

THE ARSENAL.

One of the matters considered by the conference of Colonial Ministers who met in London in 1897 was "... the establishment of a Central Arsenal and Depot for the Australian Colonies".

Reasons stated in support of this proposal included :-

- .. the possible insecurity of the trade routes;
- .. the probability of the manufacturing resources of the United Kingdom being taxed to their utmost capacity in war-time;
- .. the possibility of the manufacture of projectiles;
- .. the certainty that a factory for producing smokeless powder (cordite) should be established in Australia; and
- .. the desirability of manufacture in Australia of fuzes and other ammunition components

as well as the desirability of extending the Small-Arms Ammunition Factory then being conducted at Footscray, Victoria, by the Colonial Ammunition Company to enable it to meet the military requirements of all the Australian Colonies.

At that time, the Australian Explosives & Chemical Company -- a subsidiary Company of Nobel Dynamite Trust Limited -- was engaged at Braybrook, Victoria in the production of explosives for commercial purposes as well as for military purposes when so required.

Because of the advanced stage of the planning for the Federation of the Australian Colonies into the Commonwealth of Australia from January 1, 1901, nothing was done to advance the Arsenal proposal until March 14, 1901 when Captain Collins, first Secretary of Defence for the Commonwealth, reported in detail to the first Minister for Defence (Sir John Forrest). He urged that early steps be taken to have cordite made at the Braybrook factory and to extend ammunition production at Footscray.

Collin's representations were supported but varied by Major-General Sir E.T. Hutton, K.C.M.G., C.B. of the Imperial Forces who was appointed on December 26, 1901 to be General Officer Commanding the Military Forces of the Commonwealth. On April 19, 1902, he reported to the Minister that a small-arms ammunition factory should be established on the site for the future Arsenal for the Commonwealth, that the Arsenal should include a shell foundry, that the limited Ordnance maintenance workshops should be improved to enable alterations to be made to fortress and field artillery guns and mountings, that a Laboratory and a Gun Factory should also be included in the Arsenal planning and that the Arsenal

There was, however, little more than paper support at that time for the concept of a Central Arsenal. During the succeeding ten years, in fact, there were established by the Government the Small-Arms Factory at Lithgow (NSW.), the Cordite Factory at Maribyrnong (Vic.) and the Government Laboratories at Victoria Barracks, Melbourne.

The wide dispersal of such activities indicated clearly that the authorities at the time were not convinced of the wisdom of concentrating the manufacture of munitions of war at any one location. Nor had the position been changed before the outbreak of World War 1 in 1914 emphasised the lack of local industrial support for the Armed Forces, either in Government Factories or commercially, even in such essential supplies as ammunition for the Army's guns.

Early in 1915, Chemical Adviser Bell of the Government Laboratories submitted a detailed report to Senator Pearce, then Minister for Defence, regarding processes involved in the manufacture of ammunition for the 18-pdr. Q.F. gun, the standard British pattern of quick-firing gun at that time. Some of these guns had been delivered in Australia -- in 1904 -- as equipment for the newly-formed Brigade of Field Artillery but all ammunition supplies still had to be obtained from England!

The argument of those in favor of establishing an Arsenal became more convincing and the Minister for Defence decided that the project should proceed. He directed that all information -- specifications, etc. -- regarding the ammunition for the 18-pdr. gun should be obtained and, concurrently, he instructed the Chief of the General Staff to confer with other senior Government officials -- as the Arsenal Site Selection Committee -- regarding the selection of a site for an Arsenal.

It was the general understanding that an Arsenal would comprise a group of factories, each one equipped for differing manufactures, rather than a single factory manufacturing a variety of munitions products. The Arsenal complex would also include a separate Research Laboratory, in addition to the production laboratories in the individual factories, and independent storage areas apart from the storage floor space of the individual factories.

In his covering minute to the C.G.S., it was suggested by the Minister that in selecting a site, it should be of sufficient area to provide for the erecting of capacity for the production of :-

- .. 18-pdr. Q.F. cartridges, with possible expansion to other ammunition and to artillery carriages and wagons.

It was also directed that the potential site for the Australian Arsenal should be adequate to accommodate a power-plant capable of serving the 18-pdr. gun and ammunition factories as well as the Small-Arms Factory which it was contemplated might be transferred from Lithgow (N.S.W.) to the Arsenal site.

Leighton, Manager of the Cordite Factory, who had been sent abroad on other duties concurrently with the setting up of the Arsenal Site Selection Committee, had been instructed to examine developments in factory practice in India and in England in the production of cordite for artillery ammunition and the explosives and chemicals used for that purpose.

Reporting from India, he recommended that a Commission of Inquiry be sent to that country to examine what had been done by the British Authorities there in establishing factories near Calcutta for production of explosives, small-arms ammunition, shell, fuzes, guns, carriages and rifles, including the supporting Proof Range, along similar lines to what might be regarded as appropriate to meet Australia's requirements.

His recommendation was adopted and the Arsenal Committee arrived in India on November 1, 1915 and left again on December 5 after investigating the facilities there for the manufacture of :-

- .. complete ammunition for quick-firing artillery;
- .. rifles and machine-guns and their ammunition;
- .. lighter types of mobile and static guns and their mountings; and
- .. torpedoes and mines.

Facilities for testing and proof of all types of munitions, including a testing range with proof-butts and a laboratory, were also included in the Committee's investigations.

The Committee's comprehensive report, dated December 21, 1915, established officially for the first time a broad view of the meaning officially of the descriptive term "arsenal" as contemplated for Australian conditions. It also provided the details upon which estimates of cost could be formulated when considering facilities for production of individual types of munitions.

Concurrently the Committee had been considering also the question of the best location for the Arsenal, having regard to the Minister's directive that

The initial sites nominated by the Committee were ruled out by Walter Burley Griffin, the architect town-planner responsible for the Canberra project, as conflicting with the approved over-all plan for the Canberra City lay-out. The most favored alternative site - at Tuggeranong on the Murrumbidgee, some seven miles from the Canberra city centre -- was approved by Cabinet on February 28, 1916.

Included in the Estimates for 1916-17 was the amount of £250,000 to cover the costs expected to be incurred by the Department of Home Affairs in preparing the site at Tuggeranong and in providing railway and road connections, residences, etc.

On July 1, 1916, the High Commissioner for Australia in London was asked to inform Leighton that it was proposed to appoint him as General Manager of the Arsenal. He was still in England, where he had been loaned indefinitely to the British authorities to assist in developing the additional munitions manufacturing facilities needed for the British war effort. He agreed to accept the position which involved responsibility for a factory complex capable of manufacturing "..., 50,000 rifles, 3,600 pistols, 720 machine-guns, 60,000 Q.F. cartridges, 40,000,000 small-arms cartridges, 16 eighteen-pounder field gun carriages, limbers and wagons, and to make provision for high explosives".

Before the end of that year, the Federal Munitions Committee (whose function was primarily to provide a link between the Department of Defence and the Australian manufacturers in developing munitions production in industry) established the following broad policy guide-lines for the Arsenal planning :-

"The Arsenal would be a centre for the privately-owned factories of the Commonwealth to which their engineers and technicians could resort at times and thus become familiarised with the processes of manufacture of munitions, with a view that, in the event of war, the whole manufacturing resources of Australia would be available in its prosecution. By these means it could be possible to organise the country so that every factory would be capable of turning out something for the Navy and Army; the Arsenal would be the brain centre, directing the work of the whole country."

By early 1917, however, questions were already being raised as to --

(a) whether the proposed arsenal should be in Federal Territory at

all; and

... as it was doubtful if the

In addition, the Treasury raised objections to the incurring of expenditure on the project which had not been discussed and approved as such by Parliament.

Planning was, however, proceeding steadily, particularly in regard to the accumulation of technical data in respect of the items considered to be first priorities for Australian production in the Arsenal (or elsewhere) — e.g. 18-pdr. Q.F. gun and ammunition and the machine-gun. In this task, the engineers and chemists sent to England specially to conduct specific investigations in British munitions factories had the support also of other Australian engineers who were already working in those factories under the War Workers Scheme (see page ).

By November 1918, however, with the termination of hostilities, the Military Board had such doubts about the Arsenal concept generally that an interdepartmental conference of all interested parties was arranged to re-examine the earlier planning in the light of the arguments that :-

- .. it would cost much less to extend the existing factories than to establish an Arsenal;
- .. new production would be achieved more quickly if associated with a "going concern"; and
- .. better and more economical access to supplies of labour and materials would be assured if the new capacity contemplated were created at Melbourne and Lithgow respectively instead of at Tuggeranong.

The Military authorities contended also that, in time of war, reliance could and should be placed upon the resources of commercial industry, and that it should be a matter of Government policy to insist on certain basic industries being firmly established within the Commonwealth.

The Conference on November 18 and 20, 1918 concluded that an Arsenal organisation was necessary but that it should produce only sufficient quantities of individual items of munitions to develop and prove new patterns and designs, to improve the standard of munitions generally, and to train men technically for allocation to industry throughout the country in time of war. The Conference recommended that :-

- (a) Government Factories should be located where they could best assist in bringing about rapid production in time of war;
- (b) Additional Arsenal Factories needed to provide the requirements of the Military Board in times of peace should be located in Melbourne as near as practicable to the existing Cordite Factory and the

- (d) The Small-Arms Factory should be permanently located at Lithgow (NSW)
- (e) Existing Arsenal activities should be strengthened to provide reasonable assurance against war needs; and
- (f) The necessary basic industries should be supported by Government action to make Australia self-sufficient in war.

On November 28, 1918, Cabinet considered the Conference report and decided that nothing further would be done at that time regarding the proposal to establish the Arsenal at Tuggeranong or at any alternative location. The Arsenal concept as such has never since been resurrected.

Estimates of the costs involved in advancing the Tuggeranong project to completion, including £700,000 for the supporting "township", totalled £2,400,000 with £1,400,000 annually estimated as the cost of maintaining the establishment at the level contemplated in 1916. Actual expenditure upon the Federal Territory scheme up to the date of its abandonment was £10,315.

There were, however, other aspects of the Arsenal scheme which were proceeding in accordance with the over-all planning regarding the items to be produced, the priority to be accorded to the different items in creating the production facilities, the appointment of personnel to be responsible for production when the new capacity was available and the selection and procurement of the machine tools and other plant items that would be needed to supplement capacity already available in Australia when setting-up the production lines, irrespective of whether the new projects would be located in Federal Territory or elsewhere.

An Arsenal Branch had been established in the Department of Defence to carry out whatever was necessary in regard to advancing the project generally. The London office of the Arsenal Branch established close liaison arrangements with the British Government factories engaged in the production of the munitions items in which Australia was interested. Australian technical representatives were given every facility in studying the techniques and practices adopted in the British factories in striving for the maximum out-put under war-time conditions.

These Australian project officers were concerned also with selection of plant items that would be needed in Australia if the planned new production were to be realised. Their investigations were still proceeding when the War ended in November 1918, to be followed quickly by the closing by the British authorities of all those war-time factories which would be unlikely to be needed under post-war

of thousands of plant items, now surplus but which

of munitions of war.

Consequently, despite the inevitable restrictions by the Treasury in Australia in the availability of funds for the purchase of plant to make munitions of war, there was still sufficient determination on the part of the Department of Defence, with the support of the Government, to ensure that some of the Arsenal planning would continue even though the Central Arsenal concept had been abandoned.

In Britain, apart from placing on sale thousands of individual plant items unrelated to one another, the Government also offered for disposal the complete installations of some factories which had been established for the production while the war lasted of, say, small-arms ammunition. Disposal was by open auction or, at times, by private treaty with the plant concerned in many instances realising not much, if any, more than "give-away" prices.

Because of these circumstances and in recognition both of the purposes for which Australia was seeking such capital equipment -- i.e. to render Australia more self-sufficient in respect of production of specific items of war material to be used, if necessary, in support of the British Forces in any future war -- and of the great contribution made by the Australian Armed Forces and the Australian workers in England to the Allied effort during "the war to end wars", the British Government agreed to negotiations by the Australian Government with their disposals authorities to obtain for Australia £300,000-worth of machine tools and plant items based on "fair disposals value" and to make them available at a 50 per cent. discount - i.e. for £150,000.

By shrewd bargaining and intensive prior investigation of what was becoming available, the Arsenal Branch in London, then under the leadership of Jensen, purchased no fewer than 1656 plant items -- including 583 items in the "new unused" condition and 520 which had been slightly used only -- for £167,060. If purchased direct from the manufacturers, the cost of the same plant at prices current in 1920 would have been £617,095.

Installed in Australian Munitions Factories developed in the 1920's these "disposal" machine-tools and plant items were a major factor in Australia's ability to support the Army and the Navy during the between-wars period and in the vast expansion of productive capacity that followed the outbreak of Great War II in 1939.