

This is the story of Commonwealth
Aircraft Corporation Pty. Ltd.,

The initial action leading to the formation of Commonwealth Aircraft Corporation Pty. Ltd., took place in 1934, during which year Mr. Essington Lewis then Chief General Manager of The Broken Hill Proprietary Co. Ltd., undertook an overseas tour. Developments seen by Mr. Lewis moved him to write to the B.H.P. Chairman of Directors, Mr. H. C. Darling, referring to Australia's vulnerability to attack and suggesting that manufacture of aircraft in Australia for defence purposes should be explored. He also suggested that other commercial enterprises would be interested in the proposal.

Based on these suggestions, discussions held with the Government and leading industrial concerns resulted in the formation of a syndicate comprising The Broken Hill Proprietary Co. Ltd., The Broken Hill Associated Smelters Pty. Ltd., and General Motors-Holden's Ltd. The syndicate appointed a mission to undertake a world tour to study overseas manufacturing methods. Meanwhile the Government sought to purchase suitable aircraft for the R.A.A.F. from the U.K. but found all production there was needed for the R.A.F. Progress of the syndicate was reported to the Government which after consideration addressed a letter to the syndicate on October 15th 1935, requesting that a company be formed to establish in this country the manufacture of military aircraft and engines. The original directors were Mr. Harold Darling (Chairman), Mr. Essington Lewis, Sir Colin Fraser, Mr. M. L. Baillieu, Sir Leonard Raws, Mr. L. J. Hartnett and Mr. Arnold Johnson.

During the second world war years of peak production, financial turnover of the factory was £7,000,000 a year but no dividends were taken by the shareholding companies. Profits were put back into the factory in expansion of equipment and general facilities.

The technical nucleus of C.A.C. was formed from the personnel of Tugan Aircraft, Sydney, which was taken over by the new company. W/C L. J. Wackett head of that pioneer firm, was appointed manager and Mr. A. G. Brown from B.H.P. became secretary.

The companies forming the original syndicate were joined by others and Commonwealth Aircraft Corporation Pty. Ltd., was registered in Victoria on October 17th 1936. The company had an authorised capital of £1,000,000 paid up to £600,000, the shareholders being The Broken Hill Proprietary Co. Ltd., The Broken Hill Associated Smelters Pty. Ltd., General Motors-Holden's Ltd., Imperial Chemical Industries of Australia and New Zealand Ltd., Electrolytic Zinc Company of Australasia Ltd., and Orient Steam Navigation Co. Ltd. In 1949 Rolls-Royce Ltd. acquired the shares of General Motors-Holden

After careful consideration, the mission had recommended building the North American Inc. NA33 and the Pratt & Whitney Wasp engine installed in the aircraft. The Government agreed with this recommendation and the first order for forty aircraft, modified and given the Australian name Wirraway, was received in January, 1937. While W/C Wackett proceeded to America to arrange license agreements, work was commenced on the factory buildings in Melbourne. These were ready for occupation in September, 1937 and production commenced immediately. The first engine was completed and

accepted in January, 1939 and the first aircraft flown in March of the same year. When War was declared in September approximately thirty aircraft had been completed, but by the end of 1940 nearly 200 aircraft had been delivered to the R.A.A.F. and production had reached seven per week. This was later increased to forty-five per month, a remarkable achievement considering the youth of the industry. A total of 755 of this type were built.

With this production under way a design for a new trainer was commenced. Two prototypes were followed by the building of 200 Wackett Trainers. The engine division was occupied at this time with the production of F. & W. engines for the Australian-built Beaufort aircraft.

The next urgent demand was for a fighter. Japan had entered the war and the R.A.A.F. had no front line fighters and little chance of obtaining any abroad. C.A.C. designed, built and flew its first Boomerang fighter on May 12th 1942, precisely fourteen weeks after approval of rough drafts and 250 were supplied to the R.A.A.F. Another aspect of the company's work at this time was the assembly, repair, modification and servicing of British and American aircraft of all types.

In 1943 C.A.C. was authorised to manufacture the North American Aviation Inc. Mustang and also its Packard Merlin engine. To speed delivery some imported components were incorporated in early aircraft but later, locally manufactured parts were used and 200 of this type were produced. C.A.C. Mustangs served with many squadrons but perhaps with greatest distinction when in action with No. 77 in Korea where they were used with extreme effect against ground targets.

The second fighter completely designed by C.A.C. was intended to replace the Mustang. Known as the CA.15 this aircraft had exceptionally fine lines and outstanding performance. Engine supply difficulties necessitated changes which delayed production of the prototype and the ending of the war caused further development and production to be halted.

After the cessation of hostilities a section of the design staff was working on a new trainer and also on the design of an all-weather twin-jet delta wing fighter capable of attaining M.1.5. Aircraft reconditioning for the R.A.A.F. and the R.A.N. was augmented by the design and construction of a series of prefabricated houses.

Meanwhile the trainer prototype had been built and was evaluated by the R.A.A.F. This was developed into the Winjeel, the Standard Trainer of the R.A.A.F., sixty-two of which were supplied.

In 1951, after studying contemporary fighter designs in England and finding them insufficiently developed to make building in Australia a reasonable proposition, a decision was taken to manufacture the Sabre F86-E under licence from N.A.A. from whom drawings, assembly jigs and detail parts were made available. The Avon-Sabre was no mere assembly job. C.A.C. incorporated two major improvements, the fitment of the Avon Engine and heavier calibre Aden guns. This involved considerable redesign - indeed 60% of the fuselage was modified. The prototype began its flight trials on August 3rd, 1953 and less than a year later the first production aircraft was in the air.

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In 1957, C.A.C. realised that the growth of aerial agriculture in Australia had created the need for a safe, economical aircraft of ample capacity to replace the many converted disposal aircraft which were rapidly becoming obsolete. From this requirement C.A.C. marked its entry into the civil aircraft field with the design of the Ceres Agricultural Aeroplane.

MIRAGE III O FIGHTER

The Mirage III O, the latest fighter in service with the R.A.A.F., is a single-engine delta wing jet aircraft for which C.A.C. constructs the wings, fins, tail cones and drop tanks and the complete Atar 9C engine. These are delivered by road to the Avalon Airfield, some 40 miles away, for final assembly into Mirage aircraft by the Government Aircraft Factory. Speed capability of the Mirage is twice the speed of sound, and its every concept is modern. The imposingly versatile armament includes guns, rockets, guided weapons and bombs, and the speed is matched by its rate of climb and manoeuvrability. The aircraft has retractable tricycle-type landing gear and a drag chute for use in landing. Fuel is carried in fuselage tanks and in the wings which form integral tanks.

Because of the aircraft's very high speed, wing dimensions must conform to very close tolerances, not more than one half millimeter variation in contour being permissible. Use of complex production jigs and regular tests in a master jig ensure that this accuracy is maintained. These controls of accuracy ensure that full interchangeability is maintained between all fuselages, wings and control surfaces.

Wing span of the Mirage is 26.96 ft., length 49.2 ft., and total wing area 373.36 sq. ft. Weight of the aircraft empty is 14,292 lbs. and maximum take-off weight 29,476 lbs.

The ATAR 9C engine, designed by S.N.E.C.M.A., is a straight-flow jet with a nine stage axial flow compressor, an annular combustion chamber, a two stage turbine and afterburner and a variable area flap type exhaust nozzle. The engine produces a static thrust of 9,370 lbs. at 8,400 r.p.m. and 13,300 lbs. with afterburner.

The introduction of this engine resulted in the acquisition and development of new manufacturing techniques and an extension of the company's production complex.

The objective has been to attain a very high degree of locally manufactured components in the production of the engine, and its achievement is shown by the fact that over 90% of the parts are now Australian made.

Production of this engine has also meant the introduction of many new materials, new applications of materials and new processes. Approximately 90 different materials — metallic (wrought and cast) and non-metallic — are used in the engine.

Advances made in precision methods of casting, particularly in the field of the heat-resisting alloys, have greatly improved production. Quality is maintained and X-ray tubes are constantly in use as a monitoring facility, supplemented by other destructive and non-destructive methods of inspection.

To develop independence from overseas supplies, the local forging of compressor and turbine blades has been successfully established, and these are machined at C.A.C. The turbine blades of very complex alloys possess high resistance to creep in the elevated temperatures in which they operate, and they have successfully completed the very stringent type testing applied to such components.

The machine and sheet metal shops, assembly areas, test houses, foundries and process shops of the Company's engine factory are modern and extensive, and contain some of the most exacting production operations to be seen in Australia.

THE MACCHI MB326H JET TRAINER

C.A.C. is the prime contractor for the Macchi MB326H jet trainer and its Bristol Siddeley Viper 11 Mark 22-11 engine. About 90 per cent. of the airframe and engine will ultimately be manufactured in Australia. The Macchi is a low-wing monoplane of conventional design, all-metal construction, and fully aerobatic. Span including wing tip tanks is 34.7 ft.; length 35 ft. and height 12.3 ft. Maximum speed of the aircraft is 445 knots, range 600 n.m. and service ceiling 40,000 ft. Gross weight is 7,320 lbs. The Bristol Siddeley Viper 11 Mark 22-11 engine is a straight-flow turbo jet with a seven-stage axial flow compressor and an annular combustion chamber. The engine delivers 2,500 lb. thrust at 13,800 r.p.m. The introduction of the Macchi, which has been praised in glowing terms by R.A.A.F. pilots and servicing staff for its strength, ease of handling and accessibility for maintenance, will allow eventual implementation of the R.A.A.F. policy of all-through jet training for the future.

GET UP AND GO

Recent years have seen remarkable changes in industrial organisation in Australia and C.A.C. is adapting itself successfully to these changes with modern administrative techniques.

In so doing it has not relaxed in any way the high standards of quality and close adherence to customers' specifications that have traditionally been its policy.

In spite of adverse rates of exchange, work has been successfully performed for aerospace companies in U.S.A., the United Kingdom and Europe.

The Company has embarked on an intensive programme of staff motivation and its people are proud of the products of C.A.C. — its gas turbines, helicopters, missile systems and its wide range of industrial equipment.

The Training School for Apprentices, with facilities of a very high standard, is a feature of the C.A.C. staff training programme.

AEROSPACE

C.A.C. is currently an aircraft manufacturer and marketer in Defence and general aviation of fixed and rotary wing aircraft. It manufactures Bell Light Observation Helicopters and, through its wholly owned subsidiary, Rex Aviation, it markets Cessna aircraft and Hughes Helicopters.

Bell Helicopter

The Bell Light Observation Helicopters are the first rotary wing aircraft manufactured in Australia, introducing a whole new field of tech-

nology. The manufacture of the rotor blades and the high standards of gear production are major achievements by the industry.

Cessna Aircraft

Cessna Aircraft continue to play a dominant role in Australian general aviation activities, as shown by recent Australian statistics. Cessnas represent approximately 40 per cent of all light aircraft registered in Australia.

Some 500,000 hours are flown by Cessna aircraft annually.

Hughes Helicopter

C.A.C., through Rex Aviation is the sole Australian agent for the Hughes Helicopters imported from the Hughes Tool Company, U.S.A.

The Hughes Helicopters sold in Australia are being used also for Government mapping contracts, mining exploration, construction, survey camp supply and general charter work. Of special interest is the work these helicopters are doing for Australia in the Antarctic.

The Hughes 500 is a light turbine helicopter which easily converts from a five passenger executive transport to a utility cargo carrier. Maximum cruise speed is 150 mph and it has a range of 400 miles.

The model 300C is creating a great deal of interest, cattle mustering being one of its uses.

persistant courage
and scientific effort by all concerned have
placed this Company in the forefront of
aircraft manufacturers.