

## **NAVAL GUNNERY FROM USER'S POINT OF VIEW\***

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The lecturer started by saying that as the majority of those present had for the last week been studying the subject of Internal Ballistics, it might be of value to them to see how this subject fitted into the general problem of Naval Gunnery, and he would, therefore, try to give them a brief summary of this problem.

### **The low angle fire control problem**

2. The lecturer defined the terms :—

Deflection

Range Correction

Rates of change of range and bearing,

and showed how they were used. The need for corrections to allow for movements of own ship, enemy travel during time of flight and wind was explained. The methods used for obtaining values for the factors just referred to were explained, and it was shown how these were used.

### **The high angle problem**

3. This is basically the same as the low angle problem, but there are certain additional factors to be considered :—

- (i) The target will not be in the same horizontal plane as the gun and the plane in which it is flying may not indeed be horizontal at all.
- (ii) In order to burst the shell close to the target, the correct setting of the fuze has to be calculated.

The methods of dealing with these two factors were explained briefly.

### **External Ballistics**

4. The necessity for corrections to allow for drift and changes of trajectory varying with the density of the atmosphere was explained.

### **Minor corrections**

5. Corrections may be used to allow for the curvature of the earth and the rotation of the earth. These corrections, are small, and are normally ignored.

### **Internal Ballistics**

6. The lecturer stated that he would not dwell on this subject as the audience had been studying it for a week and knew far more about it than he did. It was mentioned, however, that it is necessary to apply corrections to allow for the wear of the gun and the temperature of the charge.

### **Ship considerations**

7. The effects of the roll, pitch and yaw of a ship were explained. The methods of firing and the use of the director system and its advantages were also explained.

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\* Synopsis of a lecture given in the Defence Science Organisation in April 1951.

### **The human factor**

8. The importance of the human factor was stressed. It was shown that however elaborate and labour-saving the various mechanisms fitted might be, the system had ultimately to be controlled by a human being. The need for thorough and continuous training was emphasised in order that the officers and ratings concerned should acquire the necessary skill and confidence, so that they should be able to take immediate action in the event of breakdowns, that they should instinctively carry out their duties under adverse conditions, and finally that they should maintain their equipment in a satisfactory state.

### **Conclusion**

9. The lecturer pointed out that although Internal Ballistics forms only one part of the whole problem, if this subject were neglected, the guns would not fire straight nor to the correct range, and however skilful the men and however complicated the fire control machinery, it would not be possible to hit the target. The scientific study of Internal Ballistics, was therefore, of the greatest importance.