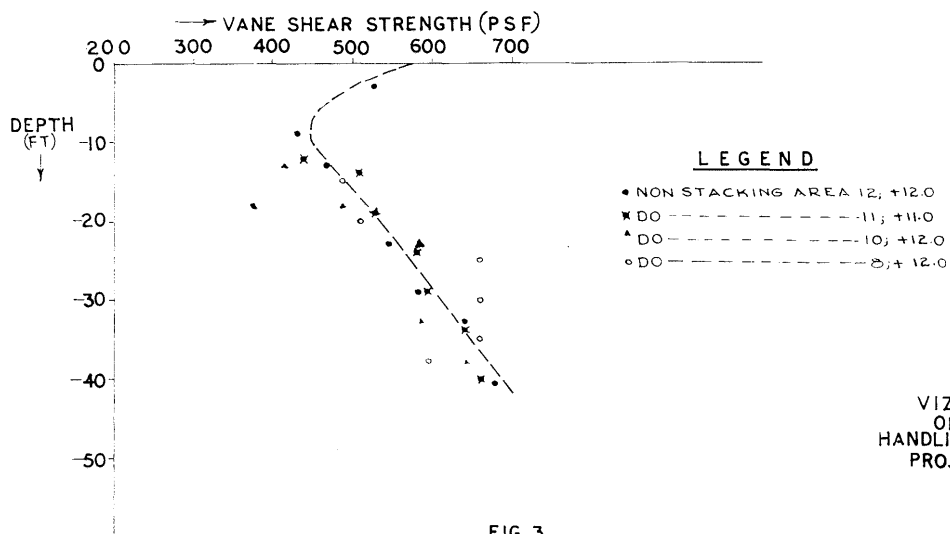


## VIZAG ORE HANDLING SCHEME.

### STACKING AREAS



### NON STACKING AREA



VIZAG  
ORE  
HANDLING YARD  
PROJECT.

FIG. 3

PLATE 7.

# *A Closer Look at The Port of Marseilles Authority*

Extracted from the brochure "Port of Marseilles Authority,  
Facts & Figures"

## **Marseille—the Region and Port Areas**

Latitude 43°19' N

Longitude 5°22' E

Marseilles with a population of a million people is the most important town on the French Mediterranean coast, along which 5 million people, or 10% of the French population, reside.

Population-wise, this part of France is the fastest-growing, averaging 2% increase per year. By the year 2000, 15% of the French population will reside in this sector and 80% of this increase will be due to people migrating from north to south. This part of France appeals immensely to new settlers. Apart

from its well-known climate and natural beauty, there are considerable possibilities for increased employment (1.8 million in 1968).

The average income per person is second only to the Rhone-Alpes region just north of the Mediterranean coast. In 1970 industrial production attained an 80% increase in this Provence Cote d'Azur region compared with 1962 figures, which is itself 20% higher than the average French statistics.

Details of the port's throughput in 1971, totalling 75.5 million tons are as follows:

—Crude oil imports (In this respect the Port of Marseilles is second in Europe. Oil is distributed to the south, to the east of France, to

western Switzerland and to south-western Germany) and refined petroleum products (liquid, gaseous):

Total: 66.9 million tons:

—Heavy bulk cargoes (ore, coals, fertilizers, sulphur, alumine): 3.6 million tons.

—General cargo: 5 million tons.

Traffic forecasts over the coming years is expected to rise to 120 million tons in 1976 including:

—Crude oil imports: 110 million tons.

Considerable increase in coal and ore are expected essentially owing to the fact that the steel works complex at Fos commences operations early 1974.

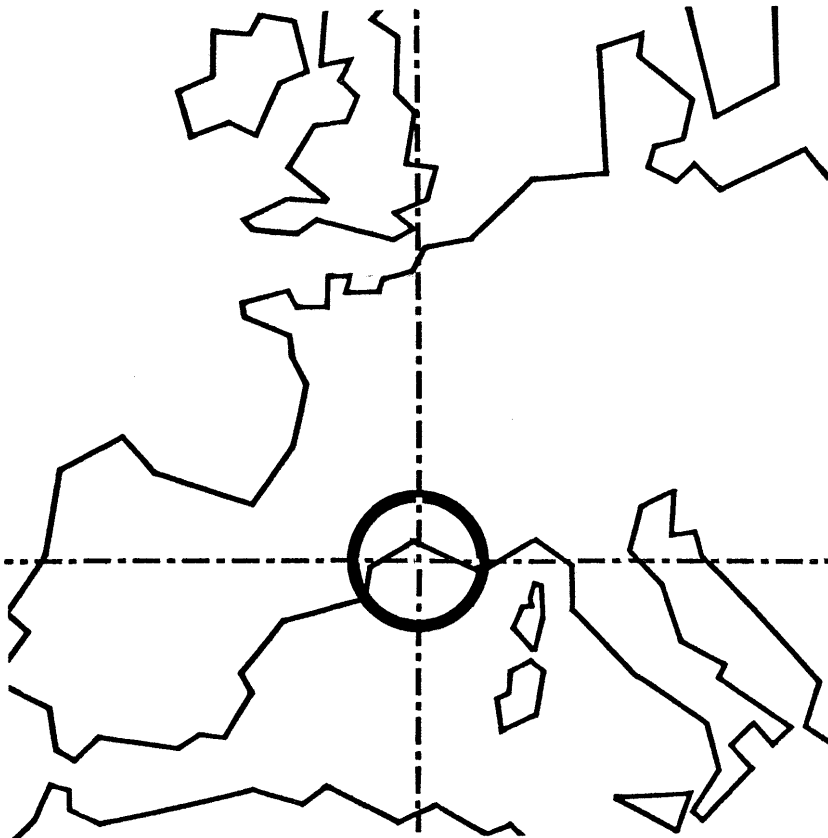
—Development of chemical products in keeping with regional industrial development.

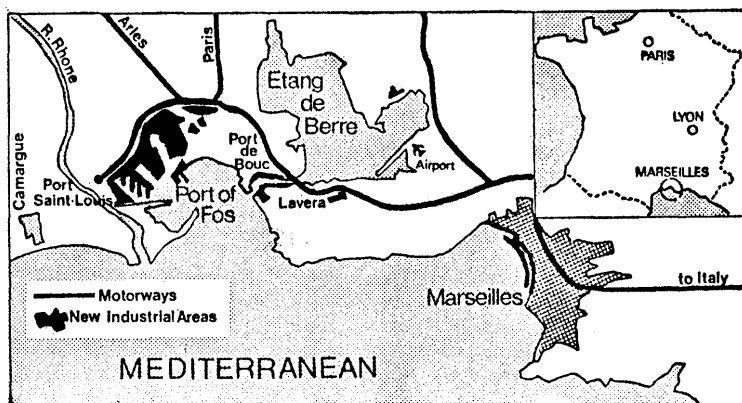
As regards general cargo, the closure of the Suez Canal has weakened Marseilles' position for certain inter-continental traffic. However, should the canal remain closed, general cargo should increase, though at a slower pace owing to the setting up of new industries and the general economic development forecast over the Mediterranean countries. From OECD figures the annual gross production of Mediterranean countries should increase 7-8% which is 2% faster than Northern European countries.

## **The Port of Marseilles Authority**

In 1965 the French Government set up a new Port policy with a view of providing French ports with competitive means of equipment. Six ports were chosen and certain of their investments are assisted by the State. However, in order to develop their economic activity these ports have financial autonomy, which is controlled under the Ministry of Works by the State. Their development is pursued in keeping with the Government's general policy. The Port Autonome de Marseille was thus established with this new status on the 1st April 1966 and is entrusted with the development of the port and its industrial areas with a budget that must be balanced as in any normal enterprise.

The port's revenue comes from Port dues on the ship (net registered tonnage) and on imported cargo





(per ton). Other sources of revenue are: use of shore equipment, general services and the rental of warehouses and industrial and port land. Annual revenue reached 137 million Francs in 1970.

#### Investments

The Government law on "Ports Autonomes" passed by the Government in 1965 forecast State aid in developing infrastructure only and the Port itself finances independently all superstructure on its own revenue or directly contracted and repayable loans.

For dredging, the State provides 80% aid, for quay building, 60% aid, the remainder in each case being completely assured by the Port's revenue.

The Director-General of the Port is alone responsible for the performance of construction works.

Total investments reached 185 million Francs in 1970, 205 million Francs in 1971 and are expected in 1972 to rise to 250 million Francs.

#### Organization

The Board has power of decision. The Board decides the investments that are to be made without State aid and votes the annual expenditure budget, fixes tariffs and the setting up of industries on port land.

The Director-General of the Port, who is a top civil servant named by the Council of Ministers of the Government, is responsible for the execution of the budget. The Board is composed of 24 members and elects its own chairman:

- 7 members designated by the Chamber of Commerce and Industry of Marseilles,
- 1 member designated by the Chamber of Commerce and Industry of Arles,
- 1 member designated by the General Council of the Bouches-du-

Rhone,

- 1 member designated by the Municipal Council of Marseilles,
- 14 other members are named by decree and proposed by the Minister of Equipment, comprised presently of the following Board members:

- One representative of the Council of State,
- One representative of the Public Works Administration,
- One representative of the Merchant Marine Administration,
- One representative of the Ministry of Finance and Economic Affairs,
- One representative of the Ministry of Industry, 7 people chosen among the principal port users or selected on account of their competence in port matters, shipping, transportation, regional or general economics,
- One representative of the Port's personnel,
- One representative of the dockers.

The Director-General of the Port is assisted by six Directors:

- Director of Industrial Relations,
- Director of Planning and Fos Works,
- Director of Commercial Relations,
- Director of Docks and Operations,
- Director of Engineering,
- Director of Administration.

In all, the Port of Marseilles Authority employs 1,500 people.

Dockers are employed by private stevedoring enterprises and are not part of the Port's personnel. The Director-General of the Port, however is also Inspector of Labour for Dockers.

#### Harbour Areas Administered by the Port

The Port of Marseilles Authority

comprises the following Harbour areas:

- Marseilles
- Lavera
- Caronte
- Fos
- Port-Saint-Louis-du-Rhone.

The whole area has deep water without tide or marine currents and practically no fog (annual average: two days). All harbour areas have the usual port services, pilotage, tugging, barging, victualling, supplies and bunkers all supplied by private enterprises.

#### Marseilles Harbour Area

From the year 600 B.C. up to 1845 a natural harbour called the Vieux-Port provided sufficient port facilities. Thenceforth further docking development has been constructed behind an artificial breakwater. Once the present new docking facilities are completed in 1973 there will be no more room for extensions in this harbour area.

The Marseilles harbour area treats most of the general cargo traffic (4.2 million tons out of 5).

#### Lavera Harbour Area

In 1949 it was decided to construct an oil port in order to satisfy the requirement for bigger ships than those who had previously access to small private piers near the refineries on the Etang de Berre.

Over a ten years period 9 berths were constructed. However, draught limitations limited Lavera's possibilities to 80,000 tons deadweight tankers and now ships calling at Lavera are of a diversified nature, carrying in particular refined products, liquefied petroleum gases and bulk chemicals (caustic soda, ethylene, benzene).

These 9 Berths have a draught alongside of 41 Feet and are adapted to the following traffics:

- Crude Oil: Import-Export-Reshipping
- Refined Oil Products: Import-Export
- Liquified gas, butane, propane, ethylene, etc. . . . Import-Export
- Liquid Chemical Products: Import-Export.

8 Berths for coastal shipping are also available.

The above berths are linked together by privately owned pipelines to the local refineries, petro-chemi-



Port of Marseilles, Piers J1, J2 and J3.



Port of Marseilles, Repair Docks.



Lavera Harbour.

cal industries, public storages for liquified gas and chemical products and to overland pipeline systems.

On the Etang-de-Berre two refineries have private piers for small ships.

### **The Caronte Harbour Area**

This area receives heavy bulk shipping and is privately run for public service by Etablissement Maritime de Caronte.

### **Port Saint-Louis Harbour Area**

At the mouth of the Rhone river, Port Saint-Louis, founded in 1863 and administered until 1966 by the Arles Chamber of Commerce and Industry, though essentially a tramp- ing port, also serves an industrial zone where the timber industry plays an important part. The construction of general cargo quays at Fos will enable Port Saint-Louis traffic to develop considerably. Present facilities will be used mainly for barge traffic and transshipment.

### **Fos Harbour Area**

#### **General Cargo**

In order to benefit from the vast storage areas required, the container terminal was established at Fos Harbour area from the very beginning. A first temporary terminal has been operational since 1969 situated on the west side of Dock 1. The new final terminal presently under construction on the west side of Dock 2 will be of far greater capacity.

#### **Container Terminals**

Terminal No. 1 is in operation alongside Dock 1. A 1640 feet quay under construction at Terminal 2 will replace Terminal No. 1 early in 1973.

Fos Generally is a port with practically unlimited scope, for example 10 miles of commercial quays can be constructed on Docks 2 and 3 and there is practically no restriction of any nature on the physical distribution of merchandise.

**Heavy Bunks — Public Terminal No. 1.**

#### **Other Berths**

Industries set up at Fos are allowed to create private berths and to utilize privately owned equipment.

#### **Crude Oil and Oil Products**

All berths are connected to refineries, storage and the pipelines by means of 42 inch diameter pipes.



Discharge flow can attain 600,000 cubic feet per hour. Berths are open to shipping 24 hours a day, the only waiting being due to the fact that the present South-European pipeline has reached full capacity but is presently being trebled.

### **The Port and Industrial Development Area of Fos**

The port and industrial development area of Fos which is situated at the mouth of the Rhone river, on the deep water gulf of Fos whose entrance is 148 feet deep, will eventually spread out over 70 square miles. Of this area, about 25% will be reserved for port development and the remainder will be an industrial development area.

Over a third of this land is already being exploited and two docks are almost dredged.

The Port Authority owns the land, equips the entrance to each industrial section with water, electricity, telephone, and rents the land on very long term basis to the particular industry desiring to be set up in keeping with the general mass-plan set out by the Authority.

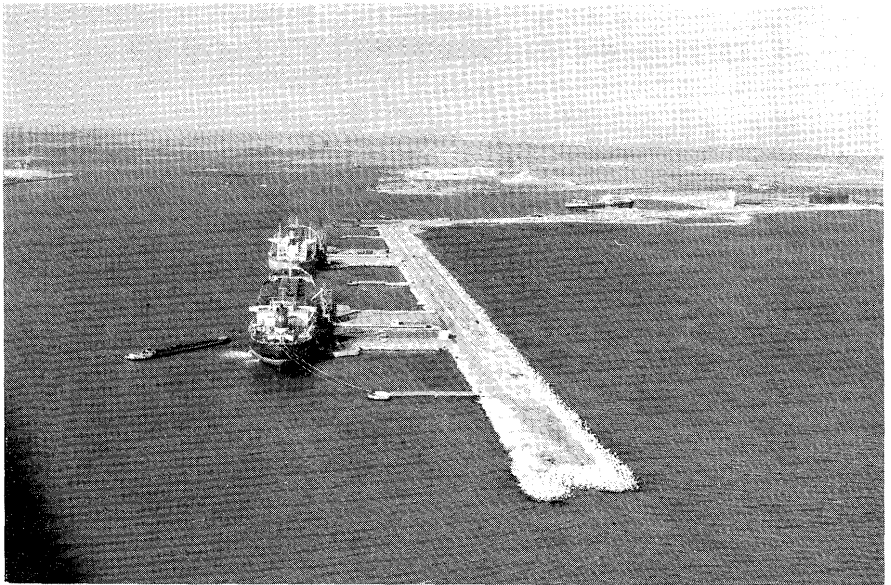
The terrain is very suitable for plant construction and there is adequate water supply, both via the canal between Arles and Fos and eventually the Rhone river where flow averages 3,300 cu. yard per second and furthermore an extensive subterranean water reserve under the Crau plain.

### **Next Stage of Development**

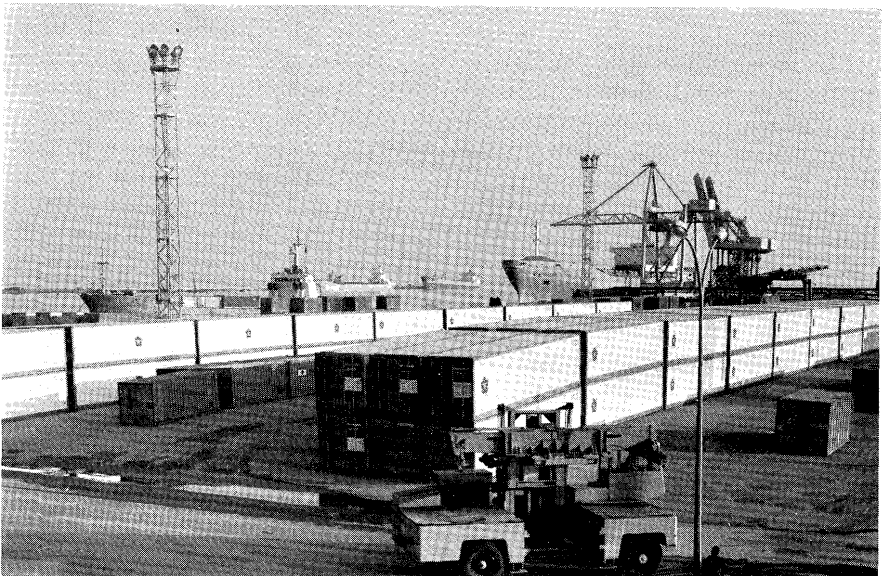
The following types of industry are considered to have particular potential for development at Fos:

- electrometallurgy
- general metallurgy—metal processing
- smelting — boilermaking — heavy engineering
- general engineering
- automobile construction and assembly
- electrical and electronic industries
- chemicals
- rubber tyres
- industrial Food production
- paper industries

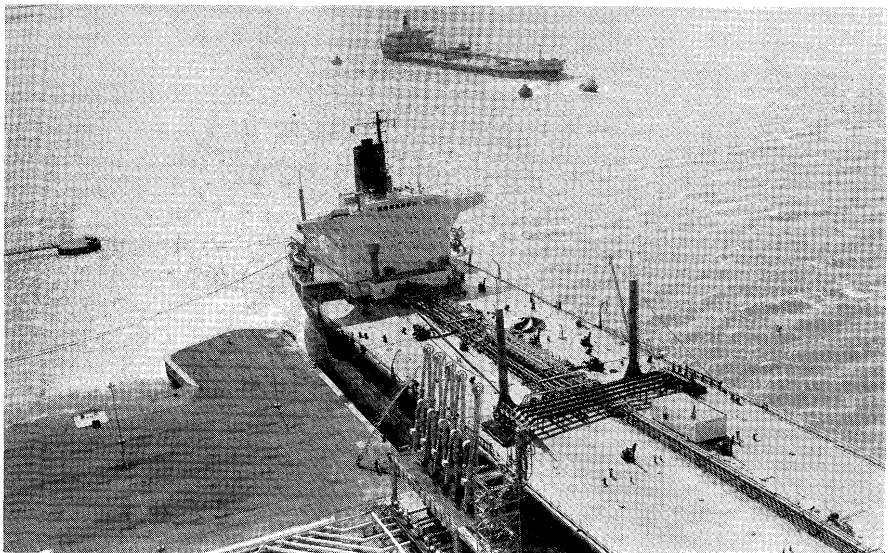
Overall engaged investment by the private enterprises already under construction or operational will reach 800 million £ (2 billion \$) by 1976.



Fos, oil berths.



Fos, container terminal.



Fos, oil berth No. 3.

# *Complete Security Cover At the Port of Melbourne*

**from Melbourne Harbor Trust Gazette  
March, 1972**

Holden Dock, the Port of Melbourne's new \$1.5 million oil dock which is located outside the main navigation channel of the River Yarra, is protected from any outbreak of fire by a highly sophisticated and thorough cover.

The Commissioners of the Port of Melbourne have through the Port Emergency Service of the Port, maintained a safety first policy within the territory under their jurisdiction.

This policy has paid handsome dividends, as the Port of Melbourne has justly earned the reputation of being one of the safe ports in the world.

The money spent on protecting Holden Dock, therefore, though it might be considered large, is in fact a wise investment when balanced against the safety screen that it affords to any tanker that uses the dock.

In fact the new dock was built because the Commissioners felt that the oil berths at Nos. 3 and 4 Newport and No. 8 Yarraville located in the main river channel were a hazard to ships entering and leaving the port from berths further up the River Yarra.

The new dock, besides removing tankers out of the river channel, also concentrated traffic in the one area.

Eight oil companies whose tankers discharge or load refined petroleum products at the new dock are its main users, but because of the nature of the products and its proximity to the heart of the Port and industry and storage tanks around and adjacent to the dock, a high degree of protection had to be afforded to any vessel using the dock.

Fully realising the important task of providing maximum safety coverage in case of an outbreak of fire, etc., in the new oil dock, a feasibility study was undertaken by officers of

the Port Emergency Service and the Trust's Design Engineers.

The points which were taken into consideration in the feasibility study were:

- The high inflammable nature of the products which would need large quantities of foam;
- Rise and fall of a tanker as it discharged or loaded refined products;
- Prevailing wind directions, principally northerlies in summer and southerlies in winter;
- The difficulty of P.E.S. personnel getting close to the fire;
- The location of the berth and the difficulty in moving the vessel away from adjacent risks.

As a result of the study it was decided that a fixed fire fighting installation was the answer, and that the installation had to provide foam for fighting a fire on board as well as water for cooling and isolation purposes.

To provide for this dual concept, provision of two separate mains totalling nearly a mile in length was laid. This first main provides foam for fire fighting and the second main laid parallel to the first main supplied water which could be tapped off various points for lines of hose which could be handled manually.

The mains are 6 in. diameter rigid PVC pipes buried 2 ft. underground and operate at a maximum pressure of 175 lb. per sq. inch. This is the first major use that has been made of this material in the port area.

The fire fighting installation consists of four strategically sited towers (25 feet above deck level) each supporting a powerful monitor, capable of discharging either foam or water as required.

Each monitor delivers up to 3080 gallons of finished foam over a range of 125 feet or 440 gallons per minute of water over a range of 160 feet at a minimum nozzle pressure of 75 lbs.

per sq. inch.

The monitors can be remotely controlled from hydraulic cabinets located well clear of the berth. Each cabinet controls two monitors, which have a radial traverse of 315° as well as generous elevation and depression movements or alternatively the monitors can be manually operated from their elevated tower platforms.

The primary service of supply to the monitors is from a stationary electrically driven pump of 1200 gallons per minute capacity at a 175 lb. per sq. inch, supplemented by a secondary internal combustion engine pump of 1000 gallons per minute capacity at a 100 lb. per sq. inch pressure.

Either pump can be used to supply foam and water or water as required to one or other of the two mains. The whole operation being completely flexible in case one of the pumps or mains is put out of action for any reason.

Additional cover to the valve manifold on the jetty deck is provided by water and foam hydrants on the deck from which smaller portable monitors can be operated.

The pumps are housed in a pump house located outside the immediate risk area, drawing water from the River Yarra. The foam compound is stored in 4 × 250 gallon tanks located outside the pump house, and fed to the proportionators by an electric pump, operated on electrical relay from the main fire pump and automatically providing a predetermined percentage of foam compound dependant upon the amount of water being used.

The main fire pump can be started by remote control from the main gatehouse of the compounded area, as well as from the berth-side hydraulically controlled cabinet, or manually from the pump house.

On the berthing of a tanker, the four monitors are trained to cover the main risk area of the vessel's deck, and the four valves of the monitors are immediately opened. Should there be an outbreak of fire, either of the two P.E.S. men on duty can start the main fire pump from either of the two remote control positions by simply pressing a button, which immediately starts the fire pump, which in turn brings the foam compound pump into oper-

ation, and within approximately 5 seconds the monitors are discharging a total of 9,500 gallons per minute of foam onto the vessel.

Adjustment of the monitors is then carried out by the men on duty from the remote controlled cabinets.

They system is designed for a 20-minute application, before replenishment of foam compound is necessary.

Replenishment is achieved by mobile foam compound tankers (1100 gallon capacity) from the P.E.S. headquarters pumping compound into the system at a rate of up to 65 gals. per minute.

Provision has also been made to permit mobile fire appliances to connect lines of hoses into the installation to supplement supplies or in the event of failure of either or both of the pumps.

Additional foam and water hydrants are located at strategic points around the dock to enable incidents to be attacked from points other than those covered by the four main monitors.

The fire protective cover was installed at a cost of \$120,000, but besides providing this safety screen, the Commissioners are also installing a safety boom across the entrance to the dock, as a preventive measure against polluting the River Yarra.

The boom will be opened to allow a tanker to pass in or out of the dock, but will be closed for the duration of the ship's stay in port. Tenders for the floating part of the boom have been received and are at present being assessed.

The eight oil companies whose tankers use the dock have participated in preventing any pollution occurring, by installing a metal tray under the valve manifold which will receive any accidental leakage of oil and spillage when the valves are disconnected. It is connected to a separator pit on shore by a two-inch diameter slop line.

In addition, Mobile Oil Australia Ltd. are at present installing a 16-inch diameter de-ballasting line which will enable them to pump ballast and tank cleanings to a new tank at their Yarraville terminal. The contents of this tank are then passed through a considerable separator system to enable waste oil to be separated before the water is discharged to the drains.

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# *Protection of Dockworkers*

## *To Be Discussed*

## *At ILO Conference*

**International Labour Organisation**

Geneva, 5 April (ILO News):— A dockers' charter to protect waterfront workers from unemployment and other hardships resulting from modern cargo handling methods will be drawn up at the forthcoming International Labour Conference (Geneva, 7-27 June).

Government, employer and worker delegates from all over the world will be considering a report by the International Labour Office on the social repercussions of new methods of cargo handling in docks. After this initial debate, ILO member States will be consulted, and a full-fledged Recommendation is expected to emerge from final discussion of the subject at next year's International Labour Conference, giving guidelines for national legislation and practice on dock labour policy.

New methods which have led to ILO action in this field include the use of containers, fork-lift trucks and the roll-on, roll-off system by which trucks can be driven straight into a ship without being unloaded. These advances permit tremendous savings, since they cut out much of the time during which ships and other expensive equipment stand idle while gangs of men labour to

move heavy cargoes.

The savings benefit all consumers and are of special importance to developing countries, where transport can account for 50 per cent or more of the total delivered cost of imports.

But when a ship can be unloaded in six hours instead of six days, the docker fears for his job. The report being submitted to the Conference shows that while new methods can improve working conditions and earnings, they have led to a widespread drop in the demand for dockworkers.

### **Outline of proposed Recommendation**

The ILO report suggests that technological advances should be accepted because of the clear advantages they confer, but that at the same time measures should be taken to reduce hardship to dockworkers, and that dockworkers should share in the benefits derived from modernization. Action to secure lasting improvement in their situation, as for example by putting their employment on a regular basis and stabilizing their income, should be planned and carried out as new methods are introduced.

Provisions to be considered for incorporation in the final Recommendation include the following:

Introduction of new methods should be co-ordinated with development and manpower programmes.

Dockworkers should be employed full time, or failing this, receive guarantees of income or employment or both.

Registers of dockworkers should be established and kept at a level adequate to the port's needs.

There should be a fair share of available work for each regis-

The consortium of oil companies, in order to speed up the coupling and uncoupling of tankers to the land mains, have introduced hoses in 80 feet lengths, and installed a novel overhead monorail to transport the hoses. This monorail extends from the hose shelter on the southern end of the jetty and completely covers the valve manifolds.

This latest exercise instituted by the Commissioners of the Trust to safeguard Holden Dock against any outbreak of fire is additional proof of their determination to maintain the reputation of the Port of Melbourne as a safe port.

(Continued on Next Page Bottom)

# 4 New Specialized Services

## via Bremen Bremerhaven

The introduction of the fully containerized service of the German/Japanese/English group to the Far East using containerhips of the third generation, the introduction of two further LASH services by the Combi Line and the Lykes Lines to the US-Gulf, the introduction of a further roll-on/roll-off service by the Care Line to Canada, also the completion of an ultra-modern terminal, the "Container Crossroads Bremerhaven", to ensure speedy operation of these special services—all these facts prove clearly that the Ports of Bremen are both extremely attractive and efficient, thus maintaining their lead over rival ports. One more reason for showing a wider circle of experts what services are offered.

The new liner services increase the number of specialized services of the Ports of Bremen considerably. After all, from May of this year onwards Bremen and Bremerhaven will offer shippers a total of eight fully containerized services, five to the USA, one to Canada, one to Australia, and one to the Far East, more than 30 semi-containerized services on almost every route, two feeder services to and from Scandinavia and the western ports three LASH services to the US-Gulf as well as three roll-on/roll-off services to Canada, England, and Spain.

tered dockworker, and a fair share of available labour for port operators.

Agreements to improve port efficiency are urged between employers' and workers' organizations.

Industrial labour legislation should be effectively applied in ports; working hours and holidays should not be less favourable for dockworkers than for the majority of other workers.

Pay scales and methods should be revised when new techniques are introduced; dockworkers' earnings to be improved where possible.

### A. Container Services

1. Sea-Land Service, Inc.
2. American Export Isbrandtsen Lines
3. Atlantic Container Line (also roll-on/roll-off)
4. Hapag-Lloyd AG
5. Seatrain Lines, Inc.
6. Columbia Transatlantic Container Lines, Inc.
7. Australia Europe Container Service
8. Trio-Group (Ben Container Line Ltd., Hapag Lloyd Ag, Mitsui OSK Line, Nippon Yusen Kaisha, Overseas Containers Ltd.)
9. IBESCA Container Line (Feeder service for the Dart Container Line)
10. A/B Svea (Feeder service for the Seatrain Lines, Inc.)

### B. LASH Services

1. Central Gulf Contramar Line
2. Combi-Line (Hapag-Lloyd and Holland-Amerika Line)
3. Lykes Lines

### C. Roll-on/Roll-off Services

1. Care Line
2. Iberhanseatic Transport System (ITS)
3. Prinzen Lines

"Container Crossroads Bremerhaven"—centre of these specialized services.

Conditions prevail in Bremen/Bremerhaven which are so essential to the economical operation of all these specialized services. The full-container-ships and LASH vessels concentrate on the "Container Crossroads Bremerhaven" (also the American Export Isbrandtsen Lines will

move to Bremerhaven at the beginning of April), whilst roll-on/roll-off vessels are ideally served by handling facilities in Bremen (Überseehafen) and Bremerhaven (Nordhafen and Columbus Quay). A Further ro/ro facility is now being built in Bremen's Europahafen for the service to and from Scandinavia.

The centre of all the specialized handling facilities of Bremen is, however, the "Container Crossroads Bremerhaven", which has computer-controlled movements and which was constructed with this development towards giant vessels in both container and LASH transport in mind. After completion of the third berth at the Stromkaje in May this year the terminal, combining the quays direct on the outer river Weser and in the Nordhafen as one operational unit will have more than 741 200 sq. metres of storage and marshalling area, 1.9 km quay length, and 9 container gantry cranes; it will thus be the largest single container terminal in Europe. Investments of about 280 million Marks, which were made by the municipal authority in Bremen (infra-structure) and by the Bremer Lagerhaus-Gesellschaft as terminal operators (supra-structure) were necessary for the construction of this excellent facility on the estuary of the Weser. If the volume of traffic increases, this terminal can be further extended seawards. For the present the "Container Crossroads Bremerhaven" is large enough to ensure smooth clearance of all the full-containerhips and LASH vessels calling here.

### Top container handling figures

It would not be very convincing to call the "Container Crossroads Bremerhaven" Europe's largest container terminal, if the container handling figures were not so high. But here Bremen/Bremerhaven have had remarkable successes. From 6th May, 1966, the date of the première

Year	Container traffic		
	absolute	20-ft basis	t
1966 (May-Dec.)	8 335	16 670	72 462
1967	35 358	51 258	318 310
1968	46 873	69 848	464 553
1969	73 334	118 001	822 129
1970	112 191	194 812	1 384 817
1971	144 600	240 000	1 850 000
1972 (estimated)	200 000	330 000	2 200 000



of container traffic in Bremen, up to the end of 1971 a total of 420 691 containers (690 589 on a 20-ft basis) carrying 4.9 million tons were moved. In 1971 alone, 144 600 containers (240 000 on a 20-ft basis) carrying 1.85 million tons were moved. And, owing to the introduction of the all-container service to the Far East, the Port's of Bremen can forecast a new record handling figure of more than 180 000 containers (290 000 on a 20-ft basis) carrying more than 2 million tons for this year. Therefore the proportion of container traffic of the general goods handled by the Ports of Bremen will rise to 18%.

#### Table

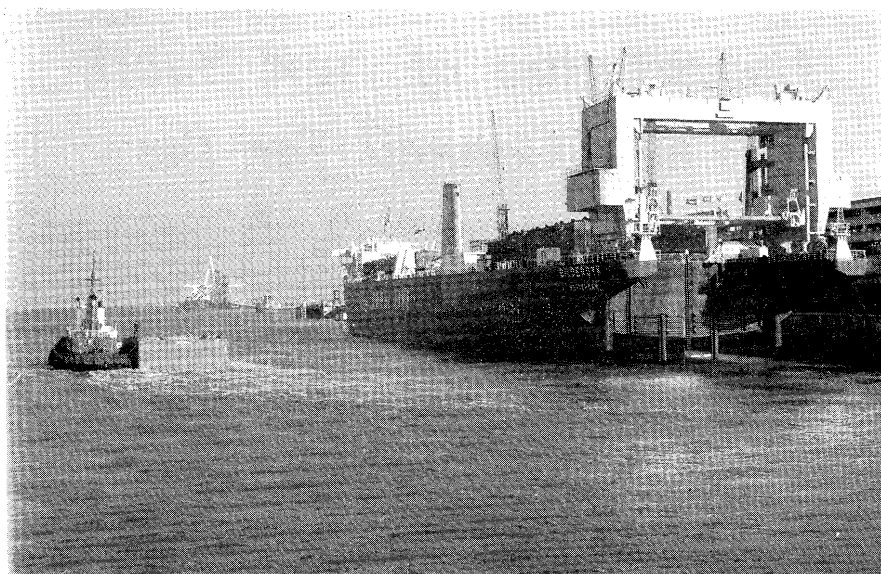
Impressive achievements can also be recorded in the field of LASH traffic. Since the introduction of the first LASH service by the Central Gulf Contramar Line on the 1st September, 1970, up to the end of 1971 a total of 939 barges with 276 591 tons were moved into or out of Bremerhaven. It will be possible to increase this tonnage considerably once new LASH services have been put into operation by the Combi Line and Lykes Lines.

#### "Secrets"

The secret of the success which has made Bremen/Bremerhaven the largest German and leading European port for new systems of sea transport, lies in many various but interdependent factors. In brief these criteria are:

- immediate reaction to changing market situation
- flexibility of investments
- first-class, individual service
- excellent geographical location, seawards and to the hinterland
- high amounts of cargo to be moved

Good service, an interesting volume of cargo and an optimal geographical location are so very important especially for container-ships of the third generation and for LASH carriers. These capital-intensive vessels prefer ports which have not only efficient handling facilities (for these are unconditionally necessary) but also have an excellent geographical location from a nautical point of view. For these shipping lines operate above all according to the principle of "only to touch a port"



LASH ship MS "Bilderdyk" at Bremerhaven.

in order to accelerate turnaround times and to eliminate the considerable risks and losses of time involved in navigating a river channel. These conditions are fulfilled in the Ports of Bremen. Moreover, they have a favourable geographical position with regard to the European hinterland. Examinations and comparisons by neutral authorities show that Bremen/Bremerhaven offer favourable freight rates to the most important industrial and commercial centres than the rival ports. The railway ports of Bremen/Bremerhaven offer fastest connections to and from more than 50 DB-Terminals and goods yards in the Federal Republic of Germany and about 170

similar facilities in other parts of the European hinterland. Many of these connections are by night express.

The positive development of container, LASH, and roll-on/roll-off traffic in the Ports of Bremen contributed to a great extent to the considerable increase in the total amount of general cargoes moved. Since 1966 Bremen/Bremerhaven have achieved an increase of 2.6 million tons to 11.7 million tons in this sector of port turnover, which is so interesting because it is so expansive. This is a unique development among the German seaports.

#### Keen, but fair competition

Although the German ports have

(Continued on Next Page Bottom)



# *Constitution of New South Wales Council for the Promotion of Safe Boating*

**The Maritime Services Board of N.S.W.  
Australia**

Sydney, 13th March:—The President of the Maritime Services Board, Mr. W. H. Brotherson, announced in Sydney today that it has been decided by the Board to constitute a body to be known as the New South Wales Council for the Promotion of Safe Boating.

In making this announcement, Mr. Brotherson said it was felt by the Board that the number of people now engaged in recreational boating has reached such proportions that every endeavour should be made to encourage them to become aware of their responsibilities in the handling of their boats.

He said it was proposed that the Council achieve this aim by a programme of education.

He pointed out that the Board fully appreciated the work along these lines which had been undertaken over an extended period by other organizations, including the news media.

Mr. Brotherson said that it would not be the intention of the Council to take over from these organizations but rather to support them

to stand up to some keen, but fair competition in the sphere of special services, they do agree on one point: the enormous investments which were made and will still have to be made for the rapid clearance of container, LASH, and roll-on/roll-off vessels, can only yield adequate return, if the national transport policy and the transport policy of the EEC create the same conditions of competition in transport to and from the German ports as those existing in transport over the land border to the Benelux ports. The same treatment for all, not a special position, is what is required.

Bremen, 1st March, 1972

and assist them in their work.

(Letter forwarded to invitees to attend the Inaugural Meeting of the Council)

29th February, 1972.

Dear Sir,

As the Navigation Authority for the State of New South Wales, the Board has given consideration in recent times to sponsoring a voluntary organization which would meet regularly to discuss matters associated with the handling and operation of recreational boats and aquatic activities associated therewith, and to advise the Board of its views on matters which may be related generally to the safety of small boats.

It is known that there is a move to set up a Water Safety Council in this State but it is understood that the survival of individuals exposed to the dangers of the water will be the primary objective of this organization. The Board's approach, however, relates directly to the questions of safe boat handling which, it is felt, could be promoted by the dissemination of literature, the setting up of training programmes and by collaboration and co-operation with the news media and other organizations which have done so much in the past to assist in the education of the boating public by sponsoring safe boating courses.

The Board has decided, therefore, to approach various bodies seeking their participation in an organization which will be known as the "N.S.W. Council for the Promotion of Safe Boating Practices", the broad aims of which would be as follows:—

1. To educate the public in proper compliance with the law relating to safe boating and in the safe and proper handling of

pleasure and private boats and for these purposes:—

- (a) to publicize in whatever way it considers practical the need for safety in the operation of private boats and such simple precautions in this field as it considers appropriate.
- (b) to support and assist so far as it thinks practical the educational activities already being undertaken by any recognized organization.
- (c) to encourage the establishment of additional activities of this nature in other areas of the State and to assist in their operation.

2. To consider and report to the Maritime Services Board on any matter associated with boating safety on which the Board may request its views.

The Board would have two representatives on the Council, one of whom would act as Chairman, and the organizations which have been invited to participate and to have two representatives attend meetings are as follows:—

The N.S.W. Maritime Committee  
The volunteer Coastal Patrol

The Boating Industry Association of N.S.W.

The Yachting Association of N.S.W.

The N.S.W. Police Department  
The Department of Shipping and Transport

The N.S.W. Water Ski Association, and

The Australian Power Boat Association.

I should be pleased if you would be good enough to indicate whether your organization would have in mind participating in the Council activities and nominate two representatives to attend the inaugural meeting which has been arranged for Thursday, 23rd March, 1972, at 5.30 p.m. in the Conference Hall on the fourth floor of the Board's Head Office Building at Circular Quay West. The Board would greatly appreciate your participation in the manner indicated.

Yours faithfully,  
W. H. BROTHERSON,  
President.

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# Orbiter Probe

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## IAPH News:

### New Members

#### Regular Members

1. The Felixstowe Dock & Railway Company  
Felixstowe, Suffolk, England, U.K.  
(Mr. Stanley Turner, Group Managing Director)  
was approved on March 16, 1972
2. Toyama Prefecture  
(Ports of Fushiki-Toyama and Uozu)  
1-7 Shin-sogawa, Toyama City 930 Japan  
(Mr. Kokichi Nakada, Governor)  
was approved on April 20, 1972.

### Travelers

- Mr. Carl H. Plumlee, seaport consultant in Port Hueneme, California, U.S.A., IAPH member, visited the IAPH Head Office on Friday, April 7 morning and had conversations with Dr. H. Sato, Deputy Secretary General.

- Asian Trade Mission from the Port of Long Beach held a reception in Tokyo Wednesday, April 19 evening at Hotel Okura, Gyokutei Room. At the receiving line were Mr. James G. Craig, Jr., Vice President of Harbor Commissioners, Mr. Robinson A. Reid, Commissioner, Mr. James H. McJunkin, Deputy Executive Director, Mr. Dean J. Petersen, Trade Development Director, and Mr. Shigeo Tokoro, representative in Japan. Many shipping executives, transport and trade representatives, Japanese and foreign, were among the guests.

- Mr. Yann-Pierre Remond, Director of Commercial Relations, Port of Marseilles Authority, held a movie and slide presentation of "Marseilles—Fos Development" at the conference room of Japan Port and Harbor Association in Tokyo

on Monday, April 24, 1972, as arranged by Dr. H. Sato, IAPH Deputy Secretary General (Director-General of Japan P. & H. Ass'n.). Mr. Jacques Candau, Assistant Commercial Attache of the French Embassy, Mr. Henri Ballardur, Manager for Japan, Compagnie des Messageries Maritimes, Mr. Sidney Emery, Director, French Industrial Development Agency, Japanese Ministry of Transport officials, Japanese shipping company representatives, and Japanese engineering company representatives who had previously visited the Port of Marseilles, were present.

Mr. Remond arrived in Japan on Sunday, April 23, and departed for home on Wednesday, May 3. Meanwhile, he inspected Mitsui Zosen's Chiba Shipyard and container wharfs of Tokyo Bay Port Development Authority, made a trip to the Port of Nagasaki, touched at ports of Kobe and Osaka for inspection.

- Mr. R. H. Hoogewerff, Treasurer of FIATA (International Federation of Forwarding Agents Associations) called at the IAPH Head Office on Tuesday, April 25, 1972. Unfortunately, both the Secretary General Mr. Toru Akiyama and the Deputy Secretary General Dr. H. Sato were traveling abroad. Mr. Hoogewerff spoke for FIATA and suggested that IAPH become a member of FIATA. Mr. Hoogewerff is a director of H. Hoogewerff Junior & Co. N.V., international forwarding agents in Rotterdam and Amsterdam. He also holds a dozen other officer's titles and memberships in business organizations related to forwarding business.

### 1971 debut and finale

Buffalo, N.Y.:—The last 1971 cargo shipment activity at the NFTA

Seaway Piers was completed with the arrival of the ship Lakewood on December 15. Four thousand tons of concrete sand from Canada was unloaded. The English ship, Nina Bowater, marked the first ship of the 1971 season to unload at the NFTA Buffalo Port Terminal with 3,800 tons of newsprint from Finland on April 20. (Port of Buffalo. Progress Bulletin, February 1972)

### Brochure available

Duluth, Minn., March 30:—A new port brochure describing the services and capabilities of the Port of Duluth-Superior has been published by the Seaway Port Authority of Duluth. The brochure, available upon request, may be ordered by contacting the Seaway Port Authority of Duluth, 1200 Port Terminal Drive, Duluth, Minn., 55802.

### 1972 season opened

Montreal, April 12, 1972:—The 8,600 ton Danish freighter OLAU SYD entered the St. Lawrence Seaway at Montreal today opening the 1972 navigation season.

Dr. Pierre Camu, President of The St. Lawrence Seaway Authority, welcomed Captain Knud Egtved of Denmark at St. Lambert Lock and presented him with mementoes to mark the occasion.

The OLAU SYD, an 18-month-old ice-strengthened tanker of 463 feet in length is capable of carrying 24 different products at one time. She is bound in ballast for Green Bay and Milwaukee, Wisconsin, and Detroit, to take on a load of tallow for Spain and Holland.

The Seaway's scheduled April 1 opening was delayed because continuing cold weather hampered Canadian Coast Guard ice-breakers assigned to cut a channel through heavy ice in the lower sections of the St. Lawrence Seaway.

OLAU SYD is owned by Olau-Line, Copenhagen. The company is owned by Ole Lauritzen, whose father pioneered winter service to the St. Lawrence.

The ship was christened by Mrs. A. Jensen, the charwoman at the Lauritzen home, who was asked to perform the ceremony in recognition of her 15 years' service to the family.

Among those on hand to take part in today's ceremony at St. Lambert were His Excellency Borg Andersen, Danish Ambassador to Canada; Willy Anderson, President of Anship Limited, Montreal, agents for Olau-Line; Peter E. R. Malcolm, Vice-President of The St. Lawrence Seaway Authority; David W. Oberlin, Administrator of The Saint Lawrence Seaway Development Corporation of the United States; and Roger E. Belanger, Director, Eastern Region St. Lawrence Seaway Authority. (The St. Lawrence Seaway Authority)

### Cruise guide

Hollywood-Fort Lauderdale, Fla., March 22:—New Port Everglades spring-summer Cruise Guide will be available for distribution shortly. The booklet lists all cruises and voyages from the harbor through September.

### A bright month

Houston, Texas (Special):—February was a bright month for the Port of Houston with a total of 5,499,895 tons of cargo handled, 4.6 percent better than January and 4.7 per cent more than February 1971.

Foreign trade general cargo looked particularly good with nearly 400,000 tons of imports and exports to better the previous month by 20 per cent and the February 1971 total by more than 36 per cent.

Foreign trade bulk cargo was more than one million tons in February or 25 per cent more than the 800,000 tons for the same period a year ago. Total foreign trade, bulk and general cargo, was up nearly 35 per cent with a total of some 1.5 million tons for the month against 1.1 million in February 1971.

Bulk grain exports amounted to 856,000 tons, a 175,000 ton increase over January, and comparable to the heavy shipments at the beginning of 1971.

Deepsea coastwise shipments, mainly petroleum, were down about half a million tons from the 2.25 million tons shipped in February a year ago but internal barge traffic at 2.1 million tons was up from last February's 1.7 million tons. (Port of Houston News Release)

## Chilean Project Awarded to Swan Wooster Engineering



Bulk Iron Ore Shiploading Terminal for 250,000 dwt. Ships

Port of Guacolda, Chile  
COMPANIA DE ACERO DEL PACIFICO S.A.

McKee & Company  
INTERNATIONAL ENGINEERING & CONSTRUCTION  
A DIVISION OF THE MCKEE GROUP

Vancouver, B.C., April 10:—Ian S. Ross, president of Swan Wooster Engineering, announces the award to his company of a contract from the Arthur G. McKee and Company, Western Knapp Engineering Division, to design new port facilities at Guacolda, Chile. The final design for this project is now underway and it comprises of a high capacity dual quadrant shiploading system capable of loading giant ore carriers up to 250,000 deadweight tons. Swan Wooster has on several recent projects found the dual quadrant shiploader system an economical solution to the problem of providing high capacity loading systems for very large bulk ocean carriers.

The Port of Guacolda is located some 400 miles north of the capital city of Santiago, Chile. The new port facilities are being constructed to meet the ever expanding needs of world trade and is part of an overall program by Compania de Acero del Pacifico, S.A., the national steel company of Chile, to provide adequate export facilities for the expansion of their Algarrobo open pit iron mine near Guacolda, as well as development of the new Boqueron Chanar underground mine.

This new engineering assignment from McKee and Compania de

Acero del Pacifico, S.A. resulted from a feasibility study prepared by Swan Wooster last year. At that time, Swan Wooster engineers travelled to Chile to review the project requirements with the client and made a detailed examination of the construction site. Included in the site examination was an under water survey by the firm's scuba diving engineers.

In addition to the Chilean project, Swan Wooster is currently working on major bulk materials handling projects in South Africa, Yemen, Australia, United States and Canada.

### Trade with nations

Houston, Texas (Special):—Japan far outdistanced all other nations in the Port of Houston's 1971 foreign trade picture with a total of \$420 million as against the \$223 million in trade with West Germany, her nearest competitor. (Figures are quoted to the nearest million).

Brazil was third with \$157 million followed closely by the United Kingdom with \$148 million, Belgium with \$112 million and Venezuela with \$106 million. The remaining four countries in Houston's top ten were France with \$89 million, The Netherlands with \$88 million, India

(Continued on Page 34)

## "A Look at the Industrial World Ahead"

New York, N.Y.:—The U.S. Maritime Administration/Soros exhibit at the February White House Conference meeting was one of a selected few designed to take "A Look at the Industrial World Ahead." The display panels from left to right tell the story of the problem, while the offshore terminal demonstrates a solution.

ENERGY CRISIS points up the greatly increased need for all types of energy, particularly petroleum; the present and anticipated supply sources by U.S. production, pipeline from Canada, and petroleum reaching U.S. ports by ship; and the need to provide for larger and larger tankers up to the 500,000 DWT class.

WORLD OIL TRAFFIC points up present reserves and use ratios while the world globes show the increasing petroleum traffic expected from 1970 to 1980 and 1990.

The OFFSHORE panel demonstrates the inability of U.S. ports to handle ships in the 375,000 to 500,000 DWT class, not to mention lack of capacity to handle the present 65,000 DWT ships.

The TERMINALS panel is a graphic demonstration of the wave dampening effect of the breakwater which extends 14,000 feet in a "V" shape toward the open ocean.

ENVIRONMENTAL SAFETY . . . is a matter of constant concern and the subject of a considerable por-

tion of the study being completed by Soros Associates, consulting engineers of New York, for the Maritime Administration in Washington.

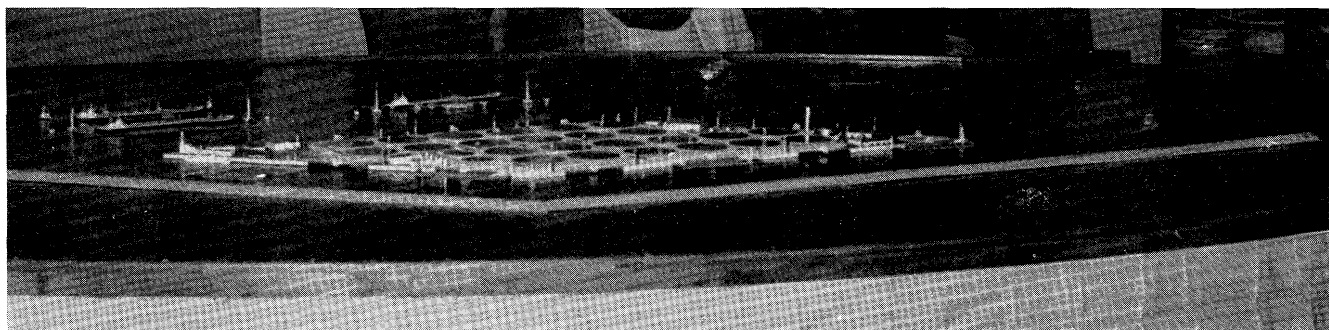
The 7'×12' MODEL of an "offshore petroleum terminal" depicts a man-made terminal island of some 200 acres, providing a 14,000 ft. long breakwater to protect the terminal from rough seas and permit loading and unloading operations under pollution free conditions.

The MODEL illustrates a tug-barge feeder system. Provision for pipeline connection to shore have also been incorporated into the concept.



↑ The 18"×30" display area sets up the problem in easy to read graphics—Energy Crisis, U.S. Petroleum Supply, World Reserves, Increased Petroleum Traffic, Inadequate U.S. Ports, and how Offshore Terminals can be protected with breakwaters as one step in Environmental Safety.

↓ The 7'×12" model of a man-made offshore terminal demonstrates a solution to our energy crisis—all a part of an extensive study for the U.S. Maritime Administration by Soros Associates, consulting engineers of New York.



Photos by W.F. Haddon, Bronxville, New York.

(Continued from Page 32)  
with \$87 million and Italy with \$74 million.

Total value of the Port of Houston's foreign trade was just under \$3 billion with exports prevailing two to one over imports.

Japan showed a big bulge in its exports, which ran more than \$100 million ahead of its imports from the United States, and West Germany's exports to Houston were twice as great as its imports. In Houston's trade with Brazil and the United Kingdom, however, the reverse was true due to heavy shipments from here of grains and machinery. Houston's exports to India and The Netherlands were ten times greater than its imports from those countries and ran five to one ahead in its Venezuela trade.

Trade with Belgium, France and Italy was fairly well balanced with imports from those countries running only slightly ahead of exports. (Port of Houston News Release)

### Container seminar

Houston, Texas (Special):—A seminar on all aspects of containerization with outstanding speakers in the field from throughout the nation will be held at the Houston Oaks Hotel May 16th-18th with more than 500 persons expected to attend.

Sponsored by the Port of Houston, the Chamber of Commerce and Houston World Trade Club, the conference will be directed by CONTAINER NEWS Magazine with Marc Felice, editor, moderator for most of the sessions.

As the Southwest's first Intermodal Transport Seminar, the three-day meeting will focus on "The Impact of Modern Shipping and Distribution Methods on the New Look of World Trade" on the first day, with speakers from government, business and shipping.

The second day's session will cover "The Gulf Coast's Share in U.S. Exports and Imports Moving in Intermodal Door-to-Door Traffic" and the third day's discussion will be on "The Gulf Coast As Transit Point for Intermodal Shipments and its Importance for Container and LASH/SEABEE Traffic."

This final session will feature

twelve panelists representing eight steamship lines, the Port of Houston and two International Longshoremen's Association locals.

Benjamin Woodson, president of the Houston Chamber of Commerce will preside at the May 17th luncheon and introduce Federal Maritime Commissioner George Hearn, who will speak. Speaker at the closing luncheon will be George W. Altwater, executive director of the Port of Houston. Henry M. Broadnax, director of trade development at the Port of Houston, is general chairman of the seminar. (Port of Houston News Release)

### Supertankers at port

Los Angeles, Calif., March 29:—The economics of whether to dredge the harbor deeper or to use offshore monobuoys to handle the huge supertankers of the future will be the subject of a study authorized today (Wed., March 29) by the Los Angeles Board of Harbor Commissioners.

The Board authorized the general manager to negotiate with consulting engineering firms and to select one for the study, since the ramifications of the problem warrant detailed investigation by specialists in the design of marine oil terminal facilities.

While a primary purpose of the study is to compare the cost of offshore buoy construction and operation versus tanker berths inside the breakwater, consultants will also be required to recommend a schedule to develop oil tanker facilities which will keep the Port of Los Angeles in the competition for anticipated increased petroleum traffic using tankers of ever-growing size.

Department research has shown tankers of 250,000 deadweight tons will soon be in use on the West Coast, requiring greater depths of water if they are to enter or serve Los Angeles Harbor.

Present harbor depths of 51 feet can only handle tankers of a maximum 120,000 deadweight tons.

Proposals include possible dredging to 80 feet in parts of Outer Harbor that might be used as fairways and terminals for the monster-sized ships.

Study is to be made of at least

three alternate buoy locations outside the Harbor, but within the offshore jurisdictional area of the City of Los Angeles. Consideration must be given to the comparative revenue potential of the two means of handling the big oil tankers.

Environmental impact is another phase of the study to be reported on, although in-depth investigation in this area would be made when the project proceeds to the final design stage.

Current indications that the long-pending Alaska pipeline project may soon be producing 2,000,000 barrels of oil per day, with all or much of it coming to the West Coast, have prompted port officials to accelerate plans to receive the oil. (Port of Los Angeles)

### Nation's leading seaport

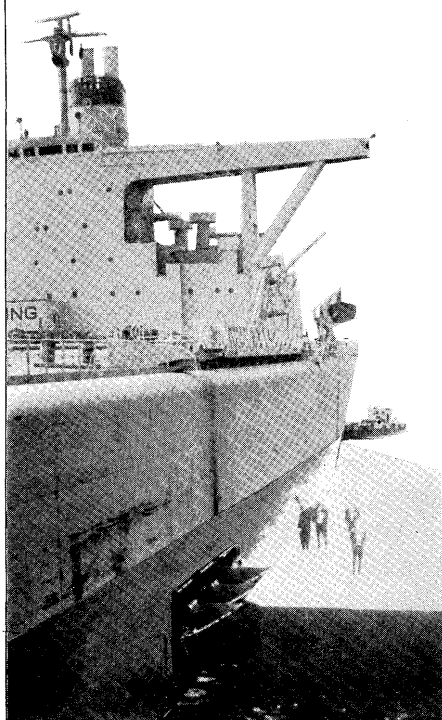
New York, N.Y., March 13:—A statistical analysis of vessel activity at the eleven leading ports in the United States during 1971, recently released by the Maritime Association of the Port of New York, reveals that the Port of New York strengthened its historically dominant position as the nation's leading seaport. The study emphasizes the fact that in 1971, as in previous years, the New York-New Jersey Port continues to remain far ahead of any other American port in terms of vessel activity, its share of total volume of ship traffic amounting to 20.9%, up 0.9% from the 20.0% recorded in 1970.

The 18,193 arrivals and departures of ocean-going vessels, represented just about twice the activity shown at any other United States port. An analysis of the figures on a month-to-month basis indicates that vessel arrivals and departures at the Port of New York were fairly constant throughout the year, averaging about eight-hundred in each category a month. The month of September 1971 showed the greatest activity, with a high of 884 arrivals and a total of 918 departures. The study further revealed that of the 18,193 vessels using the Port of New York in 1971, 70.1% were foreign-flag vessels representing fifty-five nations throughout the world. (News from The Port of New York Authority)



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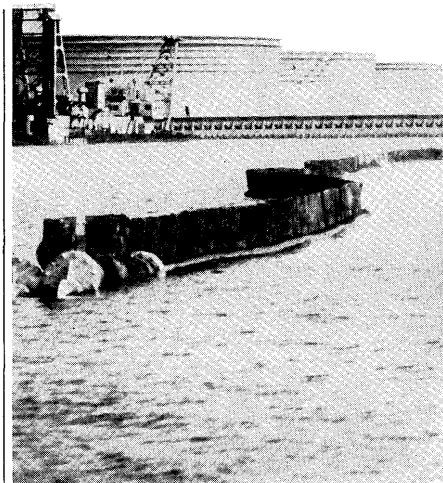
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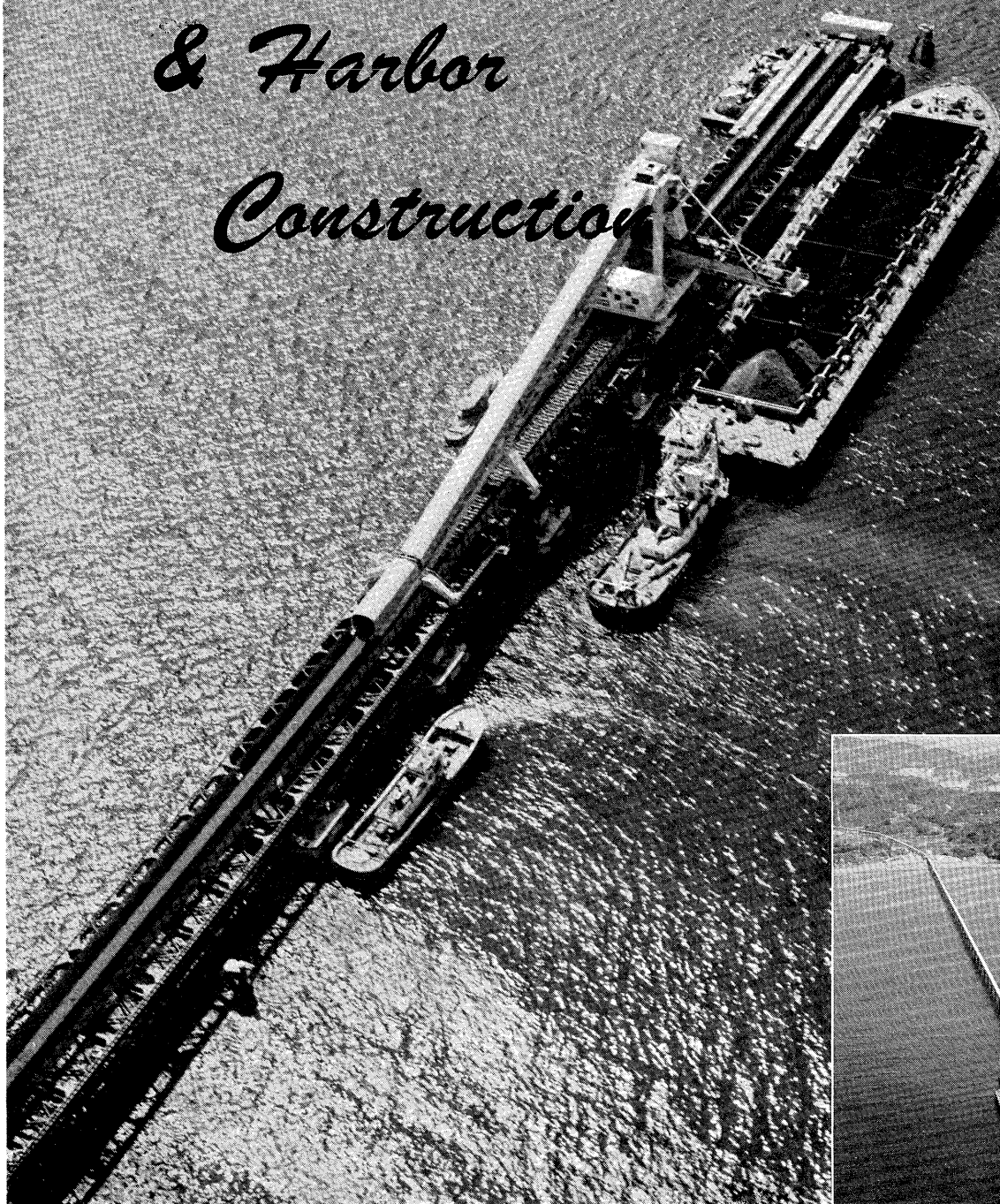


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# *Locust Point Complex Dedicated; Baltimore's Largest Cargo Pier*

**News from Maryland Port Administration**

Baltimore, Md., April 12:—The largest single general cargo pier in the port of Baltimore, known as Pier 4-5 complex, was dedicated today during ceremonies at Locust Point Marine Terminal.

The noontime dedication ceremony, sponsored by the Maryland Port Administration; Ramsay, Scarlett and Company, Inc., and the Chesapeake and Ohio/Baltimore and Ohio Railroads, included a reception and luncheon in the complex's new transit shed and was attended by more than 200 distinguished guests.

The Pier 4-5 facility, a two-berth, open pier served by the fastest tandem gantry cranes on the East Coast, combined with a two-berth shedded pier, represents a total investment of almost \$10 million. The modern complex has a total area of 450,000 square feet (176,960 square feet of which comprises the transit shed), length of 1200 feet, and width of 375 feet.

Other features of Pier 4-5 include 10 dock side doors on the loading platform and 16 on the shed apron; terminal rail service provided exclusively by C&O/B&O; truck loading; a channel depth in slip of 34 m/w; and a paved backup area totaling 11 acres.

Designed as a multi-purpose pier, 4-5 will primarily handle general cargo, with the open pier area equipped to take heavy lift cargo, scrap and project shipments. The complex is also capable of providing service to ships unloading a limited number of containers. In addition, a 13,500 square foot portion of the transit shed will house the latex production facilities of Steinhall and Company, Inc., a latex company which is moving from New York to Locust Point. This specially parti-

tioned area of the shed will have laboratory and office facilities and ten latex tanks with a total capacity of 535,000 gallons for the production of natural latex.

Leasing three of the pier's four berths will be Ramsay, Scarlett and Company, Inc., steamship agents and operators-foreign freight forwarders, with Baltimore offices at 19 South Street.

The completion of Pier 4-5 is part of an overall renovation and construction project at Locust Point that began in 1964 when the Maryland Port Administration began a 40-year lease of the piers on the north side, exclusive of the grain pier, from the Baltimore and Ohio Railroad. Since that time, over

\$14.5 million has been spent on such work as the repairing of roofs and decks of piers, the replacing of condemned water towers, the installation of a workable and efficient heating system, the removal of unsafe structures and other construction projects.

In July 1970, the MPA purchased 11 acres of backup area on the north side of Locust Point and also negotiated for the purchase of a portion of land on the south side of the terminal. With the major portion of restoration to the north side now completed, the south side area takes no major importance as the site for future development of a new, modern three-berth marginal cargo handling terminal.

The MPA holds approximately 30 acres of land at south side with riparian rights—a total development area of 125 acres. It is estimated at this time that expenditures for the development of a cargo terminal on the site that will extend from Port Covington to the United Fruit pier, the development of a bulkhead and the construction of a planned special pier will exceed \$15 million.



**In the center of this aerial photograph of Locust Point Marine Terminal is the new Pier 4~5 Complex, largest single general cargo pier in the Port of Baltimore, representing an investment of nearly \$10 million by the Maryland Port Administration.**

## *Port of Houston Selected As West Gulf Terminal*

Houston, Texas:—The Port of Houston Authority's new multi-million dollar facility at Barbours Cut has been selected as the West Gulf terminal by Delta Steamship Lines for their new large container and barge-carrying vessels when go into service the first of next year.

In a letter to Port Executive Director George W. Altvater, Delta's President J. W. Clark said the decision had been taken after "exhaustive studies of all major Gulf ports" and that the Port of Houston had met all requirements.

In addition to existing and planned port facilities, Captain Clark said Delta was interested in cargo concentration, growth potential, market trends and the ability and energy of a port's personnel to "get the job done."

"Our selection of the Port of Houston as the West Gulf Terminal point for our LASH/Container operations is indicative of the fact that your port has not been found wanting in any of these areas," Clark said.

Delta's announcement was the fourth in a little more than two months by a steamship line selecting the Port of Houston as its West Gulf terminal for full-scale container or barge-carrying operations.

In January the COMBI Line, a combination of Hapag Lloyd and the Holland America Line, named Houston the West Gulf port for its LASH vessels and two weeks later SEATRAN Line chose Houston as its only Gulf port for a full container service and began service in early February. In mid-March the Intercontinental Air, Sea-Land Corporation announced sailings from Houston in early April of its full container service.

"We are elated by Delta's choice for their new service," Altvater said. "It is further evidence of the widespread acceptance the Port of Houston is receiving for its leader-

ship in the whole container and barge-carrying movement. Delta is the most recent of the steamship companies to justify our faith in the facilities we have completed and in those we are undertaking.

"All of this swing to Houston simply points up the dynamic importance of Houston's industrial district and distribution center, as well as the great Southwest, in the international traffic picture."

The letters LASH stand for Lighter Aboard Ship and the new Delta vessels will be unique in that in addition to being full barge- or lighter-carrying ships they will also carry containers in their forward holds. At present, the new LASH and container ships of other lines are either all barge or all container.

These new ships will be nearly 900 feet long and 100 feet wide with a maximum draft of 37 and a designed draft of 28 feet. They will carry 26,700 tons of cargo at a speed of 22 knots plus and can accommodate 74 barges and 288 containers. Should a vessel wish to carry containers only, it can take another 1452 containers in place of the 74 barges.

The Port of Houston's Barbours Cut facility is located 25 miles down-stream from the Turning Basin and is also just 25 miles in a straight line from the Gulf of Mexico to a point where the Ship Channel enters Galveston Bay.

Dredging to accommodate the deepwater ships was completed early this year and construction is underway on a U-head wharf which will serve both LASH and container ships.

The COMBI Line's first LASH vessel will dock at Barbours Cut in early July and a second vessel will be completed for the service later in the year. Delta's target date is January of 1973, at which time the Port of Houston will have the U-shaped feature of its wharf head completed to accommodate trucks

on which the containers can be carried. A four acre container marshalling area near the wharf will also be ready at that time as will an additional barge fleeting area.

In addition to its present facilities under construction, Barbours Cut has been authorized for Phase II of its development by the Port Commission and plans and specifications for that work are now underway.

Phase II, as plans are now developing, will include two wharves which will each be 1000 feet long as the new LASH/Container vessels coming off the ways are running between 800 and 900 feet and may grow larger.

There will also be spacious paved area immediately adjacent to the wharves for the marshalling and handling of the containers and a 1200 foot barge slip within the wharf area to provide for loading and unloading barges at the ship's location. Also there will be a transit shed with 200,000 square feet of space, and four container cranes.

Across the way on the north side of Barbours Cut Phase II will provide an enlarged barge fleeting area and authority has been given to proceed with this dredging immediately to give Houston, all in all, a LASH/Container facility unequalled in the Gulf.

### **Elizabeth seaport**

New York, April 13:—Construction work for the new 232-acre Sea-Land container terminal at the Elizabeth-Port Authority Marine Terminal is steadily moving forward with the award of two additional contracts by the Port Authority. The contract awards were announced today by the Authority following the Annual Board meeting.

The first contract covers paving of the wharf at Berths 96 and 98, at the southeast corner of the Elizabeth seaport, and of approximately 38 acres of adjacent upland area. Water, sanitary and storm drainage systems also will be installed by Gallo Asphalt Corporation of Irvington, New Jersey, the low bidder, at a cost of \$1,411,411. The job will begin immediately and be completed this fall.

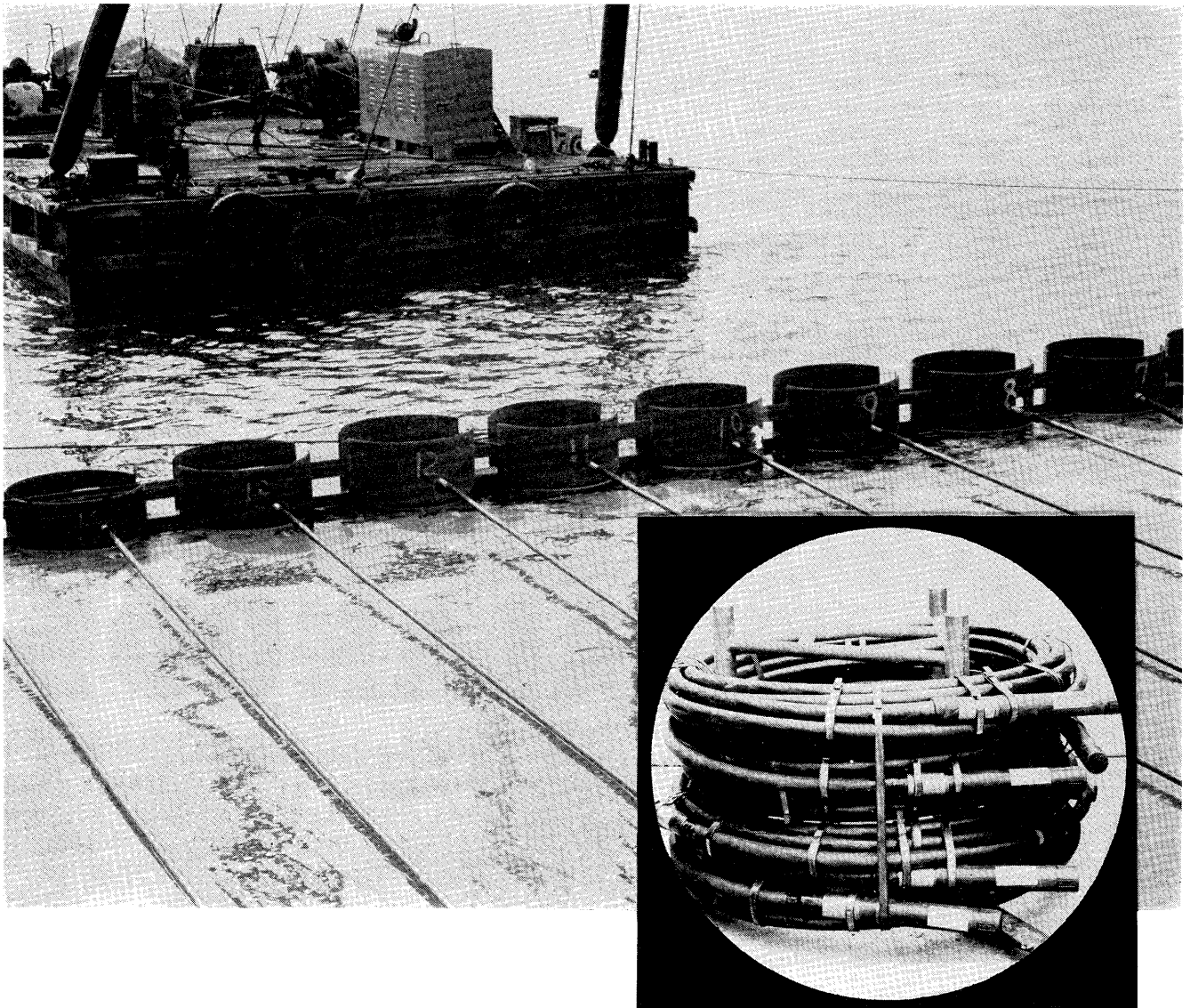
(Continued on Page 41)



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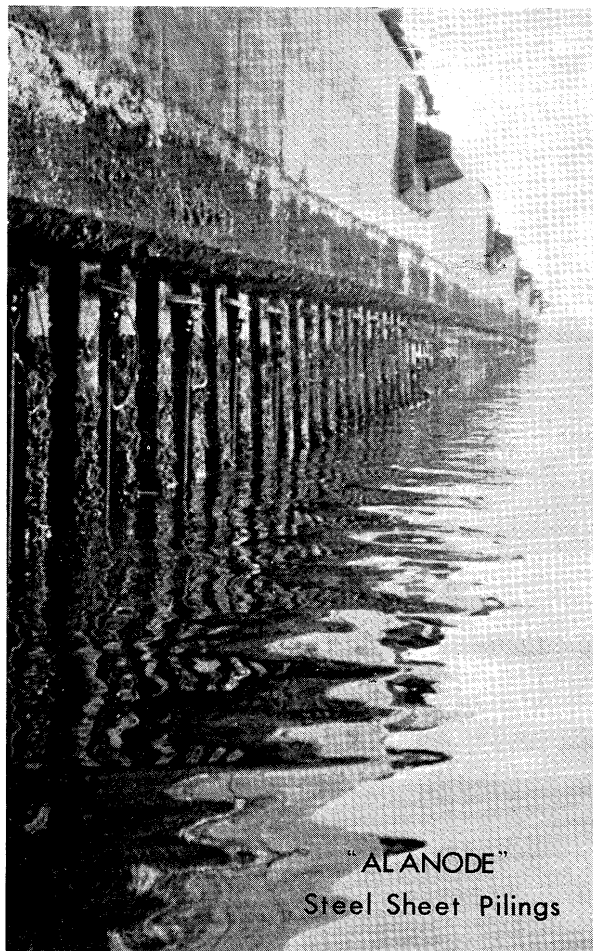
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The second contract calls for construction of a lighting and power distribution system for the new Sea-Land complex. An electrical substation, including a transformer, switchgear and associated conduit and cables, will be furnished and installed. These will eventually handle all the electrical requirements of the buildings, container cranes and outdoor lighting. The job will be done by Santaniello, Inc. of Newark, New Jersey at their low bid price of \$831,500. Work will begin immediately and be completed this fall.

Sea-Land, pioneer containership company, was the first tenant at the Elizabeth seaport when it opened ten years ago. From its existing 132-acre terminal at Elizabeth, Sea-Land now offers ten scheduled sailings a week and serves trade routes around the world with a fleet of 61 containerships.

The new 232-acre container facility will accommodate all the needs of Sea-Land's SL-7 super-containerships scheduled to enter service this summer. These 33-knot vessels, 942 feet long and 105 feet wide, will be able to carry up to 27,000 tons of containerized cargo. The new facility will provide 4,519 feet of berthing space, 40-foot-depth berths, a turning basin and wider access channels to the berths.

Already the world's largest and most modern containership facility, the Elizabeth marine terminal is handling a steadily increasing volume of goods shipped in containers to worldwide markets. Upon completion in 1973, the \$205 million Elizabeth seaport will have over three miles of containership berthing area supported by over 1,000 acres of container marshalling and distribution space. When fully operational, the facility is expected to handle some 12 million tons of containerized cargo a year.

## ***Port Authority Begins Operation of Interim Passenger Ship Terminal***

### **News from The Port of New York Authority**

New York, Apr. 11:—There will be a pleasant surprise awaiting transatlantic passengers when the Italian Line's S.S. Raffaello, inbound from Genoa, docks at Pier 86 at the foot of 46th Street on Manhattan's west side at 8:00 A.M. on Thursday, April 13. Attractive Port Authority "Golden Girls" in smart nautical blue and gold uniforms will be on hand to welcome these ocean travelers to the nation's foremost port and assist those who may have language difficulties or need travel information.

These passenger accommodation agents are in the vanguard of the streamlined services for steamship passengers to be available upon completion of the Port of New York-New Jersey's new Passenger Ship Terminal in 1974.

With the arrival of the S.S. Raffaello that morning, the Port Authority will begin operation of interim passenger ship terminal facilities at Piers 40, 84, 86 and 97 along the Hudson River in mid-Manhattan. These piers, to be used by all passenger vessels, will provide ocean travelers with a comfortable and attractive temporary gateway to the bi-state Port.

City officials and representatives of the Italian Line and the Port Authority will be on hand to greet the first passengers to use newly refurbished Pier 86, which had been idle for several years. The Port Authority has painted the interior of Pier 86 and adjacent Pier 84, and made repairs to elevators and moving stairs, and to the heating and electrical systems.

The Golden Girls are bright, friendly, bilingual college students from the metropolitan area. They will serve the same function at the piers as the Golden Girls who have

assisted travelers at the International Arrivals Building at Kennedy Airport since 1968.

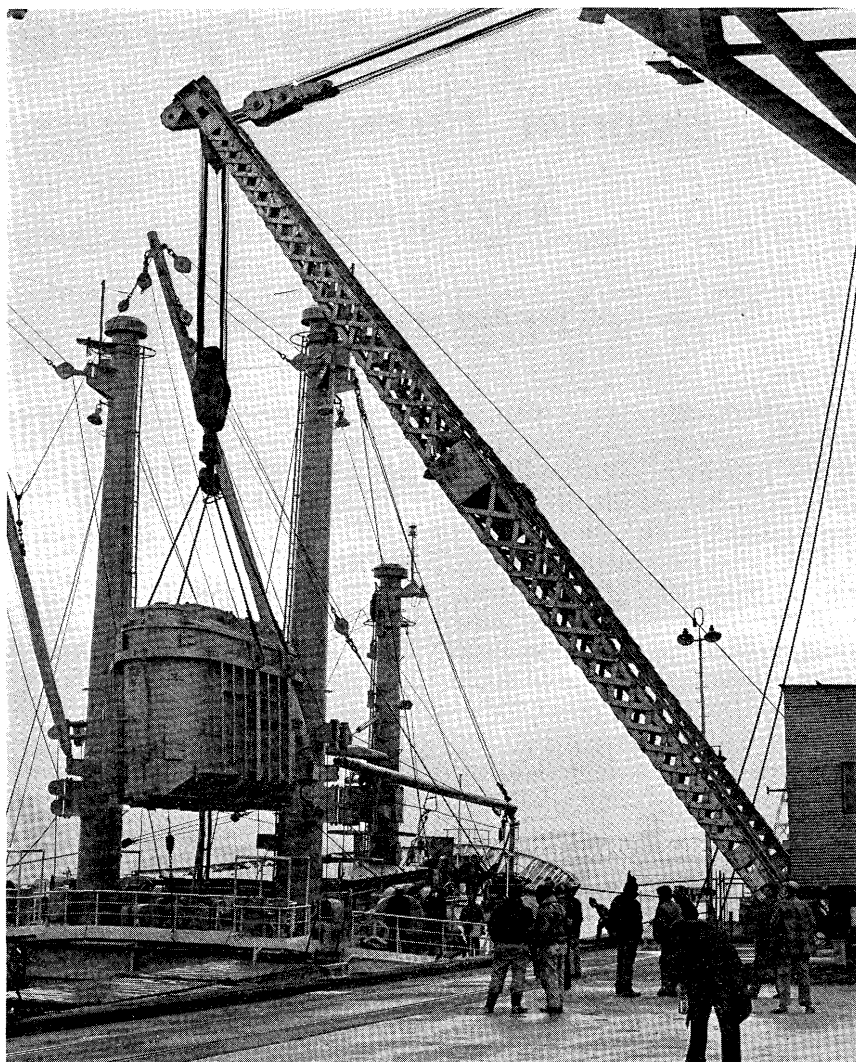
Passenger ship operations at existing Piers 90 and 92 will cease by Monday, April 17 so that construction of the new Passenger Ship Terminal can continue. The Home Lines and the Italian Line, which have been operating from Pier 90, will move to Pier 86. Cunard Line, French Line, North German Lloyd and Flagship Cruises, Inc. will move from Pier 92 to Pier 84. The steamship lines now located at Piers 40 and 97 will continue their operations from these piers until construction of the new terminal is completed.

The new Passenger Ship Terminal is under development by the Port Authority at the request of the City of New York. It involves reconstruction of the barnlike and obsolete Piers 88, 90 and 92, between 48th and 52nd Streets, to provide six ship berths with the most modern passenger facilities. In addition, Pier 40 at Houston Street will be used as a companion three-berth facility, thus providing a total of nine steamship berths to accommodate transatlantic and cruise liners.

When the terminal is completed in the spring of 1974, it is estimated that 750,000 oceangoing travelers will use the facility during the first year of operation.

The new terminal will cost an estimated \$35,900,000. The Port Authority will construct and operate the terminal under a 20-year lease with the City. The bi-state agency will collect user charges from the steamship lines to cover the rental payments to the City and operating and maintenance costs.

Designed to serve all passenger vessels calling at the Port of New



Portland, Oregon, January 6, 1972:- Port of Portland Terminal 1 Berth 1. 132.5 L/ton Swiss-built transformer being discharged with the Port of Portland 150 ton stiff leg crane. The transformer was delivered to Portland by the "M/S Heilbrown", Hapag-Lloyd Line.

York, the new Passenger Ship Terminal will have air-conditioned lounges, roof-top parking areas and efficient Customs facilities. A ramp and roadway system adjoining the terminal will enable passenger vehicles and taxis to load and unload their passengers rapidly and conveniently. These new facilities will give the Port of New York the comfortable and attractive passenger ship terminal it has needed for so long.

### Officers elected

New York, Apr. 13:—The Commissioners of The Port of New York Authority today reelected James C. Kellogg, III of New Jersey to his

fifth term as Chairman, and Hoyt Ammidon of New York to his third term as Vice Chairman. The elections were held at the Commissioners' Annual Meeting at 111 Eighth Avenue this afternoon.

Mr. Kellogg has been a Commissioner for the past seventeen years and was Vice Chairman for eight years. Mr. Ammidon has been a Commissioner since 1968.

The Board of Commissioners of the Port Authority comprises twelve members, six of whom are appointed by the Governor of New Jersey and six by the Governor of New York for overlapping terms of six years. They serve without compensation. There are currently two vacancies

on the Board—one from New York and one from New Jersey.

The Commissioners announced that Matthias E. Lukens would continue as Acting Executive Director of the bi-state agency. He was appointed to that position in December following the announcement of the retirement of Executive Director Austin J. Tobin effective March 31.

Patrick J. Falvey was formally elected as General Counsel to succeed Sidney Goldstein, who has retired after 20 years' service in that position. Mr. Falvey's selection to be General Counsel had been announced by the Board of Commissioners last month. (News from The Port of New York Authority)

### Canal lock damaged

New Orleans, La., April 11:—The Industrial Canal lock in the Port of New Orleans was substantially damaged by the M/V CALAXY FAITH on April 5. Preliminary estimates indicate that from two to four weeks will be required to effect necessary repairs.

Port Director E. S. Reed stated that damage to the Industrial Canal lock has caused no adverse impact on barge and ship traffic calling at city front Mississippi River wharves in the port. The temporary closure of the Industrial Canal lock, located downstream from the main complex, and east of the River has, however, stopped all barge movement between the Mississippi River and the Industrial Canal, as well as between the River and the Gulf Intracoastal Waterway to the east. Vessels utilizing the port's Public Bulk Terminal, Florida Avenue and Galvez Street wharves must use the Mississippi River-Gulf Outlet **only**.

Mississippi River traffic is not effected by this closure. (Port of New Orleans News Release)

### Trade with Russia, China

Oakland, Calif., March 30:—Trade with the Soviet Union and People's Republic of China will be focal points of two major addresses during the International Cargo Handling Coordination Association technical conference, to be held April 20-21 in Oakland, Calif.

Washington, D.C. attorney Arthur T. Downey, who recently con-

cluded two and a half years of service as a Presidential advisor, will concentrate on trade with Russia during an April 20 dinner address. Downey, who was on the White House staff of Dr. Henry Kissinger as a specialist in U.S.-Soviet relations, will discuss new horizons in commerce with the world's second largest industrial nations.

"The president's China visit and upcoming trip to the Soviet Union emphasize that our post-war foreign policy is now dead, and that we are in a transition period to a new type of foreign policy," Downey said recently. "By understanding the factors involved in that policy change we can achieve a greater appreciation for the possibilities of increased future trade."

Professor Stanley Lubman, a specialist in Chinese trade law and its usage at the University of California—Berkeley Center for Chinese Studies, will discuss "Trading Methods With the People's Republic of China" during the April 21 morning portion of the program.

Lubman, a former practicing attorney, studied Chinese language and institutions at Columbia University from 1963 to 1965 and conducted research on China in Hong Kong and Japan from 1965 to 1970. More recently Professor Lubman has concentrated his studies on China's foreign trade, gathering information on the country's negotiating practices, contracts and dispute settlement procedures.

He has testified before the United States Senate Foreign Relations Committee on Chinese foreign trade and on Sino-U.S. relations. His writings about China have appeared in the New York Times and Wall Street Journal, as well as in many of the nation's leading law reviews.

The ICHCA conference in Oakland, expected to attract more than 200 shipping industry executives from throughout the world, will be hosted by the Port of Oakland, with Port Executive Director Ben E. Nutter serving as general chairman for the event.

Included on the program are five panel discussions with topics related to efficient freight movement, the presentation of special papers by well-known industry speakers, a tour

of Port of Oakland container and general cargo facilities and other events. (Port of Oakland)

## Record container trade

Oakland, Calif., April 12:—A record amount of cargo was shipped through the Port of Oakland during 1971 as containerized tonnage figures for the year reached an all-time high, Y. Charles Soda, President of the Oakland Board of Port Commissioners, announced today.

During the year 5,805,358 revenue tons of cargo moved across Port of Oakland wharves of which 3,887,698 tons were in containers.

The total, Oakland's eighth consecutive record year of shipping, was achieved despite the 100-day West Coast dock strike. "That is no way minimizes the effect the strike had on shipping at Oakland," Soda said. "We estimate that we lost between a half-million and a million tons of cargo because of the dock tie up."

The container shipping figures represent an increase of 236,999 tons over the record set in 1970 and marked the tenth straight year in which containerized tonnage has risen at the Port. During the year 319,624 20-foot container equivalents were shipped through the Port as containerized freight constituted 80 percent of all general cargo handled and 67 per cent of the Port's total tonnage. Oakland is the largest container port on the Pacific Ocean and is second only to New York in the world.

Total cargo handled at the Port rose by 206,920 tons from the 5,598,438 tons handled in 1970. Break-bulk cargo was also up, Soda noted, from 761,850 tons in 1970 to 989,523 tons last year, a gain of 227,673 tons.

Soda attributed the large increases to the addition of new facilities through completion of the Seventh Street Terminal, largest container terminal on the West Coast, and the inauguration of new steamship operations by Pacific Australia Direct Line and ScanStar.

"New trade routes added by Sea-Land Service and Seatrain Lines, a significant increase in import steel and additional conventional cargo handled at the Matson Terminal were also major factors," Soda said.

As for the future Soda sees as much as 6.5 million tons of cargo moving through the Port in 1972, of which about 4.3 million tons would be containerized.

"A full year of operations by the new lines and services added recently at the Port should bring us to that level," he says. "And looking farther ahead, the completion next year of our Middle Harbor Container Terminal and expansion of the Seatrain Terminal make the prospects for continued tonnage increases extremely encouraging." (Port of Oakland)

## Tioga Marine Terminal

Philadelphia, February 16:—The first general cargo vessel of the Norwegian America Line to dock at Philadelphia's new Tioga Marine Terminal will arrive here on Thursday, Feb. 17, it was announced today by Harry R. Belinger, City Representative and Director of Commerce.

The "M.S. Topdalsfjord" will load and unload general cargo between Philadelphia and Oslo, Stockholm, and other Scandinavian ports. The NAL will continue this service every week thereafter from the local Terminal.

The Line has been serving shippers at the Port of Philadelphia for some 40 years, but this is the first time they will be berthing at the Tioga Marine Terminal.

According to Erik Murer, Director for North America for the Norwegian America Line, the shift in operations was a direct result of the modern new facilities built at the 90-acre Tioga Terminal.

J. A. McCarthy, Inc., 700 Lafayette Bldg., is the Philadelphia agent for NAL, which will co-host a noon-day reception aboard the vessel tomorrow. (City of Philadelphia News Release)

## Far East service

San Diego, Calif., March 27:—The States Steamship Company's cargo ship S.S. IDAHO will call at the Port of San Diego in late April. A company official noted that the stop will be the first in a monthly direct service schedule connecting ports throughout the Far East and Southern California.

(Continued on Next Page Bottom)

# ***U.S. Lines Announces Full Container Service For The Port of Savannah***

Savannah, Ga., April 7:—The Georgia Ports Authority announces the opening of its multi-million dollar "Container Central" with the naming of Savannah by U.S. Lines for full Container service direct to Europe.

United States Lines will reinstitute a new regular fortnightly South Atlantic fully containerized express service between East Coast ports and Europe with the sailing of the SS American Leader from New York on May 14th. It was announced today by Edward J. Heine, Jr., President of the shipping company.

Mr. Heine said, "This move was particularly gratifying since it represents another progressive step in the development of the Line's 15,000 mile tri-continent services. It also marks the comeback of the American-Flag Shipline to its traditional and highly important South Atlantic run, and the resumption of service with the strategically located Ports of Philadelphia and Savannah.

"We view our return to Savannah as a major breakthrough opening a new and important international gateway through which shippers in wide trade areas in the Midwest and Southeast may benefit from the many economic efficiencies and conveniences of containerization."

The new schedule also provides for regular direct calls at the Port of Philadelphia which had been temporarily suspended during the period when the Line reorganized and con-

verted its fleet to containerization.

United States Lines is well experienced in the South Atlantic trade, having previously operated the former South Atlantic Steamship Company fleet from ports in the Carolinas, Georgia and Florida to Northern Europe for several years. "The Red-White and Blue funnels and Spread-Eagle Houseflag will once again be familiar sights in the South Atlantic", Mr. Heine said.

The company's speedy 20-knot container leader-class vessels will maintain the new route making the transatlantic crossing between the East coast and Europe in nine days.

Containerships will depart New York on Sunday—call at Philadelphia on Monday and Savannah on Wednesday. Scheduled European calls will be at Rotterdam, Bremerhaven and Liverpool. All of the company's regular North European destinations will also be served. The flow of cargoes will commence from Europe with the westbound sailing of the SS American Leader prior to her maiden trip out of New York.

In Savannah, Hohenstein Shipping Company has been named general agent for the company. At Savannah, vessels will use the Georgia Ports Authority's "Container Central" berth 58 at the Garden City terminal on the Savannah River. The selection of Savannah was largely influenced by results of a recent mail survey conducted by the Line of the shipping needs of customers located throughout the Southeast and Midwest.

In Philadelphia where United States Lines maintains its own offices, vessels will utilize the Tioga Marine Terminal at North Allegheny Avenue and the Delaware River.

These new facilities combine up-to-date efficiency and equipment with capability to handle practically

all commodities either—full or less-than-container loads in 20 or 40 foot containers.

The addition of the New South Atlantic service by United States Lines now affords regular high speed container service on 11 major routes between Europe, Intercoastal U.S.A., Hawaii and the Far East. The reactivation and expansion of service to Philadelphia and Savannah brings to well over 50 the number of points throughout the world served by United States Lines Container System.

## **Happy captain**

Seattle, Wash., March 24:—To celebrate her release from the not-so-benevolent bindings of the Jones Act, the auto-liner "Wickersham" of the Alaska Marine Highway System will hold open house for the general public on Easter Sunday, April 2, from 1 to 4 p.m. at Pier 48.

This sleek cruise ship was built in Norway and since the Jones Act forbids foreign built vessels to haul passengers between U.S. ports, this State of Alaska owned vessel has been unable to sail directly between Seattle and Alaska. She has been operating from Seattle to ports in British Columbia thus causing her Alaska-bound passengers to leave the ship and take passage on one of the other big auto-liners of the Alaska Marine Highway System fleet or to board in Vancouver, B.C. for the voyage north.

Since the President has just signed a 3-year waiver permitting the "Wickersham" to operate in direct Seattle/Alaska service, Captain H. J. "Red" Lockert, director of the system, is inviting everyone to come aboard to inspect the vessel and to preview their travel film "High Road to Alaska" which will be shown continuously in the ship's theater.

The "Wickersham" was granted this special waiver since a \$20 million replacement vessel is now under construction by Lockheed Shipbuilding and Construction Company, Seattle and will be delivered in about 27 months. The "Wickersham" may then be sold.

When she sails on her first "direct-through" voyage from Seattle

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The S.S. IDAHO sails April 24. Along with Long Beach and San Diego, the vessel will call at the ports of Yokohama, Kobe and Osaka, Japan; Pusan and Inchon, Korea; Naha, Okinawa and Hong Kong, B.C.C.

A sister ship, the S.S. MONTANA makes the trip June 3 with the IDAHO sailing again June 13. (Port of San Diego News Release)

to Alaska about midnight Monday, April 3, she will by-pass (but in a friendly way) those Canadian ports where she has been restricted by the Jones Act, and head directly for Alaska. At each Alaskan port — Ketchikan, Wrangell, Juneau, Skagway, Haines and Petersburg—she will be given civic receptions and she will reciprocate by having open house. (News Release from Port of Seattle)

## Cargo, tanker fleet

New York:—An Asian Development Bank survey has recommended the establishment of a regional cargo and tanker fleet for Southeast Asia.

The \$2.9 million survey, jointly financed by the ADB, the UNDP and the United States, further recommends a multinational regional airline as a "desirable long-term objective."

Begun in 1969, the Southeast Asian Regional Transport Survey covers Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and the Republic of Viet-Nam. Its report will be published by the ADB in April 1972.

The purpose of the recently concluded survey is to provide a basis for the coordinated development of transportation in Southeast Asia during the next two decades.

Conducted by Arthur D. Little, Inc., a U.S. consulting firm, in collaboration with five other firms, the survey makes far-reaching recommendations covering national and regional transportation and other sectors of the region's economy.

It also includes in-depth studies of the growth potential of important economic sectors such as agriculture, fishery, forestry, minerals and manufacturing.

Referring to regional maritime transport, the survey recommends:

- improvement of regional mariner navigation aid systems;
- region's participation in a major worldwide container ship consortium;
- a regional tanker fleet for carrying palm oil and other bulk cargoes;
- a regional shipping fleet of log and lumber carriers;
- and a regional fleet of dry bulk

carriers for maize, ores, sugar and rice cargoes.

The survey recognizes the practical limitations on regional cooperation in the field of air transportation. It spells out the conditions under which an airline, jointly owned by the countries of the region, could be set up. As a first step, it recommends the establishment of a regional flight inspection service.

The report also emphasizes some important institutional and policy changes which must accompany the recommended investment programme. It also underlines the need for an effective regional organization for implementing regional transport projects. (Pre-Investment News, UNCTAD, U.N., February 1972)

## New cargo record

Melbourne:—The Port of Melbourne's cargo tonnages for 1971 once again showed a distinct increase when more than 16 million tons of cargo passed across its wharves—a further illustration of the ever increasing role played by the Port in the economy of the community.

Total trade for 1971 was 16,078,323 tons including 196,348 tons of transshipment cargo. This was an increase of 1,805,235 tons in comparison with the previous year.

The acceptance of roll-on roll-off, unit load, and containerization was indicated by the decline in the number of calls made by conventional overseas ships to the Port during the year. It is obvious that these new concepts in shipping have been proven and will continue to be the favoured method of cargo carriage, particularly in the overseas trade.

In the interstate shipping trade a slight increase in shipping calls occurred.

During 1971 overseas ships paid a total of 1629 calls to the Port of Melbourne which was 119 less than the previous year, whilst interstate coastal trade vessels showed an increase to 1308 calls, this being 64 higher than the previous year.

The decrease in calls by ships in the overseas trade has resulted in part from the increased number of cellular ships with considerably increased cargo capacity now operating in the Europe-Australia service and to some degree from disruption

to shipping services owing to industrial problems in some overseas countries.

The growing demand for a coastal feeder service to major Australian ports and the extension of services by Australian Shipping Companies is shown in the increased number of calls by interstate vessels totalling 1308 as against 1244 in the previous year.

Throughput cargo showed substantial increases in all but one classification, that of overseas imports.

The increase of 28% in transshipment from 153,161 tons in 1970 to 196,348 tons a gain of 43,187 tons, has resulted from the impact of new shipping concepts and the increased demand for coastal services out of Melbourne, in particular to the island State of Tasmania.

The total containerized cargo handled by the Port of Melbourne during 1971 also showed a distinct upward trend to 3,583,614 tons, up by 832,047 tons or 30.2%.

Overseas import trade during the year fell by 552,980 tons to 4,716,637 tons; while exports increased 490,401 tons or 14.7% to 3,819,929 tons.

The decrease in overseas imports was in the main occasioned by an increase in delivery of crude oil from Bass Strait oil fields, import of overseas crude oil was down 804,496 tons, fuel oil, motor spirits, wood pulp, and timber were amongst the other overseas imports to show a decline. The principal cargoes to show an increase in this category were motor vehicles and parts, phosphatic rock, machinery and iron/steel.

Wool continued to be the Port of Melbourne's main overseas export cargo, showing an increase of 63,637 tons to 886,550 tons for the year, other principal items showing an increase being malt, meats, hides and skins, and fresh fruit—the main items to show a decrease being scrap metal, casein, milk/cream and flour.

Coastal and interstate imports showed a 48.2% increase (1,748,072 tons) to 5,377,667 tons, the major segments of this being crude oil up 1.5 million tons to 2,706,998 tons, fuel oil, iron/steel and gypsum.

Exports figures out of Melbourne

to other destinations on the coast amounted to 1,967,742 tons, an increase of 76,555 tons compared with the previous year. Principal cargoes showing an increase in this category being oil in bulk, passengers' cars and fuel oil, motor spirits, new cars, and fresh fruit showing a decline.

Of the 16,078,323 tons handled during the year, 3.58 million tons was containerized, 6,191,384 tons general cargo and 6.1 million tons bulk commodities, and 196,348 tons were transhipped. (Melbourne Harbor Trust Port Gazette, Feb., 1972)

### **"Public" automobile shed**

Kobe:—On February 1, 1972, a new automobile shed commenced its operation, which had been constructed by this Bureau on a 10,000 sq. m. city-owned site on the north of the 2nd-pier of Maya Piers, Kobe Port.

The 4-storied shed is of reinforced concrete, consisting of two houses named "A" and "B", with total floor space of 23,560 sq. m., and with total construction cost having been ¥675 million.

The 1st floor of House-A was designed for "Maya Terminal Cargo Station" of the Japan National Railway siding, the construction work of which is now under way towards near future completion.

The shed is capable of storing about 1,800 automobiles at one time, and it should be noteworthy that this is the first "public" automobile shed that has ever been operated in Japan, different from those which have been owned, managed and exclusively used at various ports by respective individual carmakers.

For managing this shed an operation company, named "The KOBE-AUTOBASE Inc.", was established jointly by Kobe City Government (Port & Harbor Bureau was in charge.), the Japan Automotive Industrial Association and a few forwarding companies located in Kobe Port.

As any one who wishes to use the shed may make application to this company at any and each time, a large part of the business of this company is to co-ordinate their applications and works of carrying-in and -out of the cargos.

The shed is to handle not only



Public automobile shed—Port of Kobe.

exporting automobiles but also imported ones and, moreover, exporting used-cars.

For the readers' information, the total number of automobiles exported through this Port during 1970 was approximately 64,000, of which main destinations were South-East Asia countries, the Union of South Africa, U.S.A. and so on. The number is increasing year by year. (News Release from Port and Harbor Bureau, Kobe City Government)

### **New pilgrim ships**

Penang:—Two new pilgrim ships, the "Malaysia Baru" and "Malaysia Raya", belonging to the Great Malaysian Lines Sdn. Bhd. made their maiden calls at the Port of Penang to convey Malaysian pilgrims to Jeddah during the 1971 season. They have replaced the "Kuala Lumpur" and "Anshun" which used to carry the pilgrims during the past years.

The two new ships are fully air-conditioned, each having a capacity for 1,850 passengers with facilities for a prayer hall capable of accommodating 1,000 people and a swimming pool. Specially trained cooks are employed to cater for the needs of the pilgrims.

The "Malaysia Baru" was the first ship to call at Swettenham Pier, Penang, on 4th November 1971 and made two further trips on 13th De-

cember 1971 and 9th January 1972. The Malaysia Raya called on 23rd November 1971 and 20th December 1971. Both the ships will make a total of 6 trips to carry the returning pilgrims. (Berita Pelabohan, January, 1972)

### **Regular Members' Committee**

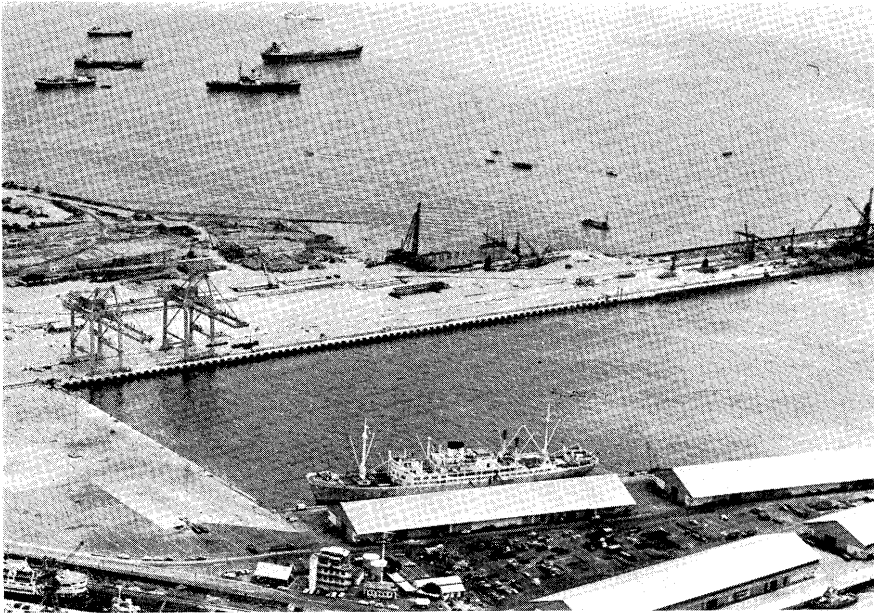
Wellington, N.Z.:—On Friday 17th March 1972 at New Plymouth a meeting of Regular Members of I.A.P.H. was held in the office of the Taranaki Harbours Board.

The meeting was to discuss various matters which might require joint consideration by the Regular Members of I.A.P.H. in New Zealand and it was decided to set up a committee to be known as the New Zealand Regular Members' Committee. The objects of the Committee are stated to be to protect and further the common interests of the Regular Members of the International Association of Ports and Harbors domiciled in New Zealand and to elect Elective Directors and Elective Alternate Directors to represent them at Conferences of that Association. Mr. R. E. Dawson, Chief Executive Officer of The Harbours Association of New Zealand, was appointed Secretary of the Committee. (The Harbours Association of New Zealand)



# PSA Container Complex

The Port of Singapore Authority



The whole PSA Container Complex includes 2 main berths and one feeder berth occupying 60 acres of land. Three warehouses totalling 171,000 sq. ft. are in use in this area in addition to 3 Container Freight Stations of 225,000 sq. ft. The proposed extension length of another 750 ft. to the existing main berths of 2,250 ft. will allow 3 large container ships to be berthed alongside the wharves at the same time. The initial phase of the Container Port will be completed by 1972.

The new concept of Through Transportation of cargo in container is increasingly being accepted by the Singapore traders. The throughput of containers handled by conventional vessels through the Port Authority has been increasingly every year.

In 1971, 9,613 containers were handled as compared to 8,779 containers handled over the previous year, an increase of 9.49%. The

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The Port of Singapore is developing a Container Port at East Lagoon. The Container Port comprises 2 main berths and 1 feeder berth occupying 25 hectares of land. The main Container Berths are constructed to 685.80 metres. Upon the completion of this length, it will be extended by 78 metres so as to allow 3 large container ships to berth alongside the wharves at the same time. The Feeder Berth is 228 metres long. The construction work at the Container Port is well under way. Two 35.6 tonnes container cranes have already been installed. The Container Port is expected to be completed at the end of 1972.



The photograph shows a close-up at the PSA Container Port which is still under construction. The Feeder Berth has been operational since October 1970. The first main container berth was completed at the end of 1971 while the second will be operational by the end of 1972. Alongside the main Container Berth, feeders, 1,400 mm. long each, have been installed. The fendering system is designed to cater for the needs of 60,963 tonnes deadweight container vessels. Three identical units of container cranes, 35.6 tonnes capacity each, will operate along the berths. The photograph shows 2 units already installed.

tonnage of containerized cargo increased from 60,945 tons in 1970 to 83,466 tons in 1971, an increase of 36%.

Door to door delivery of containers, the ideal concept of through transportation, showed a marked increase from 1,299 containers in 1970 to 2,562 containers in 1971. Forty foot containers are also increasingly being used. Fifty-five 40 foot containers were handled as compared to 14 in 1970.

#### Container Statistics 1971

Discharged	—	5,001 containers
Loaded	—	4,612 containers
Total	—	9,613 containers

#### Progress

The 700 ft. long Feeder Berth (34 ft. LWOSt) was completed in October 1970 and was officially opened in November.

The first main container berths was completed on schedule at the end of 1971 whilst work on the second main berth is progressing satisfactorily. Over 50% of the wharf deck for the second berth has been laid with concrete. Dredging to provide 44 feet depth alongside the container wharves at low water, was completed in June 1971.

The first freight station 540 ft. × 150 ft. and the adjacent hard-standing to serve Berth 49 was completed in November 1971. The construction of the foundation for the second container freight station is underway and fabrication of steel work is nearly completed. The erection of the station will commence in the second quarter of 1972.

The laying of fuel oil, diesel oil and water lines commenced last year and is expected to be completed by mid 1972.

In late 1971, the layout of the gateway system to the Container Port was finalized and the construction work for two external gateways is underway.

The first 30 ton straddle carrier was delivered in April 1971. Five other straddle carriers were delivered earlier this year.

The first 35 ton container crane was delivered during the third quarter of 1971 and the erection was completed by the end of the year. The erection of the second

## Persian Gulf Ports

Extracts from Gray, Mackenzie Bulletin  
March, 1972

### Bandar Shahpour

**Port facilities:** We understand that tenders will shortly be finalized for the extension of existing port facilities at Bandar Shahpour.

This extension will consist of an additional four general cargo berths to the six already in operation, and it has been reported that there will be a further two berths to the existing Petrochemical loading facilities.

The complete contract will, we understand, take about two years to complete.

### Kharg Island

#### New Sea Island Terminal:

Construction of the new Sea Island terminal for I.O.E. and P.C. is progressing satisfactorily, and we understand the Shahanshah has declared that the terminal will officially be opened by him in September 1972.

Two separate sets of mooring dolphins will accommodate tankers of up to 500,000 tons in one instance and 350,000 tons in the other, and the depth of water alongside will be 120 feet.

The 72 inch pipeline will supply crude oil cargoes for tankers loading at these berths, and the construction of suitable additional tank storage facilities on the Island is already well under way.

### Bandar Abbas

#### Port Facilities:

Tenders are presently being negotiated for the construction of crane is well underway.

The installation of lighting towers at the first main container berth has been completed.

### Inland Container Depot

The PSA has made plans to build an inland container depot of 6 freight stations each 165 metre by 46 metres at Bukit Timah.

the following additional facilities at Bandar Abbas:—

- (a) One dry dock 200 metres long by 29 metres wide for vessels up to 20,000 tons.
- (b) One dry dock 166 metres long by 23 metres wide for vessels up to 2,000 tons.
- (c) Two berths 250 metres long.
- (d) Two small 'T' shaped berths (Refuelling).

It would appear however these projects will relate entirely to the Iranian Navy, and no actual extension to commercial port facilities is contemplated at the present time.

### Bushire

#### Port Facilities:

It is expected a contract will be awarded shortly for the dredging of a channel 30 feet deep, and the construction of 300 metres of new wharfage. The contract is reported to be worth £3,500,000, and is scheduled for completion in about two years time.

Completion of this project will ultimately enable ocean going vessels to berth alongside at Bureau.

### Abu Dhabi

The Government of Abu Dhabi has invited tenders from internationally reputed oil companies to participate in the exploration, development and exploitation of oil and other hydrocarbons in nonconcessionary areas of the Emirate of Abu Dhabi.

The Public Works Department has invited tenders for the construction of the 3rd section—Tarif/Jebel Dhanna—of the Abu Dhabi-Sila Highway forming a part of the Trans Arabian Road to Qatar.

The Ministry of Petroleum and Industry has recently invited tenders from firms of international repute, specialized in the construction of refineries, to participate in the Abu Dhabi Refinery Project work consisting of engineering, procurement, construction and test oper-

ation of the project. Tender documents are available until the end of March 1972, and offers are required to be submitted by the 5th July 1972.

It has been announced that the Budget for the Emirate of Abu Dhabi for the financial year 1972 will be in the region of 215 million Bahrain Dinars. Expenditure is estimated to be around 190 million Bahrain Dinars, of which a sum of 77 million is earmarked for development projects.

Present indications are that the dredging in the approach channel of the Abu Dhabi harbour will be completed by the end of May, when berth No. 4 will be ready, and that by the end of June berths No. 5 and 6 should also be ready for commissioning.

It is understood that contractors will be invited to retender for sheds in the port area, and that the construction work on these sheds will commence about June, continuing for approximately 9 months.

It is the present intention of the Government authorities to put out a tender shortly for the construction of berths No. 7, 8 and 9, which it is estimated will cost in the region of 2½ million Pounds Sterling.

### Australian ships

London, 5th April:—The PLA's Director of Tilbury, Mr. R. H. Butler, said he was very pleased to learn of the A.C.T.(A) & A.N.L. announcement and that Tilbury would continue to serve their important element in trade with Australia.

'It is an indication of the satisfaction the company have felt towards Tilbury since their Australian operation began there in 1970. Since that time we have handled a major share of Britain's trade with Australia through the containerport at Tilbury', he said.

Mr. Butler said that the inclusion of New Zealand in the container service was yet another important trading area continually served by the Port of London through the transition from conventionally handled cargo into containers. A large proportion of the New Zealand trade has been traditionally handled in the the Port for nearly 200 years.



View of the Churchill dock, Port of Antwerp.



Container terminals at the Churchill dock, Port of Antwerp.

'That we can provide facilities to satisfy our customers in 1972 is an indication of the success of the PLA's forward planning and development in modern cargo handling methods', he added. (News from PLA)

### Australian Minister visits

London, 6th April:—Mr. Peter Nixon, Australian Federal Minister of Shipping & Transport, today paid a flying visit to Maplin—the site of proposed further port development in the Thames estuary—and to Tilbury Docks, Britain's leading container port.

The Minister's visit was to meet with Directors of OCL and in response to an invitation extended to him by William Bowey, PLA Assistant Director-General, during his recent business trip to Australia when Mr. Nixon declared his interest in the PLA's container successes at Tilbury and their forward thinking about estuarial development.

Accompanied by Mr. Bowey and Mr. N. N. B. Ordman, PLA Assistant Director-General, the Minister flew by helicopter from nearby St.

(Continued on Next Page Bottom)

# ***Docks Board Managing Director on the Future of The Port of Hull***

**British Transport Docks Board**

London, 18 April:—A long period of continued industrial peace, a raising of standards of service, and a substantial lowering of costs, are needed above all to ensure future prosperity for the Port of Hull, writes Mr. Stanley Johnson, managing director of the British Transport Docks Board, in the latest issue of the Board's magazine "Docks", published today.

Since January, the Board's decision to close the Western Docks at Hull and concentrate all traffic at the larger and more modern Eastern group of docks had been the subject of almost continuous discussion with representatives of trades unions, port users and others.

The basic reason for the decision, the fall in total trade, should be well known, Mr. Johnson says. Overall cargo tonnages had fallen

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Katharine Dock to Maplin for a bird's eye view of the vast area of planned reclamation for London's third airport and the deep-water seaport complex in prospect for oil installations and the next generation of container ships.

They returned to land at Tilbury Docks where R. H. Butler, Director, and Peter Padget, Docks Manager, escorted Mr. Nixon round the highly successful forest product berths, the new Grain Terminal and the busy PLA container berths which had established new container handling records just before Easter.

The docks visit culminated in a tour of No. 39 Berth—the OCL terminal famous for its intensive use of high throughput of Australian container traffic—where the Minister had a working lunch with the Directors and Principals of the Australia/European Conference before returning by helicopter to the City. (News from PLA)

from ten million tons in 1964 to just over six million tons in 1971 and during the same period shipping movements declined from 13,500 to 10,300.

The decline in the tonnage of bulk cargoes—coal exports (1 million tons in 1967) had ceased and petroleum imports had fallen by half a million tons—had been offset to some extent by the growth of short-sea general cargo trade between Hull and the Continent by roll-on/roll-off and container services. But these services could not be accommodated in the Western Docks "owing to tidal restrictions and lack of land availability for the construction of shore terminals".

Docks Board studies had shown that the Eastern Docks could accommodate all services now using the Western Docks and leave ample scope for all foreseeable increases in traffic in the future.

Programmed road improvements, the Humber Bridge, additional investment incentives for industrialists, and the port's position facing the industrial heart of the Common Market, were all factors which should lead to a return of confidence in the port, Mr. Johnson said.

Losses at Hull's Commercial Docks—£500,000 in 1969, £950,000 in 1970, and £900,000 last year—were of such a magnitude that "a drastic curtailment of costs must be achieved if the port is to be restored to good health and placed in a position where it can benefit from the great opportunities for advancement which Britain's entry to the Common Market will present", Mr. Johnson writes.

"Obviously, there are human problems resulting from the measures announced by the Board in January. The Board are well aware of these problems, and are anxious to deal

as generously as possible with those who will be affected, for this situation has resulted in a surplus of labour in the port of 170 of the Board's permanent employees and 320 dock workers."

A new and much improved Voluntary Severance Scheme produced by the Board has since been agreed by the Trade Unions representing manual workers.

## **New container traffic**

London, 10th April:—A new trans-Atlantic container service for Tilbury Docks will begin with the maiden voyage of m.s. "Main Express" on April 24th when Hapag-Lloyd AG inaugurate a regular weekly direct container service from Tilbury to the U.S. East Coast.

Mr. John Lunch, PLA Director-General, welcoming Hapag-Lloyd's announcement said he was pleased to see this important cargo liner company benefitting from the facilities and expertise that PLA have developed at their specialist container berths. The company's choice of Tilbury is a further recognition of its geographical importance to importers and exporters of containerized cargo and the new service will re-establish a direct freight link with the major business generating centres of the U.K. and U.S.A.

The new service will operate from the PLA's multi-user berths Nos: 40 and 41/43 which function as one unit.

The berths offer 3-shift, round-the-clock working on a seven-day week, year-through basis for all types of container vessels. This, coupled with a recently reached agreement with the trade unions whereby the PLA will perform all the dock clerical work, makes Tilbury highly competitive in catering for ocean-going container services.

Other advantages in the dock are the speedy lorry handling system and the nearby Rail Container Terminal with U.K. Freightliner links. Tilbury also has ample space for further expansion of container services without congestion. (News from PLA)

## **Port Promotion Department**

London 10th April:—The Port of

London Authority has formed a new department responsible for the functions previously performed by trade promotion, public relations and shipping liaison. This new department will be known as the Port Promotion department, and will be headed by Port Promotion Manager, Roger Nation, a new appointment, with Herbert Lloyd as the Public Relations Officer, Alan Holland as Trade Development Manager, and John Collins as Shipping and Information Officer. The latter two are also new appointments.

Experience has indicated that following the devolution of management responsibilities, the needs of the Port's customers and users will be best served by the provision of this integrated port promotion and information service. (News from PLA)

### Another container service

London, 13th April: — Combi Line, the joint container service by Hapag-Lloyd AG of Hamburg and Holland America Line of Rotterdam, have decided to base their UK to South Atlantic and Gulf ports service on Tilbury Docks, so that their combined service may be closer to the UK's great commercial centre—London.

The first sailing in the service from Tilbury will be by m.v. "REGENSTEIN" on May 2nd to Savannah, Miami, New Orleans and Houston, after which there will be a sailing every 10 days.

Mr. John Lunch, PLA Director-General, welcoming the company's decision said the news was very encouraging, following the announcement earlier this week by Hapag-Lloyd of their new container service from Tilbury to North America. "It shows that the many advantages of Tilbury in favourable location, expertise and service are being progressively recognized" he said. "It confirms the rightness of our decision to develop there Britain's leading container port and to create for ship operators and shippers and forwarders the facilities and organization they have a right to expect."

The PLA's multi-user container berths in Tilbury Docks, from which the new line will run, offer

## Clydeport Reports Record Year In 1971

### Clyde Port Authority

Glasgow, 17th April:—The Clyde Port Authority's Annual Report and Accounts for 1971 published today, show that the Authority achieved a record gross revenue of £9.19 m. during 1971 (compared with £7.6 m. in 1970). The net revenue—after interest charges—but before depreciation rose to £919,000 (£360,000 in 1970). Surplus for the year was £517,000 after allowing for depreciation of £402,000.

The Chairman, Mr. A. G. McCrae, commenting on this satisfactory position attributed the year's success to an overall increase in traffic which was assisted by vigorous marketing, reorganization and rationalisation which continued to keep rising costs under control and freedom for the first time from the charging restraints of the past. He

continuous working throughout a 3-shift pattern which makes possible 24-hour working every day of the year. Berth layout and operating methods have been planned to give a smooth flow of traffic through the terminals and a speedy turn-round of vehicles delivering and collecting. Freightliner links from the within-dock PLA Rail Container Terminal to other major UK centres are also available in the integrated container port.

The Combi Line service from Tilbury, now brought 60 miles nearer to the country's centre of commerce, and the Combi Line LASH service based in the river Thames, together offer an all-embracing cargo service from the London area.

The PLA have been happy to plan for these developments with the Line's General UK Agents Brown, Jenkinson and Co. Ltd., who are to establish offices "on-the-spot" in Tilbury, which will ensure good liaison between Agent and PLA berth operating staff. (News from PLA)

also drew attention to the management reorganization of the Authority and its Subsidiaries which took place during the year with the aim of ensuring better co-ordination of the several management functions and of increasing efficiency. The Chairman also forecast that trading during 1972 is expected to continue at a satisfactory level.

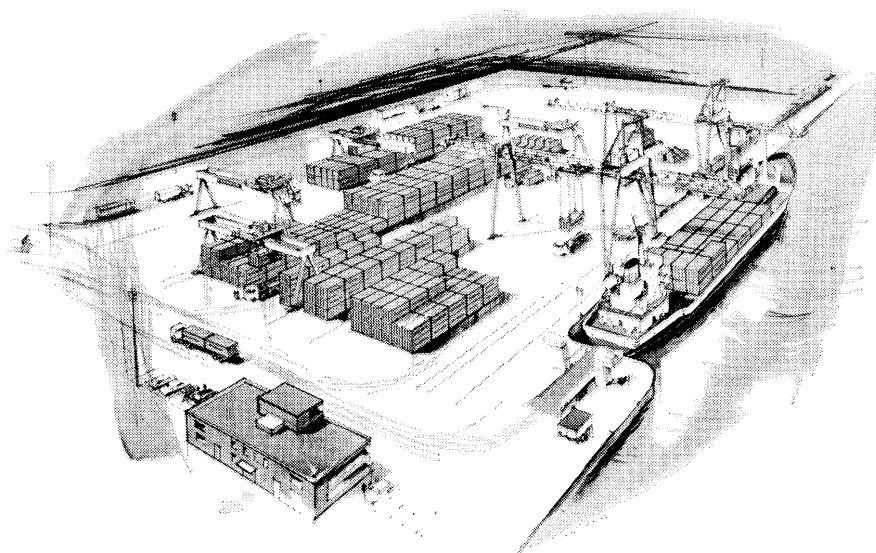
Tonnage of shipping handled in the Port at 17.8 m. tons was an increase of 780,000 tons on the 1970 figure. Cargo, at 18.2 m. tons, was up on the previous year, the biggest single commodity, oil, increasing by 1.75 m. tons to 11 m. tons. Traffic through the Container Terminal at Greenock was up by 51% on the 1970 figure and whisky exports again increased to approximately 200,000 tons. The export of iron and steel increased from 264,000 tons in 1970 to 466,000 tons in 1971—exports through Glasgow at 307,000 tons being an 'all time record' for this commodity. Grain imports through Meadowside Granary once again stood around the 800,000 tons record figure set in 1970.

At Ardrossan, the roll-on/roll-off ramps for vehicles going to Ireland and the Isle of Arran continue to be well used—traffic during 1971 totaling 29,600 commercial vehicles and trailers and 45,300 cars.

Reorganization and rationalization resulted in a reduction of 449 employees covering all grades and departments and the Subsidiary Companies. The surplus of dock workers attached to James Spencer & Company (Stevedores) Ltd., the Authority's Subsidiary Company, continued to throw a heavy burden on the Company's finances and during 1971 payments made by the Company to registered dock workers for whom there was no work amounted to over £250,000. It is hoped that the recent increase in the voluntary severance payments



## New Container Terminal for Ellesmere Port



This is an artist's impression of Cawoods new container terminal when fully developed.

(Continued from preceding page.) will encourage more men to leave the Industry.

The deep water facilities in the Lower Estuary continue to attract attention and early in 1972 the second largest vessel sailing in the World—the "UNIVERSE KUWAIT" of 327,000 tons dwt.—sailed to Finnart Oil Terminal fully laden with a draught of 82 ft. It is sufficient to say that no other Port in the United Kingdom can accommodate fully laden vessels of this size.

Commenting on the 1971 Report, Mr. James P. Davidson, the General Manager, said:—

"Despite the changes taking place in shipping patterns affecting mainly the major ports in this Country and the many other difficulties with which the Industry was affected, the year 1971 must be considered as a very satisfactory one for us. We are conscious of the problems to be faced in the future, but are confident of our ability to cope with them and hope that the general economic improvements now envisaged throughout Scotland will particularly reflect in increased prosperity in the Clyde area."

Manchester, March: — Cawoods Containers Limited, The Belfast Based Container Shipping Services Company, presently operating their own container terminals at Belfast, Cork and Garston, announce the development, in conjunction with the Manchester Ship Canal Company, of a further container terminal at Ellesmere Port.

Situated three miles from Eastham Locks, the new terminal will have 30 feet of water available at the berth, which will initially be served by a 35 ton Liebherr container gantry crane and a Strachan and Henshaw transtainer of similar capacity. Adequate marshalling areas will be available at the berth for container storage with additional berthage and land for future expansion. A ro/ro berth may be incorporated in the future terminal plan together with large trailer parking facilities. Site work is already well advanced and it is anticipated that the first ship will be accommodated in late May of this year. Final completion of phase one development is expected by September 1972.

The first services to use the facility will be the expanding Cawoods West Coast U.K. Services, the twice

weekly services to Cork and the weekly service to Rotterdam. (The Port of Manchester)

### Big work at Tilbury

London, 19th April:—The Government has now given approval to the proposal for the re-development of the south side of Tilbury Docks to provide a terminal with modern handling methods for West African trade. Plans can now be completed in detail with the users, the UK/West Africa Lines Joint Services, who are involved with the PLA in this project.

Application was made by PLA to the Secretary of State for the Environment in January last under the provisions of the Harbours Act 1964 and his approval gives the 'go-ahead' for the project which is likely to cost in the region of £5 million.

Some 39 acres of land including deep-water berths No. 31-33 form the site of what will become a custom-built terminal where the Lines will operate up-to-date methods of cargo handling. Modern facilities are envisaged to enable the Lines to handle a considerable proportion of their export cargo on pallets and introduce improved methods of handling imports.

For many years the West African trade has been dealt with through a number of berths in Tilbury Docks and the new scheme will give the advantages of centralized organization and planning geared to customer needs.

The PLA will carry through the development in close consultation with the users who will operate the terminal on a long term lease.

Mr. R. H. Butler, PLA Director of Tilbury, welcoming the Minister's decision said: "This is most gratifying because we can now complete our plans with the shipowners and their agents and press on with the prompt development for these important customers and their growing business".

The shipping lines involved are: Elder Dempster Lines Ltd., Palm Line Ltd., Guinea Gulf Line Ltd., Black Star Line Ltd., Nigerian National Shipping Line and Leif Hoegh & Co. A/S. (News from PLA)



# *The Port of Le Havre Today*

by **P. Bastard**

**General Manager of Le Havre Port Authority**

**from Bulletin Maritime du Havre, March 1972**

**English Edition No. 1**

At a time when growth means nothing unless it is above a rate that the most ambitious executive would formerly have dismissed as totally unrealistic, when everything is on such a gigantic scale that only the small attracts any attention, when technology changes as fast as high fashion, the Port of Le Havre can take heart: in all these respects, it belongs to its time.

## **EQUIPMENT**

To face up is the real problem which under some new form does not fail to crop up when one believes it solved.

Even where conventional cargoes are involved, handled and conveyed by methods that have proven themselves through long and routine experience, one has to be ready to make changes. In 1913, when the port of Le Havre had to face fast-growing cotton traffic, it opened a hangar which, nearly sixty years later, remains the largest ever built in a port; more recently, when fruit traffic, which was formerly seasonal, became an all-year-round occupation, 36,000 square metres of hangar space had to be air-conditioned without delay; when the old timber traffic, a major factor in Le Havre trade, became industrial in character, private wharves, floating storage areas, and river reloading berths had to be increased.

A major effort has been made to satisfy the requirements of roll-on/roll-off traffic: in six years, three car-ferry berths have been built and developed, and when improved and extended, over a total area of 80,000 square metres of ground. This is still not enough, and traffic prospects have led the Port Authority to set up a new terminal, which by itself will cover the same area as the three existing ones.

Container traffic involves similar re-

quirements. The Quai de l'Atlantique (800 m long, 16 hectares in area and with 4 40-ton gantries) had hardly been completed in 1970 when the need for a second terminal became obvious. This new construction has been increased in scale to 1,150 m and 45 hectares, and the first half will come into operation in June 1972.

To back up the traffic of solid and liquids bulks, all the developments already carried out or planned are based on one essential fact, the arrival of giant carriers in the naval field.

## **RECEPTION OF GIANT VESSELS**

So far, only conventional cargo ships have escaped this phenomenon, or, if they have been affected, it has at least been within limits such that they can still be coped with quite easily using the installations provided for their predecessors. At Le Havre, at any rate, the safety margin can cover any immediate or short-term surprise developments.

Solid bulk carriers conveying cereals are also restricted in size by port installations in developing countries. The trend, however, is towards higher tonnages, and so Le Havre has equipped itself to take 60,000-ton grain-carriers.

Ore-carriers have followed a quite different growth curve. Several years ago, the Port Authority decided to admit ships of at least 200,000 tdw. These vessels are to use the world's hugest lock. The lock, which has useful length of 401 m, and is 67 m wide, with an apron 14.5 m deep, offers the key to a 10,000-hectare industrial zone, a vast area already partly occupied, and available without formality to any new plant concerned with naval traffic. It is more than 20 km long and 550 m wide, and as required it will be developed

to take the vessels of 200,000 tons or more for which the lock has been designed. Le Havre is becoming a large industrial port, thanks to the size of the site, the savings resulting from the use of large-tonners, the elimination of any transshipment of cargoes, the plentiful supply of skilled labour, and the unlimited supplies of energy at competitive prices.

The port of Le Havre, which is at present accessible to 250,000-tdw tankers, was the first in continental Europe to take such ships fully loaded. In addition, its approaches have been chosen by the French government to take the first giants of 500,000 to a million tons that will be entering European waters well before the end of the century. Preliminary studies are completed, and the first stage of construction of this terminal, which will for long be the only one of its kind in the world, will be finished by 1974. The port is primarily designed to supply French refineries, but it will also be capable of coping with traffic to be distributed to other destinations as required, and of supplying certain refineries on the Continent by pipeline, in areas where the problem of supply may arise very shortly, because of constantly rising fuel demand.

So the port of Le Havre presents in 1972. It shows a wealth of achievements as well of promises and possibilities, and it faces the year 2000, already approaching over the horizon, with a confidence that is justified by its position in the forefront of Europe, and the enterprising spirit that lies behind it.

## **B.T.D.B. port of Goole**

London, 28 March:—The car carrier 'Autostrada' discharged a cargo of 450 Renault cars at the British Transport Docks Board port of Goole on Monday (27 March), bringing the total number of cars imported through the port during the first quarter of this year to over 6,000.

Regular shipments have been arriving at Goole since Renault began using the port in July last year, and the 1972 total to date has already exceeded the eleven shipments, totalling 5,094 vehicles, which the port dealt with during the second



Two Paceco Transtainer cranes ordered for the Port of Haifa, Israel, will be similar to this Transtainer crane operating at Long Beach, California.

half of 1971. The level of Renault imports through Goole, currently about 24,000 cars a year, is expected eventually to rise as high as 40,000.

The largest single consignment of Renaults to have arrived at Goole so far, 516 cars, was discharged by the car carrier 'Montlhery' on 18 March. This vessel is the largest car carrier to berth at Goole and has an overall length of 329.7 ft. and a beam of 52.1 ft.

(British Transport Docks Board)

### Container crane for Haifa

Alameda, Calif., April 20:—The Israel Ports Authority has awarded Paceco, a Division of Fruehauf Corporation, Alameda, California a contract for two 40 Long Ton capacity Transtainers\* (terminal cranes) to be installed at the new container terminal at the Mediterranean Sea Port of Haifa this Fall.

The large cranes are mounted on rubber tires for greater mobility and will be equipped with telescoping lifting spreaders to handle both 20' and 40' containers. With a 76' span between the legs, the Transtainers can straddle six rows of stacked containers, plus a truck roadway. Ample clearance under the lifting spreader permits stack-

ing containers four high to conserve storage space in the terminal.

Paceco's representative in Israel, Hollander and Co. Ltd., Tel-Aviv, assisted in the negotiations. (PACECO News)

### Barry Docks, B.T.D.B.

London, 29 March:—A stern ramp specially constructed by British Transport Docks Board engineers in only two days was used at Barry Docks, Glam. at the weekend to discharge a roll-on/roll-off cargo of 198 military vehicles from Malta brought by the Sicilian car ferry 'Frecchia Rossa', 3,800 tons gross.

The ferry arrived on Saturday evening (March 25) at Barry's No. 2 Dock, where at berth had been specially-prepared to receive her, and began discharging her cargo of cars, tractors, buses, mobile cranes and other Ministry of Defence vehicles at 6.45 p.m. Three stern ramps, each approximately 15 ft. wide, served by elevators and internal ramps from each of the vessel's five decks, were used for the unloading operation, which was completed at 11 p.m. The 'Frecchia Rossa' then loaded a cargo of 69 export cars and lorries for her return voyage to Malta, completing the operation at

ten minutes to one on Sunday morning (March 26)—a turnaround of under six hours.

Mr. Marcus Watt, Docks Manager for Barry, commenting on the speed of the operation, pointed out that it could not have been achieved without the co-operation and enthusiasm of the engineering and other staff who undertook the construction of a stern ramp at very short notice and volunteered special overtime facilities to enable the vessel to commence discharge immediately upon its arrival. Mr. Watt hoped that the success of this venture might stimulate the interest of shippers in the potential of South Wales, and particularly Barry, for ro/ro activities.

Messrs. Bethell Gwyn and Co. Ltd., who represented the owners of the 'Frecchia Rossa', (Soc. Grandi Traghetti di Navigazione S.P.A.) and Messrs. Hogg Robinson and Gardner Mountain (local agents for the Ministry of Defence) both expressed their appreciation for the efficiency and organization which contributed to the excellent turnaround of the vessel. (British Transport Docks Board)

### Millbay Docks, Plymouth

London, 12 April:—A contract worth about £400,000 has been awarded by the British Transport Docks Board to John Mowlem and Company Limited for the construction of a roll-on/roll-off terminal at Millbay Docks, Plymouth. The contract will be carried out by E. Thomas and Company Limited, Mowlem's west country subsidiary.

The terminal is being provided by the Docks Board for use by a roll-on/roll-off ferry service between Millbay Docks and the Breton port of Roscoff due to commence in January 1973. The service will cater principally for the importation of vegetables and other produce from Brittany during the fresh produce season occurring in the first six months of the year, but it is expected that during the holiday season, July to September, private car, caravan, and passenger traffic will be attracted.

The terminal will be built at a tidal berth in the north-west corner of the Outer Basin at Millbay, and work on the site will begin immedi-

ately.

The scheme includes the provision of lead-in and mooring dolphins with fenders, and a bridge ramp, 55 metres (180 ft.) in length, hinged on to the South Quay, which will enable vehicles to move between ship and shore at all states of the tide.

A surfaced area of 0.8 hectares (2 acres) will be provided for marshalling purposes, together with associated roadworks and fencing, and a further 1.6 hectares (4 acres) is available for future development. The scheme also includes the adaptation of an existing building for customs examination of vehicles.

A limited amount of dredging in the Outer Basin will be necessary to ensure a minimum depth of 5.2 metres (17 ft.) in the area of the berth at all times.

The frequency of sailings between Roscoff and Plymouth is expected to be five a week in each direction during the produce season (January/June) and three a week at other times. (British Transport Docks Board)

### **Hull terminal, B.T.D.B.**

London, 17 April 1:—Work has begun today (Monday, 17 April) on construction of a £280,000 roll-on/roll-off terminal in Queen Elizabeth Dock, Hull, to cater for a service between Hull and Esbjerg. The service will be operated jointly between Ellerman Wilson and the Danish company, D.F.D.S.

The British Transport Docks Board has awarded the contract for construction of the terminal to Mears Construction Limited of Sydenham, London, S.E. 26.

The terminal is scheduled to be operational early in 1973 when a new ferry at present under construction comes into service. It is estimated that by 1975 the volume of traffic carried on this roll-on/roll-off service will amount to nearly a quarter of a million tons annually.

The berth will be sited at the North-East corner of Queen Elizabeth Dock. The scheme includes the provision of a hydraulically operated two-level shore bridge, measuring about 18 m (59 ft) long and 5 m (16½ ft) wide, which will serve two decks of the vessel simul-

taneously. The bridge has been designed to permit use of the berth by a wide range of roll-on/roll-off ferries.

A storage area of 18,380 sq m (4½ acres) will be provided and equipped with 30 refrigeration points for the bacon containers which will be carried on this service.

Certain ancillary work, such as fendering and re-aligning and leveling of existing railway tracks, will be carried out by the Docks Board's own engineers.

The scheme was designed by the Docks Board's chief docks engineer, Humber, Mr. P. K. Brown, B.Sc., C.Eng., F.I.C.E., F.I. Mech. E., F.C.I.T., and the contract will be carried out under his direction. (British Transport Docks Board)

### **The 1,000th ship 1972**

Le Havre:—On February 18th the Townsend Thoresen car-ferry Viking I became the 1,000th ship to enter harbour this year, six days ahead of its 1971 equivalent. The Viking I sails under the Norwegian flag and runs a twice-daily shuttle-service between Le Havre and Southampton. (Port of Le Havre Flashes, April 1972)

### **Port activity in 1971**

Barcelona:—Although, logically, it is not possible to know the total figures for the year, it is possible to calculate approximately the movement of traffic in our port during 1971. The goods carried reached at approximate total of 9.4 million tons, an increase of 9% over the previous year.

Of this, some 3.4 million tons was general cargo, which experienced an increase of 15.5%. 3 million tons was of petroliferous products with a growth of 29%, 2.2 million tons of solid grains with a 9.5% increase on 1970 and .35 million tons of non petroliferous liquids with a growth of 2%.

As far as Passengers are concerned, the tentative figure is 830,000 persons, an increase of 5% over the previous twelve months.

These increases in activity are all the more notable when all the large Mediterranean ports have suffered a decrease in movement during the

year, due principally to the continued closure of the Suez Canal and the Port strikes in the U.S.A.

Apropos to Public works activity during the year, 198 million Ptas. have been invested in extending installations.

In the field of events, important for our port, we could point to the following: The completion of the special quay for containers and Tendering for its exploitation. The quay will enter into service during the first quarter of 1972, once the giant crane, that has been built for us in a Bilbao factory, has been set up. The exploitation will be carried out by a private company, designated by the General Port Direction, after a speedy tendering process. The coming into service of this quay will mean for Barcelona the formal incorporation into the mechanized world of container traffic. The second important event refers to the proposal formulated by the UNION NAVAL de LEVANTE to convert the floating dock into a dry dock, capable for taking ships of more than 200 M in length. This signifies the possibility that at long last our port will have ship repair installations in keeping with the importance of the port. The resolution of the Appointed Commission for Economic Affairs, by which 200 Hectares of land were ceded to the port, extending its service zones to the actual course of the River Llobregat, constitutes the necessary basis for future expansion of the Port. The River Llobregat will be diverted permitting the transformation of the old course into a basin, will service fundamentally port-based industry.

Finally, it is also necessary to underline as an event of the year now ending, the conclusion of the renovations of the Old Port. The modernization of the "Muelle de Baleares" and the Fishing port actually finishing now, thus complete the circle started 8 years ago to modernize our installations. (Puerto de Barcelona Boletín Informativo November/December 1971)

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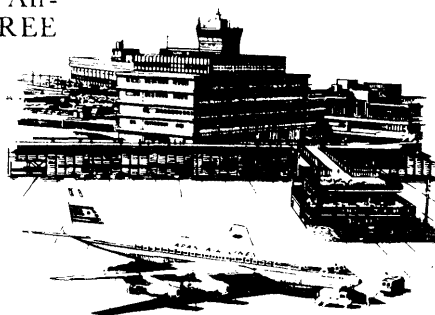
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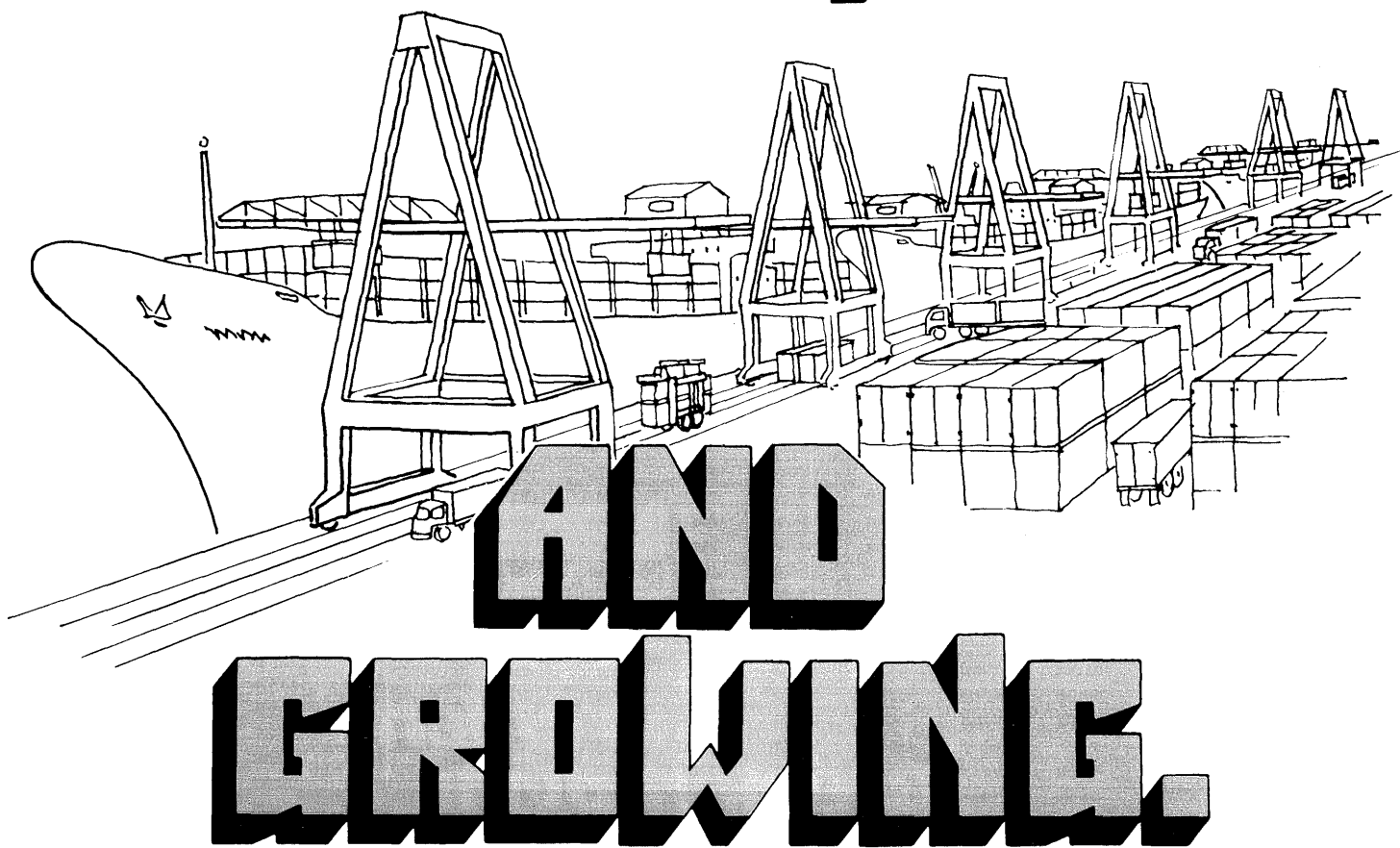
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