

DEFENCE PRODUCTION IN AUSTRALIA

23. 3. 64.

Comments on the historical record compiled by Sir John Jensen.

- Page 17:- Reference is made to the employment of junior labour even in these days. Female labour is largely used but most of it is of adult age.
- Page 19:- At the bottom of the page mention is made regarding the compliance with the Act by delivering ammunition before a certain date.  
The Melbourne "Age" of 23rd June, 1891 said that an Order in Council had been passed for the payment of £5,000.
- Page 22:- The word "spite" has been omitted in the sixth line from the bottom.
- Page 34:- In the 8th line the plural "reserves" is used instead of the singular.
- Page 39:- In the 12th line the word "hour" is used instead of "how".
- Page 45:- In the middle of the page should the word "inclusive" be replaced by "inconclusive"?
- Page 54:- In the 12th line from the bottom the Prime Minister's name is incorrectly spelt as Baron instead of Barton.  
The 5th line from the bottom has "including" instead of "included".  
The word "reported" has been omitted in the third line from the bottom.
- Page 63:- In the 7th line from the bottom the dimension ".302" is given instead of ".303".
- Page 65:- The open hearth furnace referred to in the 17th line from the top is the "Siemens" and not the "Sidemens".
- Page 73:- In the 10th line from the bottom was the word "definite" intended when "different" is now shown?
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DEFENCE PRODUCTION IN AUSTRALIA.

14.1.64.

Notes and abstracts taken from the manuscript copy of a historical record on the above written by Sir John K. Jensen.  
(The numbers refer to the page number of the original copy).

First references to an Australian ammunition supply.

5. In pre-federation days Victoria led the field regarding the establishment of a small arms ammunition industry.

From 1882, onwards, the Colony of Victoria was conscious of the necessity of practical action. By 1890 it had a Navy, Army and small arms ammunition factory.

8. The first evidence of official interest in the production of munitions in Australia is a memorandum dated 16th August, 1882, from the Surveyor General of the Ordnance, War Office, London forwarding details of the manufacture of the Martini-Henry .45-inch military cartridge. The letter was in response to an enquiry from Major H.T. Sargood, an officer of the Volunteers in Victoria, who was at the time on a visit to London. Major Sargood was later knighted and eventually became Minister of Defence. His initiative and drive greatly helped Victoria to lead the way in the production of munitions.

On the 30th September, 1884 Major Sargood, as Minister of Defence, sent the papers to the Minister of Public Works advising that it was his intention to send copies to other Colonial Governments with a view to ascertain the possibility of erecting a central factory.

9. In April, 1886, Major-General M.F. Downes, Secretary of Defence, Victoria, wrote to the Premier stressing that in the event of war supplies of ammunition from overseas would be stopped. He urged that the Premiers of other Colonies should be approached to promote a local ammunition factory, preferably under private company control.

In the letter he referred to a Royal Commission on Defences, held in Sydney in 1881, which reported "that steps should be taken to purchase a plant for the purpose of making up small - arm ammunition."

The Premier of Victoria communicated with the other Premiers but the replies were unfavourable.

10. A considerable amount of correspondence passed between commercial concerns and Government agencies between 1886 and 1888. On the 4th August, 1886, the Government in reply to one suggestion said that the Government had no intention to establish a munitions factory, The Premier had indicated in a Budget speech that he was prepared to give a bonus to any private company which first manufactured a certain amount of rifle ball cartridges of approved quality in the colony.

11. In exchanges of correspondence with English manufacturers a possible subsidy of £2,500, from the Government, was mentioned, with provision of cheap land and promises of firm orders. On the 10th December, 1886 a letter from the Victorian Secretary of Defence, Major-General Downes to G. Kynock and C., a leading manufacturer of military small-arms ammunition in England, stated that the other Colonies were unco-operative in the establishment of a rifle cartridge factory, and that the Government was determined to establish one in Victoria. The consumption of ammunition in Victoria for the past year was:-

3,100,000	Martini-Henry	ball	cartridges	
300,000	"	"	blank	"
900,000	"	"	Carbine	"

12. On the 25th February, 1887, a Mr. Alexander Davidson, Australian representative of Greenwood and Batley Ltd, Leeds, England wrote to say that his principals were interested in establishing a factory but he protested against the plant being subject to Customs duty and also to the smallness of the bonus of £2,500 offered which was insufficient for a possible capital expenditure of £40,000. The price of the ammunition suggested by the Government of 25 per cent above the Woolwich prices was too low.

Various English companies were interested in the proposal. Messrs Kynock proposed that the Governments of the four principal Colonies should give a joint loan of £15,000 towards the capital expenditure, and in joint orders for 10 million cartridges annually. With a bonus of £10,000 and free entry of the plant they would build and operate a factory at a site to be agreed upon.

13. Messrs Kynock were informed that the Minister of Defence (Sir James Lorimer) was in London to discuss the question with interested firms.

#### Origination of Colonial Ammunition Company.

A proposal dated 21st July, 1887 forwarded to Sir James Lorimer from a Mr. John Whitney who had already started a small-arms ammunition factory in New Zealand, and was then in London, was the origination of the factory at Footscray.

The offer was to erect a factory in the Colony of Victoria equipped with modern plant supplied in arrangement with Greenwood and Batley, and other interested gentlemen. The conditions sought were the support of the Government, a subsidy of £5,000, favourable terms for the introduction of plant and the necessary material and a contract for, say, ten years.

14. Captain Whitney's proposal was favourably received by the Victorian Government. A letter between the Premiers of Victoria and Queensland said the proposal was preferable to other proposals from English concerns. On the 12th February, 1888, from New Zealand, Captain Whitney submitted more explicit proposals and about three weeks later, the Government requested him to come to Melbourne and select a site for the factory.

In his letter, Captain Whitney said his company would consist of Messrs Whitney and sons; Messrs Greenwood and Batley of Leeds, England; Mr. T.W. Cartwright, Solicitor, of Nottingham, and Messrs T. Hall of Mount Morgan, Queensland; J. Clarke, J. D'Arcey and Captain de Lussada, R.N. The contract would provide for 3 million, or more, cartridges annually for 25 years, a site on the Saltwater River, powder to be supplied by the Government on repayment, a bonus of £5000 plus £2000 as an allowance for Customs duties. The price of cartridges would be based upon current prices abroad plus carriage and incidental charges. Victoria was requested to induce New South Wales to purchase their requirements from the Company.

#### Reactions of the Colonies.

15. Copies of Captain Whitney's letters were forwarded to the Premiers of Queensland and New South Wales. Sir Henry Parkes, Premier of New South Wales favoured a Federal factory, a member of Parliament urged that it should be built at Echuca.
16. Sir Henry Parkes said that his Government could not support, on Federal grounds, a factory in Victoria. Mr. Gillies, Premier of Victoria, said that, if the factory was transferred to New South Wales, Victoria would be willing to co-operate by procuring its requirements from a Sydney factory. Mr. Gillies next wrote to say that Mr. Whitney would call upon him to discuss the suggestion of a New South Wales site. On the 14th May, 1888 Sir Henry Parkes said he had seen Mr. Whitney and he objected to Mr. Whitney's requirement of being close to a dense population to supply junior labour. Sir Henry Parkes suggested a site on the River Murray. He even went on to say, if the factory was established in Victoria, it might result in a competing factory in Sydney.
17. Representations were made from towns in the proximity of the River Murray but Captain Whitney was opposed to any locality outside a capital city.

18. The Register of Joint Stock Companies in England issued a certificate that "the Colonial Ammunition Company Limited was incorporated under the Companies Acts 1862 - 1886, as a limited Company, on the 30th January, 1888.

On the 22nd May, 1888, Captain Whitney submitted a plan of the proposed factory and testing range at Footscray. He asked for a grant of three acres of land for the present, and the option of purchase of 30 to 50 acres in consideration of future requirements. He also stipulated the conditions he should like and said the product was to be delivered within twelve months of commencement, or before.

About the time the Governments of South Australia and Tasmania expressed their willingness to support the scheme.

The Crown Solicitor had prepared an agreement by September, 1888, but it was May, 1889, before formalities were completed in Australia and the indenture was signed by the Governor-in-Council. It provided for a lease of five acres of land for 999 years at pepper-corn rental. The contract was to supply ammunition during the ensuing 25 years, and provided that the company should be paid £5000.

19. The contract was sent to England for signature and on 2nd August, 1889, the Agent-General for Victoria wrote to say this had been done and that the signatories were:-

W.T. Cartwright - Chairman of the Company  
Arthur Greenwood of Greenwood and Batley, Ltd.,

On the 8th August, 1889, the Company informed the Minister for Defence that Mr. Asa Whitney was leaving for Melbourne to supervise the erection of the factory, a layout of which was enclosed with the letter. On the 4th November, 1889, Parliament formally ratified the indenture. The Act prescribed that the delivery of ammunition should commence by November, 1890.

#### Orders placed in England.

20. There is a mention that one million rounds were ordered in England by Sir Frederick Sargood and that the factory closed in consequence. A deputation of employees waited on the Minister in October, 1892 regarding the latter. Employment at the factory amounted to 140, including 120 females on piece-work, and the wages ranged from 8/- to 25/- weekly.

An aftermath of the order being placed in England was an agreement entered into with the Company in December, 1893, whereby it received £1,450 by way of compensation for the loss of the order, and the Government contracted to place orders of  $1\frac{1}{2}$  million cartridges annually for 5 years, or in default, to make cash payments to the Company.

From 1893 matters at the factory were of a routine nature until September, 1897 when an explosion at the factory caused the death of three female employees. The verdict of the jury resulted in the strengthening of supervision by the Government Explosives Department of the Colony.

#### Weapons and ammunition in use.

61. Before Federation, the Victorian Infantry was armed with the single loading Martini-Henry .45 inch rifle. The Mounted troops used the Martini-Henry Carbine, practically the same weapon with a shorter barrel.
22. In the latter part of the 19th century intensive research was being carried on to develop a "smokeless powder" to replace gunpowder. This resulted in a design change to strengthen the weapon and, in England a reduction in calibre to .303 inch but still using the Martini breech action. The rifle was called the Martini-Enfield.

Cordite filled ammunition.

The first official mention of cordite in Australia appears to have been made soon after the United Kingdom adopted cordite. This was in a letter dated 17th December, 1895, from the Victorian Secretary of Defence to Secretary, Trade and Customs. It stated that the Agent-General reported that gunpowder, RFG2, was becoming difficult to obtain because the War Office was adopting cordite for small-arms, and the demand for RFG 2 had diminished. It was requested that the Inspector of Explosives should report on steps to procure a local supply of RFG 2, and to investigate the practicability of establishing a cordite factory.

24. Mr. C. Napier Hake, Inspector of Explosives, for Victoria, reported in January, 1896 that the decline of manufacturing capacity of RFG 2 had already brought about a sign of deterioration in the product. He advised against local manufacture on technical and economic grounds. Cordite developed by United Kingdom and ballistite developed by the Nobel concern were the only propellants that should be considered.

The manufacture of cordite could only be economically done in association with the manufacture of commercial explosives of the same general composition. He mentioned the Australian Explosives and Chemical Company which was already producing a blasting explosive at Deer Park Melbourne.

24. Commander Collins, Secretary for Defence in submitting the report advised the Premier that the Colonial Military Commandants were meeting in Sydney on the 29th January, 1896, to consider what pattern of small arm should be accepted, after first discussing the propellant to be used, and whether it would be manufactured in Australia.

A resolution was passed at the Military Conference "that the establishment of a cordite factory in Australia is a matter of urgent importance."

25. On the 20th March, 1896 Mr. Asa Whitney advised the Premier that New South Wales was making enquiries in England for a cordite factory to be located in Sydney. Such an arrangement was unsuitable for the ammunition factory in Victoria.

On the 14th April 1896 Commander Collins recommended that Mr. Hake should be sent to England to investigate the adoption of smokeless powder by the Victorian Government and the question of a factory in Australia. He left England on 23rd May, 1896, on the 25th March, 1896 Nobel's Explosives Company Ltd, said they would be prepared to establish a cordite factory in Australia for £60,000. Mr. Hake was informed that a Government factory was not contemplated and that no steps would be taken except in conjunction with other Colonies. No subsidy was contemplated.

27. Victoria was concerned by the falling off of gunpowder supplies and realised that weapons using gunpowder would become obsolete.

New South Wales was not prepared to accept a change of weapons.

The Military Commandant of Victoria strongly advocated the adoption of cordite.

28. The Commonwealth Military Forces were organised under the one command in 1902. Major General French said that if cordite was to be made in Australia it should be made by the Government and not by contract. A meeting of Military Commandants of the Colonies held in Melbourne in 1896 advocated that Federal action should be taken to manufacture cordite in Australia under Government supervision.

29. Mr. Hake reported on the 3rd February, 1897 that he was satisfied that cordite was the best of the various propellants and there was nothing to hinder it being manufactured in Victoria. Copies of the report were sent to the Colonies and New Zealand.

In January, 1897 Nobel-Dynamite Trust purchased the Australian Explosives and Chemical Company, Ltd of Deer Park. The company still traded under its original name.

31. In a letter dated 9th April, 1897, the Colonial Ammunition Company offered also to include the manufacture of cordite along with its proposal to manufacture .303" ammunition.

Proposal for Government factory.

In October, 1897, Major-General French said the supply of small-arms ammunition was unsatisfactory and it should be manufactured by the Government. He suggested a factory at Goat Island, Sydney making use of boys from a training ship. On the 24th January, 1898, writing to the Premier of New South Wales Major-General French again stressed the need of Government made ammunition particularly with a new rifle and cordite ammunition.

32. A Premier's conference held in Melbourne three Military Commandants were instructed to interview representatives of Colonial Ammunition Co and Nobel's Explosives Co. and prepare a rough estimate on the cost of establishing a Government factory.
33. Prices supplied by Mr. Batley, then in Australia, for the manufacture of .303 were as follows:-

Machinery and plant - .303	£25,000
Buildings and plant - cordite	£70,000
Buildings and plant including power	
plant - rolling mill	£15,000

Cordite delivered in Victoria was quoted as 2/6 lb and Greenwood and Batley were paying 3/6 lb in England.

The Premier decided that if Victoria did not elect within three months to establish a Government Small-Arms Ammunition Factory, then N.S.W. would hold itself at liberty to establish one in that colony for the manufacture of ammunition from cordite.

Proposed new agreement.

34. MR. Batley in concluding the draft of a new agreement to come into effect on 1st July, 1898, whereby .303 inch cordite filled ammunition, and any other kind of military small-arms ammunition would be included in the company's contract; reserve stocks of materials other than cordite would be held by the company and the Government would undertake to supply cordite from stocks.

In April, 1898, Commander Collins commenting on the Premier's Conference wrote as follows:-

- (1) Australian Military Forces required 4 million rounds annually. The Footscray factory had a designed capacity of 8 million. A rolling mill would not be justified for 4 million.
  - (2) Both Victorian and British authorities agree that a well known private firm should be encouraged to produce .303 inch ammunition.
  - (3) Other colonies had promised support of the Colonial Ammunition Co. but had not sent forward regular orders. They favoured the solid drawn case although UK and Victoria found the rolled case satisfactory.
35. As .303 inch cartridge had been approved for adoption C.A.C. were willing to install plant for .303 inch at Footscray and also a rolling mill which would be used on commercial work as well.
- (4) Victoria was bound to CAC for 16 years and could not support the proposed N.S.W. factory.
  - (5) It would be unwise to have two factories.
  - (6) A Government factory for cordite was inadvisable as the requirements would only be about 10 tons per annum.

Proposed sale to Government and new factory.

In August, 1898, C.A.C. offered to sell to the Government for £60,000 cash, or to lease the factory.

Annual profit since 1892 was £3,129.

Nothing came of the suggestion.

36. Greenwood and Betley quoted N.S.W. £17,325 for a complete plant for .303 inch including cap manufacture, rolling mill and foundry for 5 million rounds per annum, on a 40 hour week basis. The proposed factory was to be at Newington, N.S.W. No finality was reached.
37. In January, 1899, the position was much the same. N.S.W. was still uncooperative. Doubt was expressed that N.S.W. could dispose of 5 million per annum. On the 30th January, 1899, Commander Collins, Secretary of Defence, said that N.S.W. was still awaiting the supply, from Imperial sources, of .303 ammunition for their new rifles. In June, 1899, the Premier of Victoria suggested to the Premier of N.S.W. that the question of a Government factory should be left to impending Federal Government. A reply from N.S.W. dated 28th September, 1899 queried the qualifications of Commander Collins and said that Victoria, having failed to establish a Government factory, N.S.W. now intended to do so. Furthermore, the experience of N.S.W. with reference to ammunition supplied by C.A.C. had not been altogether satisfactory and they were reluctant to obtain supplies of cordite filled, .303 inch ammunition from the Company.
38. N.S.W. seemed to be unco-operative possibly due to the influence of the Military Commandant. In Victoria the administration of the Defence Forces was by Ministerial administration.
41. On the 3rd October, 1899, the Victorian Premier, Mr. George Turner, wrote to the Premier of N.S.W. giving the qualifications of their Captain Collins and stated that it was his suggestion to leave the question of the Government Factory to the new Federal Government.
42. General French in January, 1900, recommended that Nobels' should be invited to start manufacturing cordite with the option of the Government taking over, and that the Imperial Government should initiate a factory at the expense of N.S.W. This was practically the end of discussions with N.S.W. In April, 1902, the New South Wales Government file on the matter was transferred to the Commonwealth Department of Defence without any further action being disclosed.

Proposed supply of cordite.

43. Victoria, and in particular Captain Collins, were endeavouring to commence the production of cordite in Australia. Australian Explosives and Chemical Co. said they needed no capital assistance but only orders for a definite quantity per annum to enable them to commence production. The Premier of Victoria sent a telegram to the Premier of N.S.W. informing him that the War Office was unable to meet requirements from Colonies for the supply of cordite ammunition Victoria was prepared to negotiate with Aust. Explosives if the other colonies concurred. Copies were sent to other Premiers, and to New Zealand. Nothing constructive resulted. N.S.W. were still talking of having their own factory.
44. Captain John Whitney offered to lease or sell the Company's Footscray works to the Victorian Government so as to forestall the N.S.W. Government. In March, 1900, Australian Explosives requested an agreement with Victoria. A complete cordite plant was available for shipment at Glasgow. On the 26th March Cabinet decided to leave the matter of cordite to Federal Government.

45. In June, 1900 Captain Collins was still trying to get some positive action. Further quotes were obtained from England - a complete plant would cost £70,000. Nobels at Glasgow were manufacturing 2,500 tons of cordite annually - Victoria's requirements were 5 tons per annum. In October, 1900, Captain Collins submitted fresh proposals but they were deferred.

Federation.

46. On the 1st January, 1901 the Commonwealth of Australia were now responsible for defence but it was some months before the transfer was effected. The Victorian Defence Department was the nucleus of the Commonwealth Department of Defence with Captain Collins as Secretary.
50. On the 14th March, 1901 the Central Arsenal was suggested by Captain Collins.

Expansion of C.A.C.

51. On the 15th April, 1901, Captain Whitney submitted a memorandum by the chairman of the C.A.C. in London stating that the company had made large additions to its Footscray factory for the manufacture of .303 inch ammunition and it now proposed to erect a rolling mill.
52. A further Indenture dated 23rd April, 1901, extended the land leased to the Company to cover the whole of Allotment 2 of Section 15 amounting to 40 acres, from Saltwater River to Gordon Street to a width of 900 feet all the way; this lease to expire at the same time as the original lease, about 1914. The object of the lease was to erect a rolling mill. In view of the proposed Central Arsenal there were discussions regarding the site as several hundred acres would be required. Consequently, it was requested that no action should be taken to sell the site of the Meribyrnong Magazine. The Premier of Victoria expressed agreement on 23rd Oct, 1901. On the 25th June, 1901, Captain Collins resubmitted his proposal for the Commonwealth to undertake the manufacture of small-arm ammunition, or to amend the agreement with the C.A.C., or to purchase the existing factory.

Price of ammunition and proposed agreement.

54. The price paid to the C.A.C. for current supplies of ammunition would be arranged in London between the Agent General of Victoria and the Company based on
- War Office price plus 5½% for inspecting, wrapping and packing  
6/5d per 1000 for the wooden box  
10 per cent on total for small order  
Plus cost of shipping and landing in Australia.  
The cost of .303 Mark VI, based on above, would be £6.2.6. per 1000 landed in Melbourne.  
Increased orders brought the price down to £6.0.0.  
Martini-Henry .45 inch was £5.5.0. per 1000.
56. In March, 1902, the C.A.C. reiterated its proposals for an extended agreement to cover all Commonwealth requirements of ammunition. They offered to provide rolling mills with an option for the Government to purchase the factory at any future date. The Minister of Defence sent the proposed draft to General Hutton, General Officer Commanding the Military Forces of the Commonwealth. The draft provided for a contract for the supply of 12 million .303 inch cartridges annually as a minimum. General Hutton did not favour a long contract with a private company and recommended six years instead of twelve. He also recommended that all ingredients for manufacture of the ammunition should also be made in Australia.

Proposed Central Arsenal.

57. On the 19th April, 1902, General Hutton said a small arms ammunition factory should be established on the site of the future Arsenal.



A memorandum dated 20th May, 1902, by Sir George Clarke, Governor of Victoria and an authority on defence, stated that it was imperative that the Commonwealth should be independent of outside sources of S.A.A. because in the event of war Australia would be cut off from supplies.

58. General Hutton favoured the locating of the proposed arsenal at Newington Magazine Area, N.S.W. but he agreed that the small arms ammunition factory, free of major transport problems, need not be located in Sydney. The arsenal proposal remained dormant until 1904 when it was revived by Captain Collins. General Hutton still favoured Newington. No action resulted and the question was left in abeyance for a decade.

Weapons in use.

61. Before Federation, the Victorian Infantry battalions were armed with single-loading Martini-Henry .45-inch rifles. The Mounted troops were using the Martini-Henry Carbine, practically the same weapons with a shorter barrel.
62. On the 5th May, 1897 the London office of the C.A.C. offered to send to Footscray the necessary machinery, apparatus and a skilled staff to convert the Martini-Henry rifles to Martini-Enfield or Metford rifles. No action appears to have been taken abroad regarding the manufacture of cordite and rifles.

Quote on new factory.

Mr. Hake was requested also to enquire as to the cost of establishing and operating a small-arms ammunition factory inclusive of the production of all materials such as caps, wads, fulminate and caps.

A quotation from Greenwood and Batley was as follows:-

Power plant - Two steam turbo-generator 300 KW	£5,020
.303 cartridge plant complete	£27,137
Rolling mill plant and furnaces	£15,980

71. Mint Cartridge factory.

The Mint authorities put forward a proposition to cast, roll and blank discs, for both case and bullet, using Mint equipment. The discs would only need cupping. Nothing developed from the proposal and an expert committee ruled against it on the 15th June, 1908. However, the committee recommended the production of brass and cupro-nickel cups in Australia.

72. Rolling Mill.

The committee said the production of cups could be arranged without cost to the Government by extending the lease of the C.A.C. On 11th June, 1910 an agreement was gazetted whereby the Company in consideration of a grant of a 99 years lease of land at Gordon Street, Footscray, undertook to erect thereon rolling mills with the necessary foundry, and also machinery for the manufacture of caps and wads.

73. Defective ammunition.

In August, 1904 a .303 inch magazine rifle burst at Fort Melbourne Rifle Range. Three months later a similar accident occurred at Williamstown and several were reported the following year. The bursts were caused by the presence of a second bullet. Weighing machines eventually eliminated the trouble.

New .303 inch rifle and ammunition.

63. Letters from the C.A.C. in England in November, 1897 and January, 1898 before Federation indicated that the Colonial Governments had adopted the .303 inch rifle but there is no record of the rifle type.

In June, 1900, when Mr. Jensen started at the Ordnance Stores, Melbourne, Martini-Enfield rifles were on issue to the Infantry and the .303 inch ammunition for them was being made at the Footscray factory.

64. In September, 1903, advice was received in Australia that the British Army had adopted the Short Magazine Lee-Enfield rifle.

Agreement with C.A.C.

68. In November, 1902, Sir John Forrest suggested that clauses should be added to the contract with the company to:-

- (a) Maintain reserve metal stocks for 10 million cartridges.
- (b) Provide machinery for the percussion cap.
- (c) The company to erect rolling mills if so instructed.

The Prime Minister endorsed this "Agree to proposal for 5 years".

The C.A.C. suggested that it should be associated with Nobels Explosives Co. (A.E. & C. Co). However, the explosives company was informed on 21st November, 1902, that the Commonwealth was not prepared to take action in the matter especially in view of the fact that the explosive may be modified.

69. A draft agreement was sent to the C.A.C. on the 2nd March, 1903 for a period of five years. It took a long time for the contract to be signed. In June, 1906, the Government had purchased stocks of materials equivalent to 10,000,000 cartridges. The company was also obliged to install a rolling mill.

70. In May, 1907, Mr. C.N. Hake and Engineer Commander W. Clarkson were asked to make enquiries.

First Cordite Production in Australia.

90. On the 8th August, 1912, Manager, Cordite Factory reported that the first two lots of cordite, about 2½ tons, was ready for proof. The lots were accepted on 30th August, 1912.

Q.F. Cartridges

- 4/56. In early 1915 the Chemical Adviser (Mr. Marcus Bell) supplied a detailed survey of the processes involved in the manufacture of the complete 18 pr Q.F. Cartridge.

Proposed Arsenal.

- 4/57 The Australian Capital Territory was now considered as a likely site for an arsenal.

Ammunition Requirements.

- 4/67 By the middle of 1914 the Cordite Factory was running smoothly and the programme for 1914-1915 was 100 tons Cordite Mark 1, Size 3¾. In October, 1914 the Chief of the General Staff called for 100,000,000 rounds of .303 inch ammunition annually, for two years. This would need doubling the cordite requirements to at least 200 tons.

- 4/69 After conferring with those concerned the Chief of the General Staff stated on 11th December, 1914:-

1. 2,000,000 rounds .303 inch ammunition was required weekly.
2. Cordite Factory to be advanced funds to finance purchases of raw materials.
3. £8,000 to be provided to expand cordite manufacture.
4. The output of the C.A.C.'s factory was not satisfactory. The matter is to be considered again later.

The Cordite Factory planned to produce 250 tons annually working 24 hours daily. A small factory was to be equipped to manufacture mercury fulminate.

The C.A.C. undertook to produce 2 million rounds weekly working two shifts.

In July, 1915 England enquired whether Australia could supply .303 inch ammunition but as the C.A.C. was making the Mark VI instead of the Mark VII used overseas, supplies could not be sent.

- 4/92. In 1914 Cordite Size  $3\frac{3}{4}$  Mk.1., made in England and landed in Melbourne, was 2/50 per lb. The local production 1915/16 was 3/6d. per lb. In 1917 a new specification was undertaken to produce Cordite MDT 5-2.

#### World War I.

- 4/98. Up to 1911 the C.A.C. imported all components used for the manufacture of small arms ammunition.

In 1912 a brass foundry was installed, together with a rolling mill plant, and brass cups were produced. By 1915 production of cups had increased and some millions were exported to England.

In 1913, some cordite was exported from England to supplement local production but all imports ceased at the end of that year. Percussion caps, cupro-nickel cups, glazed board discs and leather board were imported.

The cap factory reached production in February, 1916. Importation of cupro-nickel cups continued to the end of 1916 when the company supplied the requirements after considerable investigation and even then the product was not entirely reliable.

- 4/99. On the 11th December, 1914 the Chief of the General Staff reported that two million rounds were required weekly. Manager, C.A.C. said the factory could produce two million weekly. In another letter he said he needed more plant. It was recommended that the Departmental Committee should consider the advisability of taking over the factory.
- 4/100. The company was approached on the matter on the 2nd February, 1915, and it conveyed the enquiry to London. The Company was having trouble financially. The Department suggested a price of £202,000. Correspondence went between Australia and London but nothing eventuated. The Government did not pursue the matter as thought had been given to the inclusion of a small-arms ammunition factory in the Arsenal scheme. The Commonwealth Bank agreed to lend money to the Company and the Company's own bank did likewise. Additional plant was purchased, the processes re-arranged and the factory became a highly efficient organisation.
- 4/101. To supplement local production limited supplies of .303 inch ammunition was obtained from the United States and a little from England. Output of ammunition using 1914 as a comparison increased 62 per cent in 1915, 140 per cent in 1916 and 209 per cent in 1917. Cordite MDT 5-2 became available about the middle of 1917.

#### New agreement sought.

- 4/102. On the 4th September, 1916 the Company wrote to the Minister asking for a new agreement for the supply of ammunition. The former agreement with the Victorian Government had expired on the 27th May, 1914.
- 4/103. A new draft had been prepared in October, 1914 to extend for 25 years, but had been held over pending decision on the proposed arsenal site for which had been selected at Tuggeranong, N.S.W. Queries were raised as to whether the Government should proceed with a second factory as an essential portion of the arsenal or purchase the plant and transfer it to Tuggeranong.

Proposed Arsenal.

In August, 1916, Mr. Leighton was appointed General Manager of the proposed arsenal and the Minister favoured placing it in Federal Territory

4/102 On the 4th August, 1916 a letter was sent to the Company informing them of the proposed formation of the Government Arsenal and stating that the Government was willing to purchase machinery and plant from the Company.

The Company replied that the Directors had quoted a price to the Prime Minister in London.

The Defence Department had not received this document and a copy showed that the price offered was £350,000 with other conditions.

On the 9th August, 1916 Cabinet decided to take no action at present.

In a cable to Mr. Leighton in London giving the above information it was stated that the Commonwealths normal annual requirements was 35 million rounds per annum.

4/104 Mr. Leighton cabled from London that his answer to both questions was in the negative and recommended a five year contract with the Company conditionally on the Company rendering assistance to establish the new factory.

A Board of Business Administration was set up in the Defence Department and on the 22nd August, 1918 the Board reported that it was endeavouring to determine a satisfactory price and recommended that the contract should not be signed.

It was considered that it was possible that the Goodwill would be about £100,000 which was exorbitant and the Board refused to agree to any clause for Goodwill being included.

The Board continued to examine the matter and an agreement was concluded in 1919. However, the Company found itself in difficulties after the war and had to approach the Commonwealth for relief.