SPECIALISATION OF ENGINEER OFFICERS IN ORDNANCE ENGINEERING

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Records show that as far back as 1870, and possibly earlier, Engineer Officers have been associated with Gunnery Machinery at the Admiralty, Royal Dockyards and makers' works. Up till 1906 a small team of Engineer Officers in the Engineer-in-Chief's Department dealt with the design and production of naval gun mountings and the associated machinery.

About 1906 this team was transferred to assist the Director of Naval Ordnance in the design, manufacturing and installation problems of naval gun mountings and their associated gun sights. At this time the control of guns and mountings was very rudimentary and the control arrangements, apart from local sighting, were by verbal means or very simple mechanisms. Afloat, the power operated turret mountings were maintained by Engineer Officers and E.R.A.s to the satisfaction of the Gunnery Officer, and the smaller weapons were maintained by the Armourer Branch.

With the introduction of Director Firing Gear in the early part of the First World War the duties of the Chief Inspector of Gun Mountings, which title was adopted subsequently by the Senior Engineer Officer on the staff of the Director of Naval Ordnance, were extended to include the responsibility for the design, production and installation of the gun directors. The then relatively simple Fire Control Table link in the gunnery chain was not the responsibility of the Chief Inspector of Gun Mountings. Similarly in the Dockyard organisation an Engineer Officer assistant was borne on the Manager Engineering Department's staff to deal with the repair and storage of Gun Mountings, Gun Sights and Director Firing Gear. The same officer was responsible for repair and storage of Torpedo Tubes, Depth Charge Throwers and the like.

Much the same situation existed in the Overseeing field where from the early part of the century the Gun Mounting Overseers were responsible to the

Director of Naval Ordnance for the oversight of contractors' manufacture and installation of Gun Mountings and, in due course, Director Firing Gear and to the Director of Torpedoes and Mining for the oversight of contractors' manufacture of Torpedo Tubes, &c. As has been explained adequately in various articles in *Papers on Engineering Subjects* and the *Journal of Naval Engineering*, the advent of Auto Control of gun mountings made it essential to consider the materiel in the gunnery chain as an integrated unit and not, as hitherto, a series of separate items which, by the addition of simple verbal or electrical communications, became a complete system.

To deal with the situation that had developed it was decided early in 1946 to place the technical responsibility to Director of Naval Ordnance for the design, development, production, inspection and installation in the hands of the Chief Inspector of Gun Mountings, who was subsequently and logically re-christened the Chief Gunnery Engineer Officer. As such he became a Deputy Director of Naval Ordnance responsible to the Director for all technical aspects of gunnery materiel other than guns and ammunition, which are the province of the Chief Inspector of Naval Ordnance for design and inspection, and the Director of Armament Supply for production and supply.

In 1919 the Ordnance Branch was created to deal with the maintenance of gunnery equipment afloat, which duties, as already stated, had been carried out previously by Armourers and Hydraulic E.R.A.s. The Ordnance Branch provided for artificers and officers of Branch rank only. It will be appreciated that the system in force in 1938, when an Ordnance Officer of Branch rank was responsible technically for the mechanical efficiency of the whole of a capital ship's armament, could not be expected to produce the best results. It was very much to the credit of these officers that the efficiency of gunnery materiel was kept as high as it was.

By 1939 it had been realized that the technical growth of gunnery materiel necessitated revision of the arrangements in the Fleet for maintenance of gunnery equipment and an Admiralty Committee under the chairmanship of Admiral Sir Sydney Bailey had recommended certain changes. Approval was given, therefore, for certain Engineer Officers to undergo extensive courses in gunnery equipment at H.M.S. *Excellent* with the object of fitting them for the many seagoing and shore appointments needing a high standard of engineering and gunnery knowledge.

This was, in effect, the introduction of Gunnery Engineering specialization, which step coincided approximately with the introduction of Engineer Officers specialized in Air Engineering duties. It has since been decided that the Fleet maintenance of both Gunnery and the mechanical portions of Torpedo and A/S materiel shall be carried out by Engineer Officers, assisting the Gunnery and T.A.S. Officers, respectively, with whom the overall responsibility for tactics, training and maintenance still remains.

To cover this wider range of responsibilities the sub-title "Gunnery Engineering" has been replaced by that of "Ordnance Engineering (O/E)," the previous Ordnance Branch Officers have been incorporated in the Engineering Branch as Commissioned and Senior Commissioned Ordnance Engineers and consequently the head of the specialization is now known as the Chief Ordnance Engineer Officer (C.O.E.O.).

Thus, although the Gunnery and T.A.S. functions are carried out by separate Admiralty Departments and specialist Executive Officers, their engineering requirements will be met from a pool of Engineer Officers specialized in Ordnance Engineering, the new sub-title (O/E) indicating the broader field of weapons as a whole.

The engineering problems of Gunnery and T.A.S. warfare have so much in common that this latest step is a logical one, whether considered from the point of view of Fleet maintenance or of the design, development, production and shore maintenance questions that precede it. Quite apart from the technical advantages to be obtained by this new arrangement, the administration of all personnel concerned with these matters becomes more rational. The Ordnance Branch, hitherto a small self-contained unit with limited promotion outlets to the Engineering Branch now becomes an integral part of the latter, so that all officers promoted from Ordnance Artificer become Engineer Officers with career prospects similar to those of their contemporaries promoted from E.R.A. and Air Artificer.

The author's career provides an example of the result of the changes in policy dealt with above. He joined the Engineering Branch in 1918, transferred to the newly created Ordnance Branch in 1920 and re-transferred to the Engineering Branch in 1947.

In aiming for a more efficient administrative organization it has always been considered axiomatic that the career prospects of the Ordnance Engineering specialization must be directly comparable with those to be obtained in the other Engineering Branch specializations. There can be no doubt that this has now been achieved. The career factors of the Engineering Branch were dealt with more fully in the article in Volume 4, No. 4, *Journal of Naval Engineering*.

The training of Engineer Officers specializing in Ordnance Engineering will include a comprehensive technical course covering the requirements for both Gunnery and T.A.S. engineering and will be carried out, subsequent to the common basic engineering training, at H.M.S. *Thunderer*, *Excellent* and *Vernon* in parallel with the specialist courses in Air and Marine engineering.

The new weapons required to compete with the new threats to our sea power produced by high speed aircraft and submarines have most certainly increased the magnitude and diversity of the engineering problems to be solved by Ordnance Engineer Officers in a wide range of responsible appointments.