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INSTITUTE OF MARINE ENGINEERS  
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1900-1901.

*President*—COL. JOHN M. DENNY, M.P.

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EIGHTY-NINTH PAPER

(OF TRANSACTIONS).

SEA-BORNE TRAFFIC,

BY

MR. JAMES ADAMSON (*Hon. Secretary*),

READ AT

THE INSTITUTE PREMISES, 58 ROMFORD RD., STRATFORD.

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PART I.—MONDAY, MARCH 12TH, 1900.

„ II.—MONDAY, MARCH 26TH, 1900.

„ III.—MONDAY, APRIL 23RD, 1900.



## P R E F A C E .

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58 ROMFORD ROAD,

STRATFORD, ESSEX,

*April 23rd, 1900.*

A meeting of the Institute of Marine Engineers was held here this evening, presided over by Mr. A. Boyle (Chairman of Council), when the concluding part of a paper, entitled "Sea-borne Traffic," was read, and in part discussed.

The former portions were read at meetings held on the 12th and 26th March. The subject of the paper formed the foundation of an illustrated lecture delivered by the writer in the course of last year, and the matter was modified and extended to its present form.

The discussion was adjourned and the subject is still open for contributions by correspondence.

JAS. ADAMSON,

*Hon. Secretary.*



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### SEA-BORNE TRAFFIC

PART I (Ancient)

BY

MR. JAMES ADAMSON (*Hon. Secretary*).

READ AT

58 ROMFORD ROAD, STRATFORD, E.,

ON

MONDAY, MARCH 12th, 1900.

CHAIRMAN :

MR. A. BOYLE (*CHAIRMAN OF COUNCIL*).

THE CHAIRMAN announced that the paper which it was expected would be read at this meeting not having come to hand, Mr. James Adamson had most kindly undertaken, at very short notice, to read a paper embodying some of his thoughts on the history of shipping from the earliest times.

Mr. ADAMSON then read his paper as follows :

PART I.

To a nation whose boundary is a girdle of water, the means of transit across the face of the deep is not only of interest but of importance, and when the increase of population exceeds the productive power of the land in respect to food supplies, the question of sea-borne traffic becomes vital. That it assumed this aspect many years ago so far as this country is con-

cerned, has been made patent to all, hence necessity demands that the utmost consideration be given to the export and import trade of the country.

By a provision made in the economy of the universe the wants and requirements of one part of the earth can be supplied by another. Such a provision became known early in the history of the world, and to satisfy these wants, those who had perhaps sailed on the seas for their own pleasure or pastime began to find that they could combine pleasure with gain, so establishing a trade, bartering with the cities and nations they visited, the produce of their own land for luxuries and material which could not otherwise be obtained by their own people.

We have all recollections of a more or less exciting and romantic nature in connection with raft-making or of taking advantage of stray planks to float astride on and paddle away from land, so far as our venturesome mood dictated, and our recollections are probably similar to those who lived in the primitive ages, when youngsters made rafts on which to float, and designed boats to match with their mates in sailing qualities, while their fathers gradually ventured further and further in search of adventures at sea with larger craft round the coast line.

Previous to the establishment of Noah's ship-building yard in the East, experience had doubtless been gained in the building of small boats, if not for ocean, at least for lake and river traffic, but the order received by Noah was, as far as we know, a great advance over what had been previously built; we have similar great and sudden advances in later days.

In a paper read by Mr. Aisbitt three sessions ago, the ark was referred to as 540 ft. by 90 ft. by 54 ft., with three decks, and probably a lower hold; tonnage about 18,000. The capacity, allowing for body shaping, about 1,300,000 c. ft.

The proportionate ratios  $\frac{\text{length}}{\text{breadth}} = \frac{6}{1}$ ,  $\frac{\text{length}}{\text{depth}} = \frac{10}{1}$   
draught of water about 27 ft. in fresh, or somewhat less in salt water. That the proportions of the best

sailing ships of modern times have been approximately the same as those of the great ship of Noah, shows that experience has proved the proportions to which he worked in his design were remarkably good and true.

The dimensions of the *Oceanic* are 704 ft. long, 68 ft. 4½ in. broad and 49 ft. deep with a tonnage of 17,000 and weight of hull about 12,500. She has accommodation for 400 first class, 300 second class and 1,000 third class passengers. The population of the ark may be worked out for comparison as a matter of speculation.

The cargo carried in the ark, its disposition and stowage, and the speculative theories arising therefrom are fascinating, but as we have no data to work from, the subject need not be entered upon further than to say that the accommodation seems to have been ample, judging from what can be done now in the direction of carrying live stock.

These two vessels are here placed in contrast to show their relative sizes, the one built of gopher wood without means of propulsion (*nec remis nec velis*), the other built of steel and fitted with all the latest machinery and appliances for propelling her with the least expenditure of coal, and with the greatest comfort to the luxurious traveller of to-day.

The information we have of the ships built in the early ages of the world is very slender. The allusions made from time to time in the Old Testament, however, show that the art of the shipbuilder and the science of the navigator were well known before the days of Solomon.

The Egyptians had boats, chiefly, if not entirely for river navigation. They appear to have shunned the open sea mainly on account of their superstitious views with regard to it and its supposed horrors. The birth and the flotation on the Nile of Moses show that small boats could readily be made from the reeds that grew on the banks of the river, while these could be made water-tight by bitumen—a substance similar probably to that used by Noah—and which to-day is

found to be one of the best preservatives as a coating for iron. It was also used in the process of embalming by the Egyptians.

The wreck of the vessel from which incident the Hellespont was named, after Helle, daughter of the King of Thebes, is placed in point of time about 3,300 years ago. The *Argo* in which Jason and his fifty-four comrades sailed, is usually referred to as the first sailing vessel of any size. The mode of propulsion was by fifty oars and probably a square sail to take advantage of fair winds. The expedition for which the *Argo* was fitted was possibly not a commercial one; the results of the voyage were, however, of considerable importance, and no doubt served to stimulate others to cross the sea. The dimensions of the *Argo* have not been handed down to us in detail, but some years later, we read that the Egyptians owned a vessel, the *Isis*, about 180 ft. long, 45 ft. broad, and 43 ft. deep.

The ships of Solomon and of the Phœnicians traded to the east and west respectively, and both seem to have sailed also south (the naval station of Solomon being Ezion-Geber on the Red Sea, formerly belonging to the Edomites and taken from them by David) round Africa from the Red Sea to the Mediterranean, some of their voyages extending to three years. Herodotus refers to the merchant ships of the Phœnicians having exported Egyptian and Assyrian merchandise which they sold at Argos, and in the course of one of their visits carried off Io, to retaliate on the Greeks for carrying off Europa. The Trojan war and the large fleet of vessels then built by the Greeks brought the skill and handicraft of the carpenter into considerable demand, and advanced the interests of the community in ship-building. The vessels of this time are represented as open decked, except for the rowers' benches and portions at stem and stern, where retiring accommodation was built in. Hiero is said to have built a ship of 4,000 tons; the dimensions are not definitely known and doubt is cast upon her tonnage, the laws relating to which were likely less exacting than now,



and the desire to exaggerate erred on the large side, while now it is reversed—when dues are concerned.

The Babylonians carried on water traffic, chiefly inland, by means of boats of almost a circular shape; they were constructed of willow ribs, with skin of hides. Some of these are said to have carried 130 tons. The current of the stream carried these boats down to the coast, the steering being done by means of two spars. The up river journey was made by land, the ribs being carried by an ass, brought down in the boat for the purpose, after the cargo had been disposed of, the hides forming the skin of the boat being also sold. This vessel when alluded to in the discussion on Mr. Aisbitt's paper was referred to by the then chairman (Sir F. Flannery) very wittily as of one ass power.

The coracles of the ancient Britons were somewhat similar; the shape differed according to circumstances. The Greenlander used for his boat the material which lay readiest to his hand, and covered his ribs with seal or whale skin, while the New Zealander and American aborigine used the trees of their forests, shaped and dug out to suit their needs and requirements for trading, fishing, or making war upon adjacent coast lines.

The Chinese appear to have retained to the present day the same style of ship which they had 3000 years ago. The Chinese junk is well known from the pictures which appeared on plates and teapots of a generation ago, more so than now, owing probably—for economic reasons—to the development of, and the desire to create a taste for, Indian teas, in order to help as much as possible the exports of our Indian empire. The remarkable way in which the Chinese have almost stood still for hundreds of years has often been commented upon, and although the most ancient of nations it is surprising how the country has been held together by traditions and superstitions.

China being intersected by canals and rivers, and having a coast line on the borders of which are

many islands, boat building must have been commenced early in her history, the notions that the earth was flat, that the Chinese empire was the centre, while they themselves, as a nation, were above and over all, the celestials, have prevailed and still seem to prevail, thus preventing the introduction of western civilisation. The recent war with Japan ought to open their eyes to the fact that something more than paper is required to conquer the opposing forces around them, whether spirit or material. At an early period, there are evidences to show that the products of India, China, and Ceylon reached the market-place of Alexandria, and from the representations of the vessels then in use they are very similar to those in use at the present day by the natives.

The Phœnicians were well situated at the east end of the Mediterranean for purposes of trade and commerce, and by their enterprise and daring became rich and prosperous. They dwelt in a country rich with timber; from the forests of Lebanon they cut down and transported cedar wood, and being, in the days of David and Solomon, on friendly terms with the Israelites, Hiram, King of Tyre, supplied the cedar used in the building of the temple, receiving in return corn and oil and wine, the produce of Palestine. The famous purple dye, which was so much esteemed in the East, was exported by the Phœnicians, made from the shell-fish found around their coast line. Iron and copper mines were within their territory, while from Britain they obtained tin to mix with the copper for the manufacture of brazen vessels. Encouraged by the successful trading of his friend the King of Tyre, Solomon built ships of his own, his building yards being situated on the Red Sea, about the Gulf of Suez.

The ships of Solomon traded to the East, while those of Tyre went West; the pilots for Solomon's vessels were supplied from the trained ranks of Tyre. We read that Solomon imported from India and Africa gold and precious stones, birds of rich plum-

age and apes, in exchange for which were bartered the produce of Palestine and the exchanges received from other nations with which they traded in the West.

The ships of Judah, conjointly with those of Israel in the days of Jehoshaphat and Ahaziah, were somewhat unsuccessful, as we read that the ships being large and cumbersome, the fleet which was about to depart on a voyage to Pontus, was wrecked in one of the frequent storms of the Levant, and Jehoshaphat—possibly concluding that he had erred in joining with Amaziah—took the loss so much to heart that he gave up shipowning, unlike the sailor whom Horace pictures in the lines :

“ *mox reficit rates  
Quassas, indocilis pauperiem pati.*”

It may be noted that in Genesis, Zabulon is referred to as a coming haven for ships, with a sea-board to Zidon, and in the song of Deborah and Barak over their victory, the reproach is cast upon the Danites that they remained in their ships and looked after their merchandise in place of joining their brethren to overthrow the Canaanites.

Besides the trade and commerce carried on by the Phœnicians as shipowners, their caravans were known far inland, and by means of colonies they added to their markets. Carthage for a time proved the colonising adaptability of the race, and even appeared to outshine the original stock by land and sea, although in respect to their moral character as keepers of their promises—according to the views of their enemies—they bore no enviable reputation, Punic faith having become a byword for faithlessness.

For 700 years Carthage flourished by land and sea; holding Spain where New Carthage was founded, it became a base for their operations against Rome in the days of their greatest generals Hamilcar and Hannibal. Before leaving these references to the Phœnicians and their colonies, the following character which has been accorded to them may be quoted : “ As they were merchants, they may be said

to have engrossed all the commerce of the western world; at least, as navigators, they were the boldest, the most experienced, and greatest discoverers of the ancient times. They had for many ages no rivals, and as they delighted in establishing distant colonies, their exertions in that particular were so numerous, that when it is recollected their country was in all probability little more than the narrow slip of ground extending between Mount Libanus and the sea, it must appear not a little surprising how they could furnish such extensive emigrations without causing an absolute depopulation of their whole country."

The expeditions of Alexander the Great opened up vast territories to the explorers, and were instrumental in bringing the eastern and western hemispheres into commercial relationships. The fleet of Alexander fitted out for his expedition to the Indus consisted of about 1,000 vessels, of which thirty to forty were ships of war; this started in October, B.C. 326. The death of Alexander left incomplete the schemes of commercial centres he had planned, and on the day he departed this life, although beset by sickness, we read that he continued to give instructions as to the movements of the fleet; but when the master spirit passed away, the empire and its destined plans fell to pieces. This fleet was less than that of Xerxes 150 years before, which consisted of 5,000 vessels. The Romans were not sailors by choice; they, however, found it necessary to carry on their commerce and warfare to some extent by sea. The luxury and wealth which brought about the destruction of their empire proved a bait readily seized by the hordes which surrounded them, and showed also the vigour and fearlessness of the Goths in embarking on the sea in order to overrun the territory of their neighbours—made effeminate and callous by reason of their pride engendered by luxury and ease.

The fall of Rome and the withdrawal from Britain of the Romans followed, and Europe became a pillage ground for the Barbarians for a time, until Justinian reformed the empire, and with the infusion of new

blood Rome again became a power by land and sea, with a fleet of 500 vessels.

The Vikings now come upon the scene as the most intrepid and daring sailors; their movements over the face of the waters were, however, more piratical than commercial. They appear to have had vessels of 100 ft. long, well-made and skilfully put together; these vessels they managed with ability, as the speed with which they seem to have sailed from shore to shore testifies.

Charlemagne for France and Offa of Mercia for England then carried on trade and commerce by ships, gradually improving the vessels. The Danes following on similar courses to those of the Vikings, hindered the progress of shipping for a time until Canute restored quiet for the development of sea-borne traffic among the nations which he controlled. In the days of Harold, a sailor received as wages £2 16s. 8d. per annum.

William the Conqueror, to overcome the Danes, had a fleet of war vessels built, after which commerce again moved forward. The Crusade, with the large fleet of vessels taken by Richard to the Levant, served to give a great impetus to the sea-borne trade of England and France, and laws were framed for the regulation of ships and all connected with them and their traffic. The first Shipping Code was established about the year 1200.

Soon after this period, piracy became so common in the Channel, originated probably as a result of the sea-fights between England and France, that it became necessary to make penal enactments against those found guilty and caught in acts of piracy. The commerce of the nations was restricted to such an extent that prices increased, shipowners were ruined and merchants suffered severely, trade was stagnated, and the piratical acts of one nation led to retaliation by another. Severe measures were adopted and a fleet of war vessels for the protection of commerce was constructed, while international arrangements were made for the purpose of maintaining commercial relations for mutual advantage.

The arrangement thus made in the reign of Henry III again started the onward tide of prosperity, and shipowners and merchants rejoiced to carry on their business, while the people reaped the benefit in having placed within their reach articles from across the seas hitherto beyond them. London was followed by Liverpool as a receiving port, and ships were now built on better lines and with more taste, as experience dictated. Edward II helped forward the maritime progress of England to some extent, but it was greatly impeded by the wars and strifes of nations at this time, during which others began to see the gain and profit attached to peaceful commerce, and while England quarrelled with her neighbours stepped in and secured the sea traffic she was compelled to neglect. Antwerp took the place of London and the fruit remains to this day, while the Hanseatic League cities flourished more and more. The fleet built and partly chartered by Henry V—1,500 vessels—led to the subsequent claim of England as having the “Dominion of the Sea.”

The French from Marseilles, the Venetians, Genoese and others sent forth their ships upon the waters for trading purposes, confining their voyages, however, to the Channel and the Mediterranean Sea.

Florence, famous for her land trade, commerce and bankers, set herself to the business of ship-owning, and came to the front in her efforts; her shipping laws being in the direction of keeping the food required by her people cheap, restricting the export of grain, etc., her rulers aiming also to keep their habits frugal, and avoid the errors which had brought about the pride, avarice and luxury, and ultimate fall of Rome and surrounding States; how far they were successful is matter of history. It may be incidentally mentioned here that the punishment awarded to a sailor found gambling was that he be dipped in the sea three mornings successively.

The achievements of the Dutch, Portuguese and Spaniards as navigators are well known in history, and need not be detailed, but the discovery of the

then new route to India by the Portuguese is worthy of note, by the seamanship of Diaz, who discovered the Cape of Good Hope in 1486, and by Vasco de Gama, who sailed round it to the East.

Soon after, Columbus, a Genoese, backed by Spain, started to the West, and discovered the Continent of America, where it had previously been found 500 years before by Æloph, the Norseman.

The labours of Marco Polo, Vasco de Gama, and Columbus fired the enthusiasm of the maritime nations of Europe to further deeds of daring and discovery, while the invention of the mariner's compass in the fourteenth century rendered future enterprises more certain, and then began the work of making the whole habitable globe a market-place, and the lands beyond the seas acquainted with the advancing tide of civilisation, its undercurrents, and its wrecks.

The pioneering work and the privateering carried on by Sir Francis Drake, Raleigh and others, the expeditions of Captain Cook and the many adventurous spirits who followed him gave a great forward movement to the development of British trade and commerce. The colonisation of lands by the aid of convict establishments was a rough way of dealing with a new territory, but in the main it served the purpose for the time, and no doubt gave a new lease of life to many who might otherwise have been lost.

The songs of Dibdin and the works of Kingsley, Marryat, and others, very materially assisted to foster and encourage youngsters to desire

“ A life on the ocean wave,  
A home on the rolling deep.”

and it is well that the desire should still be encouraged, although much of the romance has disappeared.

