SINGAPORE GOVERNMENT PRESS STATEMENT MC.JUL.40/67(DEF.)

EMBARGOED: TILL 1000 HOURS on 1.8.1967

SPEECH BY DR. GOH KENG SWEE, MINISTER OF DEFENCE, AT THE OPENING OF THE SCHOOL OF ARTILLERY AT SAFTI ON TUESDAY, 1ST AUGUST, 1967.

Ten days ago, we witnessed the opening of the School of Signals. With the opening of the School of Artillery and the first artillery officers course, SAFTI today takes another step forward.

All these preparations, which had been planned more than a year and a half ago, are extremely timely in view of the announced intention of the British to withdraw from the Far East by about 1975. Obviously it will be necessary for the Republic to increase its defence capability. And the first step consists in the training of personnel in the various arms and services of the armed forces.

Unlike modern signals, which really had their beginnings with the invention of telegraphy in 1844, the artillery has a long and ancient history. The Chinese were credited with the invention of gunpowder, but they never developed artillery weapons although there was mention in the "Romance of the Three Kingdoms" of extensive use of land mines by General Chu-ko Liang in his southern expeditions.

As a branch of warfare, artillery weapons using gunpowder were believed to have been invented in the West in the 14th century. The actual inventor of the artillery is not known. Some people believe that it was the Arabs who first made use of gunpowder to fire projectiles, but the evidence for this is disputed and so far as any one person can be held to be the inventor of artillery, a German monk named Berthold Schwarz or Berthold the Black probably held the honour. He was so named because he was believed to be frequently practising black magic, mixing chemicals and using them in ways which mystified and alarmed people of his time.

The earliest artillery weapons fired a projectile in the shape of a large arrow. It appeared to be similar to the harpoon gun used by whaling ships of today. But soon the arrow gave way to solid shots made of iron or stone.

The development of artillery proceeded rapidly from the 14th century onwards in Europe, as is natural when the many European kingdoms were waging constant war against each other. This was the period of the decline of the feudal system and the rise of national monarchs. Rivalry between kingdoms and even within kingdoms provided an incentive for the improvement of weapons, including of course the artillery. Many of the kings of this age were closely associated with the development of artillery. Henry VIII of England was a keen and perceptive gunner. He was one of the first to group the advantage of the H.E. shell over the solid iron ball used in his day. He encouraged the production of artillery pieces in England and arranged for a Flemish expert to improve the level of the art. This expert made a large number of cannons including a set which became known as the "Twelve Apostles." 2/-

Guns in those days were extremely dangerous implements -- dangerous not only for the enemy but also for the gunner and his crew. They had not discovered the means of packing together the ingredients of gunpowder into a conveniently usable form. The gunner had to mix the ingredients on the battlefield. The gunpowder was then inserted into the barrel through the muzzle and it required a delicate touch to pack the powder to the right degree of firmness. Any error would result in a misfire or even worse, might blow up the gun and the gun crew.

The mixing and loading of gunpowder had to be done not only in the thick of enemy fire but also in the midst of friendly infantry, all of them brandishing lighted matches to fire their own infantry guns. Apparently the artillery of those days engaged at extremely close range. At one time, it was necessary for the gunner to lay down his pike while applying a match to fire his gun. This resulted in casualties because while he was thus unarmed, he was often cut down by the enemy. So a special type of pike had to be designed which had a bird's or serpent's head branching at each side of the main pike-head. These were used to hold the match for firing the cannon and this allowed the gunner to defend himself at the same time.

It is not surprising that, with the frightful dangers which artillery men had to face in those days, both from friend and foe, this branch of the service never became popular. In fact, more than three centuries since the use of artillery, most European armies decided that this vocation was too dangerous for soldiers. Accordingly, civilians were engaged as gunners and for reasons which were obscure, they were named "artists". The French army engaged civilian "artists" of this kind right up to the year 1800.

Since Napoleon introduced revolutionary methods of using artillery fire power not merely as a means of destroying fortifications but also against enemy formations so as to enable the infantry and cavalry to break through, the artillery has become an increasingly important arm of the services. Great technological advances achieved since the Industrial Revolution of the 18th and 19th centuries have produced weapons of tremendous destructive power and great range and accuracy. These have made great demands on the professional skill of artillery men and accordingly, it is necessary to train artillery officers to a very high degree of perfection.

Most of you have just gone through a continuous and hard period of training as Infantry Officers. Another hard and trying period of training lies before you in order to become Artillery Officers. But, Gentlemen, the tempering of steel is a lengthy process and men of steel you must be. Anything less will have no place in the Singapore Artillery.

You will be taught the techniques and tactics of artillery in general, so that you are able to master any artillery weapons. There will be a lot to learn and practise, yet essential as it is, knowledge alone is not enough. Techniques are only instruments. It takes a skilful and imaginative artisan

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to pick up the right instrument and technique for the right job. You will have to develop a perceptive eye and an open mind. You must not be bound by dogma. Intelligent improvisation must become your second nature and you must not regard existing rules and principles as a sacrosanct. You must always strive to discover new and more practical methods of doing things. Experience is of great value, yet its value is greatest when it leads to new and better methods. It is invaluable only when backed by an analytic mind, conditioned to grasp the essentials of a specific situation and ready to discard known practices in favour of improvements. Only officers who have achieved a mastery of principles and technique can be expected to take the right decisions at the right time. In order that an officer is able to take the right decisions, he must first condition himself to make decisions — any decisions. Only men with initiative and with the moral strength of being ready to shoulder responsibility, make decisions. This is the type of Artillery Officers we need.

Being fully aware of your past achievements, I am perfectly confident of your ability to meet and overcome this new challenge. Your greatest reward will be the knowledge and the feeling of joining the elite of any society — the PIONEERS.

Date: 1st August, 1967. ——— (Time Issued: 1000 Hours)