

A NOTE ON GUN AMMUNITION.

When delivered to the Services from an Explosives Filling Factory, a complete round of gun ammunition comprises - in addition to the cartridge case and the projectile - the primer (the ignition cartridge), the propellant charge, the explosive charge loaded into the projectile and the fuse which is fitted into the projectile and which determines when the explosion takes place - i.e. after a predetermined period of time; on impact with the target; or when the shell (projectile) is in close proximity to the target (particularly when the target is a moving one, such as an aircraft).

The primer is required to ignite the propelling charge. It functions either mechanically - as the result of a sharp blow from a firing pin - or electrically by a small electric current flowing through and heating a resistance wire embedded in an explosive substance. The explosive substance used in the ignition-primer charge must be extremely sensitive and is usually one of the following :-

- .. mercury-fulminate and potassium-chlorate in a 90/10 or an 80/20 mixture;
- .. lead azide; or
- .. lead styphnate.

The propelling-charge is a "low"-order explosive, usually cordite or an appropriate smokeless-powder from Australian production. The propellant should be smokeless and flashless to avoid detection of the gun-positions by the enemy. When ignited in a closed chamber, it burns - rather than detonates - and builds up relatively slowly to a high pressure, providing launching energy sufficient to propel the projectile from the gun to the target without any supplementary propulsion assistance during flight.

The projectile - or shell - is a hollow steel body specially shaped to ensure the least amount of resistance from the air as it covers its trajectory accurately from the gun barrel to its predetermined target. It is packed with the explosive charge - such as RDX/TNT - and is fitted with a suitable fuse to initiate detonation of the explosives charge when the shell reaches - or approaches - its target.

The fuse as indicated above, is incorporated into the body of the shell, its function being to activate the firing mechanism leading to the exploding of the shell. The type of fuse used is selected as that most appropriate for the mission planned for the shell. It determines when the explosion will take place.

The explosive charge, usually TNT or a mixture of RDX and TNT, is loaded into the cavity inside the projectile. It has to combine the properties of withstanding the shock of the propellant charge and the subsequent high-speed flight of the