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Structural Changes in International Shipping

Revolution in World Sea Transport through Container Use?

By Hettmar R. Köhler, Hamburg

Modern industry could no longer exist without automation. Without machinery that is subject to automatic controls, whose orders are issued from a central control console or switchboard, the requirements of the civilised world could no longer be met. However, for many years the service industries have been the stepchildren of automation, and the extreme case of this neglect has been transport, especially ocean shipping. Only very recently, when the leading shipowners who dominate the transatlantic trade have started to use large containers, the impending change, which has so far been recognized by some specialists only, has gradually become obtrusive. Line shipping companies are expecting that this change may permit them better utilisation of their capital afloat, as it should enable them to cut down considerably the time spent in port by their ships. The waste of time caused by laboriously loading and unloading, and handling, of individual pieces of freight is being transferred from board ship to the quayside. Through this rationalisation of loading and unloading an overdue step towards further promotion of simplified loading and stowing procedures and towards a not unconsiderable speed-up of ships' travel time will be taken. Before modern all-round freighters were rebuilt into partial container ships, fork lifts and loading boards (palettes) were used as an intermediate solution of the problem.

Quicker Turn-Round

It was therefore a logical step taken by the United States Lines (USL) that it reequipped no fewer than four of its most advanced express freighters—after none of them had been on the seas for more than eighteen months—as so-called container liners. At the end of March of the current year, the "American Racer", the first of these new cargo boats, arrived in Europe. The ship has an overall length of about 550 feet, is about 90 feet wide in the beam, and has a carrying capacity of 13,300 tons dw. Its travelling speed is 21 knots, and it can even develop spurts of 25 knots at top speed. Of its six cargo hatches, two of the largest had been reshaped, in three sections that filled part of their space, for stowing containers. From the top opening of these hatches, vertical steel rails are going down into the ship's rump, on which standard size containers, each 20 by 8 by 8 feet, slide and are fixed like cigarette boxes in a vending machine. On the upper deck, additional containers of 40 feet length can also be placed. On land, such containers may be set on railway flat cars or on special undercarriages pulled by motor trailers, thus forming vehicles rolling towards any final destination. By avoiding the break-up of a cargo into single parcels that have to be reloaded on to land vehicles before they travel to their final place of delivery, automa-

tion goes far beyond the seaports and thus influences a large section of the entire transport industry.

Even for important shipowners like USL, it was not easy to decide on the introduction of the new method of large-container transport within a comparatively short delay, as this required big new investments. The first step was reconstruction of four turbine-driven ships to become partial container liners. Containers and undercarriages for their travelling by land had to be provided. Later, it is intended to build six freighters of 20,000 tdw., each to carry containers only, and to travel at 25 knots. The reasons for the change are, without doubt, to be sought in the endeavour of individual shipowners to avoid losing ground in the highly competitive North Atlantic freight market. Mr W. B. Rand, President of USL, argued diplomatically: "After long and careful study, our shipping company decided to introduce this service, because our permanent desire is to offer our customers the best services available."

Traditionally, the North Atlantic is a sea where the rough winds of competition blow perennially. Already in the past, many new technical developments have been promoted by competitive pressures there, which would not have come about so rapidly without them. Take alone, as an example, the development of shipping towards the German ports on the North Sea coast. Only shortly after the war, USL resumed its contacts with German forwarding agents and ports. It offered freight and passenger services, first for departures every ten days, later every week for freight loadings. The company built the fastest passenger ship afloat, the "United States", and even turbine-driven cargo liners, which are able to ply between New York and Bremerhaven within six days only. It is only a short while ago that a large American transport organisation indicated that it intends to enter, as a newcomer, the container freight market across the Atlantic, and this makes it the more understandable that almost everyone of the transatlantic shippers is discussing, with great urgency, the subject of container traffic. In this context, no comment is needed on a press release that the Hamburg America Line, the North German Lloyd, and the United States Lines are planning to make an agreement on joint time-tables. Also other big shipowners betray an inclination to merge and/or cooperate for taking up container transport.

A Weekly Container Service between New York and Bremen

Jointly with the A/B Svenska America Line, the Wallenius Lines, and the Swedish Transatlantik Rederi A/B, the Holland-America Line intends to run four

partial container ships, from 1967, between Northern Europe and the United States. Neither does American Export & Isbrandtsen Lines hold back with "containerisation", as the new technical term goes. Moore-McCormack already own container ships, whose introduction to the transatlantic runs is expected. The newcomer, who is on the threshold to entering the Atlantic freight market, is the American transport company, Sea-Land, which intends to run a once-weekly container service to Rotterdam, Bremen, and Grangemouth.

Use of containers will shorten the turnaround periods of sea ships, and this will improve profitability not only of the shipowners' business but also of that of the persons and/or firms liable for paying freight charges. Rising outgoings for loading and unloading, especially through constantly increasing labour charges, impose much keener costing. Shorter lay days, in addition, improve utilisation of port facilities. All too often, ships have to wait idly, as there are no berths free for them in a port to discharge cargo and/or to take in new freight, or dock labour is short, and an ocean-going vessel has to wait its turn at high cost and without any profit. Switching ships round to other ports, which may not be so busy, is possible only very rarely.

The United States as an Example

Already at the end of 1964, the United States was using over a quarter million containers. Looking at one of the big container handling ports in the United States, one must not be surprised at the ships berthing there, which are equipped with gate-leg cranes and special loading gear, equipped to lift, by their own power, heavy containers upon the waiting undercarriages, so that ship containers are transformed, in a matter of minutes, into tractor-drawn trailers. In other places, containers are lifted on to railway bogie "flats". The scene is characterised by hundreds of railway flat cars, trailer undercarriages, and tractors waiting ready to be used. Other container types, called "stricktainers", are not being placed on undercarriages but pushed directly on to wheel pairs on axles. A special development is a shunting tractor, having a retractable fifth wheel, which is situated in front, parallel to the radiator grid. Releasing this wheel to the ground lifts the front part of the tractor, so that it can turn round on the spot. Such tractors are also useful for pushing containers on to railway flat cars. All the technical problems of highly-mechanised container handling are practically solved in the United States.

Publicity photographs of firms which make propaganda for container use often suggest that only the perfect type of container cargo exists in the United States. Almost on every picture, there are rows upon rows of cardboard boxes of equal size and form stacked in neat rows beside and on top of each other, which fill the large container to perfection.

Perhaps there are sufficient standard-type pieces of freight in the enormous market of the United States. However, in Europe, it will, at least for some time to come, not be possible to collect always a sufficient quantity of the perfect type of freight for charging an entire large container for direct delivery to the United States. Admittedly, also European manufacturers

produce a number of goods which are carried in batches from door to door—meaning that containers—independently of their size—can be completely filled by the manufacturer and discharged only when they reach the users in an overseas country. There is no doubt that also Europeans will do their best to profit from door-to-door transport in containers in the case of new products. Individual goods are well protected in the container, which reduces the need for individual packing and makes pilfering and theft virtually impossible, so that future insurance premiums may be susceptible to reduction. But the main advantage is that goods need not be handled, reloaded and reassembled at transfer points.

Nonetheless, it will, within the foreseeable future, not be possible to utilise fully through such goods the impending oversupply of container/tonnage capacity offered by shipping companies running from German North Sea ports, Benelux harbours, and other continental terminals to the United States, in a true door-to-door service. Nevertheless the containers will have to be filled in order to utilise the available freight space. An immediate interim solution would be to fill and discharge the containers on the quaysides of the ports. Stevedoring firms, which hitherto were stowing all goods in the ship's rump, could deal with container freights beforehand in the dockside sheds, thus shortening idle stoppages of the cargo boats in their berths. True, this method would not offer the clients who ship their goods by the seaway all the advantages of container traffic, as individual parcels have still to be packed for carrying them to the ocean port, and to be handled and reloaded on the wharf.

A New Traffic Structure Within the Ports?

In view of these facts, there will be various possibilities, e.g. to subject so-called collective freight loads of forwarding agents to containerisation. To find answers to all relevant questions, it is necessary first to ask which ports will be used for the transfer of goods to ocean-going ships. In the Benelux ports, the flow of individual freights is highly decentralised both for import and export. Goods are being made ready for dispatch at the quays of the individual shipping lines by brokers, forwarding agents, and other transport firms. It is different in the German ports: collective freight batches of forwarding agents are channelled through centralised distribution sheds, from which shipowners run their ships to various destinations with which Hamburg and Bremen are linked by sailings. Some quarters have mooted the possibility of containerising collective loads at central containerisation depots in the hinterland. Forwarding experts believe that this could lead to centralisation of Benelux port traffic. On the other hand, containerisation depots in the hinterland would destroy the degree of centralisation already achieved in German ports, so that transport routes would have to be reshaped. The effect might well be that the excellent working arrangements that have been built up by overland transport firms channelling traffic directly to Hamburg and Bremen would disappear, so that costs for the loader, who normally delivers his goods "fob seaport", would perhaps even rise. Centralised collection of freight loads in the hinterland for filling large containers waiting there means naturally also a certain wait for goods ready to be

loaded. Their manufacturer must send them to the collecting depot, and there they have to remain until a large container is completely full. Only then can they travel to the seaport. The big advantage offered to inland loaders by Hamburg and Bremen ports through the use of their central distribution sheds would be lost in this way. Moreover, no such inland collecting depot has yet been built.

On the other hand, forwarding agents' collective freight loads could continue to travel along the established routine routes to the ports, to be containerised in or near the distribution sheds. This would only transfer costs from board ship to the shed, as stevedoring could be done mainly on land. Overall, however, costs might be reduced by filling containers in the shed, lighterage of the full container to the ship, and loading the bulk containers into the ship, as against the traditional methods of handling.

Yet again, forwarding agents' collective freight batches, which contain highly valuable cargo, represent no more than about 10 % of total freight volume. The remaining 90 % consist of large batches for direct delivery to ocean-going ships. Of these, a sizeable proportion might be suitable for containerisation inland, perhaps by the manufacturers who deliver these batches. Containers filled in this way might travel from door to door, or from door to US port, or again, containers might be filled jointly by two or more industrial loaders, wishing to make deliveries from the same district at about the same time, so that they could fully use the available container space. This again depends upon whether the two or more deliverers are able to use the same ocean-going freighter, which would be impossible if and when their overseas clients lay down, as a condition of purchase, that their goods are to be sent by a named shipping company. Financially, it would also be essential that return freights can be found, lest containers travel empty on the homeward journey.

Door-to-Door Delivery Desirable

The New York Shipping Conference recently announced that containers in future will be offered rent-free to loaders. Hitherto, this had not been the case. It is only logical that containers are free of lending charges only for limited periods, for containers of the new container cargo liners represent these ships' loading space, an integral part of their structure. But even optimal use of containers will not prevent that more than one set of containers per individual ship is needed, as containers must be available for use during the times freight travels from and to the ship to destinations inland, which will always be longer than the short waiting period of ships in port. Yet containers might be "misaid" or alienated from their proper uses, unless lending periods are limited. The time during which use of a container will be free of cost to the user must be sufficiently long to make door-to-door deliveries attractive. A simple calculation will show manufacturers how much money they can save by using container transport directly through obviating the need for much packing material, for handling and reloading, etc. Further savings are the protection offered by a large container against breakages of goods, pilfering, climatic damages, and manufacturers will have to consider how much this is worth to them and especially to their clients in

hard cash. Modern containers are safe against adverse weather, sturdy, and they can be locked safely against burglars and thieves. They also make it superfluous to load individual pieces into the hatches securely and supported by expensive wooden struts against the movements of the sea. (Years ago, German container experiments have led to the observation that so-called transport damage claims over the entire distance from door to door can be reduced by containerisation to one sixth of their normal level.)

It is to be hoped for the future that insurance companies will help, through lower premiums for overseas container loadings, to foster this modern form of transport. It would lead too far here to discuss the question how to issue bills of lading for door-to-door deliveries to overseas destinations. But a recent example may be of use: a meat transport in a closed container travelling from Texas to the final client in Germany carried experimentally a document similar to a bill of lading, which covered the entire journey from manufacturer to consumer. Also for other reasons, this load of fresh meat offers interesting aspects. The meat was chilled and not frozen, and it had therefore to be ventilated. For this reason a "cooltainer" (chilling box) was used for this cargo. This shows to what extent shipowners will be compelled to shed their traditional ways of thinking by the advent of container ships. A pure container ship will require also cool storage containers, both for carrying chilled and deepfrozen goods. Special square tanks will likewise be needed for the transport of liquid cargoes from door to door.

A Danger to the Ports?

What does the introduction of container ships mean for the organisation of our ports? Is it true that stevedoring firms, dock hands, tally clerks, even port forwarding agents and lightermen will suffer from the new technique? Anyway, the change in the structure of traffic will be a very gradual one, as for the time being, only a few busy routes will use containerisation, and even there, the changeover will not come with a sudden rush. Moreover, port employers will certainly welcome new chances for rationalising their methods, as they all suffer from shortages of labour. The unavoidable slowness of the change may lead to partially containerised ships remaining economically superior to fully containerised vessels. Gradual change will permit the affected businesses to make provision in time for the future. Anyway, there is much work being done already now building new container terminals in almost all the ports, in order not to be found wanting when the time comes. Whether at Rotterdam or Antwerp, Bremen or Hamburg, people are busy everywhere in this field. At Hamburg, the Burchard Quay is being rebuilt for this purpose, and the Karl Robert Eckelmann company tries to refurbish the Euro-Quay.

Last but not least, the fact that transatlantic shipping companies, who are notorious for their addiction to economy and prudence, are spending enormous sums—reputedly United States Lines alone carry out a multi-million dollar programme—makes us confident to state that port authorities and shipowners, to say the least, seem to be firmly convinced that container transport means effective rationalisation.