

Aircraft Control.—To prevent the unauthorized use of Government-owned facilities in the repair of civilian aircraft and to eliminate production delays from unwarranted design and construction modification, an Aircraft Controller was appointed in June, 1942. In addition to restricting the manufacture and assembly of aircraft, the Controller has regulated the material purchases of the aircraft manufacturers.

Ammunition.—During the War of 1914-18, shells were made in large quantities in Canada, but not until late in that conflict were the more difficult components and assemblies, such as fuses, produced in substantial quantities. In the present war, Canada has not only produced enormous quantities of shells and small-arms ammunition, but has created a new industry whereby shells are filled with various Canadian-made explosives and shipped overseas as complete rounds of ammunition.

Canada had produced \$1,000,000,000 worth of heavy ammunition up to the end of August, 1944. This output has comprised: 28 types of artillery ammunition; 32 types of bombs and special projectiles; 51 types of fuses, primers, gaines, etc.; 25 types of cartridge cases; and 52 types of steel and wooden boxes, cylinders and containers. In addition to 100,000,000 shells and bombs produced to the end of August, 1944, Canada has turned out 4,000,000,000 rounds of small-arms ammunition.

At the end of 1944, more than 130 plants engaged in making shells and in producing other ammunition components employed 85,000 men and women.

Aside from the expenditure of private capital, the Government has spent about \$200,000,000 in constructing plants for the output of ammunition of all kinds. This includes capital investment in chemicals and explosives, ammunition filling, component manufacture, and some raw material projects.

As shell manufacture expanded, management also underwent an evolution. Originally under the Department of National Defence, administration of this key part of the war program was transferred to the Department of Munitions and Supply. Late in 1940, when the British Commonwealth was standing alone, the Canadian munitions program was again expanded.

Working in close co-operation with the Ammunition Production Branch are the Chemicals and Explosives Production Branch of the Department and Allied War Supplies Corporation, a Crown Company, which built and supervises the Dominion's chemicals and explosives projects.

Ammunition does not merely consist of hollow pieces of steel loaded with an explosive. Many parts call for exacting workmanship and precision. Shells must be machined to the closest of tolerances and fuses are often extremely intricate.

As an example of the tremendous amount of work involved in the production of ammunition, it takes 574 operations to produce a complete round of 3.7-inch anti-aircraft ammunition boxed ready for shipment and 5.6 man-hours per round to produce the empty components, fill them and pack them in a service box. This does not take into account the raw materials and their handling to the primary contractors for fabricating into the finished article. To produce the shell itself, filled, requires 63 separate and distinct operations and the cartridge case, including loading, 54 operations.