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NEW YORK, SATURDAY, MAY 11, 1907.

The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

THE PERIL OF THE DERELICT.

The safeguards of science and good engineering have been thrown so carefully around the transatlantic passenger, that travel by sea is decidedly safer than travel by land. One by one the perils of the deep have been removed or so far controlled that the chances of a passenger who embarks at New York, setting foot safely and unhurt, and within a few days' time, on European soil are shown by statistics to be so many millions to one. The risk of collision has been largely eliminated by the selection of separate specified lines of travel to which the ships can, and do, adhere with wonderful accuracy. Even should collision occur, the vessels are so minutely subdivided that the damage is localized and foundering is a remote possibility. Wireless telegraphy, submarine bells, improved sirens, and many ingenious and effective devices, combine to guide a transatlantic liner to port with an accuracy, which can only be impaired by negligence or carelessness, happily very rare, on the part of the navigating staff.

There is one menace of the deep, however, which, from its very nature, can never be controlled. It may lurk in the path of any unsuspecting vessel, unheralded, scarce detectable by day, quite invisible by night—a menace which may be created by any storm that blows. We refer to the derelict, or the partially submerged hull of a vessel that has been wrecked and abandoned on the high seas. Until a derelict has been sighted and reported by some passing vessel, its very existence is unknown, and even after it has been reported and ships have been warned as to its whereabouts and probable course, its place on the chart can be only approximately determined. While daylight lasts, if a sharp lookout be kept, a ship may sight the semi-submerged craft in time to avoid collision; but by night the question of hitting or missing is one of the merest chance. The only safeguard against the derelict is to find and destroy it; and from time to time the government, on being notified of the existence of dangerous floating wrecks, details a warship to search for and blow up or sink them.

Shipping men on both sides of the Atlantic have been much gratified by the announcement that the Treasury Department is asking for bids for the derelict destroyer which was authorized by the last Congress. This vessel, which is to be stationed on the North Atlantic, will embody the latest improvements in craft of her kind, and will be capable of cruising for five thousand miles without replenishing her bunkers. She will be furnished with powerful searchlights and a wireless telegraph equipment, the latter to enable her to receive and give information as to the location of derelicts. She will be provided with an ammunition room stored with high explosives for sinking and blowing to pieces floating hulls and wreckage; provision being made, as in warships, for flooding the magazines in an emergency. The derelict destroyer will also be furnished with an equipment designed to assist her in salvage and life saving work, for which her size and the fifteen hundred horse-power of her engines will render her highly efficient.

THE LIMITS OF HEAVY ELECTRIC TRACTION.

The progress of the electrification of the terminals and the suburban service of the New York Central and Pennsylvania Railroads has advanced to a point where it becomes possible to make some definite statements as to cost and practicability. Enough has been learned to make it certain, in the minds of some of the engineers associated with the carrying out of the work, that the field of electric traction on steam roads will, for the present at least, be a limited one. Such, at any rate, is the view of Mr. George Gibbs, Chief Engineer of the Electrical Division of the Pennsylvania, New York, and Long Island Railroad, as announced at a recent meeting of the New York Railroad Club.

At present our trunk-line service is worked by heavy and comparatively infrequent train units; and unless the introduction of electric traction increases the capacity of the lines and builds up new business, and the savings in cost are such as to pay for its introduction, Mr. Gibbs believes that its use is "neither logical nor probable." In the first place, it appears that the cost of installing electric traction on steam railway lines has been almost invariably underestimated. In addition to the cost of equipping the line with its purely electrical features, it is necessary, because of that equipment, to make very serious changes in the structure and equipment of the road; so much so, that in some cases these amount to a practical rebuilding of the line. So great are these incidental expenses, that the purely electrical features involved in changing a railroad from steam to electric traction amount, under average conditions, to from one-half to two-thirds of the total cost. From the above statements and others of a like character which have appeared of late in the technical press, it would seem that the remarkable efficiency shown on the electrified elevated roads in this city caused both steam railroad men and electrical engineers to jump to somewhat hasty conclusions as to the economy that would be realized by applying electric traction to trunk lines for long-distance service. As a matter of fact, Mr. Gibbs is of the opinion that electric traction cannot at present be made to show sufficient economy over steam in trunk-line service to justify its wholesale introduction. He states that the public has little idea of the very high cost of inaugurating electric traction. To the railway engineers who have looked into the question with the idea of making the change of motive power, the figures have been "positively staggering."

The experience thus far gained indicates that the introduction of electricity on steam railroads will be confined, for the present at least, to large city terminals where, by abolishing a large amount of the switching, the daily capacity for trains will be greatly increased. It will also be applicable to those sections of the mountain divisions on which the heavy grades occur, provided always that either water power or cheap fuel is available. The electric locomotive, because of its great tractive power, is particularly suited to the handling of trains over heavy grades, and it will prove to be exceedingly valuable in increasing the weight of the ruling trainloads over any given division.

According to this authority the time is far distant when we shall be ready to discard the steam locomotive even to an appreciable extent for heavy, long-distance freight and passenger service. Moreover, he makes the rather startling announcement that when the time does come, it will be brought about through a radical change in methods from any of those heretofore advanced. All of this must not, however, be taken to indicate that any doubt is thrown upon the success of the work which is now being carried out on the New York Central and Pennsylvania Railroads. The benefits in comfort, cleanliness, speed, and safety which were aimed at, undoubtedly will be fully realized; but for the present at least it is probable that the electric zone on the respective roads will not be extended beyond the limits of the more remote suburban service.

TURBO-ELECTRIC ENGINES FOR SHIPS?

The reciprocating steam engine has apparently reached the limit of its efficiency in the propulsion of ocean-going ships. The present indications are that the marine engine of the future will be either the steam turbine or the perfected producer-gas engine; with a strong probability that the latter, because of its excellent fuel economy, will be the preferred type.

There is, however, a third system of propulsion which theoretically, at least, has so much to recommend it that we should not be surprised to see it given a trial in one of the arger ships. We refer to the use of a turbo-electric plant of the same general character as that which is giving such excellent service in stationary power houses ashore. As installed in the engine room of a large steamship the system would consist of steam turbines, direct-connected to electric generators, the current from which would operate motors directly coupled upon the propeller shafts. Although at the first blush this looks like a complication of parts, the advantages derived in the increased efficiency both of the turbines and the propellers, to say nothing of other gains, would under certain conditions render such a plant superior to the present direct turbine drive. This will be evident from the following considerations:

If the turbines on an ocean liner are run at the high speed of revolution which gives the best steam efficiency, this speed will be too great for the propellers. On the other hand, there is a certain maximum speed, beyond which propellers suitable to the propulsion of a large ship cannot be driven efficiently. From the horns of this dilemma the naval architect has sought escape by the only road open to him—that of compromise. Consequently, in the largest turbine-propelled ships of to-day, the turbines are too large and heavy and too slow, and the propellers are too small and running too fast to give their respective best results.

The conflicting requirements of the turbine and the propeller may be harmonized by the interposition between them of the electric generator. This can be done by using small, high-speed, steam turbines direct-connected to generators, these turbo-generators being run at the speed which gives the most economical results. From the generators, current would be led to motors, whose type and speed of revolution would be accommodated to the propellers on the outboard end of the respective shafts. It is evident that by this arrangement both at the steam end and the propeller end the designer would have a perfectly free hand, and in shape, size, speed, etc., he would be able to design directly for the work to be done and, therefore, for the highest efficiency results. Of course, in a plant of this kind there would be a certain loss in the conversion from steam to electric power; but this has been reduced to such a low figure, that it would be more than offset by the increased efficiency of the turbines and propellers and by the great reduction in the sizes and weights of the turbines.

Incidentally there would be various valuable advantages secured. It would be possible, in the case of warships, to cruise at low speed economically, and it would be no longer necessary to provide separate cruising turbines. It would be possible to reverse immediately; and the go-astern turbines would, therefore, also be eliminated. Furthermore, the steam turbines could be located quite independently of the position of the propeller shafts, and might be carried on an upper deck immediately above the propeller-shaft motors. We understand that the problem, as we have outlined it above, has been receiving careful consideration from some of the manufacturers of turbine and electric plants. The only discouraging feature, in any proposed experimental work that might be done, is that a comparative test, to be of any value, must necessarily be carried on in an ocean-going ship of the larger size, since it is only in the larger ships that the reduction of turbine speed becomes a serious drawback.

THE SPRING MEETING OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

The spring meeting of the American Society of Mechanical Engineers will be held in Indianapolis, Indiana, from May 28 to May 31. The headquarters room will be on the parlor floor of the Claypool Hotel, and the professional sessions on the top floor on the south side of the building.

The official headquarters will be opened in the Claypool Hotel at noon on Tuesday, May 28, and maintained throughout the meeting.

The opening session will take place on Tuesday evening, May 28, at 9 o'clock, in the auditorium of the Claypool Hotel. An address of welcome will be delivered, with response by Frederick Remson Hutton, president of the society. The second session will be called to order on Wednesday morning, May 29, at 9:30 o'clock. This will be a business session, devoted to the reading of reports of the tellers of election of members and vote on amendments and reports of standing and special committees. The more important reports to be considered will be those of the committee on Standard Proportions for Machine Screws; preliminary report of the committee on Refrigerating Machines; Collapsing Pressures of Lap-Welded Steel Tubes (Reid T. Stewart); The Balancing of Pumping Engines (A. F. Nagle); A Comparison of Long and Short Rotary Kilns (E. C. Soper).

An automobile symposium will be held with papers on "Bearings and Moving Mechanism," by Henry Hess; "Air Cooling of Automobile Engines," by John Wilkinson; "Materials for Automobiles," by Elwood Haynes; "Special Auto Steel," by T. J. Fay; "Railway Motor Car," by B. D. Gray.

The fourth session will be held on Thursday morning, May 30, at 9 o'clock, and the subject of Superheated Steam will be discussed. Papers on "The Specific Heat of Superheated Steam" will be read by A. R. Dodge; "Determination of Entropy Lines for Superheated Steam," by A. M. Greene; "The Flow of Superheated Steam in Pipes," by E. H. Foster; "Correlation of Furnace and Superheated Conditions," by R. P. Bolton; "The Heating of Storehouses," by H. O. Lacount.

On Friday morning, May 31, a professional session will be held at 10 o'clock in one of the Purdue University buildings. The following papers will be read: "Performance of Cole Superheaters," by W. F. M. Goss; "Experience with Superheated Steam," by G. H. Barrus; "Use of Superheated Steam in Locomotives in America," by H. H. Vaughan; "Superheated Steam in an Injector," by S. L. Kneass; "A Hirn's Analysis of Locomotive Test," by S. A. Reeve. Other papers are expected.