

In this chapter, an attempt has been made to introduce in a reasonable time-sequence some of those whose names loom largest in the official documents covering the development of the Government Munitions Factories. Brief biographical summaries in an appendix present further information but inevitably this personal record will have missed many others who also played an important part.

Australia's progress between 1850 and 1950 from the exploitation of the most readily accessible of the primary resources of the continent — pastoral and agricultural plus the richest of the deposits of gold — into the advanced community as we know it today with industries capable of undertaking successfully production of the most advanced, the most sophisticated, the most technically demanding of the needs of modern society has been spear-headed by the initiative of Governments and the unrelenting drive of Government officials inspired by the conviction that Australia's future as a nation was uncertain unless the Navy, the Army, and, in later years, the Air Force were adequately supported by munitions of war produced in their homeland.

Available records disclose that, way back in 1882, Major F.T. Sargood of the Volunteer Army of the Colony of Victoria — a principal of the Melbourne firm of Sargood Gardiner — sought and obtained from the War Office in England information needed to produce locally the ammunition used by the Victorian Army — the 0.45" ammunition for the Martini-Henry rifle. Largely as a result of his sponsorship, there was set up in 1883 Australia's first munitions factory — that of the Colonial Ammunition Company at Footscray (Vic.)

As Victorian Minister for Defence 1890-99, Major Sargood — later Sir Frederick and a Victorian Senator — encouraged the extension of the policy of self-sufficiency and campaigned, with limited success, to win the agreement of all the Australian Colonies to support any munitions factories established in Australia, whether located in Victoria or in any of the other Colonies.

Sargood's enthusiasm in this regard was shared by the Victorian Secretary for Defence — Commander (later Captain) R.H.M. Collins, formerly of the Royal Navy. On the inauguration of Federation, Collins became the first Secretary of the Commonwealth Department of Defence, which position he retained until 1906, when he was transferred to London to become Official Secretary for the Commonwealth

By that time, Collins and his Departmental associates, with full support from the first Commonwealth Minister for Defence (Sir John Forrest, G.C.M.G.,



Clarkson, R.A.N., to England in 1907. These visits preceded the establishment of the Cordite Factory at Maribyrnong (Vic.) and the Small-Arms Factory at Lithgow (N.S.W.) as the first Commonwealth Government Munitions Factories.

The Minister for Defence at that time (the Hon. Thomas Swing) and the Secretary (S.A. Pethebridge who succeeded Collins) were a solid combination of enthusiasts for self-sufficiency in defence. Hake, Fellow of the Institute of Chemistry in Great Britain, was the Chief Inspector of Explosives for the Victorian Department of Trade and Customs and his advice had frequently been sought by the Commonwealth on explosives matters. Commander Clarkson was a very capable Engineer-officer of the Royal Australian Navy and was dedicated to a Naval career.

The decision by the Government in 1908 to build the Cordite Factory posed the question of management, on which subject Hake was consulted and recommended appointment of A.E. Leighton, an Englishman who had for five years been Assistant Manager of the Government Cordite Factory at Aruvankadu in India and who had greatly impressed Hake during his inquiries in England. On August 4, 1908, Leighton accepted the appointment as Manager of the Commonwealth Cordite Factory under a five-year contract.

Concurrently, Hake accepted transfer from the Victorian Government to the Commonwealth service to supervise the erection of the Cordite Factory and also to serve as Chemical Adviser, with a laboratory and offices at Victoria Barracks, Melbourne which eventually evolved into the Munitions Supply Laboratories at Maribyrnong.

An Assistant to Hake was appointed at the same time in the person of Marcus Bell, an Australian chemist who at his own expense was gaining experience in explosives production in England at the time of Hake's inquiries regarding cordite. Planning was that, on Hake's retirement, Bell would succeed him as Chemical Adviser, which he did on February 1, 1911.

After planning details of the new Factory, Leighton had gone to England to perfect himself in the latest cordite-manufacturing practices and to acquire the plant and equipment needed for the Australian project. In his absence, Hake supervised the erection of the factory buildings, the installation of the plant and the initial production tests before handing over to Leighton.

Bell's vacant position of Assistant Chemical Adviser was filled on February 7, 1911 by G.A. Ampt, B.Sc., another chemist who had volunteered to



Assistant in February 1914.

Leighton's Cordite Factory staff had been increased prior to his departure for England by the appointment of N.K.S. Brodribb on October 4, 1909, as Chemist, following experience with the Victorian Government Laboratories from 1903 as Assistant Chemist. His explosives knowledge was greatly widened by special study in England in 1910 of the latest cordite-manufacturing processes.

In parallel with these developments with the Cordite Factory, Clarkson had been equally active in advancing the Small-Arms Factory. Despite his Naval-career ambitions, circumstances prevented his return to Naval duties (as Engineer-Captain) until August 11, 1912, by which time as Acting Manager he had seen the Lithgow Factory successfully through its establishment stages to regular production at the planned rate of out-put.

Associated with Clarkson in setting-up the Small-Arms Factory was A.C. Wright, a Pratt & Whitney expert in arms manufacture who was retained by the Commonwealth as consultant for the contract entrusted to his Company to equip the Factory and bring it into service. Another Company engineer -- F.R. Ratcliffe -- was seconded under contract to the Department of Home Affairs (the Commonwealth Works Authority at that time) during the construction of the Factory buildings and the installation of plant and power and other services.

Ratcliffe was transferred from the Department of Home Affairs on May 20, 1912, after accepting appointment as Assistant Manager of the Lithgow Factory. On Clarkson's return to Naval duties, Wright accepted the position of Factory Manager under a three-year contract commencing August 12, 1912 but resigned on July 31, 1915 to take up management for the New England Westinghouse Company of a new Arms Factory in U.S.A. which attained an out-put of 600 rifles a day. Ratcliffe succeeded Wright and served as Factory Manager until his resignation on June 30, 1930.

The new Manager was A.S. Ford, who had joined the Factory staff as a draftsman on February 3, 1913, after having served his time with Vickers Ltd. in England in the production of the Vickers Machine-gun. During 1916/17 and again in 1918-20, as the Factory's Chief Draftsman, he had studied in England various types of small-arms and machine-guns being developed and which were likely to be of interest to the Australian Forces.

Returning to Australia in October 1920, he joined the Arsenal staff and



Ratcliffe as Factory Manager in 1930 and was transferred during the 1939-45 War to the position of General Manager of Small Arms & Machine-gun Factories and, subsequently, to that of Controller of Gun Ammunition Production, from which he retired because of ill-health.

During the planning of the Small-Arms Factory, six mechanics selected after Australia-wide advertisements were sent to the Pratt & Whitney works in U.S.A. in 1910 for special training in rifle production to qualify them for leading positions in the new Factory. Two of them - J. Finlay and J.D. Statton -- specialised in heat treatment and tool-room work respectively.

Finlay became General Foreman in charge of the Factory Tool-Room and in September 1923 advanced to Assistant Manager, which position he held until becoming Factory Manager when Ford moved on to his War-time job. Statton was also an Assistant Manager of the Factory from May 1, 1916 and from January 1934 he occupied a similar position at the Ordnance Factory, Maribyrnong, until July 1936 when he was called upon to act as Manager of the Ammunition Factory, Footscray during the absence of the Manager in England. He returned to the Ordnance Factory in November 1937 until his appointment as Manager of the Ammunition Factory in 1939.

One member of the Department's clerical staff - J.K. Jensen -- was also sent to the Pratt & Whitney works in U.S.A. in 1910 as well as to other Governmental and commercial munitions plants in U.S.A. and Canada. His mission was to study American accounting and costing methods in connection with piece-work and factory accounting generally and specifically in relation to mass-production of small-arms. After serving as the first Accountant at the new Factory at Lithgow, he progressed steadily through the ranks of the Department until becoming Secretary of the Department of Munitions from January 1, 1942 until his retirement on April 6, 1949.

In November 1914, Pethebridge -- by now Brigadier-General Sir S.A. Pethebridge, K.C.M.G. -- who had been Secretary of the Department of Defence since 1906 and who had been a part-time officer of the Royal Australian Naval Forces, was detailed to take command of a combined Naval and Military Force to operate in the North-West Pacific Islands. He was followed by T. Trumble, the former Assistant Secretary of the Department and M.M. Maguire followed when Trumble became Official Secretary in London.

Shortly after the departure of Ford for England in 1916, a vacant position of draftsman at the Factory was filled by R.H. Doyle who left the Factory shortly



Arsenal Branch to assist Ford in studying British practices in the production of rifles and pistols. After resuming duty in Australia, as Assistant Engineer in the Arsenal Branch, and then returning to the Small-Arms Factory, Doyle moved in due course to the position of Assistant Manager.

In 1937, he was borrowed to act as Assistant Manager of the Ammunition Factory at Footscray and, in the following year, as Acting Manager, with J.D. O'Shea, the Factory Supervisor, acting as Assistant Manager. Manager was J.H. Wrigley who had planned and brought the Factory into production but who retired for health reasons in May 1939. Statton became Manager and Doyle took over Statton's former position of Sub-Manager of the Ordnance Factory.

While considering the management of the Small-Arms Factory during the first World War, it is appropriate to refer to the valuable contribution made by B.T. McKay, General Manager of Walker's Ltd. of Maryborough, Queensland. He had spent seven years at the Birmingham Small Arms Factory, which his father had built and managed for 20 years. From June 1915, he assisted the Lithgow management materially by exercising general technical supervision and acting as Manager on several occasions prior to his death in September 1918.

When the 1914-18 War commenced, the Cordite Factory had already proved its ability to achieve in excess of the out-put planned by Leighton. It was found to be desirable, however, to provide him with an Assistant Manager and Brodribb was selected for the position in 1911 with A.A. Topp appointed to the vacant position of Chemist. Topp had worked as Chemist with the Mt. Lyell Mining Company of Victoria and the Chillagoe Mining & Railway Company of Queensland from 1906-08, as Analyst with the Victorian Mines Department 1908-10 and Assayer at Cassilis Gold Mining Company, Victoria, 1910-11.

In April 1915, when production of gun-cordite was being planned, Leighton proceeded to England to study British practices and to select and procure the plant and materials needed for the project. In response to representations from the British authorities, however, Leighton's services were made available to assist in establishing and operating new War-time factories in England and Scotland, a task which prevented his return to Australia until early 1919.

In the meantime, Brodribb had been Acting Manager of the Factory, with Topp as Assistant Manager until leaving for England on the Arsenal project in 1917 to investigate explosives manufacture and filling factories. A.G. Hall

J.D.S. Gaskins was appointed to the



On his return to Australia in 1918, Topp was placed in charge of development of the Explosives and Filling Factories. C.W.O. Stubbs and S.B. Abbott joined the Factory staff as Chemists in January 1919. In 1921, Hall was appointed as Assistant Manager of the Factory, supervising the propellants section.

Other Government Factories established or in course of being established prior to the 1914-18 War were the Clothing Factory, the Harness & Saddlery Factory and the Woollen-Cloth Factory. First Manager of the Clothing Factory was H.A. Slade, an Englishman appointed to the position in March 1911 whose experience in the trade in England enabled him to have the Factory operating by January 1912. He controlled its development until his retirement on age grounds on May 19, 1931, when Jensen became Acting Manager until October 19, 1931. The Factory Accountant -- D. McDonald -- was then Manager until retirement in 1939 with F.E. Corbett taking over.

The Harness & Saddlery Factory at Clifton Hill (Vic.) commenced production in August 1911 and continued under the expert direction of G.E. Crowe as Manager until the replacement of horses by machines led to the close-down of activities in 1923.

J.M. Smal, appointed early in 1912 to establish and manage the Woollen-Cloth Factory (built at Geelong, Vic.) saw production commence in 1915 and continued in charge of the establishment until his resignation in 1920. Assistant Manager J. Robertson, appointed in 1915, carried on until the Factory was sold in June 1923.

Concern regarding the likelihood of difficulties under war-time conditions in maintaining adequate supplies of acetone for the explosives programme led to the commissioning of Auguste de Bavay, an eminent mining chemist, in 1915 to develop a process for extracting acetate of lime from surplus Queensland molasses. He asked no fee for his contribution to the War effort. His contribution also included the supervising of the establishment of a Factory near Brisbane for this purpose, assisted by his son -- F.X. de Bavay -- who conducted the Factory as Works Manager until it was placed "in reserve" in 1927.

Official developmental thinking regarding munitions supplies in 1915-16 was based on the proposal to establish a Government Arsenal, which received official approval in 1916. Leighton was appointed General Manager of the Arsenal in June 1916 and Brodrigg was confirmed as Manager of the Cordite Factory on



Small-Arms Ammunition Factory at Footscray. Wrigley served as Factory Manager from 1928 until his death in 1939. Fowler, an Assistant Manager of the Factory in the 1930's was responsible during World War II for the construction and equipping of large Ammunition Factories at Finsbury (S.A.), Rocklea (O'land) and Welshpool (W.A.).

F.C. Spiller, assisted by M.M. O'Loughlin, studied British practices in the manufacture of guns, gun-carriages and projectiles. Spiller had been Engineer-in-Charge of commercial manufacture of 18-pdr. shell in Australia before going to England on the gun project and on his return was appointed Engineer-in-charge of construction of the Ordnance Factory to be erected at Maribyrnong.

E.P. Eltham and F.S. Daley, engineering graduates of the University of Melbourne, were sent to London, after Leighton's return to Australia, for further investigation of the production of machine-guns and of gun mountings and gun-carriages respectively. Eltham joined the Victorian Education Department shortly after returning to Australia, becoming Chief Inspector of Technical Schools before being borrowed in 1939 to take charge of technical training in the Munitions organisation and, later, up to the time of his retirement, to serve as Director of Industrial Training in the Department of Labour & National Service.

Daley and O'Loughlin were located at Lithgow until transferred to Melbourne in 1925 to work with the Central Drawing Office. O'Loughlin was made Assistant Manager of the Ordnance Factory -- of which Brodribb was Acting Manager following Spiller's resignation in May 1925 -- with responsibility for the Gun Factory, Shell Factory and Forge. Concurrently Daley was made Assistant Manager responsible for the Carriage Factory, Tool-room and Woodworking, retaining that position until resigning in 1931 to join the General Motors organisation. O'Loughlin became Works Manager of the Factory in 1935, advanced to Acting Manager in 1936 and was confirmed as Manager in 1937 when Brodribb became C.G.M.S. Statton was promoted from Assistant Manager to Sub-Manager of the Factory at the same time.

The London Arsenal Branch also included Lt.-Col. H.B.L. Gipps whose duties were to study the organisation of an effective Munitions Inspection Branch and the methods of inspection and proof to be applied on behalf of the Army in conducting the Arsenal. He was responsible later, as Chief Inspector, for the activities of the Inspection Branch, the control of which was transferred in June



position as draftsman with the English machine-tool builders -- Alfred Herbert Ltd. of Coventry -- was appointed in September 1918 as Chief Draftsman of the Arsenal Branch and was provided with offices at the North Melbourne Town Hall.

Accompanying Leighton on his return to Australia in February 1919 was F.T. Small, an Australian who had been serving with the Ministry of Munitions in London as an aeroplane-production engineer, his position being Engineering Personal Assistant to the Director-General of Aircraft Production. Although establishment of an aeroplane-manufacturing project was seriously considered at the time, the post-war depression conditions led to its postponement and to Small's resignation.

T.L. Sherman had been investigating production of aero-engines. Sherman, a Bachelor of Engineering from Queensland, had been working in the Technical Department (Engines) of the Ministry of Munitions in London but action could not be taken in Australia at the time to make effective use of the vast amount of technical and manufacturing information he had accumulated and he reluctantly also left the Commonwealth service.

Early in 1919, H.C. Green, an N.C.O. in the A.I.F. who had temporarily joined the London staff of the Commonwealth Auditor-General, was given the task of examining the accounts of the London Arsenal Branch. After returning to Australia he progressed to the position of <sup>Assistant</sup> Commonwealth Statistician before being seconded to the Department of Supply & Development as Assistant Secretary (Civil Supply) at the start of World War II. Later he served, initially, as Controller of Materials Supply -- and later again as Director of Materials Supply -- under Essington Lewis as well as Assistant Secretary of the Department of Munitions. After the War ended, he became Chairman of Directors of a large Melbourne Company.

Jensen returned to Australia in July 1921 after having spent approximately three years in London studying the British organisation of Government Factories and industry for the maximum production of munitions under war-time conditions. He also conducted the activities of the Arsenal Branch in London after Leighton's departure, until there was no longer any need for continuing that Branch office.

With the abandonment of the Arsenal project in 1918-19, Leighton's title of General Manager of the Arsenal lost its significance but it was not until July 25, 1921 that his new position of Controller-General of Munitions Supply was created. On August 13, 1921, with the establishment of the Munitions Supply Branch with responsibility for all activities of the Government Munitions



Munitions Supply Board. In September 1922 he became also Chairman of the Department's Contract Board of which A.V. Smith was Secretary and Executive Member, as well as assisting Jensen with the paper-work for the Munitions Supply Board.

Membership of the Board was the same as that of the Board of Factory Administration created in September 1920, which it replaced. Leighton was Chairman. Colonel T.J. Thomas (Finance Secretary) and Maguire (Assistant Secretary of the Department) were members. Maguire had been Chairman of the Contract & Supply Board set up in 1915 until 1918 when he became Secretary of the Business Board of Administration, comprising three business-men - the Hon. George Swinburne, W.G. McBeath and H.V. McKay - whose function was to take over control, under the Minister, of the business sections of the Defence Department. The Business Board, however, never really became operational.

Thomas, who acquired his military rank as Chief Paymaster of the A.I.F. in World War I, left the Munitions Supply Board temporarily to become a Member of the Federal Capital Commission in 1927, his place being taken by T.W. Jolliffe of the Department's Finance Branch. During a short period of "acting in higher position" about that time, W. Howie acted as Secretary of the Contract Board.

In the early years of the 1920's, there was considerable development on the Laboratories side of the Department which was still the responsibility of the Munitions Supply Board and the names appear in the Department's story of many individuals who were destined to achieve distinction in their respective fields, including in addition to those already mentioned briefly, A.E. Dawkins (General Chemistry), C.E. Blazey (Non-ferrous Metallurgy) and W.R. Jewell, (Ferrous Metallurgy). They were working under the supervision of Superintendent of Laboratories Bell (who continued in charge until his death in 1934) and Assistant Superintendent J.T. McCormick who followed Bell as Superintendent. Dawkins became Assistant Superintendent.

With the absence on unpaid leave for 12 months of Esserman, the Physicist at the Laboratories, E.L. Sayce was transferred from the Laboratory at the Ammunition Factory, Footscray in 1922 to help out and his career followed in that field after Esserman moved on to the C.S.I.R.O. In July 1924, temporary Chemist W.A. Hedding joined the Laboratory staff.

The Laboratories story, however, was destined to develop in parallel with and in a practical sense independently of the Factories although still



the Laboratory executives are, consequently, left for record elsewhere.

During 1924, much of the administrative detail associated with the Factories in the Maribyrnong area was transferred from the Central Office to an office at Maribyrnong, with over-all direction by Brodrigg in the joint capacity of Chief Chemical Engineer and Acting Manager and Chief Executive Officer of the new Ammunition, Explosives and Ordnance Factories in the area. As part of the new organisation, O.F. Lovell of the Works Department was transferred to the Munitions Supply Board in 1925 as Electrical Foreman in charge of the electrical installations of the Factories -- later he became the Department's Principal Engineer, Electrical Services.

The 1930's saw a large number of changes in Factory executives. McDonald retired from the Clothing Factory in January 1931 and, after a brief period while Jensen was in charge of the Factory, was succeeded as Manager by Factory Accountant F.E. Corbett who in turn retired in November 1939, to be followed by the Department's Inspector of Stores (H.H. Potts) who had previously been Inspector of Clothing. Shortly afterwards the responsibility for the activities of the Clothing Factory was placed with the Department of Supply & Shipping and the Factory ceased to be the responsibility of the Munitions Supply Board until 1958.

With Leighton's impending retirement in November 1937, on age grounds, the retirement of Thomas in mid-1936 and of Maguire during the following November, the Munitions Supply Board's personnel was completely changed. Brodrigg, who had acted as Chairman and as temporary Member of the Board on several occasions, was in due course appointed as Controller-General of Munitions Supply and Chairman of the Board to replace Leighton. F.G. Shedden (later Sir Frederick, and Secretary of the Department of Defence) replaced Thomas and A.V. Smith later replaced Maguire on the Board. Jensen had been made a Controller of Munitions Supply on March 18, 1936 and a Member of the Board.

During June/July 1937, further organisational changes were made which confirmed Jensen as a Member of the Board and of the Principal Supply Officers' Committee and as Chairman of the Defence Contract Board.

Howie was appointed as Secretary and Executive Officer of the Munitions Supply Board and Secretary of the Principal Supply Officers' Committee. F.A. O'Connor was made Secretary and Executive Member of the Contract Board with responsibility for Contract Branch activities throughout Australia, taking over



from the Services and of acting as "understudy" to Jensen and Howie.

Although there had been a contract medical service at the Maribyrnong Factories since early in their establishment, it was not until September 1936 that a full-time medical officer - Dr. H.M.L. Murray - was appointed. He was transferred later, for administrative purposes, to the staff of the Department of Health although continuing to provide service at the Factory.

Leighton, on whom the honor of C.M.G. had been conferred, retired on November 1, 1937, but was invited to return to relieve Brodribb from May 1938 to June 1939, while Brodribb was acting as Inspector-General of Works & <sup>Services</sup> Supplies for the Department. On Brodribb's resumption of duty as C.G.M.S., Leighton was persuaded to continue through the 1939-45 War as Consultative Member of the Munitions Supply Board.

As from June 17, 1939, with the creation of the Department of Supply & Development, the Munitions Supply Board became the Factories Board, with Brodribb as Chairman, Jensen as Deputy-Chairman, A.V. Smith and C.J.W. Gillan (Controller of Munitions and Chief Accountant) as Members. Leighton was Consultative Member and Howie was Secretary of the new Board.

Concurrently, the inauguration of the new Department introduced D. McVey as Secretary, following a career as a P.M.G. engineer and as a National Insurance Commissioner, but he was destined for transfer on promotion to Director-General of Posts & Telegraphs in November 1939. His personal assistant in the new Department was J.L. Knott.

J.B. Brigden, formerly Chairman of the National Insurance Commission, was appointed as Economic Adviser to the new Department and promoted as Secretary of the Department on December 1, 1939, when McVey moved on. Jensen was Assistant Secretary (Factory Administration) of the new Department and A.V. Smith, Assistant Secretary (Supply & Planning). Jensen succeeded Brigden as Secretary of the Department on January 1, 1942.

When the Commonwealth agreed in 1921 to lease the Ammunition Factory from the Colonial Ammunition Company, the Company arranged for G.A. Cartwright, the Company's Managing Director and General Manager, to continue to manage the works as a Commonwealth official, which he did until his retirement when the Commonwealth acquired the Factory on January 1, 1928. Of the Company's work-force taken over at the commencement of the lease period, J.D. O'Shea and E.E. Backhouse



Backhouse became Manager of the Explosives Factory at Mulwala in 1953; at Maribyrnong in 1955; and at Albion in 1964.

When the newly-formed Australian Principal Supply Officers' Committee (APSOC) was formed in 1933, Leighton acted as Chairman until Brodribb replaced him in November 1937. Jensen and other Members of the Munitions Supply Board were Members and A.V. Smith was Secretary. Maguire was made Chairman of the APSOC executive agency -- the Australian Supply Board, subsequently renamed the Defence Resources Board -- but relinquished the position to Lt.-Col. L.E. Beavis in December 1935 when it was made a full-time appointment. Smith became Deputy Chairman. Beavis returned to an Army appointment in December 1936, with Major G.C. Rowe following him as APSOC Chairman.

Early in 1937, liaison officers were appointed to collaborate with APSOC as the official representatives of the Chambers of Manufactures in the Australian States -- M.T.W. Eady represented the Victorian Chamber and the Hon. F.P. Kneeshaw, M.L.C. and F.T. Perry, M.P. represented New South Wales and South Australia respectively.

On January 28, 1938, Eady was also appointed, as representative of the Associated Chambers of Manufactures, to sit with Essington Lewis, Managing Director of the Broken Hill Proprietary Company Limited (Chairman) and Sir Colin Fraser, Chairman of Directors of the Electrolytic Zinc Company of A/asia, as an Advisory Panel on Industrial Organisation, assisting the Minister for Defence. Sir Alexander Stewart, Director of Metal Manufactures Pty. Ltd. and Kneeshaw joined the Panel shortly afterwards.

When Lewis was appointed as Business Consultant to the Department of Defence in September 1939, Fraser became Chairman of the Advisory Panel on Industrial Organisation, and Perry joined the Panel which continued to function until July 1940 when the need for it disappeared with the creation of the Department of Munitions.

In his new position, Lewis was Consultant in respect of equipment, stores and munitions with Norman Myer of Myer's (Melbourne) as Consultant in respect of the clothing requirements of the Services from the Clothing Factory and from industry.

Shedden was by this time Secretary of the Department of Defence -- later Defence Coordination, when Defence was split up. A.V. Smith became Secretary



21, 1940 (and also of Aircraft Production from early 1942) the former Advisory Panel Members accepted the invitation to fill specific appointments under his direction, as follows :-

Fraser	Director of Materials Supply
Stewart	Chairman, Board of Area Management, Victoria
Kneeshaw	Chairman, Australian Shipbuilding Board
Perry	Chairman, Board of Area Management, South Australia
Eady	Employer Representative, Central Advisory Committee for Dilution of Skilled Labor.

Eltham was loaned by the Victorian Government at this stage to direct technical training. Brodribb became Assistant Director-General under Lewis with Leighton acting again in his earlier position of Controller-General of Munitions Supply. As from January 1, 1941, Major-General T.R. Williams was transferred from his position of Master-General of the Ordnance to become Chief Military Adviser to Lewis.

Newcomers under the Lewis organisation were :-

Jan McShane as his Engineering Assistant (from B.H.P.)

Lindsay Jenkins as his Personal Secretary (from B.H.P.)

E.V. Nixon, a leading authority on accountancy and a Member of the Board of Business Administration of the Department of Defence as Director of Finance.

L.J. Hartnett, Managing Director of General Motors, as Director of Ordnance Production.

F.G. Thorpe, Director of McPhersons Ltd., Melbourne as Director of Machine-Tools and Gauges

Thomas Donaldson, Technical Director of I.C.I.A.N.Z. as Director of Explosives Supply

J.B. Chifley, later to become Prime Minister, as Director of Labor Supply & Regulation.

W.J. Smith, Managing Director of Australian Consolidated Industries, as Director of Gun Ammunition Production.

In parallel with the appointment of Nixon, the Attorney-General's Department selected F. Seleeba to serve with the Munitions organisation as Principal Legal Officer. Unfortunately, Chifley became ill about a month after accepting appointment as Director of Labor Supply and was obliged to resign. R.J. Murphy, the Department's Controller of Labor, carried on in Chifley's absence until the services of a Conciliation Commissioner from New South Wales -- the Hon. E.J. Kavanagh -- were loaned to the Commonwealth in June 1941 to serve as



By this time, the May 1939 Munitions Expansion Programme was well advanced and Cochrane, by now Assistant Manager of the Explosives Factory -- of which Topp was Manager -- accompanied by Summers, his opposite number from the Munitions Supply Laboratories, made an official visit to England to study the latest developments in the operations of Explosives and Filling Factories before proceeding with the setting up of a new Factory to be operated by I.C.I.A.N.Z. as an Annexe to the Company's works at Deer Park (Vic.) -- this Annexe later became the Explosives Factory, Albion.

The 1937 Developmental Programme had provided for the production of 3.7" anti-aircraft guns and V.C. Parker of the engineering staff of the Ordnance Factory was sent to London in 1937 to study the manufacturing techniques developed by British manufacturers of the gun.

Doyle was withdrawn from the Ammunition Factory in November 1939 to take charge at Head Office of the direction, coordination and allocation to Government Factories, Armament Annexes or commercial industry of all orders for munitions needed by the Australian Forces, or by overseas Government. He was given the title of Director of Production Planning but, with the introduction of Lewis's business-men Directors, he became Controller of Production Orders & Statistics.

Other "Controllers" under the new 1940 organisation -- being the Department's "Second-in-command" to the new "big-business" Directors -- were :-

- Jensen            Controller of Munitions Administration
- Topp             Controller of Explosives Supply
- Rowe             Controller of Gun Ammunition Production, until transferred for duty in London in November 1941 with H.V. Miris, the Assistant Controller, replacing him.
- Green            Controller of Materials Supply
- Gillan           Controller of Finance, assisted by J.F. Bradburn, the Department's accountant.
- Eltham           Controller of Labour (Technical Training)

R.G. Moore, Works Manager of the Ammunition Factory, Footscray, was made Controller of Machine-Tools & Gauges and R.J. Murphy, the Department's Industrial Officer & Staff Inspector, became Controller of Labour (Labour Supply) with L.H. Styles as Assistant Controller.

F.S. Daley, formerly of the Ordnance Factory staff, was borrowed back from General Motors to act as Controller of Ordnance Production and Campbell Glenn from the Commonwealth Steel Company became Controller of Tool Steel. F.T. Merrett,



staff as Chief Engineering Assistant, as well as having charge later of the Factory Equipment Branch of the Ordnance Production Directorate and of the Directorate of Small-craft Construction when it was set up in 1942.

G.J. Coles Co. made available the services of S.K. Menzies who assisted Jensen firstly as Director, Production Orders & Statistics, and also on important Committees and later became a Controller providing personal assistance to the Director-General. Mealand became Controller of Production Orders & Statistics in July 1941 when Doyle was appointed Manager of the Ammunition Factory, taking over from Statton who was transferred as Manager to the new Government Ammunition Factory at Rutherford, N.S.W.

H.P. Breen, who had been for many years a leading member of the Contracts Board executive, returned to the Department at this time from his position of Assistant Secretary of the Council for Scientific & Industrial Research to take up a similar position in Munitions, as well as that of Director of Stores & Transport.

Under the Lewis organisation, a Board of Area Management was set up in each State to support the Directorates. Details of membership of these Boards are included in Appendix 1. A Departmental officer was nominated to serve with each such Board and to maintain complete liaison with the Department. These liaison officers were :-

New South Wales	J.W.J. Byrne, later to become Regional Director (N.S.W.) and an Assistant Secretary of the Department.
Victoria	A.A. Tregear
Queensland	D. Sutherland
South Australia	S. Lillywhite
Western Australia	A.A.C. Ramm who retired as State Controller, Perth.
Tasmania	J.O. Robson.

In May 1940, under the terms of the Agreement between the Commonwealth and the technical Unions concerned with Munitions Factory staffing, a Central Committee and six State Committees were set up to handle all matters concerned with the "dilution" of skilled labour by having some tasks carried out by unskilled or semi-skilled labour. Murphy was Chairman of the Central Committee, with Eady representing the employers and N. Roberts, Organiser of the Amalgamated Engineering Union, representing the employees.



Coordinating Committee on August 30, 1940. Knott, Chief Clerk of the Department's Secretariat, was Secretary of that Committee. He was also Secretary of the Mission which travelled to India in October 1940 -- Brodrigg, Smith and Donaldson assisted by H.R. Gollan, Australian Government Trade Commissioner in India -- for the discussions which led to the setting up of the Eastern Group Supply Council to coordinate supplies of munitions in the area, a function which was greatly reduced with the rapid advance of the Japanese Forces in 1941-42.

Following a reallocation of responsibilities in 1940, there were four Assistant Secretary positions in the Department of Munitions, held by :-

- Jensen                    Assistant Secretary (Production)
- Green-                    Assistant Secretary (Materials)
- Gillan                    Assistant Secretary (Finance & Staff)
- Breen                     Assistant Secretary (Administration)

In July 1941, Business Administrators were appointed to act as local representatives of the Munitions Supply Board in the larger States, as follows:-

- New South Wales        T. Malcolm Ritchie
- Victoria                 A.E. Keegan
- Queensland             R.J. Donaldson
- South Australia        S. McGregor Reid

They were given authority to act in their respective States, with appropriate financial delegations, in facilitating action wherever necessary to ensure the smooth flow of munitions manufacturing projects.

Expansion of Factories to meet the Services' demands led early in 1943 to the setting-up of numerous supplementary or "feeder" Factories in country areas to support the parent Small-Arms, Small-Arms Ammunition and Ordnance Factories.

To ensure effective coordination of the activities in each such group, Divisional Managers were appointed by the Munitions Supply Board - J. Finlay, Manager of the Lithgow Factory was responsible for the 14 "feeder" Factories in New South Wales, which were making components of rifles and of machine-guns, each Factory concentrating on a few "components".

Ordnance Factory Manager O'Loughlin became Divisional Manager of Ordnance Factories, all of which were located in Victoria.

There were 20 Ammunition Factories. Doyle covered those in Victoria



Footscray to establish and take charge of the new Ammunition Factory at Rutherford, near Newcastle (N.S.W.) also supervised the Ammunition "feeder" factories in New South Wales, excluding that at Broken Hill.

Fowler, who was in charge of the Hendon (S.A.) Ammunition Factory project and who became Factory Manager was responsible also for the subsidiary Factories in South Australia and for that at Broken Hill. The large new Factory at Rocklea (Q'land) was managed by J.D. O'Shea.

In the expansion of Government Factories, to a total of 47 at their peak, a very capable job was done by D.K. Laidlaw, Controller of Lands, Buildings and Works. He had responsibility also for supervising Works constructed by commercial industry at Government expense.

At about this time, J.C. Westhoven, ex-Commonwealth Public Service Arbitrator, was appointed as Controller of Liquidations, with assistance from Munitions Assistant Secretaries Green, Gillan and Breen as Disposals Committee members, to dispose of all surpluses arising and expected to arise in the munitions production section of the war effort.

Later in the year, a Secondary Industries Committee, with Jensen as Chairman in addition to his job as Munitions Department Secretary, was created to plan and direct the release for commercial or industrial purposes of Government Factories and Annexes when their war-time task had been completed. He was assisted by F.T. Merrett, by that time Director of Small-Craft Construction; W.D. Scott, Finance Member of the N.S.W. Board of Area Management; the Chairman of the State Electricity Commission of Queensland (S.E. Cochran); and the Chairman of the Commonwealth Tariff Board.

Leighton had been given additional war-time responsibility as Chairman of an Armaments Chemical Committee, for ensuring availability of all chemicals required for the munitions programme. Breen and Green and E.J. Drake, Assistant Controller of Industrial Chemicals, assisted from the Department's point of view. Dr. J. Vernon, Chief Chemist of the Colonial Sugar Refining Company and Dr. I.W. Wark, Chief of the Division of Industrial Chemistry of C.S.I.R.O. were also Committee Members.

In the Explosives field, Cochrane had gone to Salisbury (S.A.) to become Manager of the new Factory, with M.K. Pitcher as Assistant Manager. A.G. Hall, a former Assistant Manager at Explosives Factory, Maribyrnong, had become



New Factories were being set up in 1942-43 at Villawood (N.S.W.), with C.W.O. Stubbs as Manager and H.P. Matthews as his Assistant, and at St. Mary's with M.E. Playford as Manager, to be succeeded briefly by Dr. M.D. Farrow as Acting Manager and, twelve months later, by S.B. Abbott as Manager.

Matthews transferred from Villawood to St. Mary's as Assistant Manager. Mulwala Explosives Factory was brought into service with Stubbs as Manager and Knight as his Assistant - they had shared the task of studying at the American factories the techniques and processes and the plant requirements for making American types of explosives powers<sup>el</sup>.

Expansion of activities in the Ammunition Group was much more wide-spread than with the Explosives Factories. During 1942-43 the new Factories at Hendon (S.A.) and Finsbury (S.A.) were brought into production ~~under Works Managers W.A. Copsey and D. Duncan respectively~~.

Statton, as Divisional Manager in New South Wales had G.M. Seale as his Works Manager for Rutherford and Tamworth and R.V.F. Eldridge as Works Manager for the Southern group of "feeder" factories at Albury, Goulburn, Hay and Wagga Wagga.

Divisional Manager Doyle had Works Manager R.G. Moore at Footscray, C.W. Morris at Derwent Park (Tas.) and Production Manager J.G. Jensen at Mildura (Vic.). Likewise Fowler in South Australia had Copsey and Duncan at Finsbury, Hendon and Broken Hill and Production Managers at Clare, Kapunda, Moonta, Mount Gambier, Murray Bridge and Port Pirie.

At the Welshpool (W.A.) Factory, A.H. Constantine was Works Manager and R.G. Collins was Production Manager at Kalgoorlie (W.A.). J.D. O'Shea became Manager at Welshpool when the Rocklea (Q'land) Factory was transferred to the Aircraft Production Department and Senior Engineer D.C. Mills took over the Kalgoorlie works.

When the War ended, O'Shea was State Controller (W.A.) for a short period before being followed in that position by A.A.C. Ramm when O'Shea was appointed Manager of the Ammunition Factory, Footscray.

Of the 11 "feeder" factories set up in New South Wales to support Lithgow Small-Arms production, those at Bathurst and Orange, with Works Managers H.R. Wilks and W.F. Dawson respectively, were the most important. The others were at Cowra, Dubbo, Forbes, Katoomba, Mudgee, Parkes, Portland, Wellington and Young. Works Manager at Lithgow was J.C. Cliver, followed in 1944-45 by A.D. Abbott.



establishing the new Factory at Bendigo (Vic.) When the Ball-Bearing Factory was established at Echuca (Vic.), F.J. Malone was Works Manager. G.L. Ditchburn, senior engineer at Ordnance Factory, Maribyrnong, was responsible for coordinating activities at the "feeder" factories at Horsham, Stawell and Hamilton. G.S. Ramsden also had experience as Engineer-in-charge at the Horsham works.

With the return of peace, Parker became Works Manager at Ordnance Factory, Maribyrnong with E.J.W. Herbert, a former Assistant Manager at Maribyrnong replacing him at Bendigo, after extended study regarding production of mountings for 4.5" naval guns in U.K. and of traction diesel engines for locomotives in U.S.A.

Following the return of Director-General Lewis and the other business-men Directors to their respective peace-time Companies, the Department of Munitions returned to the normal Government Department administration. Jensen continued as Secretary and Brodribb as G.C.M.S. in technical charge of the Factories. By 1946, the Board of Factory Administration comprised Brodribb as Chairman with Gillan, the Department's First Assistant Secretary as Deputy Chairman. Topp and O'Loughlin, respectively General Managers for Explosives Factories and Ordnance Factories were Board Members, together with J.F. Bradburn, Assistant Secretary (Finance) and F.V. Boyle as Secretary. Leighton was still attending Board meetings as a Temporary Member following his War-time service as Consultant on Explosives.

Of the Factories still maintained, that at Lithgow had A.D. Abbott as Manager, with J. Finlay as General Manager, Small-Arms Factories. The Ordnance Factories at Maribyrnong, Bendigo and Echuca had O'Loughlin as General Manager, and Parker, Herbert and Malone as Managers. General Manager Doyle of the Ammunition Factories Group had O'Shea as his Manager at Footscray. Explosives General Manager Topp had, as his Factory Managers, Hall at Maribyrnong, S.B. Abbott at St. Mary's, Stubbs at Milwala with responsibility also for the limited remaining activities at Villawood, and L.C. Armstrong at Salisbury (S.A.)

By this stage, some of those who had guided the Factories' war efforts were reaching the retirement age. Leighton ceased his official relationship with the Department in 1947, ten years after surrendering the G.C.M.S. responsibility to Brodribb. Jensen handed over in 1949 to Breen who had been with the Secondary Industries Division of the Department of Post-War Reconstruction and



and Defence Production were merged in 1958. Knott then became Deputy Secretary for 12 months before regaining the status of Permanent Head when F.A. O'Connor, Supply's Secretary since 1953, retired.

On the technical side, Brodribb retired in 1950 (but continued as Consultative Member of the Board of Management for Munitions Factories for two years), with O'Loughlin following him as C.G.M.S. and, in turn, retiring in 1952 with Doyle, who had been General Manager, Ordnance Factories since 1950, taking over and continuing in the position until 1958. Hedding, who had progressed from Manager, Explosives Factory, Maribyrnong in 1954 to Chief Chemical Engineer in 1955 and General Manager, Explosives Factories in 1957, was Doyle's successor as C.G.M.S.

At this stage, Herbert was General Manager, Ordnance Factories and A.S. Cooley was Manager, Small-Arms Factory. Cooley, a Cadet engineer at the Ordnance Factory, Maribyrnong in 1939, had recently returned from the post of Defence Production Representative in Washington following experience as Mechanical Engineering Representative in London, and as Manager of the Ball-Bearing Factory at Echuca. He was destined to become C.G.M.S. in 1962 after serving in Head Office as First Assistant Secretary (Management Services) and Secretary in 1966 when Knott went to London as Deputy High Commissioner. Herbert then became C.G.M.S. until his retirement in 1967.

Others in the Factory Technical Management group who reached their retirement age before attaining C.G.M.S. status were Finlay, who retired in 1950 after three years as General Manager, Ammunition Factories; Topp, General Manager, Explosives Factories 1947-51, followed by Cochrane until 1955 and Stubbs who had been Chief Chemical Engineer since 1951, and who retired in 1956. Parker, who followed Finlay was General Manager, Ammunition & Small-Arms Supply from 1950 until his retirement in 1960.

Because of the shortage of experienced technical personnel during the War years, the young engineers who had been recruited since the Cadet Engineers system was introduced in the later 1930's had been called upon to accept responsibilities under war-time conditions which "blooded" them for graduating into the positions of Assistant Managers and Managers of Factories as those who had built up the Factories were retiring. Opportunities were also offering for these younger engineers and chemists in the Head Office Management structure resulting



effective links with industry regarding the munitions supplies which would not be made in the Government Factories.

Assistant Manager, I.J. Lenne transferred from Ammunition Factory, Footscray, to Head Office in 1953 and, after serving for several months as Technical Assistant to the C.G.M.S., took over the position of Director of the Defence Production Planning Branch. R.L. Kellar, Assistant Manager at Ordnance Factory, Maribyrnong succeeded Lenne on the staff of the C.G.M.S. but resigned later to accept an industrial position.

Lenne moved on to the Small-Arms Factory as Manager during the conversion to the F.N. rifle project but resigned to continue his career in industry. Cooley returned from his posting in Washington to become Manager of that Factory in 1958.

At that time, K.F. Hartnell, a former Head of Section at Ordnance Factory, Maribyrnong, who had taken over from Cooley as Manager of the Ball-Bearing Factory at Echuca, was still in charge there but was destined to transfer to employment with the new owners when the Factory was sold to British-Swedish bearing manufacturers in the early 1960's.

An Ammunition Factory Head of Section -- G.J. Churcher -- also transferred to the D.P.P.B. in 1953. He followed Kellar early in 1955 as Technical Assistant to the C.G.M.S. and later became Director, Defence Production Planning Branch (title changed subsequently to Assistant Secretary, Planning). Assistant Manager T.A. Roberts from the same factory, who had specialised in fuze manufacture also served for a period with the Defence Production Planning Branch. Churcher was later to become Manager, Government Aircraft Factories, and Roberts, Manager of the Commonwealth Government Engine Works at Port Melbourne.

Assistant Manager R.I.M. Moss of Ordnance Factory, Maribyrnong went to a similar position at Ordnance Factory, Bendigo, in 1953 and was sent to Washington to take over from Cooley in 1958. On his return to Australia he became Manager of the Bendigo Factory, following R.Campagnolo who had been in charge of the Factory since 1950 after 13 years at Ordnance Factory, Maribyrnong, including two years there as Acting Manager. Malone became Manager of the Maribyrnong Factory on Campagnolo's transfer to Bendigo.

Another Assistant Manager at Ordnance Factory, Maribyrnong -- M.J. Dixon -- served for a period as Manager at the Engine Works before settling in as Manager



General Managers Herbert, Hedding and Parker became Controllers. Assistant Secretary (Munitions Production) Matthews, who had held that position since 1951, was sent to London as the Department's Senior Representative at Australia House. This position and that of Assistant Secretary (Aircraft Production) — held by S.C. Westman — were merged as Assistant Secretary (Production) with Westman as the occupant of the combined jobs as well as replacing Matthews as a Member of the Board of Management for Munitions Factories.

By April 1958, when Supply and Defence Production were again merged — the stage at which this review of the Factory activities is ended — the management and direction of the Department — Munitions Factories — was entrusted to :-

- |                   |  |
|-------------------|--|
| .. F.A. O'Connor  | Secretary                                    |
| .. W.T. Sumner    | Deputy Secretary                             |
| .. W.A. Hedding   | Controller-General, Munitions Supply         |
| .. V.C. Parker    | Controller, Ammunition & Small Arms Supplies |
| .. E.J.W. Herbert | Controller, Ordnance Supplies                |
| .. J.L. Wright    | Controller, Explosives Supplies              |
| .. S.S.C. Westman | Assistant Secretary (Production)             |
| .. L.F. Bott      | Assistant Secretary (Finance)                |
| .. J.W.J. Byrne   | Assistant Secretary (N.S.W.)                 |
| .. G.J. Chugcher  | Assistant Secretary (Planning)               |
| .. R.B.F. Marsden | Assistant Secretary (Administration)         |

Defence Production Secretary Knott retained his status as a First Division Officer and, in the words of the official Bulletin notifying all concerned regarding the amalgamation of the two Departments, would "... generally assist in the integration of the two Departments and in various important matters which will arise therefrom".

Managers of the Munitions Factories conducted by the Department at that time were :-

- |                   |                                       |
|-------------------|---------------------------------------|
| .. F.J. Malone    | Ordnance Factory, Maribyrnong         |
| .. R. Campagnolo  | Ordnance Factory, Bendigo             |
| .. E.E. Backhouse | Explosives Factory, Maribyrnong       |
| .. A.I. Bodycomb  | Explosives Factory, Albion            |
| .. K.W. Bennett   | Explosives Factory, Mulwala           |
| .. R.W.B. Davies  | Munitions Filling Factory, St. Mary's |
| .. H.J. Hammond   | Ammunition Factory, Footscray         |
| .. I.J. Lenne     | Small-Arms Factory, Lithgow           |
| .. K.F. Hartnell  | Ball-Bearing Factory, Echuca          |
| .. T.A. Roberts   | Central Drawing Office, Maribyrnong   |
| .. E.S. Clarke    | Marine Engine Works, Port Melbourne   |
| .. J. Delany      | Clothing Factory, South Melbourne.    |