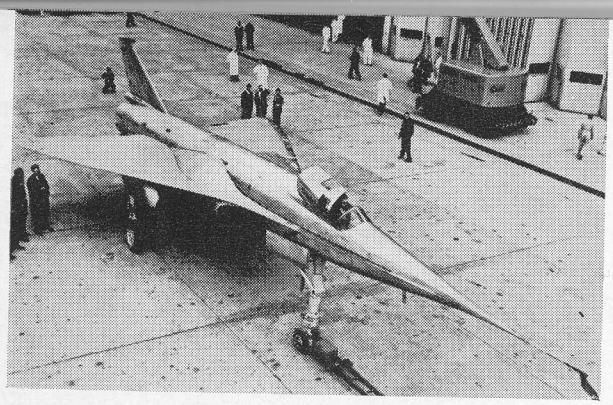

This slender delta Type 221, a re-designed version of the famous Fairy FD-2, will investigate handling properties of the wing planform intended for the Concorde supersonic airliner. Rolled out last month from BAC's Filton factory the Type 221 will fly early in 1964, following its ground checks.

lined by Professor Leech through the periods and influences of Lawrence Hargrave, Professor Warren of Engineering at Sydney University, the Aerial League of Australia, formed in Sydney to stimulate Government interest in aviation, and George A. Taylor, who demonstrated a glider to the Army in 1909, and to the Wimperis report to the Australian Government in 1937, which recommended the development of aviation research establishments and other facilities.

Professor Leech also reviewed the work of L. J. R. Jones, of Ryde, NSW, a little-known pioneer in Australia, who had been trying to achieve sustained flight as early as 1908. His first aircraft, fitted with a petrol engine, was underpowered and collided with a fence on takeoff in November, 1908. Jones had designed and built both the aircraft and engine himself and, realising the need for additional power, he then developed a steam turbine with flash boiler unit, which was satisfactorily run on bench tests. Unfortunately, in April or May, 1909, during trial ground runs, the shroud ring burst. Jones later designed and built a biplane with a rotary engine in August, 1914, but the war prevented further work on this. Later, in 1929, he assisted a group at Sydney University to design and build a 135 hp four-seat aircraft using a tubular steel structure.

In 1913 there was a course at Melbourne University on "The Mechanics of Flight" and Professor Leech mentioned particularly the pioneering work of (now) Sir Walter Bassett, fortunately present in the audience on the evening, who was able to return to the University of Melbourne in 1921 with an RAE type wind tunnel purchased for a nominal amount in England. From 1916 to 1918 the University of Sydney, under Professor Warren and Dr Bradfield, operated a "School of the Air" at Richmond. Control of this later passed to Sydney Technical College and after World War 1 it was disbanded. In 1923 Sydney Technical College recommenced Aircraft Construction Courses. The next year a lecture by Sir Walter Bassett and the publicity following a competition by the Light Aero Club of NSW stimulated graduands at Sydney University into holding regular weekly meetings to discuss aviation topics. In 1926 the Extension Board of the University of Sydney conducted courses in Aeronautical Engineering, the average attendance over 20 lectures being 196. Interest in aviation increased throughout Australia, eventually culminating in the Wimperis Report.

AIRCRAFT TYRE DEVELOPMENT

THE introduction of high-performance jet aircraft had made one major change in the designer's method of selection of correct tyre rating and inflation pressure, in that this now usually depended on design loads for the takeoff case rather than for the traditional landing case, said Mr Ted Faggetter, in his retiring Chairman's lecture to the Royal Aeronautical Society, Melbourne Branch, recently. For tyre qualification ground speeds in excess of 160 mph, the Tyre and Rim Association now requires the ply ratings and inflation pressures to be determined in relation to tyre loadings during the entire takeoff run, as shown on a series of envelope curves issued experimentally, instead of only in relation to static loads.

Aircraft such as the Boeing 727 show a small "spike" load at the point of rotation at takeoff which increases the tyre loads at this point. This spike load, very mild in the case of the 727, with its relatively low takeoff speed, is becoming a feature of high-speed takeoffs and helps to explain why takeoff dynamic loads are now higher than landing dynamic loads.

The design deflection of the tyre has a considerable influence on its rolling resistance and this is taken into account in the new experimental requirements. Rolling resistance increases rapidly at high speeds as the tyre heats up due to the increased amount of work. For aircraft now under development, including supersonic types, the tyres may need to maintain full static load almost to the point of rotation, and so will require even higher inflation pressures to maintain the reduced deflections permitted at high speeds. A result of the dominance of the takeoff case is that more powerful dynamometers costing over £1,000,000 will be required for tyre qualification tests to simulate the rotational accelerations at takeoff and it would be difficult to justify the cost of one of these machines in Australia.

The trend in landing gear design for the past 25 years has been towards using higher tyre inflation pressures and multiple wheels to reduce component weight. At the same time wheels have become simpler in design and are now usually made in forged aluminium rather than cast magnesium, and the use of disc brakes has now become almost standard. However, for commercial aircraft tyre pressures appear to have reached a maximum and may now even be reducing slightly. Owing to runway strength limitations, Australia is one of the few countries which has taken action to limit tyre inflation pressure. For example, Viscounts and Friendships used in Australia were the first of their type to be equipped with lower pressure tyres. One of the advantages resulting from this is that extra tread can be provided, resulting in longer tread life.

A further problem which is being studied extensively at the moment is the need to provide adequate braking on wet and slushy runways and expected improvement in aircraft landing aids will mean that more landings will be made under adverse runway conditions, thus accentuating the problem. Tests are now being carried out using more effective types of tread and improved anti-skid devices. Although originally introduced to increase tyre life by preventing wheel locking, these anti-skid devices have now been developed to a degree which in theory enables a very high proportion of the available friction between the tyre and a wet runway to be used effectively in braking. On a slippery runway the mean friction coefficient may be as low as 0.15 and although an efficient anti-skid system will allow 0.14 g. deceleration to be maintained, this is only about 40% of the capability of normal brakes on a dry runway. Thus it is important to achieve the most efficient anti-skid units possible, since this low deceleration force is all that can be relied on in determining the runway lengths necessary for determining rejected takeoff and landing distances. It has been suggested also that serious consideration be given to the use of improved runway drainage and runway arrester barriers to help overcome this problem.

SLAEA AT BANKSTOWN

THURSDAY, November 6, marked a turning point in the affairs of the Society of Licensed Aircraft Engineers Australia when the society held a meeting at the Royal Aero Club of NSW, Bankstown. Formerly all meetings have been held either at Science House or at Mascot. An attendance of 40 members and visitors enjoyed a series of four technical films highlighting the

CAN YOU HELP THEM?

REQUESTS for help from readers came to AIRCRAFT last month from Mr James Hay Stevens, our European technical editor, and from noted Australian aviation pioneer Mr Ian Grabowsky.

Mr Stevens tells us that an attempt is being made to form British and French DH-94 Moth Minor owners into an association or club so that available spares could be shared to keep "as many of these fascinating aeroplanes flying as possible." They want to get in touch with any Australian owners of the type or the Gipsy Minor engine to see if spares or complete units can be purchased reasonably for shipment to England.

Anyone interested should write to Mr Terence Boughton, at 281 Dyke Road, Hove 4, Sussex, U.K.

"Grab," who is writing a history of New Guinea civil aviation for DCA, wants to include the names in it of all commercial pilots and engineers with New Guinea experience, their employer's name, and, as far as possible, accurate dates of service in New Guinea. Anyone who can supply this information should write to Mr Grabowsky, C/- DCA, 499 Little Collins Street, Melbourne.

aircraft industry in England and America. Opening the meeting the president, Mr F. W. Stokes, dealt at length with future plans. These included a promise that more lectures and courses would be held in the Bankstown area to cater for the large number of aircraft engineers at this centre.

Mr Stokes stated that only by increasing membership could this society survive but to do this the society would have to give members more for their money. This was the aim of the present council and during 1964 courses in basic airframe, engine and gas turbine would be held. Notes for these courses were being prepared and it was hoped that the first course, basic airframes, would be started early in the New Year.

The basic gas turbine notes published by the society had met, he said, with general approval in the industry and were still available to any one who wanted them, either member or non-member. These notes could be obtained from the secretary, 44 Water St., Caringbah, NSW, at a cost of £3 for non-member or £2 per member.

Mr Stokes said 1964 would be memorable in the history of the SLAEA because council was dedicated to increasing membership to include anyone with an interest in Australian aviation. Inquiries for membership would be welcome from persons without licences but who were either engaged in the aircraft industry or had a general interest in aircraft.

The hon. secretary, Mr W. G. Carter, spoke for a few minutes on the present controversy relating to the purchase of a replacement for the Canberra bomber. He said it must be eventually realised by whatever Government was in power that Australia has the potential to design and build both military and civil aircraft to suit its own requirements. Men with the highest academic qualifications and skill were seeking employment overseas because of the lack of opportunity existing in this country. Many of these men had been trained in England and America and were capable of designing aircraft for Australian and export markets.

"We have the brains, we have the facilities and we most certainly have the work force available for such a project," said Mr Carter.

Toward the close of this meeting Mr Carter was asked to speak on the proposed library scheme. He said a library was in the process of being built up and the primary aim was to lend books to members studying for basic licences or extensions. The success of the library was dependent on members and friends donating books from their own private libraries and for which they had no further use. A crate of approximately 250 books was being sent from the English society and this would form the nucleus of our library. Many books had been received from members and a few were already in use.

INTERNATIONAL MOVE

AT the subsequent SLAEA Council meeting on Wednesday, November 13, a record number of 14 applications for membership was dealt with. Mr Carter reported that the application of the society for membership of the Australian Aviation Historical Society had been accepted and SLAEA was now ready to go ahead with plans for the restoration of vintage aircraft and to join with the AAHS in the collection of historical aviation material for a future Aviation Museum.

A letter from Mr Percy E. Chorley, chairman of the Overseas Liaison Committee in England, was tabled for discussion. This letter stated that plans were being made to hold an inaugural meeting in London early in 1964 and requested that a delegate from the Australian society be nominated. Council decided the honorary secretary, Mr Carter, be authorised to attend this meeting and report back to council on the general proceedings. Society funds have been available for some time for just such a purpose and council believed this meeting would be of very great value to the society and to the whole aircraft industry in Australia.

The president, Mr Stokes, reported that he had roughed out a revision of the new rules and the hon. secretary was requested to prepare a draft report on the proposed amendments. When this draft report had been discussed at council level a postal ballot is to be held authorising the change to the constitution. The main essence of the change is to change the Companionship grade to Associate and open membership to persons without licences or to anyone working in the aircraft industry, either technical or non-technical. It is expected that this change will come into effect at the end of this financial year. Meanwhile applications for membership should be addressed to the Honorary Secretary, 44 Water St., Caringbah, NSW.

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