

# AN EXODUS OF ENGINEERS

## MANY OF THEM LEAVING THE NAVAL SERVICE.

CHIEF ENGINEER MELVILLE FEARS SERIOUS CONSEQUENCES AND ASKS FOR AN INCREASE.

The rate at which engineer officers are resigning from the navy is producing little short of consternation in naval circles, and it is feared that unless the Navy Department takes prompt measures to either check the wholesale resignations or fill up the vacancies the service will very shortly be in an unhappy condition. The only explanation advanced is the great number of lucrative positions offered them by ship-building firms and iron and steel works undertaking Government contracts.

Chief Engineer Melville, Chief of the Bureau of Steam Engineering, in his annual report, just submitted to the Secretary of the Navy, finds it necessary to call the attention of the department to the steady decrease of the number of officers in the corps, pointing out at the same time that the increase in the number of modern high-powered ships soon to be in service is making a heavy demand upon the Engineer Corps for more officers, the recently-built ships requiring far more officers than the old ones. This is owing to more auxiliary machinery in the new vessels being scattered about in different compartments than in their predecessors, all of which requires the intelligent and constant care of an officer. Anyway, the number of engineer officers now allowed to war ships is in many cases too small, while in others it is as low as prudence will permit.

In the trial of the new war ships for acceptance the Government Boards have to be made up of officers assigned to special duty on shore, which results in much delay in that duty and requires these officers on their return, it is said, to work long after office hours and on Sun days to keep the current business from falling behind. In consequence of this fact Chief Engineer Melville has made a strong recommendation that the number of engineer officers in the navy be increased to not less than 300, and even this number he thinks will be found to be insufficient to give the proper care and supervision to the machinery of ships completed and building, unless assisted by a sufficient number of intelligent and skilled artificers and well-trained firemen. He recommends that the increase in numbers should be made gradually, but that there should be an increase of at least twenty a year for the next five years.

On this score Chief Engineer Melville makes a valuable suggestion and one that engineers in general have long thought favorably of. He says "No engineer appointments should be made except from young men well grounded in theoretical mechanical engineering, as well as skilled in its practical application. Unless we can have the former course of instruction for cadet engineers re-established, or a course which will produce similar results, I recommend that a certain specified number of appointments be annually given to the mechanical engineer graduates of such technical schools as give a proper course of instruction."

It is well known in the navy that our engineer officers are far less numerous than is the case in the British Navy, but, notwithstanding the greater number in the latter service, the British Admiralty has been making strenuous efforts in the past two years to increase the number. The recent British naval manœuvres demonstrated the insufficiency of numbers among the British engineers, and for this reason, if imitation of some of the conditions of war make the insufficiency of numbers apparent, it does not seem wise for us to wait till war comes to profit by the lesson.

It is thought that the one-year course at the Naval Academy, now in vogue for training the naval cadets to become Assistant Engineers, is not sufficient to give the training that is needed. Marine engineering, it is pointed out, is a highly-developed specialty, in which progress and change are constant. To keep thoroughly posted and proficient requires study and acquaintance with the latest practice, which under many of the circumstances of ordinary duty is almost impossible.

Chief Engineer Melville says: "I therefore again recommend the establishment of a course of higher instruction in engineering, which young engineers should be obliged, and older engineers permitted, to attend. Similar courses are provided for the instruction of line officers in ordnance, torpedoes, and the general duties of their profession, and it seems only reasonable, as it certainly is extremely desirable, that the engineer officers should have the same advantages for their professional improvement. The school for this purpose should be located in one of the large cities, preferably New-York, where, in addition to the attendance upon lectures, the students could inspect the large engineering establishments where work is going on and visit modern vessels, so as to see all the latest practice in marine engineering. The officers under this instruction could also be sent to collect data on trial trips and assist in experimental duty, thus benefiting themselves while relieving other officers, already fully employed, from performing double duty."

Continuing on the subject of education, Chief Engineer Melville says that the repeal of the law limiting appointments to graduates of the Naval Academy should be accomplished. The great technical schools, he believes, are turning out every year large numbers of young men specially trained in the elements of mechanical engineering, who only require experience at sea and the course of post-graduate instruction to make them valuable engineers in the navy. He thinks they might be permitted to serve two years on probation as cadet engineers, and then be examined with the candidates from Annapolis for commissions as Assistant Engineers, the examinations to be competitive. There appears to be no good reason why a young man who fits himself, without expense to the Government, for the naval service, should not have the same chance to enter it as a more favored one whose education has been paid for by the Government. This system is said to have formerly existed, and excellent men were obtained when the examinations were made as rigid as they would be under the scheme outlined.

The perplexing questions which have arisen concerning the engineer officers are also apparent on the score of enlisted men. It is claimed that there never was a time since steam has been introduced into the navy that there has been such a need for the very best men that can be obtained. This need always existed, but at the present day it has become imperative, since increased complication and subdivision of machinery, the vastly more exacting conditions under which it operates, the division of the ship into water-tight compartments, and the great number of auxiliary engines removes the men from the immediate supervision of the officers which obtained under the old arrangement. With the smaller number of engineers now allowed our war ships, a great deal of responsibility comes at times upon the petty officers, and unless they are thoroughly reliable the result will only be trouble and expense.

Chief Engineer Melville believes that good and reliable men can be trained by making their accommodations aboard ship more desirable. He says he is convinced that a greater distinction should be made between the petty officers and the men, and that as much as possible should be done to impress the fact on both the petty officers and the men that the former have authority that must be respected. He also recommends that an apartment, with bunks and a table, about like the present storeroom, be provided in a suitable place, where the petty officers can have some degree of privacy, rest, and sleep when off watch and keep their clothes decently. This is thought to be more important than increased pay, for it is said to be a well-known fact to officers of the Engineer Corps that the reason why the very best mechanics rarely serve more than one cruise is this very lack of accommodation.

The opinion among engineers generally is that there is but one thing to be done—get the best men obtainable and train them and educate them for the work on the wooden vessels. This training, it is thought, can be obtained in one and only one way—by actual experience and hard work on board a naval steamer with boilers of modern type and forced draught.

It is recommended that a force of men trained in handling strongly forced fires and quick-steaming boilers be formed and quartered on some vessel on the Atlantic coast, where they may receive constant practice. These men, it is thought, should be water-tenders or men eligible to that rating. Then, whenever a ship is fitted out, this force, in whole or in part, could be temporarily transferred to her, forming a nucleus for the fire-room force. After the trial trip and getting the other firemen somewhat accustomed to their duties, these men could be withdrawn, leaving a portion of their number on board to act as water-tenders, men of this rate to be always drawn from this trained force. The vacancies thus occurring in the force could be filled by fresh men, who would be put to work along with the skilled men until they in turn became proficient.

To carry such a plan into effect, Chief Engineer Melville suggests that one of the large tugs of the Standard class be fitted with a boiler, with forced draught appliances, and the men's quarters changed to accommodate the increased force. This vessel should then be kept under steam as much as possible, and the men put on watch in sufficiently small numbers at a time to give them plenty of hard work to do to keep up the steam pressure. It is held that there should be no false economy in this matter by making the vessel serve as freight boat or transport, but she should be used solely as an experience ship for firemen. It is admitted, though, that a large vessel with several boilers would be preferable to those named if one could be made available.

It is said that we have training ships for sailors, but there still seems to be a belief that putting a man down the fire-room hatch with a shovel in his hand makes him an expert fireman. It is further recommended that every vessel fitted with forced-draught appliances be made to cruise under forced draught entirely, until the men are thoroughly accustomed to it and are able to get the full power out of the boilers. This rule is known to be in vogue in most of the new cruisers of the British Navy, especially in craft of the Buzzard type and kindred swift vessels fitted with forced draught.