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# THE EFFECTS OF SHIPPING COMPETITION ON FREIGHT RATES.<sup>1)</sup>

## A REVIEW OF THE NORMAL PRICE THEORY.

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1. Competition in the shipping business.
2. "Laying-up point" of freight rate.
3. The lowest limit of freight rate.
4. The slow recovery of freight rate through circumstances connected with suppliers.
5. The conversion of natural value into artificial value.

### 1. COMPETITION IN THE SHIPPING BUSINESS.

The shipping business can be started freely and easily. Consequently, in the shipping world, it is as free and easy to begin competition with others as to join the competition already going on. In other words, the shipping business is of a kind which admits of free competition for all. From this point of view, it may be said to be highly competitive by nature.

But if free competition means not only the freedom with which one can start or join in it, but the absence of all restrictions on the act of carrying on competition (competitive acts), and the freedom of withdrawing from competition, rivalry in shipping circles cannot necessarily be described as free, for although the shipping business, by virtue of its nature, carries no restrictions on the starting, on the joining in, and on the conducting of competition, there is not so much

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<sup>1)</sup> This article is a commentary on the "Fall of Freight Rates under Competition," which, forming the first part of my article, appeared in the first number of this Review under the caption "Shipping Combinations as seen from the Viewpoint of Freight theory."

freedom in withdrawing from the competition as there is in joining in it.

The reason why withdrawal from competition is not free in the shipping business is that the major part of the working capital is fixed in the shape of vessels. Unlike factories, a vessel cannot be operated in part, nor can it be suspended from operation in part. Its whole activity must be suspended or it must be operated as a whole. If, therefore, those who are engaged in marine transportation desire to curtail their business under the pressure of competition, they have no alternative but to suspend the operation of at least one of their vessels, that is to say, to lay it up. On the other hand, when a vessel is laid up, not only is the whole of the capital invested in it left unutilised but its owner is involved in heavy expense. Thus, shipowners have to continue their competition, though against their will, if they find that the loss entailed upon them by continuing competition is less than what they expect to incur if they lay up their vessels.

Although vessels constitute fixed capital, from the point of view of those engaged in marine transportation, they are, in a sense, a kind of commodities in the world market. If they desire to sell their vessels, they are able to find purchasers. With regard to those vessels the original price of which was largely written off during the days of the business boom, they can be sold without loss, nay, with a good margin of profit. On the other hand in the case of those vessels the original price of which had not been written off before the business depression set in, they cannot be sold unless at a heavy loss. The more prosperous the shipping business becomes, the more do vessels acquire the nature of a commodity and *vice versa*. If competition forces the freight rate down below the cost of marine service and vessels are operated at a loss, such vessels, as productive property, are of minus value. Such being the case, the owners of such vessels find it impossible to sell their vessels, unless there happen to be buyers who are optimistic of the future prospects of the shipping world. So long as these vessels are

left on their hands, they form a fixed capital, without doubt, and so long as shipowners are burdened with this fixed capital they are not in a position to withdraw from shipping competition, being compelled to keep up rivalry against their will. This circumstance rather militates against the theory that competition in shipping circles is free.

As already stated, although one is free to join shipping competition, one is not free to withdraw from it, as the result of which there is a tendency for the rivalry in the shipping world to grow keener. There are, moreover in shipping circles, causes which stimulate competition. As the more important of these causes, the following two facts may be mentioned :—

(1) Inasmuch as it is both easy and free to start the shipping business, one can, on the return of shipping prosperity, newly start it or extend the scope of the business already in operation, with the result that the number of new ships grows and the supply of tonnage in the shipping market increases. In days of business prosperity, the increased tonnage shares in the profits that the boom brings to the shipping industry, in competition with the tonnage already available, and when the business depression sets in, it renders the competition in shipping circles generally all the keener. Viewed from standpoint of an individual shipowner, it is naturally said that if he sees that the shipping depression is not likely to be removed for some time, he can withdraw without loss from the shipping competition by disposing of his ships, in case of their original prices have already been largely written off. If he has ships whose cost of marine service is comparatively high, he can better his shipping business account, as a whole, by selling them even at a loss, before the market freight rate has declined to a point equivalent to the cost of its marine service, thereby improving his position in relation to his strong competitors to a certain extent. But these vessels still continue their activity in the shipping market after they have changed hands, and, in fact, the new owner is in a position to carry

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on competition with some advantage until the shipping depression deepens, as he will probably have bought them at prices which enable him to operate at a profit at the ruling freight rate. Such being the case, the ebb and flow of the tides that set in the shipping world always stimulate shipping competition.

(2) The reduction in the cost of marine service which results from the development of the shipbuilding and the mechanical industries is another stimulant to competition in shipping circles. In the railway business which is monopolistic, technical improvements and inventions, which tend to lower the cost of its service, go to increase the profit of those who operate the business almost exclusively, but in the shipping business, in which competition is free, they never fail to create new rivals or accentuate the competition between shipowners. In the shipping business, new devices are constantly being invented and applied by which the cost of marine service can be reduced. Indeed, the improvements and inventions made in the shipbuilding and the mechanical industries are simply surprising. These improvements and inventions are so designed as to enable marine service to be offered more cheaply than older ships have been able to offer. In the days when the shipping business prospers, therefore, a greater margin of profit can be realised by operating these new ships. Even when the business is so depressed that none of the owners of old ships is able to find any profit at the freight rate ruling in the market, a fair profit can be gained by operating ships which are provided with these new improvements and inventions. This being so, men of an enterprising spirit may be found to enter the shipping world as new competitors with their ships armed with new appliances, not only in the days of shipping prosperity but in those of depression. As for the owners of shipyards and machinery works, they put forth increasing endeavours to introduce improvements and make inventions, wherever possible, as they know that if they can produce ships which can be worked more profitably than those

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already operating, they can count on orders being placed with their works for the construction of ships even in days of shipping depression. So long as new improvements and inventions are made in the shipping and mechanical industries, there does exist a factor which stimulates rivalry in the shipping business in the days of depression as well as in time of shipping prosperity.

As already mentioned, the shipping business not only affords a very free field of activity for all, but is of a nature that can be started with great ease, and this fact, coupled with the prosperity that often comes to the shipping business and the improvements and inventions that are constantly made in the shipping and mechanical industries, tends to accentuate shipping competition. It is hardly necessary to say that the competition, when it is allowed to take its natural course, leads inevitably to the reduction of the freight rate. When the demand for marine service declines and there occurs an over-supply of such service, or, in other words, when the demand for tonnage falls off and a surplus of tonnage is brought about, there arises a sharp competition between shipowners who try to procure cargoes for their ships by reducing freight rates. Such is not confined only in the tramp business. In the liner business the case is almost the same. The offer of marine service at cheap freight rates is the tactics usually employed by those shipowners who desire to open a regular steamship service on a line on which other shipowners are already operating their ships. In either case, the freight rate is bound to fall, as long as the competition continues and grows keener. How far can the freight rate be lowered, then, as the result of the competition?

## 2. "LAYING-UP POINT" OF FREIGHT RATE

In order to explain the limit to which the freight rate can be lowered, some explanation is required about the elements constituting the cost of marine service. The cost

of marine service can be classified in different ways, but here the classification will be made with the ship as the basic factor, for convenience sake in our present purpose. The cost of marine service may be said to consist of the fixed cost, or the cost concerning the ship which forms the fixed capital, viz., the interest on the original price of the ship, the depreciation of the ship's value; the managing cost, as represented by the insurance for the ship, cost of repairs, wages and the pay for the crew and officers, cost of food supplied to the crew and to the officers, cost of the articles consumed, miscellaneous expense on board, and shore expenses (that is to say, part of the so-called office expense allotted to it); and the navigation and handling costs, namely, fuel expense, cargo expense, expense of account of passengers, and harbour expense. As regards the fixed cost, it is absolutely necessary, so long as the shipping business is carried on, no matter whether marine service is offered or not, while the managing cost can be somewhat reduced, in case marine service is not supplied, though some part of this cost is needed, irrespective of marine service. So far as the navigation and handling cost is concerned, this is not required at all, if marine service is not supplied.

The amount as well as the percentage of the fixed, the managing, and the navigation and handling costs varies according to the lines on which ships are employed, and also on the size and the age of the ships and the kinds of engines used, and the nature of the cargo carried; but it is hardly necessary to say that when the freight revenue falls short of the aggregate of all these expenses, the shipowner stands to lose by continuing navigation. So, if the shipping business is one which could be suspended without any loss being incurred, and if those in this business could freely withdraw from competition at any time, shipowners would, in such cases, suspend the operation of their vessels and lay them up.

But if a shipowner withdraws from competition and decides to lay up his ships, he must be prepared to bear the fixed cost, or the expenses on account of the fixed capital

invested in his ships, and the positive cost needed for the maintenance of the ships, or part of the managing cost. It is clearly a loss to the shipowner that he has to bear such expenses in time of business suspension. From the point of view of the shipowners, therefore, if the loss arising from continuing their marine transportation business is less than the loss that results from laying up their ships, it is better for them to continue the business, even though the freight rate does not come up to the cost of marine service. This raises the question how great a decline in the freight revenue caused by the falling of market freight rates makes the loss arising from continuing the shipping business equal to the loss resulting from the laying up of ships.

Now let  $f$  denote the fixed cost during a certain period,  $m$ , the managing cost involved when the ship is in operation,  $n$ , the navigation and handling cost,  $m'$ , the managing cost involved when the ship is laid up, and  $E$ , the freight earning, during the same period respectively. Then the total costs of marine service can be indicated by  $(f+m+n)$ , while the loss involved in transportation by  $(f+m+n)-E$ , and the loss resulting from the laying up of the ships by  $(f+m')$ . Thus it will be seen that the formulae (a) and (b)

$$(a) \quad (f+m+n)-E=(f+m')$$

$$(b) \quad E=(m-m')+n$$

represent the freight earning on the demarcation line dividing the continuance of marine service and the laying up of the ships on the part of the shipowners. If a shipowner can realise an earning above this standard, he will continue to keep his ships in operation; while if the freight earning falls below it, he will, theoretically to say, decide to lay up his ships, from the economic point of view. Therefore I want to say that the earning of a ship is at the *laying-up point*, when it is equivalent to  $E$ , in the equation of  $E=(m-m')+n$ .

In my article in the first number of this Review, I employed the formula,  $c-x=l$ , in explaining the laying-up point. The relation of this formula to that which I now adopt in the present article can be made clear later on.



Inasmuch as the shipowner finds it advantageous to continue marine service until the laying-up point is reached, even if the freight earning does not come up to the cost of marine service, no relaxation of competition can be looked for, so long as the freight earning is above the laying-up point. At what point, then, the freight rate settles itself under such competition? Before replying to this question, it is necessary to add a little more explanation about the laying-up point.

As already stated, the laying-up point of shipping earning can be indicated by

$$E = (m - m') + n$$

The values of the terms of this equation, however, differ with the ship. As can be seen from the above formula, the laying-up point is in direct proportion to  $m$ , representing the managing costs when ships are operating, and the navigation and handling costs,  $n$ , and in inverse proportion to  $m'$ , which represents the managing costs when ships are laid up. The various expenses incurred while ships are laid up, as represented by  $m'$ , have nothing to do with the efficiency of ships and engines, but the expenses on account of the officers and crew, fuel and the loading and landing of cargo, which are included in  $m$  and  $n$ , representing the managing costs and the navigation and handling costs respectively, have a good deal to do with the efficiency of ships and engines, because ships with high efficiency can be worked by a comparatively small crew, and little trouble is involved in the loading and landing of cargo or in taking in fuel. Again, highly efficient engines need a comparatively small quantity of fuel to generate an unusual quantum of horse power. The value of  $m$  and  $n$  is smaller for ships and engines of high efficiency as compared with their value for ships of lower efficiency, with the natural result that both the cost of marine service and of the laying-up point of freight earning are low.

Thus, the laying-up point varies with the ship. Even with the same vessel, it varies, as the quantity of the goods

which it chances to carry differs. In the former formula indicating the laying-up point,  $E$  represents the freight earning. Freight earning is the product of the quantity of cargo loaded on a ship multiplied by the rate of freight. Taking  $t'$  to indicate the goods loaded and  $r$  the rate of freight, the equation  $E=rt'$  will be obtained, and the laying-up point may be shown by the following expression, in regard to the rate of freight:—

$$r = \frac{(m-m') + n}{t'}$$

In this equation, it is shown that  $r$  or the freight rate at the laying-up point is proportional to  $(m-m') + n$  and in inverse proportion to  $t'$  or the quantity of goods loaded. In the relation of  $t'$  to  $(m-m') + n$ , as  $t'$  or the quantity of goods loaded becomes smaller, the special cost of marine service in regard to the transportation of cargo, which is included in what is expressed by  $(m-m') + n$ , becomes equally smaller, but the cost to be reduced forms only a small part of the navigation and handling costs represented by  $n$ . The managing costs involved when the ship is in operation, as indicated by the letter  $m$ , has nothing to do with the size of  $t'$ . Nor has  $m'$ , which stands for the managing costs involved when the ship is laid up anything to do with  $t'$ . Be it observed that  $m$  is always larger than  $m'$ . Even the cost of fuel, which constitutes the heaviest part of the navigation and handling costs, as represented by  $n$ , is not influenced substantially by the size of  $t'$ . As to pilotage, harbour dues and tonnage duty, they have nothing whatever to do with  $t'$ . Only the wages for the coolies employed in loading and landing operations, the cost of materials needed for such operations and the insurance for the carriage of the goods shipped, increase or decrease in proportion to the size of  $t'$ . The special cost of marine service for the goods carried varies according to the steamship routes, especially the shipping and landing ports, and the kinds of goods carried, and yet, it forms only a small part of the whole, represented by

$(m-m')+n$ . The reduction that comes about in  $(m-m')+n$ , because of the reduction in  $t'$ , is very slight, and in no circumstances is there any proportionate increase or decrease between  $(m-m')+n$  and  $t'$ .

As the rate at which  $(m-m')+n$  is reduced in consequence of the reduction in  $t'$  is comparatively very slight, it is clear that in  $r = \frac{(m-m')+n}{t'}$ ,  $r$ , as representing the freight rate at the laying-up point, waxes as  $t'$  becomes smaller. Now, let the full carrying capacity of the ship be indicated by  $t$ , then her laying-up point is lowest when  $t'$  is equal to  $t$ , that is to say, when  $r = \frac{(m-m')+n}{t}$ , and as  $t'$  becomes smaller than  $t$ , the freight rate representing the laying-up point goes higher. In other words, when the quantity of goods which the ship is called upon to carry is equal to her full carrying capacity, that is to say, when her holds are fully occupied, the freight rate denoting her laying-up point is lowest. As the quantity of goods which she chances to carry falls below her full carrying capacity, the freight rate embodying her laying-up point becomes gradually higher. Thus, the laying-up point becomes higher or lower, according to the quantity of goods which the ship happens to carry.

But as it is intended that the cost of a number of sailings (joint costs of several trips) should be met out of the total freight earning accruing from a succession of voyages, the ship is not to be laid up simply because the freight earning for a single trip has fallen short of the laying-up point. It is not until there occurs a general decline in the quantity of the goods entrusted to her for transportation on several voyages or there has developed a tendency for the earning from voyages to fall below her laying-up point that she is laid up. Supposing that a ship makes five voyages, on each of which she is to carry a different kind of merchandise, a, b, c, d and e, there will be five kinds of

$r$  and  $l'$ . In this case, the ship's earning is at the laying-up point when it can be shown by the following formula:—

$$(r_a t'_a + r_b t'_b + r_c t'_c + r_d t'_d + r_e t'_e) = (m - m') + n$$

And when there develops a tendency for

$$(r_a t'_a + r_b t'_b + r_c t'_c + r_d t'_d + r_e t'_e) < (m - m') + n$$

to continue, this ship is compelled to be laid up.

In order to generalise the question of the laying-up point, let us indicate the general numerical value of  $r_a, r_b, r_c, r_d, r_e, \dots$  by  $R$  and the number of terms by  $y$ , and then find the average quantity of goods carried. Ships are not always loaded to their fullest capacity, nor do they always make voyages in a condition little better than in ballast. There ought, therefore, to be an average quantity of goods carried in ordinary circumstances. Let this average quantity of goods carried be indicated by  $T$ .  $T$ , like  $t$  which represents the ship's full carrying capacity, has a fixed numerical value for a specific ship. Then we have a formula shown by

$$E = \frac{(r_a t'_a + r_b t'_b + r_c t'_c + r_d t'_d + r_e t'_e + \dots)}{y} = RT$$

The freight rate at the laying-up point can be shown by the following formula:—

$$R = \frac{E}{T} = \frac{(m - m') + n}{T}$$

In this way, a ship may be said to be at the laying-up point when the market freight rate declines to the extent of  $R$ .

Next, the laying-up point, as already explained, means that the market freight rate which, being below the cost of marine service, makes the loss resulting from the continuance

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The formula employed in my former article to indicate the laying-up point was  $c - x = l$ . If the formula used in the present article is applied,  $x$  is  $R$  in the present case,  $c$  is  $\frac{f + m + n}{T}$ ,  $l$  is  $\frac{f + m'}{T}$  and  $c - l$  is  $\frac{(m - m') + n}{T}$ .

of marine service equal to the loss arising out of the laying-up of ships. Should the market freight rate decline to this point, the shipowner might well be expected to lay up his ships, if the whole situation be viewed from the economic point of view exclusively. But, as a matter of fact, the shipowner cannot frame his business policy merely in consideration of the relation between revenue and expenditure. Accordingly, even when the market freight rate is below the laying-up point referred to, the shipowner may not decide to lay up his vessels, and, in fact, some vessels are operating in competition with their rivals at the market freight rate which is below the laying-up point.

The circumstances which prevent shipowners from framing their business policy solely out of regard for the relation between revenue and expenditure are particularly marked in connection with the operation of regular lines. In a regular steamship service which is maintained in competition with other rivals, the shipowner cannot suspend it even for a time. For him to withdraw his ships from it to avoid competition means the loss of the position which has been built up by years of hard labour, the result being that the line is entirely given up to his rivals. If he desires to regain his former position on the line at a later date, it is very doubtful whether he will succeed in his attempt, even if he put forth twice as much endeavour as he used to. It, therefore, follows that for the operator of a regular service to withdraw his ships from it under such circumstances means, not a temporary suspension of service, but the permanent abandonment of it. Entirely different circumstances rule in regard to tramp steamship services, from which shipowners can as easily withdraw their ships as they can resume them on the return of shipping prosperity. Such being the case, the owners of regular lines are compelled to maintain their lines at heavy sacrifice, even if, considered from the economic point of view only, it is advisable to lay up their vessels. The laying-up point, therefore, counts for little in a competition between the operators of regular lines.

In the tramp services also, shipowners sometimes refuse to lay up their ships even when the market freight rate is below the laying-up point. One instance of this is furnished when a ship is mortgaged. The current price of a ship becomes nil when the cost of marine service supplied by it is equal to the market freight. If anybody attaches any value to it, it is because he anticipates a rise in freight. In existing circumstances, it has no value whatever as productive property, apart from the value of the materials of which it is built. When the market freight not only falls below the cost of marine service but reaches the laying-up point, the possession of the ship clearly means a loss to its owner. Then, the ship can only be of minus value. If, therefore, a debtor shipowner lays up his ship in mortgage, the creditor will never fail to demand an additional security, as the laying-up the ship itself indicates that the mortgage is of minus value. If the creditor is well posted up in shipping matters, he will demand an additional mortgage before the market freight falls below the cost of marine service, but as the voyage account is not very evident to outsiders, the creditor remains indifferent in most cases, so long as the ship in question is operating. Once it is laid up, however, it becomes clear even to the most unobservant creditor that it has been reduced to a minus value, and he will then insist upon having fresh mortgage. As for the debtor shipowner, he tries, by hook or by crook, to continue his business at a loss in competition with his rivals, in order to avoid the painful necessity of putting up additional security, hoping in the meanwhile for a fortuitous return of shipping prosperity.

Another example of the continuance of marine service at a loss on the part of the trampowners instead of laying-up their vessels, is seen when they attempt to avoid the stoppage of the supply of funds that would otherwise take place. In the case of a small shipowner who is doing the shipping business with a few tramp steamers, the instant he decides to lay up his vessels, the supply of funds will be cut off, and if he has no revenue other than shipping, he will soon

find himself unable either to pay his office expenses or to meet his costs of living. While, on the other hand, if he keeps his ships in operation under very adverse circumstances or at a loss, he can count on some revenue and can make shift to keep up his business. Such being the case, a shipowner with a small fund to draw upon is sometimes found to be continuing his business at a freight below the laying-up point, anxiously awaiting the return of shipping prosperity in the meanwhile.

Since shipowners do not necessarily decide to lay up their vessels simply because they cannot find their account in continuing operation, it would be too hasty to conclude that the decline of freight to a point below the laying-up point results inevitably in the withdrawal of their ships from the actual service, but, apart from the owners of regular liners, it is only the exceptional trampowners who would adopt such reckless methods of management. It is all very well if, due to changes in the position of those who need tonnage, there comes about the revival of freight at an opportunate moment, when this reckless mode of business management is being pursued, but if such favourable changes do not occur, the hopes for the return of business prosperity will be shattered and his vessels will eventually have to be withdrawn from actual service. Trampowners are not generally expected long to keep up their competition when freight rules below the laying-up point, and when there is a persistent tendency for freight to decline. As a general rule, tramp steamers are laid up, as the market freight rate drops to the laying-up point.

### 3. THE LOWEST LIMIT OF FREIGHT RATE

As already explained, in the shipping business, ships keep up their active service in competition with their rivals, so long as the market freight remains above the laying-up point, even if it does not make up for the cost of marine service. Granting, then, that ships are laid up as freight

declines, to what extent can freight fall? I now propose to take up this proposition which was previously formulated. This question was discussed in the article appearing in the first number of this "Review", but in order to elucidate my point of view more clearly, I must now deal more in fuller detail with it.

It is superfluous to say that a decline in freight is caused by an over-supply of tonnage. Three different cases of an over-supply of tonnage are conceivable. The first case is that the tonnage available at a given freight rate exceeds the demand for tonnage at that freight rate. This is an over-supply of tonnage in a generally accepted sense. The second case is that the tonnage available exceeds the demand for it, if freight rates which are above the cost of marine service are charged by all. The last case is that the tonnage available exceeds the demand for it, if freight rates charged by all are above the laying-up point. The second and last cases are special cases of an over-supply of tonnage in the sense of the first-mentioned case. When it becomes accentuated to a certain extent, the second case comes about, and when the excess of supply mentioned in the second case grows more extreme, the last-mentioned case is created. As what I propose to study in the present article refers to the limit of the decline of freight under the pressure of competition, the over-supply of tonnage in the sense of the last-mentioned case is kept in view in the discourse that follows.

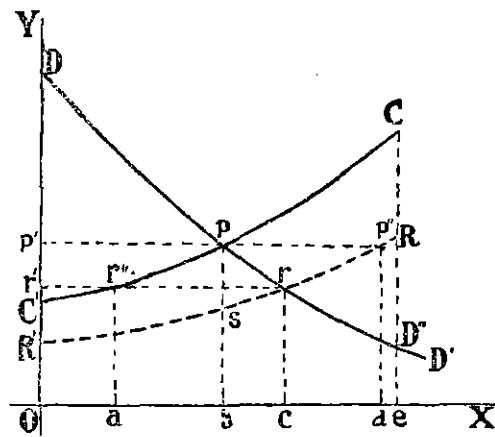
Needless to say, the decline of freight is most pronounced when there occurs an over-supply of tonnage in the sense of the last-mentioned case. As, in this case, an excess of supply takes place, if all ships would charge rates above their laying-up points, ships with high laying-up points will have to retire from actual service to the extent of the over-supply actually existing, as they are unable to compete successfully with those with lower laying-up points. In consequence, the market freight is fixed at the laying-up point of the ships which are on the border line between actual service and



retirement from service, or, in other words, at the highest of the laying-up points of the vessels remaining in the field of actual service. This constitutes the lowest limit to which the freight rate can be lowered by competition in the tramp business.

We can conceive various rates of freight, but it must be remembered that different ships stand differently under each of these rates. For instance, a freight which is above the cost of marine service with some ships may be below it with other ships, and even below the laying-up point with some of these vessels. With regard to the ships falling under the last-mentioned category, they are withdrawn from service, as the loss caused by operating them at this freight is heavier than that which is incurred by laying them up. As regards those ships with which this freight is below their cost of marine service but above their laying-up points, they continue in actual service in spite of the loss which is incurred by doing so, as the loss suffered by continued operation is smaller than the loss caused by laying them up. Thus, in a market in which there is an over-supply of tonnage in the sense of the last-mentioned case, a freight rate which is fixed when the surplus of tonnage is excluded from the field of actual service and an equilibrium found between the tonnage supplied and the tonnage demanded—that is to say, a market freight rate—ought to be equivalent to the amount representing the laying-up point of ships on the border line of actual service.

I will repeat my explanation of the above theory by



means of a diagram, which I used in my article appearing in the first number of this Review. In the diagram, the base OX represents quantity, *i.e.*, tonnage in our case, and Oe on the OX line represents the amount of tonnage of the ships actually existing in a certain shipping market, while the length of any line, from the left end, running parallel to the OX line above it represents the amount of tonnage supplied or demanded at various freight rate. The height of the OY line which crosses the OX line perpendicularly or that of the lines standing parallel to the OY line represent prices, *i.e.*, freight rates. The DD' line is what is called a demand curve which represents the condition of those who demand tonnage at certain periods, and in this diagram it shows a series of tonnage in demand at freight rates of various grades. The CC' line represents a series of the costs of marine service per a transportation unit (one ton for instance) for each vessel standing in order on the base OX (or C in  $C = \frac{f+m+n}{T}$  in the formula already given). The RR' line represents a series of freight rates at the laying-up points for a transportation unit for each vessel (or R in  $R = \frac{(m-m')+n}{T}$ ). (Therefore, the distance between the CC' line and the RR' line represents  $\frac{f+m+n}{T} - \frac{(m-m')+n}{T} = \frac{f+m'}{T}$  or the cost of laying up vessels for the unit of the average tonnage carried by each of the vessels). If those engaged in marine carrier service were to refuse to undertake the transportation of goods at rates below the cost of marine service, the tonnage which would be active would be confined to Ob, and the freight rate would find its level at p. But, as already mentioned, they are ready to undertake the transportation of goods even at rates below the cost of marine service, provided they are above the laying-up point, the Oc tonnage will continue in service, and the freight rate will settle at r, instead of at p. In this case, therefore, the supply curve is the RR' line, not

the  $CC'$  line. Accordingly, the  $RR'$  line represents not only a series of the laying-up points but that of the prices at which those engaged in marine transportation respectively are ready to offer their marine service (as represented by the quantity of tonnage).

In a shipping market in which the relation between supply and demand can be indicated by the diagram just explained, the market freight rate settles at  $r$ , and of the existing tonnage  $Oe$ , the tonnage  $Oc$  remains in service, while  $ce$ , being laid up, is excluded from actual service. Even in regard to  $Oc$  representing in this case the tonnage in actual supply that which operates at rates above its cost of marine service, or that which realises the business profit is limited to  $Oa$ . The vessels that come between  $a$  and  $c$  operate at rates below their cost of marine service, or, in other words, at a loss. Supposing that the tonnage in the given market is  $Ob$ , instead of  $Oe$ , then the freight rate will settle at the point  $p$  in order to maintain equilibrium between supply and demand, and will accord with the cost of marine service for the vessels on the border line of supply. The result is that the vessels that come between  $a$  and  $b$  need not operate at any freight below the cost of their marine service, and all except those vessels which are at  $b$ , which forms the border line of supply, can gain some profit, while those between  $O$  and  $a$  are able to realise a bigger profit than when the tonnage in actual supply is  $Oe$ . In our case, however, the tonnage in actual supply is  $Oe$ , instead of  $Ob$ , as referred to, the vessels between  $O$  and  $b$  will have to compete with those between  $b$  and  $e$ , and as the result of the freight rate settling at the point  $r$ , only  $ce$  will have to be laid up. While  $bc$  will continue in service, instead of being laid up,  $ab$  must be operated at a loss, and the profit of  $Oa$  will be reduced. (But viewed from the standpoint of the  $bc$  or  $ce$  tonnage, if there did not exist the tonnage  $Oa$  or  $Ob$ , both the  $CC'$  line and the  $RR'$  line would be obliterated left of the vertical line falling on  $a$  or on  $b$ , and it would move leftward to the extent of  $Oa$  or  $Ob$ , with the result

that the freight rate would settle at a point higher than the point *p* on the *DD'* line, and some of this tonnage would be able to operate with some profit, while some would be saved from the fate of being laid up, though some loss would attend their operation. As this, however, is aside from the question which demands immediate attention, I will take it up here.)

#### 4. THE SLOW RECOVERY OF FREIGHT THROUGH CIRCUMSTANCES CONNECTED WITH SUPPLIERS.

Under the conditions referred to, the market freight rate is fixed at the point *r*. So long as there occurs no change in the position of those who demand tonnage, it cannot rise above that point. It, therefore, follows that the tonnage between *a* and *c* continues operation at a loss, provided these conditions persist and there is the wherewithal to do so. Of course, if it were clear from the beginning that such conditions would continue to endure for a long time, all would be willing to give up their business as quickly as possible so as to avoid their capitals becoming exhausted on account of losses. But as the future course of events is unknown to anybody, many continue their business under unfavourable conditions in the hope that even if there be no visible sign of the immediate return of business prosperity, at the present time, that such a sign will appear sooner or later, and that the revival of business will become a reality. Moreover, those in shipping circles will remember that a period of deep depression was often followed by one of great prosperity, and that the occurrence of emergencies such as war put a sudden end to the business stagnation and ushered in an era of extraordinary business activity. On such occasions, they could not only repay the heavy debts contracted in the days of the shipping depression but in addition amass big fortunes. The recollection of such experiences strengthens them in their determination to keep

their vessels in actual service, so long as they can find money to do so, even at a loss, and so long as they keep up their competition under such conditions, it is impossible to expect the freight rate to recover to the point of paying for the cost of marine service, provided there occurs no change in the condition of those who demand tonnage.

While the freight rate is at the point  $r$ , the  $ce$  tonnage is laid up, but this laid-up tonnage plays its part in the changes that subsequently come over the freight rates. Although it is not actually available while it is laid up, yet it is, in the shipping market, an entity embodying a potential supply, as they still exist as ships, and their laying-up is simply for reasons connected with freight rates. If the market freight rate rises above  $r$ , some of this tonnage comes back into the field of actual supply, because it finds that it is relatively more advantageous to operate at that freight rate than to remain laid up. And this has the effect of preventing freight from recovering.

Supposing that no change, in the case described above, takes place in the condition of those who demand tonnage and that things go on as they have been, the loss of the  $ac$  tonnage will increase, as time passes. Especially with regard to the vessels near the point  $c$ , the amount of loss will mount up considerably with the lapse of time, as the losses from fruitless voyages are heavy. In the meantime, the  $ce$  tonnage, while it is laid up, goes on suffering the loss of a certain amount every day or every month, and here also the losses grow very heavy as time passes. Such being the case, some owners of the tonnage falling between  $a$  and  $c$  and  $c$  and  $e$  finding themselves unable to go on bearing such losses, decide to break up their vessels or go bankrupt. The ships belonging to bankrupt shipowners may either be disposed of at the price of the materials only of which they are built or be sold, at very reduced prices, to purchasers who have hopes of the recovery of business. But as this simply means that the purchasers of such ships become the sufferers of the losses in lieu of the sellers, these ships must

sooner or later be broken up. (As already explained, ships which are already at the laying-up point in relation to the ruling market freight rate, though they remain as ships, are of minus value as productive property.) Thus, so long as no change comes over the condition of those who demand tonnage, ships which are operating at a loss and those which are laid up are destined to be broken up sooner or later, with the result that there will be a reduction both in the actual supply of tonnage and in the potential supply of it, and a gradual rise in freight rate owing to the altered situation on the part of the suppliers.

Inasmuch, however, as nobody can foresee what may happen in future, neither the shipowners who are operating their ships at a loss nor those who keep their ships laid up decide to break them up, unless they go bankrupt or their bankruptcy becomes evident. This being so, the rise of the freight rate through the altered conditions on the part of suppliers cannot be easily expected, even if the market freight rate falls below the point *r*. Furthermore, the time when ships are broken up, granting that they are of the same age, is largely in inverse proportion to the amount of funds possessed by their owners, and wealthy shipowners can put up with the losses caused by the laying up of their ships for a long time. For instance, the Shipping Board of the United States, which began to lay up its vessels in 1920, still keeps idle steamers with an aggregate tonnage of over 4,000,000. This is, of course, an exceptional case, but it is a fact that wealthy shipowners can afford to keep their ships idle for a long time, despite the heavy losses which are inflicted upon them on that account. While they are laid up, instead of being broken up, they remain as potential suppliers of tonnage, and the conditions favourable to the recovery of freight, if they are created through the breaking up of ships belonging to other owners, are adversely affected by their re-entry into the field of the actual supply of tonnage.

## 5. THE CONVERSION OF NATURAL VALUE INTO ARTIFICIAL VALUE.

The normal price theory has it that when competition is natural (that is to say, under the so-called free competition), the prices of things have a tendency to agree with the cost of production. On the basis of this conception, the abstract existence of natural value (natural price), normal value (normal price) or equilibrium price is recognised as the centre of fluctuations in market prices. The reason is that although the market price is determined by the relation between demand and supply, if it is higher than the cost of production and brings an unusually big profit, the undertaking attracts both capital and labour, resulting in an increase in production and a decline in price. If, on the contrary, the market price is lower than the cost of production, as it is impossible to carry on business at a loss, producers will reduce production or suspend it altogether. This will cause a decrease in supply and a rise in price. Thus, the theory contends, the market price fluctuates around the cost of production. Sometimes, it rises above it and at other times it falls below it. But the market price has a tendency to find its proper level at the cost of production.

J. S. Mill says, "Persons whose capital is already embarked, and cannot be easily extricated, will persevere for a considerable time without profit, and have been known to persevere even at a loss, in hopes of better times. But they will not do so indefinitely, when there is nothing to indicate that times are likely to improve."<sup>1)</sup> Because "Capitalists will not go on permanently producing at a loss."<sup>2)</sup> Marshall also says. "In a trade which uses very expensive plant, the prime cost<sup>3)</sup> of goods is but a small part of their total cost,<sup>4)</sup> and an order at much less than their normal

<sup>1), 2)</sup> J. S. Mill, *Principles of Political Economy*, Ashley's Edition p. 451.

<sup>3), 4)</sup> See, Marshall, *Principles of Economics*, 8th. Ed., p. 359.

price may leave a large surplus above their prime cost. But if producers accept such orders in their anxiety to prevent their plant from being idle, they glut the market and tend to prevent prices from reviving. In fact however they seldom pursue this policy constantly and without moderation. If they did, they might ruin many of those in the trade, themselves perhaps among the number ; and in that case a revival of demand would find little response in supply, and would raise violently the prices of the goods produced by the trade. Extreme variations of this kind are in the long run beneficial neither to producers nor to consumers ; and general opinion is not altogether hostile to that code of trade morality which condemns the action of anyone who 'spoils the market' by being too ready to accept a price that does little more than cover the prime cost of his goods, and allows but little on account of his general expenses."<sup>1)</sup>

In order to ensure a permanent supply which meets the demand of the public, it is not enough that the price should merely cover the prime cost, it must, moreover, cover the general or supplementary cost (Marshall uses the words, general or supplementary cost, in the sense that it is the cost which covers the general business expense, and when he uses the words, the total cost,<sup>2)</sup> he means the prime cost and the general cost put together. That is to say, the general or supplementary cost means the joint cost.)<sup>3)</sup>

"But unless it (the revenue of producers) is sufficient to cover in the long run a fair share of the general costs of the business, production will gradually fall off. In this way a controlling influence over the relatively quick movements of supply price during short periods is exercised by causes in the background which range over a long period ; and the fear of 'spoiling the market' often makes those causes act more promptly than they otherwise would".<sup>4)</sup>

<sup>1)</sup> Marshall, *op. cit.* p. 375.

<sup>2)</sup> Marshall, *op. cit.*, p. 359, pp. 394.

<sup>3)</sup> Taussig, *Principles of Economics*, Vol. 1, pp. 214.

<sup>4)</sup> Marshall, *op. cit.*, p. 377.



Such being the case, in a business which requires a great amount of fixed capital, as in other businesses, the price of the articles produced has a tendency to agree with the cost of production in the long run. As nobody would continue production at a loss when the market price is continually lower than the cost of production, producers will necessarily carry out the restriction or suspension of production, which will cause an automatic restriction of supply with the result that the market price will rise. Such is the opinion of those who believe in the normal value theory.

The above is the explanation usually offered by many scholars who believe in the normal value theory. No doubt, this fundamental theory applies to freight rate which represents the price of marine service. If the market freight continues to be below the cost of marine service, the surplus ships will eventually be broken up, and a reduction in the supply of tonnage will result. Thus, as in the case of the prices of other articles, freight develops a tendency to accord with the cost of marine service, even if there occur no change in the condition of those who demand tonnage. One thing which must be remembered in this connection is this: advocates of the normal value theory believe that the automatic decrease of supply which operates to restore the market price to the cost of production, when the former is below the latter, easily occurs. It is chiefly for the purpose of showing that such an optimistic view is held by the advocates of this theory that I have quoted J. S. Mill and Marshall. Not to say of other industry, in the shipping industry, so long as a natural competition goes on, an automatic decrease of supply-tonnage does not easily take place.

Those who are engaged in marine transportation continue their business for a long time, as far as they have the wherewithal to do so at a loss, until the market freight reaches the laying-up point "in hopes of better times," even "when there is nothing to indicate that times are likely to improve," as it is impossible to foresee what the future has

in store. Ships are laid up when the market freight declines to the laying-up point, but the fact of their being laid up does not mean an absolute decrease in the supply of tonnage, for the ships in such a state still exert a negative influence on the shipping market as potential suppliers of tonnage. The absolute decline of the supply of tonnage occurs only when ships are broken up. When it is due to the decline of freight, and not on account of superannuation, it takes place after the decline has spoiled the market.

To explain this by means of the diagram already given, freight falls to the point *r*, instead of being kept at the point *p*, because the *bc* tonnage continues business at a loss, and because the *ce* tonnage, while being laid up, acts as potential suppliers, and in the shipping world "the fear of 'spoiling the market'" "by being too ready to accept a price that does little more than cover the prime cost of one's goods, and allows but little on account of general expenses" by no means makes the "controlling influence over the relatively quick movements of supply price during short periods" "act promptly." For the *bc* tonnage to continue business at a loss rather tends to "spoil the market" positively, and the fact of the *ce* tonnage lying idle is expected to "spoil the market" in a negative way. The owners of the tonnage falling between *b* and *c* accept "orders at much less than their normal price", as far as their financial circumstances permit, "in their anxiety to prevent their plant from being idle." In this way, "they glut the market and tend to prevent prices from reviving." It is not "seldom that they pursue this policy constantly and without moderation." As a matter of fact, they do pursue such a policy as far as they are financially able to do so, provided there occur no change in the condition of those who demand tonnage. This may "ruin many of those in the trade, themselves perhaps among the number." Unless things grow so bad as to "spoil the market," however, there will not be the breaking up of ships, which causes a diminution of supply, thereby restoring the market freight to the normal freight. This is inevi-

table, seeing that ships involve quite a heavy expenditure even when they are laid up. Unless a way is provided by which the shipowners can be compensated for this expense, there can exist "no code of trade morality" which "condemns the action of" shipowners who accept "an order at a price which is far cheaper than the normal price."

Thus, in the shipping business also, the market price, when it is below the cost of production, has a tendency to rise so as to agree with it in the end, but such a time does not come so soon as advocates of the normal value theory usually believe. It is not until after market is spoiled that it comes. This makes the owners of tramp steamers have recourse to a "joint laying-up agreement" or "the laying-up union" in self-defence, when there occurs an over-supply of tonnage. In this way, they try to avoid the danger of bankruptcy under the pressure of free competition, As regards the owners of regular liners who, unlike the owners tramp steamers, find it impossible to resort to the practice of laying-up their vessels when freight has dropped, but are obliged to continue competition, as far as their financial circumstances permit, for the protection of the lines which they have been operating, they go a step further and form a shipping ring or what is called the "Conference." In other words, the competition which is carried on in the shipping world by natural processes, causes the owners of tramp steamers to resort to methods calculated to modify competition by co-operation even for a time, when business depression prevails. It also causes the owners of regular liners to form a cartel among themselves which can ensure for them a monopolistic position by modifying or restricting mutual competition permanently. Thus, a state of affairs in which freight can be artificially controlled is created either temporarily or permanently, independently of normal value principles. How these combinations affect the freight market I dealt with in detail in my article in the first number of this "Review."

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