BEAGLE NEWS

Summer 1964

Issue 1

BEAGLE NEWS

EDITOR: F. J. JACKSON

CONTENTS

Front cover photo:
The first military Beagle B.206 on its final flight test prior to delivery to the Royal Air Force.

THE BEAGLE PACK

From flying board rooms for business executives, to crop spraying, glider towing and "taxis" for V-bomber crews.

The Beagle family of aircraft represents a complete range of private aircraft, designed to meet the broad range of requirements from that of the private and club pilot to those of the biggest industrial undertakings.

In this, the first issue of "Beagle News", we include brief information relating to this comprehensive Beagle range.

THE BEAGLE AIREDALE

The first of Beagle's productions was the Airedale – a 4 seat, single-engine executive/touring aircraft which is now in quantity production.

The Airedale has been sold in eight countries, it has been used for a variety of purposes which ranges from personal transport to acting as the 'Company car' for a civil engineering organisation which is building a dam in Pakistan.

Leading Particulars

Powerplant: Lycoming 0-360-A1A, air-cooled flat-four 180 b.h.p. (182·5 c.v.).

Propeller: McCauley Met-L-Matic two-blade constant speed 74in. (1·88 metres) dia.

Span	36 ft. 4 in., *11·07 m.*
Length	26 ft. 4 in., *8·03 m.*
Height	10 ft. 0 in., *3·05 m.*
Wheelbase	5 ft. 10 in., *1·78 m.*
Track	6 ft. 0 in., *1·83 m.*
Wing area	190 sq. ft., *17·65 sq. m.*
Aspect ratio	6·9
Gross weight	2,750 lb., *1,247 kg.*
Max. wing loading	14.5 lb./sq. ft., *70·8 kg./sq. m.*
Max power loading	15.5 lb./b.h.p., *6·845 kg./c.v.*
Fuel capacity, standard	30 gals., *136 litres*
Fuel capacity, long range	50 gals., *227 litres*
Basic equipped weight, less fuel and oil	1,700 lb., *765 kg.*
Disposable load	1,050 lb., *473 kg.*

THE BEAGLE HUSKY

A superior all-rounder the HUSKY is an outstanding general purpose aircraft with accommodation for three (occasional four persons). It is an extremely sturdy machine designed to operate under conditions which would prohibit the use of less rugged machines. The Husky has a degree of performance usually found only in the more expensive aircraft, and its short take-off and landing characteristics enable it to use the roughest of landing facilities. The large excess of power inherent in the Husky make this aircraft ideally suitable for a variety of roles.

Ski installation has little effect upon performance and a change-over from normal wheel undercarriage involves little work and can be carried out in a very short time. In ski form the Husky with its outstanding STOLL performance is ideally suited for mountain rescue duties. By the fitting of floats even wider operational scope is achieved. With its very high performance the Husky makes an outstanding float plane. As a float plane the aeroplane is still a full three seater.

Safety in operation, dependability, and quick simple maintenance, make the HUSKY ideal for aerial spraying. Special equipment for insect control may take the form of either boom and nozzle assembly or a set of four rotary windmill atomisers. In either case the distribution equipment is mounted beneath the wings and supplied by a windmill driven boom from a 70 gallon tank installed in the cabin. At the close of the spraying season the spray-gear may be removed and the aircraft turned to further profit as a business transport, or for private flying.

Leading Particulars

Power plant:

Engine type: Lycoming 0-360-A2A.

Propeller type: McCauley 1A/200/FA/8250 metal, fixed-pitch.

Overall dimensions:

Wing span	36 ft., *10·97 m.*
Length overall	23 ft. 4½ in., *7·12 m.*
Horizontal tail span	10 ft., *3·05 m.*
Height overall (tail down)	8 ft. 4 in., *2·54 m.*
Track	6 ft., *1·83 m.*

THE BEAGLE TERRIER 2

The TERRIER 2 is the latest in the Beagle series of small high-wing single-engine aircraft which are widely used as basic club machines in this country and abroad. Two clubs with which the Terrier 2 is flying are of a highly professional nature – Airways Aero (B.E.A. and B.O.A.C.'s own flying club) and in Germany, The Lufthansa Club. Other clubs flying Terrier include Southern Aero Club, West London, Newcastle and Cumberland. The Terriers principal feature is that it is in effect three aircraft for the price of one; it is an economical three seat – tourer; an ideal club trainer (dual controls are standard); and a highly efficient glider tug. An average two seat glider of about 600-700 lb. (two-up) is towed to 2,000 ft. in about 6½ mins. by comparison with the 14 min taken by the more common tug aircraft in use today.

Leading Particulars

Power Plant: De Havilland Gipsy Major 10 of 145 b.h.p. (147 c.v.).
Propeller: Airscrew and Jicwood Wooden Two-blade fixed pitch of 82 in. (2·1 metres) dia. (Type No. Z8010/5/C.)

Span	36 ft., *11·00 m.*
Length	23 ft. 3 in., *7·09 m.*
Height	8 ft. 11 in., *2·72 m.*
Track	6 ft., *1·83 m.*
Wing Area	184 sq. ft., *17 ·1 sq. m.*
Aspect Ratio	7·0
Gross Weight	2,400 lb., *1,080 kg.*
Max. Wing Loading	12·8 lb./sq. ft., *62·5 kg./sq. m.*
Max. Power Loading	16·2 lb./b.h.p., *7·35 kg./c.v.*
Fuel capacity	23 imp. galls., *104·6 litres*
Basic Equipped Weight	1,600 lb., *726 kg.*
Disposable Load	800 lb., *354 kg.*

THE BEAGLE B206

Foundation of the present Beagle range is the B.206 the first true 'executive' type aircraft to be designed and produced in this country for nearly 20 years.

It comes in the five/seven seat light twin category which is most popular with business users throughout the world. It is capable of carrying up to five people in considerable luxury, with toilet and washing facilities, or seven people in normal first-class airline seatings, over distances of more than 1,200 miles.

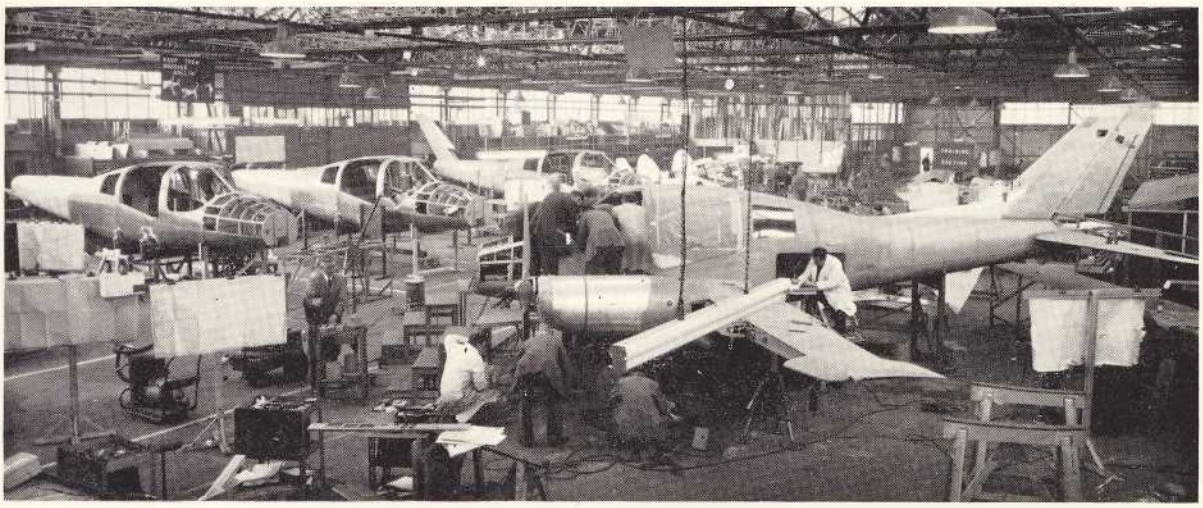
This means in effect that it can carry a team of business executives on export business to any of their customers in Europe within hours.

Beagle came into existence in October 1960, and design began within one month. As a result, the prototype Beagle made its first flight in August 1961.

By that time, the Services had begun to take an interest in what had previously been mainly a civilian design. A replacement was being sought for the R.A.F.'s communications aircraft, the Anson.

To be effective, an R.A.F. communications machine must be able to carry at least seven people – the equivalent of a full V-bomber crew, plus a pilot for the 'taxi' machine itself. And if possible it should obviously be able to fly non-stop from British territory to British territory – which meant in practice a range sufficient to travel from Britain to Malta or Gibraltar without re-fuelling. It also had to carry a substantial amount of special equipment which a civilian aircraft does not necessarily require.

Work therefore began on a new and expanded version of the B.206, which was once again completed from first discussions to prototype flight in a period of only nine months. It has more capacity, more power, more range and more speed, while the basic civil U.K. price has been held to the fully competitive figure of £35,000. The Beagle B.206 is now in quantity production.



THE BEAGLE B.206 IN FULL PRODUCTION

The BEAGLE B.206, Britain's latest seven/eight seat executive aircraft, is now in full production at the Company's Rearsby, Leicester, factory. The B.206 is the largest of the range of BEAGLE aircraft. It is the first truly executive/type aircraft to be produced in the U.K. for many years and was conceived originally to meet the demands of speed, economy and comfort for the modern businessman.

The B.206 can be equipped to full airways standards of radio, instruments and navigational aids to enable it in civilian form to use the World's airways and to operate freely on major airports.

The B.206 will be in service with the Royal Air Force later this year and production of both military and civil versions will run parallel.

Following are just a few outstanding characteristics of the Beagle B.206.

1. Exceptionally pleasant handling characteristics throughout the speed range.
2. Exceptionally wide cabin (62 in. inside) which makes possible first-class airline standards of seating, combined with special attention to pilot's view. (Cabin dimensions: 62 in. wide × 139 in. long × 52 in. high: block volume: 260 cu. ft.).
3. Exceptionally wide instrument panel (54 in.) making possible fully duplicated blind flying panels and full radio and navigational aids.
4. Special attention to layout of flight deck which meets I.A.T.A. and Transport Command requirements for transport aircraft.
5. Hydraulically operated air-stairs/baggage door for ease of entrance and self-contained operation in the field.
6. Large doors for entrance and freight loading to accommodate packages 56 in. × 40 in. × 31 in. (40 cu ft.) (with loading ramp.)
7. Strong floor – designed to accommodate loads of up to 250 lb. per sq ft. or 2,000 lb. 'punch out' on any one square inch; with three rows of lashing points at 2,000 lb. each.
8. Fully duplicated electrical system.
9. Guaranteed fatigue life of 15,000 flying hours.
10. Design for maintenance backed by provision of a full 'exchange/overhaul' scheme for all components.
11. Flexibility of roles which include:
    Eight seats for 810 miles at 209 m.p.h.
    Five seats with toilet for 1,600 miles at 209 m.p.h.
    Pilot and 1,750 lb. freight for 760 miles at 214 m.p.h.

Leading Particulars

Engines:
Two 310 h.p. Rolls-Royce Continental G10-470-A (295 b.h.p. for take-off).
Propellers:
McCauley two blade, constant speed fully feathering.

Span	45 ft. 9 in.
Length	33 ft. 9 in.
Height	11 ft. 3 in.
Wheel Base	9 ft. 8 in.
Track	14 ft. 0 in.
Wing area	214 sq. ft.
Aspect ratio	10
Max. Gross weight	7,125 lb
Empty weight	4,365 lb.
Disposable load	2,760 lb.
Wing loading	33·3 lb/ft.^{2}
Power loading	11·5 lb./b.h.p.
Baggage volume	21 cu. ft.
Fuel capacity	195 gall.

The first production Beagle B.206 from the assembly line at Rearsby, Leicester, made its first flight on the 19th February at the Beagle aerodrome at Rearsby. This aircraft . . . for delivery to the Ministry of Aviation . . . is, in fact, the 247th Beagle aircraft of 6 different types to be produced during the past 3 years, and 165 of these (67% of the output) have been sold in the export market to 14 different countries. Beagle production is now running at approximately one aircraft a week from Rearsby and Shoreham, Sussex.

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In addition the Walter Kidde Company has a range of established designs covering all forms of crew and passenger oxygen equipment, including portable sets for most types of Public Transport and Executive Aircraft.

Kidde has developed oxygen systems for the Britannia, Comet 4, Caravelle, Vanguard, Trident, H.S.125, VC 10, BAC One-Eleven and Beagle aircraft.

(Developed from an original idea of the Scott Aviation Corporation of America.)

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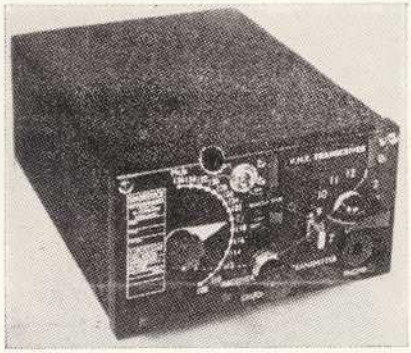

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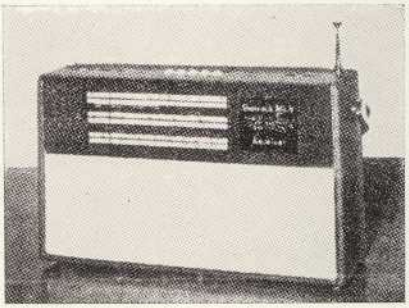
* **Four times the normal aeronautical radio guarantee.**
* **Weight 3 lb.**
* **Price—TSR £70/Intercomm, £7/Crystals £2. 10s. each.**
* **Each unit is delivered with full harness, Operator's Manual—Guarantee—A.R.B. Certificate.**



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* Circuit: all modular construction
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* 8 in ferrite aerial
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* Phone socket

PRICE: £36 *(7/6 delivered)*

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HE BOUGHT AN AIREDALE

In the following article Mr. Charles Smith of Maidenhead tells how he came into aviation and why he bought an Airedale

It was a typical Spring day in May, overcast and dreary. Life was dull and I felt all of my forty-nine years of age. Motoring past White Waltham Aerodrome I noticed a dozen or so light aeroplanes parked in front of the Club buildings, and it flashed across my mind that I had 'always wanted to fly'. Without thought, I drove straight into the Club car park and entered the Flight Office. I burst in with the words 'How do I learn to fly'? My arrival was greeted by a kindly looking character called 'Mac' with a determined set of jaw, somewhat offset by a twinkling eye. He asked my name and replied 'Well, Mr. Smith, sign this paper and we will go and see if you like it'. I signed the paper and in three minutes flat we were haring off down the runway in what I came to know afterwards as a Beagle Terrier.

My immediate impression was one of elation and it was tremendously exciting in the way the bumping of the take-off miraculously gave way to an uplifting swoop into the sky. 'Mac' seemed perfectly capable of maintaining a vigilant outlook and exact control of the aircraft, at the same time explaining to me the principles of what he was about. I discovered in the next half hour that I liked flying and I liked 'Mac', and thereupon signed for the usual approved course of training to achieve my Private Pilot's Licence. On the occasion of my next visit to the West London Aero Club I met Squadron Leader Johnny Ginns who was the Chief Flying Instructor and whose very considerable qualifications and experience inspired me to greater confidence, and gave me a wish to learn very thoroughly all things connected with private aviation.

During the weeks that followed I was made increasingly aware of the advantages of aviation as a mode of transport and became eager to advance my learning to a point where I could save many days every month by air travel and to enjoy the pleasures of domestic flying.

Having undergone all the usual treatment and having been subject to every aviation fear known to man, and having made all the mistakes on the calendar I was assured that I was now perfectly safe and fit to be let loose in the sky and on 14th July, 1963, I successfully underwent my Flight Test.

It was a wonderful sensation to know that one could manipulate one of these fascinating devices called an aeroplane and navigate one's self from place to place with a reasonable degree of confidence.

One of my business interests is that of an Organ Studio from which we sell, service and repair electric and electronic organs and our connections cover the whole of the British Isles. Here was the ideal medium to enable me to expand my business further, involving no extra time and with a great deal of pleasure. I decided to buy my own aeroplane.

I searched through all the books, I read all the catalogues, I tried the planes but there was one machine which was always in the forefront of every comparison and this was the Beagle Airedale. It was British, and it was comparatively very strong and safe. It was a little cheaper than its rivals from Overseas. Doug Bianchi of Personal Plane Services at White Waltham, a man of considerable experience, recommended it as being a very well constructed aeroplane and easy to repair. I met Eric Hall of Beagle Aircraft at Rearsby and I talked to many of the Staff, and came to the conclusion that here was an organisation who would back up their products, who were always co-operative and most approachable at all times.

Ah, but I was warned—the Airedale is no good, it won't do this, it won't do that but at least everyone agreed that it was very safe, so I obtained for myself a large sheet of analysis paper and I wrote down the particulars of every aircraft in my price bracket, including safety features and modes of construction. I placed some of the uncatalogued characteristics of an aeroplane of more importance than performance claims. Safety and reliability are more important to me than the last five knots, and with this new interest in life I certainly do not want to die yet awhile! The performance figures were obtained from disinterested sources and I was staggered to find that the Airedale outstripped so many in the 1963 Kings Cup Air Race. I was even more intrigued to see that *actual* performance figures showed the Airedale to be a very desirable machine and, although the Beagle did not come out on top on every feature in the sixty odd items of comparison data, it came out on top on more occasions than any other aeroplane.

I ordered the Airedale and on 22nd October, 1963, became the proud owner of G-ARZS. Flying my aeroplane I am gratified that in every case she has lived up to the claims by the manu-

Mr. Charles Smith (left), with his daughter Pamela, is seen here receiving the aircraft documents from Mr. Roy Goodwin of Beagle Aircraft. Also in the party is Mr. Douglas Bianca of Personal Plane Services.

facturers, and in many cases exceeded catalogue figures. For example, on my first flight I found that with three up and more than 40 gallons of fuel my initial climbing was in excess of 1000 feet per minute and I was quite unused to the controls. I found that following an American counterpart down the free lane from White Waltham, my friend in front was hopping around all over the sky, whereas the Airedale seemed to rumble along as steady as if it was on rails. It was hard to believe that we were passing through the same air space and every time I fly the plane I am more than satisfied that I was right to choose an aircraft with good visibility downwards, a feature very important to the tyro. It actually says in the Flight Manual that 'the aeroplane has been demonstrated to be suitable for operation from rough grass surfaces' and you can say that again at White Waltham!

The aeroplane is now being converted to semi-aerobatic specification and this is an added attraction to the owner of an Airedale, since Beagle's say, and the Registration Board approved, of my loops, rolls and spins which will give me a lot more confidence than taking a chance with an unapproved machine.

This is how I came into Aviation and this is why I bought an Airedale.

HOW A COMPANY

To illustrate the direct financial savings that may be achieved by the use of company planes, Beagle have provided the following example of a hypothetical company manufacturing agricultural machinery.

Their factory and offices are near Coventry. Their equipment is already widely used and they are working hard to expand their business in most European countries.

Their Managing Director has to make a routine round of visits to agents and/or customers from time to time. Many of these are situated in larger provincial market towns and, on this occasion the places concerned are Exeter, Rouen, Rotterdam, Ghent and Odense. He will be accompanied on this trip by the Sales Director, the Chief Designer and the Senior Technician. They plan to leave early on Monday morning.

By Public Transport

Using the best available services, their itinerary is as follows:

Journey	Dep.	Arr.	Cost per Person
Monday			
Coventry/Birmingham (rail)	08.45	09.31	£4 19 9
Birmingham/Exeter (rail)	10.01	13.42	
Exeter/London (rail)	18.01	21.13	4 0 0
Overnight Stop			
Tuesday			
London/Paris (air)	09.00	10.55	9 11 0
Paris/Rouen (rail)	13.40	15.41	1 15 0
Rouen/Paris (rail)	20.35	22.08	1 15 0
Overnight stop			
Wednesday			
Paris/Rotterdam (rail)	08.21	13.43	5 8 0
Rotterdam/Brussels (rail)	17.34	19.26	1 15 0
Brussels/Ghent	19.52	20.35	10 0
Overnight stop			
Thursday			
Ghent/Brussels	12.34	13.17	10 0
Brussels/Copenhagen (air)	15.45	17.25	21 2 0
Copenhagen/Odense (rail)	19.45	22.40	2 7 0
Overnight stop			
Friday			
Odense/Copenhagen (rail)	10.39	13.30	2 7 0
Copenhagen/London (air)	14.30	16.15	25 4 0
London/Coventry (rail)	17.10	19.36	1 15 3
		Total	£82 19 0

To the above must be added expenses (hotels, meals, entertaining, taxis, etc.), at say, £10 a day per head for the five days.

Total direct cost, therefore, per head is £133.

For the typical team of four described, this aggregates to £532, plus 20 man-days of time devoted to this one tour of visits.

On the modest assumption that a senior executive's time is of value to his company at a rate of about five times his salary, and assuming that the average salary of the group is approximately £3,500 a year, this rates the average value of an executive man-day at £50. The total value of the executive time spent on this tour of visits is therefore £1,000.

The entire cost of the tour of visits can therefore be assessed at approximately £1,532.

By Beagle 206

Assuming the total hourly operating costs of the Beagle to be £30 (including pilot's salary and all standing charges, such as hangarage and depreciation), the same trip would cost £300 for the aircraft, plus £100 for expenses over 2½ days. Total £400.

The party would be back in Coventry by 2.0 p.m. on the Wednesday, saving ten executive man-days (equalling £500) of time.

The itinerary would be something like this:

Journey	Dep.	Arr.
Monday		
Coventry/Exeter	apprx. 08.00	apprx. 0.900
Exeter/Rouen	,, 12.00	,, 13.30
Rouen/Rotterdam	,, 16.30	,, 18.15
Overnight stop		
Tuesday		
Rotterdam/Ghent	,, 12.00	,, 12.30
Ghent/Odense	,, 15.30	,, 18.00
Overnight stop		
Wednesday		
Odense/Coventry	,, 11.00	,, 14.00

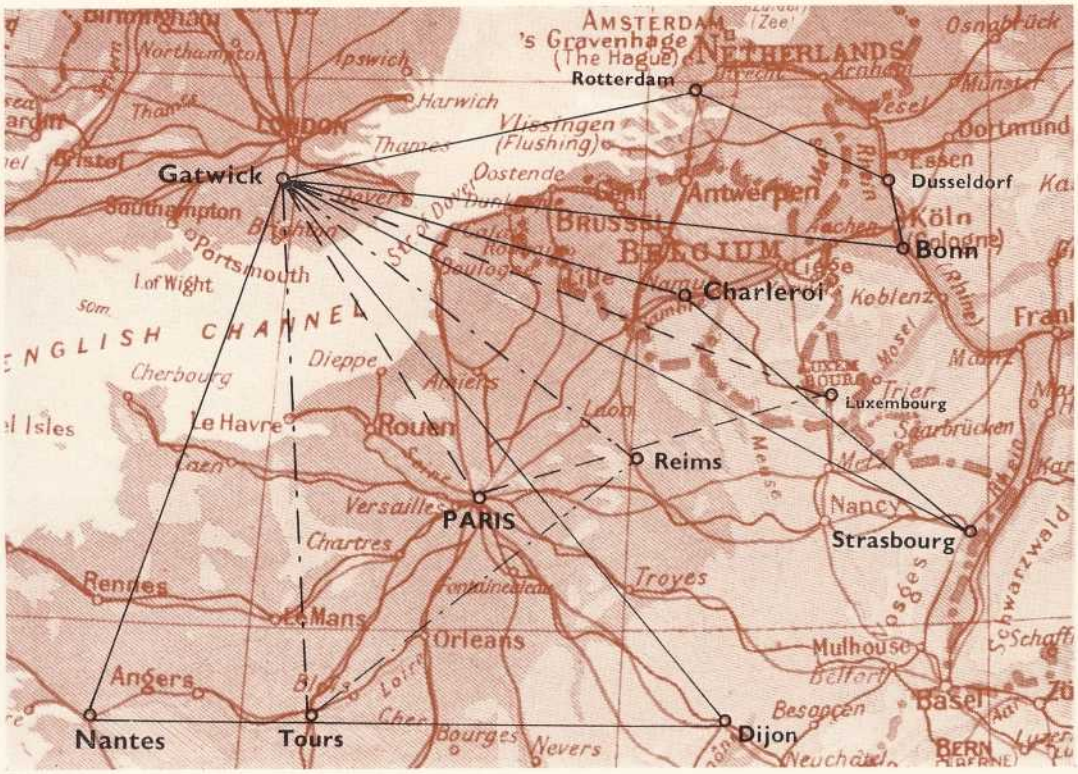
The total distance is approximately 1,490 nautical miles, for which ten hours has been allowed. This is more than generous as the aircraft's normal cruising speed is over 180 knots,

AIRCRAFT CAN BRING DIRECT SAVING

so that there is plenty of allowance for traffic patterns and other minor delays.

The total saving by Beagle is therefore £132 in direct costs, plus £500 in executive time saved. Total £632.

The foregoing takes no account of the very considerable tax relief obtainable through the operation of business aircraft, not of the indirect benefits from prestige.



Getting to and from a single city on the Continent can be fairly easy by scheduled airlines—provided of course that you do not mind being bound to a rigid timetable. But it is virtually impossible to make, in a single day, a cross-country journey involving stops at one or more places other than capital cities. This map shows a few 'three-cornered' journeys which could be made in a single day by the B.206—but which would drive your travel agent to distraction if you wanted to do them by public transport!

THE TERRIER STORY

WHEN the Ministry began to dispose of some of its Mark 6 and 7 Austers in 1959 it was realised that there was a potential market for this type of aircraft. Flying Clubs and private owners felt a need for a low priced, robust, economical aircraft with seating for two or more people in reasonable comfort. Also aero towing was becoming more and more popular with gliding clubs and although the Tiger Moth was giving sterling service, as usual, in this role, there was obviously a limited need for a more modern machine of superior performance and comfort.

It was realised that the Mark 6 aircraft as delivered to the Army was not suitable for club or private use without modification and the Company decided to acquire all airframes as they became available.

A modified fin and rudder and tailplane was fitted to improve stability and the flap travel was restricted for the same reason. The prototype was built in conjunction with Mr. F. Horridge at Lasham, who had acquired an airframe. This machine G-ARCY made its first flight from Lasham in August 1960. At this stage the aircraft was called the Mark 6A and Mr. Horridge made two more examples G-ARGB and G-ARKC. The first Rearsby built aircraft was called the 'Tugmaster' and was registered G-ARDX. It made its first flight in August 1960 and subsequently went to Lasham to replace G-ARCY which crashed in September of that year.

Four more Tugmasters were built. G-ARGI is operated by Mr. H. C. Greenway who is currently planning a round the world trip from his base

A recent photograph showing two Terrier I's and two Tugmasters which were recently collected from Rearsby by their Swedish owners. The two Terriers are for Orebro Bil-och Flygklubb and one Tugmaster for Kronobergs Flygklubb. The second Tugmaster is for private owner Mr. C. E. Aberg.

at Edgehill. G-ARHM regularly performs the impossible by towing the Midland Gliding Club's Eagle off the top of the Long Mynd and G-ARIH lives at Poddington under the watchful eye of its owner Mr. H. Britten. The last one to be delivered was G-ARRX to Mr. F. Gaze of Ross, Herefordshire.

Early in 1961 it was decided to discontinue the 'Tugmaster' in favour of a more sophisticated version to be called the A.61 Terrier. Whereas the minimum amount of work went into the Tugmaster in order to keep the cost down, the Terrier is a complete rebuild from the basic airframe resulting in a machine which is far better in all respects than the original. When a Mark 6 or 7 airframe reaches our factory it is completely dismantled and all the fabric is removed. After a thorough inspection for wear and corrosion the structure receives new protective treatment before recovering. A modified canopy is fitted to the cabin which is then reupholstered to a very comfortable standard. A new instrument panel is also fitted.

While the airframe is undergoing this metamorphosis the engine is partially stripped and examined for wear. After rebuilding and bench testing it is reinstalled in its airframe.

The first Terrier, G-ARLH, first flew in April 1961. It was subsequently re-registered EI-AMB and delivered to the Leinster Aero Club at Dublin as recorded elsewhere in this issue. Five others have been delivered to customers at the time of writing and a further six are on order. The Company's demonstrator G-ARRN has been subjected to a very rigorous flight test programme as a result of which some further modifications have been incorporated to improve the handling qualities.

There can be little doubt that the Terrier presents excellent value for money and will be seen in ever increasing numbers during the coming year. The latest Terrier, the Series 2 is fully described and illustrated in this issue.

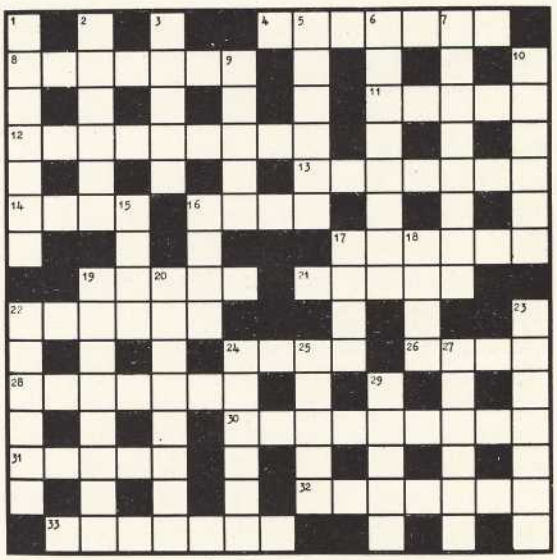
BEAGLE NEWS CROSSWORD

ACROSS

4 It's unfamiliar? Curious! (7)
8 Lone pig running off? (7)
11 Obtain by enforced demand (5)
12 It includes a condition in the burial (9)
13 Nice to receive, but lasts no longer than the giving (7)
14 A cat across one's path! (4)
16 Seems a small thing for which to disturb the encircling ditch (4)
17 Harshly sounded (6)
19 Bird's version of a wash-and-brush-up (5)
21 They have insight (5)
22 Platforms at entrances to docks (6)
24 Amperes multiplied by voltage (4)
26 Motors leave their mark (4)
28 Let the evil of the day do this (7)
30 Long life (9)
31 Cosmetic made from safflower (5)
32 Act of avoidance (7)
33 Presumably those concerned in 8 across were this (7)

DOWN

1 Found in the forest, or on vines?—both, and either way edible (7)
2 Comfort, O those. . . . (6)
3 Good memories are a requirement for these (5)
5 Heir to a piper? His rhythm, at anyrate! (6)
6 Quite agreeable to supply the means after this morning (8)
7 Giles car could not get up them (8)
9 Does a Scot meet a friend or give way to sorrow? (5)
10 No date! but something made up for it (6)
15 Italian on the fiddle (4)
16 Sale brewed up! (4)
17 Inclination (4)
18 He heads this for a suit (4)
19 In favour of, at first, and then discovered; all very deep! (8)
20 To bring about according to plan suggests mechanical knowledge (8)
22 State (6)
23 Entreating—there's a light within (7)
24 Give them a head, then moose and relations merge in the sky (6)
25 Faint colour in which the drink has been upset (5)
27 A judge? (6)
29 The beer rises to become kingly (5)



MAD DOGS AND ENGLISHMEN

BEAGLE B.206 HOT WEATHER TRIALS

BY J. W. C. JUDGE

Two days after the National Air Races at Coventry, we were off to Sunny Spain to carry out the hot weather trials of the Beagle B.206, the final part of its certification flight test programme.

It was decided to take the opportunity to make a non-stop Gatwick-Gibraltar flight to confirm the aircraft's range and fuel consumption performance and the Royal Aero Club kindly arranged for the flight to be an officially observed performance.

A direct track flight at 8,000 feet was planned with the co-operation of the British and French A.T.C. authorities, who were happy to permit us to cross airways with the minimum of fuss and at 0450 G.M.T. on a cold and misty morning, our wheels left the Gatwick 27 runway and we turned on to course.

Our first sight of France was a pinpoint on Rennes, followed by a glimpse of the end of one of the Nantes runways through cloud before setting off across the Bay of Biscay with a nice firm radio compass lock on Bilbao NDB.

Shortly after crossing the Spanish coast the clouds dispersed and we were treated to a magnificent vista of brown and red mesas and escarpments, reminiscent of cowboy-film scenery.

We then made our big mistake of contacting Madrid Zone, our pleas to remain on a direct track were brushed aside and we were sent off around the zone by a circuitous route which added 60 nautical miles to our track. Frustrated, we could do nothing but obey these inflexible instructions, which included frequent enquiries as to whether we were I.M.C. (there wasn't a cloud in sight and visibility was approximately 100 miles).

It was a relief to change to the Gibraltar frequency and be invited by a calm R.A.F. voice to help ourselves to a direct approach on runway

Mr. 'Pee-Wee' Judge, Beagle Chief Test Pilot and author of this article.

09. We arrived 5 hours and 40 minutes after leaving Gatwick with 60 gallons of fuel still remaining.

After ambling across the runway into town and a splendid lunch at the Sombrero, we were off again to Seville, where the real work of the trial commenced.

This consisted mainly of engine cooling and performance climbs but also included measured take-offs and landings.

As the main object of the exercise was to carry out these tests in high temperature conditions, most of our flying activities took place during the heat of the day, while the locals stopped everything and indulged in the old Spanish custom of the siesta. This gave us the free run of the airfield but it was usually necessary to call the tower several times before a sleepy voice answered. The siesta habit was however very catching and on one occasion between flights our long suffering A.R.B. representative was spotted fast asleep standing with his head in his arms against the wing leading edge!

After concluding the trials at the low altitude site of Seville the aircraft proceeded to Salamanca where further take-off and landing measurements were made at an airfield elevation of 2600 feet AMSL before returning to England via Madrid.

The Madrid – Gatwick flight was accomplished in 3 hours 58 minutes at 10-11,000 feet, and as if to let us know that we were back in England, our arrival was accompanied by a vigorous thunderstorm, making us look rather foolish in our light tropical clothing as we made our way across the apron to Customs.

Spain proved an excellent location for hot weather trials, combining high temperatures with surroundings more congenial than the traditional African wastes and well within 'one hop capability' of the B.206. The Airport authorities at Seville and the Spanish Air Force at Salamanca couldn't have been more helpful and we look forward to future trials in this friendly country—next time the B.242?

GRAND TOUR IN THE MODERN MANNER

The journey of . . . two young men with barely 45 years and 800 hours flying between them is remarkable as a demonstration in the grand manner of the real worth of the modern British light aircraft for serious travel without limit or qualification.

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THE safe arrival on June 28 at Darwin from England of Lord Trefgarne and Charles Masefield in the former's Airedale made little news, especially at a time when the British Press was much engaged with the doings of certain young ladies-about-town. Indeed, why should it?

The trail was blazed many years ago by pioneers using the most elementary aircraft, and having none of the facilities which are available to the private pilot today. Australia in the jet air travel era is only two shaves and about a dozen dry martinis away, and the reliability of the modern light aircraft is deservedly taken for granted in the more sophisticated countries where such aircraft are used for workaday business travel by ordinary people.

Nevertheless, the journey of these two young men with barely 45 years and 800 hours flying between them is remarkable as a demonstration in the grand manner of the real worth of the modern British light aircraft for serious travel without limit or qualification.

Clockwork regularity

Not only did they pack into six weeks a wealth of human experience in far places which must make the grand tour of past generations seem like a trip to Margate, but they were able to keep with clockwork regularity to a tightly-arranged schedule of business visits, meetings and demonstrations carefully planned beforehand in collaboration with the Beagle Company.

This remarkable keeping to schedule and the amount of useful work done in the business sense, are together a really splendid achievement, and reflect great credit on the two pilots and on the Airedale itself.

Lord Trefgarne's Airedale was a new, standard machine, equipped from the normal list of 'optionals' with VOR, ADF, blind-flying panel, long-range tanks and sunblinds. It is worth noting that Airedales are now flying in 10 countries outside of Britain, and there is little doubt that G-ASBI's voyage of demonstration will augment this number.

The travellers were seen off at Gatwick on the morning of May 15 by parents and friends. A Beagle 206 flown by Peter Masefield escorted them to within sight of the French coast to see Bravo India and its young crew fairly on their way. Weather was reported to be very bad over the eastern half of France and Clermont Ferrand was selected as the first touchdown, followed by Lyons and Cannes, trailing at the skirts of an outsize depression.

This depression was not to be shaken off until two days later, when the weather cleared in time to allow a glorious view of the Greek coast as Bravo India flew towards Athens.

The glories of Greece were left behind on the third day, when the first long sea crossing was made to Cyprus via Rhodes. In Cyprus there was some embarrassment, both passports being perfectly in order save, unfortunately, for geographical location. They had been left in Rhodes but caught up with the travellers two days later.

In Cyprus they were splendidly received by the aviation fraternity, including Mr. J. F. Blackburn, Wing Commander Savva of Cyprus Airways and

other personalities, especially those associated with the embryo flying club in Nicosia, several of whom flew Bravo India and seemed much impressed.

On May 21 the short sea crossing to Beirut was made without incident and Bravo India was again put through its paces by senior members of the Aero Club of Lebanon under the watchful eye of Tom Mapplebeck, one-time Auster agent and doyen of British air representatives in the Middle East.

Two days later the Airedale made the desert crossing to Baghdad via Damascus. A very misleading wind forecast made an intermediate landing for fuel desirable, and a desert strip was chosen. After a tricky hour of negotiating with the Arabs and '. . . . drinking disgusting pond-water tea at rifle point', the day was won and Bravo India continued its trouble-free way. Tea and rifles apart, the Arabs proved most hospitable and were clearly fascinated by the snug luxury of the Airedale's cabin.

Iraq was in the throes of a public holiday, and a quick passage of it was therefore made to Kuwait and Bahrein, where demonstrations were given to the Air Force and representatives of the local airline, police force and oil companies.

The weather, at this stage, was almost unbearably hot, the outside air temperature being often 120°F or more, and cabin temperatures as high as 140° were recorded on the ground. These quickly decreased, however, as soon as Bravo India was airborne, justifying the four ventilators with which the Airedale's cabin is equipped.

Lord Trefgarne (left) and Charles Masefield check the Airedale's engine.

Rugged coastal flight

A night stop was made on May 28 at Sharjah, and the next day the rugged coastal flight to Karachi via Jiwani was made without incident at the economical and comparatively cool height of 10,000 feet. After a night's stop at Ahmedabad on May 31, Delhi was reached next day via Jaipur, and business discussions, added to a round of heart-warming hospitality and entertainment,

occupied the travellers for three days.

After a night's stop at Allahabad, Bravo India landed at Calcutta on June 5 and was immediately sampled by the representative of the Assam Tea Estate. A letter received by Beagle from a Calcutta correspondent says: 'We believe that they are returning to England in a somewhat unorthodox manner. . . .' As Bravo India has now been delivered to Beagle's South Australian distributor, clarification of this report is awaited with interest.

Charles Masefield writes that it was quite a new sensation to find themselves approaching to land with a Comet in front and a 707 behind, but Indian A.T.C. officers seemed to take this in their stride. Perhaps there is a lesson here for their counterparts in the United Kingdom.

From Calcutta to Akyab in Burma conditions were solidly monsoon, and the Airedale flew almost continuously through heavy rain such as neither of its occupants had ever seen. It proved completely waterproof but (to quote Charles Masefield again) 'I don't know how people in open cockpits ever managed'.

Awkward moment

Rangoon was reached on June 7. Mingaladon Airport has only one runway, and this had to be tackled in a 35-knot wind, dead across it. It was an awkward moment, but Bravo India proved quite equal to the task, and all was well. Difficulty with transit visas was overcome by the kindness of Mr. E. V. E. Gaudoin of Fairweather, Richards & Co., who gave a personal guarantee.

He and Gp. Capt. Chater, the British air attache, met Bravo India at the airport and greatly smoothed the travellers' path. Mr. Gaudoin later wrote to Beagle: 'The close adherence to the flight schedule for this long journey is a testimonial . . . to the Airedale . . . also the two pilots.'

After Burma, Bravo India's next stop was in Thailand, where demonstration flying was curtailed due to SEATO exercises. Meetings were, however, arranged with representatives of the National Flying Club, Royal Thai Air Force, Thai International Airways and the Royal Irrigation Department.

May 15: Gatwick-Clermont Ferrand-Lyon-Cannes.
May 16: Cannes-Rome.
May 17: Rome-Bari-Corfu.
May 18: Corfu-Athens-Rhodes-Nicosia.
May 21: Nicosia-Beirut.
May 23: Beirut-Damascus-Baghdad.
May 24: Baghdad-Kuwait.
May 27: Kuwait-Bahrein.
May 28: Bahrein-Sharjah.
May 29: Sharjah-Jiwini-Karachi.
May 31: Karachi-Ahmedabad.
June 1: Ahmedabad-Jaipur-Delhi.
June 4: Delhi-Allahabad.
June 5: Allahabad-Calcutta.
June 6: Calcutta-Akyab.
June 7: Akyab-Rangoon.
June 10: Rangoon-Bangkok.
June 12: Bangkok-Puket.
June 13: Puket-Penang.
June 15: Penang-Ipoh.
June 17: Ipoh-Kuala Lumpur.
June 21: Kuala Lumpur-Singapore.
June 25-28: Singapore-Pelembang-Djarkarta Surabaja - Denpasar - Waingapu - Kupang Darwin (arrived June 28).
July 16: Flight concluded at Adelaide.

Penang was reached on June 13 after a night stop at Puket, and the travellers found Malaya to be the most enjoyable place they had yet passed through. They stayed in turn with the flying clubs of Malaya, Penang, Ipoh, Kuala Lumpur and Singapore, and Bravo India was sampled by members of each of these in turn.

Charles Masefield writes: 'Airedale fan I have always been, as you know, but even I am amazed at the enthusiasm of everyone who flies it. David is equally enthusiastic.' At one of these clubs the Airedale was demonstrated in parallel with two well-known American four-seaters, one high-wing and one low. The low-wing machine was found to be very disappointing and was soon eliminated,

Cont'd on page 29

BUSINESS AIRCRAFT . . . . .

TO PURCHASE

A Company may enjoy its own business aircraft in three ways, by outright purchase, by hire-purchase or by contract lease.

In Great Britain and in countries with similar systems generous tax reliefs are obtainable in each case, reducing the nett cost of business aircraft to a fraction of their face value. Moreover, in respect of 'lean' years when no tax has been payable, such relief is reclaimable against future taxation within five years.

Where an aircraft (or any other capital equipment) is resold for more than its tax written down value, a balancing charge is incurred, but this is far outweighed by the reliefs immediately obtainable if it is traded-in for a new machine.

In the following notes and examples, a company is assumed to be paying income tax at 7/9d in the £, plus 15% Profits Tax, i.e. approximately 54% in all. The aircraft is a fully equipped seven-seat Beagle 206 (including airline radio and Navaids, autopilot and de-icing) costing £50,000. Calculations are 'rounded off' approximates.

OUTRIGHT PURCHASE

Tax allowances totalling 130% of the purchase price are allowable over five years. No less than 60% is in the first year. Nett cost of aircraft is approximately 30% of purchase price.

Example

Purchase price	£50,000
Total tax relief in five years	£35,100
NETT COST OF AIRCRAFT	£14,900

HIRE PURCHASE

Over five years on the basis of a ten per cent deposit and quarterly payments including a charge of 4½% on the whole balance. The total paid over five years is thus 120·25% of the purchase price, but, against this, tax allowances yielding 81·2% relief can be set. The net payment over five years is thus only 39·05% of the purchase price.

Example

Purchase price	£50,000
H.P. Charges	£10,125
	£60,125
Tax relief in five years	£40,600
NETT COST OF AIRCRAFT	£19,525

CONTRACT LEASE

Over five years, with a down payment of 5·625%. Total paid over five years is 112·5% of purchase price but tax allowances yield a saving equivalent to 60·75%, so that the total nett payment is only 51·75%.

Example

Purchase price	£50,000
(Fly-away payment £2822 10s 0d)	
Total lease payments	£56,250
Tax relief in five years	£30,375
NETT PAID FOR FIVE YEARS LEASE	£25,875

Beagle Aircraft Limited is prepared to enter into repurchase arrangements for cash after either three years or five years, preferably on a trade-in basis against a new aircraft.

. . . . . THE REAL COST TO OPERATE

BY IAN R. ASLETT

There are in existence many standard methods for assessing aircraft operating costs, most of which are strictly applicable to large aircraft being used by firms or corporations to carry fare-paying passengers on scheduled services. The intention of the following article, by Ian Aslett of Beagle Aircraft Ltd, is to show a very simple method of assessing operating costs, breaking down the total so that it is easy for an operator to tailor it to suit his own requirements.

Although it is normally assumed that light twin-engine aircraft are usually private or corporate machines, there is in fact, a growing tendency for them to be used as 'Third Level Airliners', and this analysis is equally applicable to such operations.

Owners who operate their aircraft solely as company transport or as 'private cars' are interested only in how much it costs them, but 'Third Level Airline', taxi, and charter operators are obviously interested in making a profit, and so are looking for optimistic operating conditions of power, altitude, 'block speeds', range, and payload.

The Beagle B.206 is ideally suited for all private executive, taxi, charter and 'Third Level' operations, this aircraft has therefore been used as an example in all the following calculations and graphs.

GRAPH NO. 1 shows payload ranges that can be achieved at power settings of 55%, 65% and 75% power at 8000 ft. pressure altitude. Also shown are 'Block speeds' obtained for similar power settings, against T.A.S. and for various stage lengths.

GRAPH NO. 2 shows hourly operating costs against annual utilisation, based on examples worked out in this article, and obviously directly applicable only to the United Kingdom although a similar treatment can be used for operations elsewhere.

GRAPH NO. 3 shows costs per passenger seat-mile against stage length for 600 hrs. annual utilisation.

Note, the actual costs shown on this curve are, of course, only directly applicable to United Kingdom operations, but, the form is correct for all countries, and once the cost per hour has been established by the method shown in the article, it is a simple matter to re-plot the curve using the block-speeds from Graph No. 1.

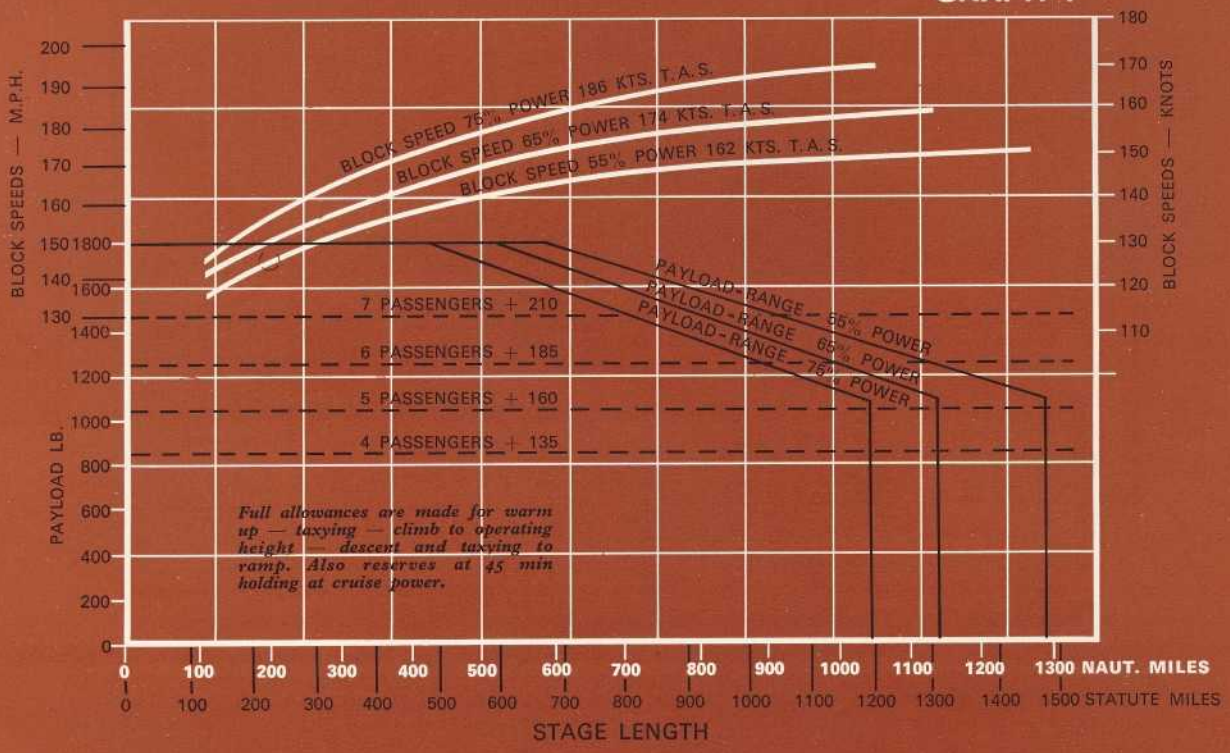
It now becomes a simple matter for an operator to compute operating costs as follows:—

1. Work out operating costs for three or four annual utilisations as shown in the cost estimate putting in your own journey times, night-stopovers etc.
2. Plot the resulting costs per hour against annual utilisation as shown in Graph No. 2.
3. Establish 'block speed' for the particular stage length being flown, see Graph No. 1.
4. Having established annual utilisation, the cost per passenger seat-mile can be plotted, using the payload range figures from Graph No. 1.

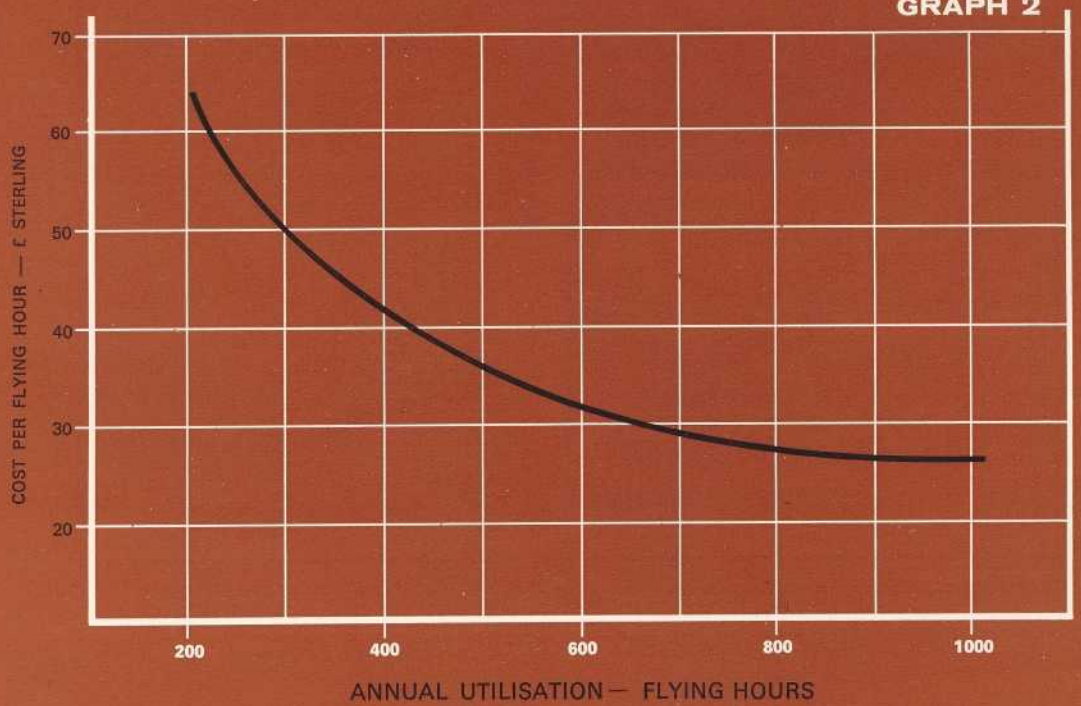
It must be borne in mind that the following cost breakdown is hypothetical only, each operator will always have a slightly different set of conditions which must obviously be fed in to give the correct result for his particular operation.

Finally, in most countries, large tax relief is available on the capital outlay and on such things

GRAPH 1



GRAPH 2



as fuel and hangarage. It is obviously impossible to generalise on these, as they differ widely from country to country.

In order to obtain a fair picture of operating costs for any executive aircraft, a break-down can be made under the following headings:—

1. Costs per annum.
2. Non-variable costs per flying hour.
3. Maintenance costs per flying hour.
4. Specific costs per flying hour.

1. Annual Costs

These costs accrue against the aircraft on 'Calendar time' only, quite regardless of the number of flying hours. They can be broken down as follows:

(a) Insurance.
(b) Hangarage.
(c) Pilot's salary, personal insurance and uniforms.
(d) Depreciation of aircraft.

2. Non-variable Costs per Flying Hour

These costs occur per flying hour, i.e. when the aircraft is not flying, they are not applicable.

They can be broken down as follows:—

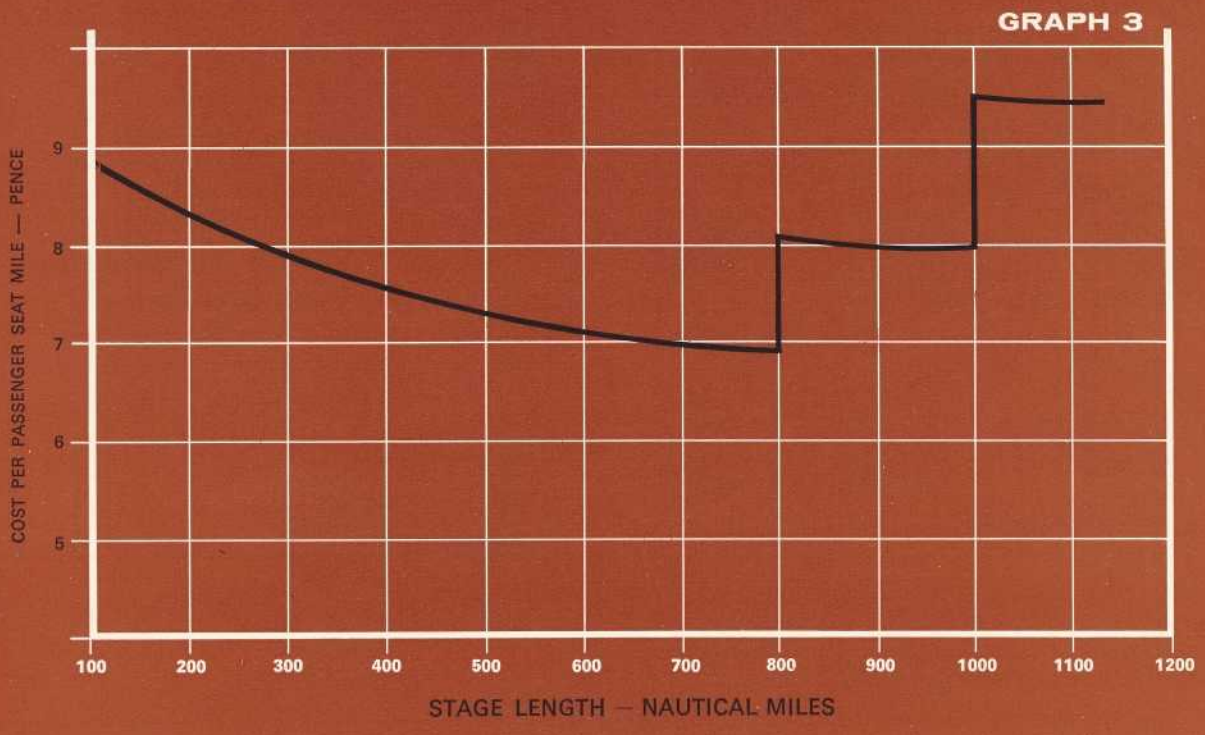
(a) Fuel per flying hour.
(b) Oil consumed per flying hour.
(c) Allowance for oil change per flying hour.
(d) Allowance for engine overhaul/replacement.
(e) Allowance for propeller overhaul/replacement.
(f) Provision for replacement of 'lifed' items, spare parts for engine, propellers, airframe.

3. Maintenance Costs per Flying Hour

This item varies with aircraft utilisation, and must be worked out using the particular aircraft check cycles laid down – it will usually be best to work out costs over at least a three year period, in order to ensure that engine and propeller overhaul costs are taken into account.

4. Specific Costs per Flying Hour

These costs are variables which, for any specific operational envelope, must be represented as a



known percentage of the assumed number of flights for a given annual utilisation.

They can be broken down as follows:—

(a) Landing fees – day and night.
(b) Hangarage fees – away from fixed base.
(c) Pilot's 'night stop' expenses – away from fixed base.

As an example, if we assume that the average flight time is two hours, then, regardless of annual utilisation, one half of the standard (or mean) landing fee must be accounted for every hour. The same applies for hangarage fees and pilot's night stop expenses.

The following Operating Costs example is for the Beagle B.206, assuming utilisations of 200, 400, 600 and 800 hrs. per year. The aircraft is assumed to be comprehensively equipped with dual controls, full I.F.R. radio package, and full de-icing, giving an ex-factory price of about £50,000 in United Kingdom.

Note: These costings are, of course for the United Kingdom only, but the basis of costing is obviously applicable throughout the World.

Example of Operating Costs based on the Beagle B.206

1. Basis of Estimate.

(a) Aircraft initial cost £50,000.
(b) Average journey time two hours.
(c) Journey's made at average 65% power at 8000 ft.
(d) 50% landings made by day.
(e) 50% landings made by night.
(f) 10% of flights involve night stopover.
(g) Maintenance check cycles are:—
50 hrs. or four weeks.
200 hrs.
600 hrs. or twelve months.
1800 hrs. or three years.
(h) Depreciation is assumed at 10%.

2. Annual Costs

	£	s.	d.
(a) *Insurance*			
Aircraft comprehensive at 3% of list price	1500	0	0
Note: Premium will reduce as aircraft depreciates.			
(b) *Hangarage*			
Based on Aerodrome Owners' Association charges	425	0	0
(c) *Pilot's Salary*			
Minimum qualifications Commercial Pilots Licence Instrument rating, Performance Schedule A	2500	0	0
(d) *Insurance Covering Passenger Liability*			
Say £25 per passenger seat (six seats)	150	0	0
(e) *Depreciation*	5000	0	0
COST PER YEAR	£9575	0	0

Cost per hour for:	£	s.	d.
200 hrs. annual utilisation	47	17	6
400 hrs. annual utilisation	23	18	9
600 hrs. annual utilisation	15	19	0
800 hrs. annual utilisation	11	19	0

3. Non-variable costs per flying hour.

	£	s.	d.
(a) *Fuel per flying hour*			
25·5 Imperial gallons per hour	6	10	0
(b) *Oil consumed per flying hour*			
Two Imperial pints per hour		2	0
(c) *Allowances for oil change-per flying hour*			
Assuming oil change every 50 hours		2	0
(d) *Allowance for engine overhaul/replacement.*			
Based on engine life of 800 hrs.	3	8	0
(e) *Allowance for propeller overhaul/replacement*			
Based on propeller life of 1000 hrs.		6	0
(f) *Provision for replacement of lifed items*			
Including spare parts for engine, propeller, airframe systems	2	0	0
TOTAL NON-VARIABLE COSTS PER FLYING HOUR	£12	8	0

4. Maintenance costs per flying hour.

Including engines, airframe and radio	£	s.	d.
200 hours annual utilisation – per hour	2	18	0
400 hours annual utilisation – per hour	2	3	0
600 hours annual utilisation – per hour	1	11	0
800 hours annual utilisation – per hour	1	10	0

5. Specific costs per flying hour.

(a) *Landing fees.*	£	s.	d.
Assume two hours average journey time and 50% day and 50% night landings	1	9	0
(b) *Hangarage fees away from base*			
Assume 10% of flights involve night stop with hangarage at £1 12s 0d per night		2	0
(c) *Pilot's expenses away from base*			
Assume expenses at £5 per day		5	0
TOTAL SPECIFIC COSTS PER FLYING HOUR	£1	16	0

It is now possible to assemble a complete picture of actual operating costs per hour for annual utilisations of 200, 400, 600, and 800 hours.

200 Flying hours annual utilisation	£	s.	d.
Non-variable costs	12	8	0
Specific costs	1	16	0
Maintenance costs	2	18	0
Cost per year over 200 hrs.	47	17	0
TOTAL OPERATING COST PER FLYING HOUR	£64	19	0

400 Flying hours annual utilisation			
Non-variable costs	12	8	0
Specific costs	1	16	0
Maintenance costs	2	3	0
Cost per year over 400 hrs.	23	19	0
TOTAL OPERATING COST PER FLYING HOUR	£41	6	0

600 Flying hours annual utilisation	£	s.	d.
Non-variable costs	12	8	0
Specific costs	1	16	0
Maintenance costs	1	11	0
Cost per year over 600 hrs.	15	19	0
TOTAL OPERATING COST PER FLYING HOUR	£31	14	0

800 Flying hours annual utilisation			
Non-variable costs	12	8	0
Specific costs	1	16	0
Maintenance costs	1	10	0
Cost per year over 800 hrs.	11	19	0
TOTAL OPERATING COST PER FLYING HOUR	£27	13	0

Looking at the total operating cost per flying hour against annual utilisation, it can be seen that the greater the annual utilisation, the more economical it becomes to operate the aircraft. For example, a utilisation of only 200 hours gives a total cost of approximately £13,000 per annum whereas if the utilisation is doubled to 400 hours, the total operating cost rises by only £3600 to £16,600 per annum. If a curve is drawn of operating costs against utilisation, it will of course be seen that the curve is exceedingly steep for utilisation up to about 400 hours per annum but it flattens fairly rapidly as utilisation increases beyond this figure. From this it can be determined that from about 600 hours upwards, the difference in operating cost per hour is becoming very slight. Therefore, for maximum economy, any operator should attempt to operate his aircraft for a minimum of 600 hours per annum.

None of the costings so far established have, however, taken into account tax reliefs which are available to any firm making a reasonable profit.

To obtain a complete picture of the manner in which tax relief can reduce the operating costs of an executive aircraft to a profitable firm, the costings must be done over a five-year period. Thus, if the original cost of the aircraft is £50,000 and if the firm is paying income and profits tax at a rate of 10s. 10d. in the pound, then the following reliefs will be permitted:—

	£	s.	d.
Year 1			
60% of cost i.e. £30,000 at 10s 10d saving	16,200	0	0
Year 2			
20% „ „ „ £10,000 „ „ „	5,400	0	0
Year 3			
20% „ „ „ £10,000 „ „ „	5,400	0	0
Year 4			
20% „ „ „ £10,000 „ „ „	5,400	0	0
Year 5			
10% „ „ „ £ 5,000 „ „ „	2,700	0	0
Total Saving	35,100	0	0

This represents monies that the firm would have paid in tax if it had not been operating an aeroplane. Therefore, over a five-year period it can be shown that the

actual cost of the aircraft to the firm is	50,000	0	0
less	35,100	0	0
	14,900	0	0
This is an annual cost spread over five years of	2,980	0	0

This figure will become part of the total aircraft hourly operating cost as shown below:-

For an annual utilisation of 200 hours	14	18	0
„ „ „ „ „ 400 „	7	9	0
„ „ „ „ „ 600 „	4	19	6
„ „ „ „ „ 800 „	3	14	6

In order to establish the operating costs, the annual costs of £9,575 as shown in paragraph 2 of the example must be reduced by £5,000 which was the allowance made for depreciation. This

gives an annual cost of £4,575 which can be broken down as shown below:—

	£ s. d.
Cost per hour for 200 hours	22 17 6
,, ,, ,, ,, 400 ,,	11 8 9
,, ,, ,, ,, 600 ,,	7 12 6
,, ,, ,, ,, 800 ,,	5 14 0

Therefore, the total cost for 200 hours will be as follows:—

Non-variable costs	12 8 0
Specific costs	1 16 0
Maintenance costs	2 18 0
Cost per year over 200 hours	22 17 6
Total	39 19 6
Cost per annum	7,995 0 0
Tax relief at 10s. 10d. in the pound	4,325 0 0
Actual cost	3,670 0 0

Therefore, the total operating cost per hour for 200 hours would be 18 7 0

The total cost for 400 hours will be as follows:—

Non-variable costs	12 8 0
Specific costs	1 16 0
Maintenance costs	2 3 0
Cost per year over 400 hours	11 8 9
Total	27 15 9
Cost per annum	11,115 0 0
Tax relief at 10s. 10d. in the pound	6,002 0 0
Actual cost	5,113 0 0

Therefore, the total operating cost per hour for 400 hours would be 12 15 6

The total cost for 600 hours will be as follows:—

Non-variable costs	12 8 0
Specific costs	1 16 0
Maintenance costs	1 11 0
Cost per year over 600 hours	7 12 6
Total	23 7 6
Cost per annum	14,025 0 0
Tax relief at 10s. 10d. in the pound	7,573 10 0
Actual cost	6,451 10 0

Therefore, the total operating cost per hour for 600 hours would be £ s. d. 10 15 0

The total cost for 800 hours will be as follows:—

Non-variable costs	12 8 0
Specific costs	1 16 0
Maintenance costs	1 10 0
Cost per year over 800 hours	5 14 0
Total	21 8 0
Cost per annum	17,120 0 0
Tax relief at 10s. 10d. in the pound	9,245 0 0
Actual cost	7,875 0 0

Therefore, the total operating cost per hour for 800 hours would be 9 16 0

It can now be established that the total operating cost including tax reliefs will be as follows:—

For 200 hours utilisation	18 7 0
	14 18 0
	33 5 0
For 400 hours utilisation	12 15 0
	7 9 0
	20 4 0
For 600 hours utilisation	10 15 0
	4 19 0
	15 4 0
For 800 hours utilisation	9 16 0
	3 14 6
	13 10 6

From these figures, it can be seen that by making full use of available tax reliefs, a firm can in fact operate an aircraft of this type very cheaply, although it will be observed that, the pattern of operating costs being the same, for maximum economy the aircraft should still be operated for at least 600 hours per annum.

Cont'd from page 21

and the Airedale seemed to be preferred to the trans Atlantic high-wing product.

After leaving Singapore on June 25 they flew through Indonesia rather faster than planned as the Indonesians' attitude was thought to be unpredictable in the present awkward international situation. Not long previously they had been impounding B.O.A.C. aircraft.

In fact, the Indonesians proved to be as helpful as anyone and seemed to enjoy the change from routine which a private, unscheduled flight brought them. The travellers had been warned that in Kupang there was a big, bad-tempered and very difficult Air Force C.O., but in the event (they write) 'butter would not have melted in his mouth'.

He said that he was quite sure that they would cross the Timor safely as he had dreamed about it the previous night. When Bravo India was out over the Timor the Indonesians kept calling up to ensure that everything was going well. The Timor was crossed at 11,000 feet to minimize a headwind, and slight carburettor icing had to be countered by use of the hot air control.

By an almost incredible coincidence, the first Australasian land sighted turned out to be called 'Beagle Shoals'.

At Darwin the main part of Bravo India's journey lay behind it, although its Australian tour was yet to come. Since leaving England it had flown 150 hours in every climatic condition, and had given 48 demonstration flights carrying 121 different people.

It had encountered desert heat, monsoon rains, and landing conditions from flat calm to a 35-knot cross wind. Most of the journey had been cruised at about 10,000 feet, the extreme range proving to be about 830 miles. Engine cooling had proved completely effective in the hottest conditions and the Airedale's tinted Perspex and overhead sunblinds had proved their worth. No snags of any kind had been encountered throughout this very long and varied tour.

A CHALLENGE FOR THE FUTURE

BY ALAN GREENHALGH

In this modern era of supersonic transport aircraft and earth launched orbital satellites, the design and manufacture of conventional propeller driven piston engined light aircraft is looked upon by many as being rather old fashioned, uninspiring, and very well understood. It is certainly true that the propeller driven piston engined aircraft has been with us for some time, for the machines of the early aviation pioneers could be classified under this category. There is no doubt that the methods used during the years in both design and construction of this type of aircraft for the light and general aviation market are old fashioned when compared with modern technologies in other fields.

Whole libraries of reports and technical books record the experience gained over the last sixty years, and it would seem obvious to anyone not directly concerned with light aviation; and unfortunately, with some already in the business, that there is very little new that can be done to improve these aircraft. Many aeronautical people who should know better argue that light aircraft of today look very much alike and follow the same stereotyped conventional pattern of the pre-war days, they say that there are no more frontiers to open or new developments to pursue that have not already been probed into before.

This could not be further from the truth, these appearances are only on the surface, the design and manufacture of light aircraft is now entering a very critical and competitive phase, new techniques need investigation in all the stages of an aircraft's life from its initial conception to the first delivery of the production model.

The competition between manufacturers is very keen and if we at Beagle are to make our mark and become one of the world's successful light aeroplane constructors we must design and produce aircraft that are safer, perform better and are more attractive in appearance and comfort and at a much lower cost than any of our competitors. There are large growing markets for this class of aeroplane throughout the world, and each manufacturer in the light aviation field has his sights firmly fixed on increasing his own particular slice of these markets.

Mr. A. Greenhalgh.

It must be remembered that aircraft have been with us just about the same length of time as the motor car, but up to now have not been recognised to the same extent for private travel. However, this outlook is changing, and it is becoming generally clearer that there is plenty of room for expansion in the air, interest is growing rapidly throughout the world, but unfortunately the cost of both aircraft and flying is a big factor still holding back the growth of light aviation.

Looking at the performance abilities of the 4 seat light aircraft of today it is obvious, that apart from cost, they are efficient forms of transportation. In what form of surface transport can one *continuously* cruise at 180 m.p.h. and upwards, with a petrol consumption of around 20 miles per gallon?

Clearly the great challenge for the future is cost

reduction, for there is no doubt that light aeroplanes are still incontestably far too expensive, and their cost will have to be reduced considerably if the light aeroplane is ever going to be recognised generally as a means of private and business transportation. The number of cars used for this form of transport are now beginning to play havoc with our road system, and officials freely admit that if the number of cars on the roads increase at the same rate as today then our present and projected road systems will not be able to cope with the increase in traffic.

The development of new methods are needed for massive cost reduction in all the phases of an aircraft's design and production life and the new technologies must be mastered and applied by a successful firm in this new era of the growth in light aviation.

More technical opportunities seem to exist now for the cost reduction than ever before. However, the basic nature of aeronautical engineering does not change, it is still an art and not an exact science. Many decisions, many judgements, and many compromises must still be made in the design and construction of any aircraft. Proper timing in the introduction of new techniques is vital.

Today one of the most fruitful cost reduction approaches is to change manufacturing methods and to design man hours out of construction processes. The design office must look at ways of reducing the number of parts to be assembled, and in the factory the maximum use must be made of sub-assemblies large enough for comfortable working access. In general we have to look to the motor car industry and learn from the experience gained on mass production and cost reduction in that industry.

BEAGLE PERSONALITIES

This is the first of what is hoped will prove to be an interesting series of pen pictures of individuals who are actively connected with Beagle. The series will not be confined to members of the Company, and it is intended to eventually include owners, Agents and Service personalities.

No. 1—TOM CARROLL D.F.C.

TOM CARROLL, Beagle's Chief Designer and Chief Engineer, received his first introduction to aircraft through a student apprenticeship at the Airspeed Aeronautical College. After completion of his apprenticeship he entered the aircraft industry as a draughtsman in the Design Office of Airspeed.

As was the case with many others, Tom's career was interrupted by the outbreak of war, during which period he served with the Royal Air Force and flew with the Path Finder Force and was awarded the Distinguished Flying Cross. After leaving the R.A.F. in 1948, he spent a year in the Stress Office at Fairey's, after which he joined B.O.A.C. and rose to be Senior Technical Officer (Aircraft) responsible for the design assessment of B.O.A.C.'s project aircraft, which at that time covered the Britannia, Comet and Douglas DC-7C.

In 1955 he joined Bristol Aircraft Company as Assistant Design Manager responsible for the C.P.A. Britannia project and was promoted subsequently to Deputy Design Manager responsible for all projects and for the American Certification of the Britannia.

When the Supersonic Transport design study was commenced, he was made responsible for the design of all systems, electronics and power plant installations on the S.S.T. project.

Tom Carroll joined Beagle as Deputy Chief Designer in March 1960 when the nucleus of the Design Office was being formed. He is a Fellow of the Royal Aeronautical Society and an Associate Fellow of the American I.A.A.

BEAGLE SERVICE BULLETIN

ISSUE No. 1

BULLETIN No. A.1

A.109 AIREDALE

Radio Interference Suppression

A ·75μF Radio By Pass Condenser is fitted between the field terminal of the generator and earth. This condenser has been found to cause burning and oxidisation of the regulator contact points, thereby reducing the generator output and possibly causing a run down battery. In view of this these condensers should be removed immediately, as no increase in radio interference will result from this action.

BULLETIN No. A.2

Lightweight Diaphragm Fuel Pumps for Lycoming 0-360 Series Engine

Lycoming Service Instruction No. 1049. Date 29th December, 1961 gives information regarding a redesigned diaphragm type fuel pump which is being incorporated on all new production 0-360 series engines. This new pump is smaller and lighter in weight than the pump it replaces. The superseded pump gives every satisfaction in service and supply of this type will continue to be made until the present stocks held are exhausted.

Should it be necessary for owners to change their existing A.C. fuel pump and are supplied with the new lightweight type it will entail the reworking of the pipe runs. Beagle-Auster Modification No. A84 has been introduced to cover this installation. The only new type pump approved by Beagle-Auster as a replacement is Lycoming Part No. 74082, A.C. Part No. 5623467 + A.

Owners wishing to fit this pump themselves may obtain details of Mod. No. A84 from the Service Department.

BULLETIN No. A.3

E2B Compass Sunshade

The compass fitted to the Beagle-Auster A109 will operate satisfactorily over a temperature range of −40°C to +70°C. When the aircraft is operating in high temperatures and is left standing in the hot sun, the cabin temperature can be well in excess of 70°C. This can cause the perspex bowl of the instrument to crack with a subsequent leak of the silicon fluid.

Beagle-Auster Modification No. A97 introduces a sunshade to shield the compass under high temperature conditions and it is strongly recommended that owners fit this item. The sunshade is fitted by attaching it between the mounting bracket and the compass flange utilising the existing 4BA Screws and Rawlnuts. After fitting the sunshade it will be necessary to reswing the compass.

Owners wishing to fit this Sunshade themselves may obtain details of Mod. No. A97 from the Service Department.

BULLETIN No. A.4

Rudder Operating Lever Lubrication

Reports have been received of a tendency for the rudder operating lever to seize in the phosphur bronze bearings. This is due to insufficient retention of the DTD.825 A Grease, as recommended in the First Edition of the Owners Handbook.

On new production aircraft these bearings will be packed with DTD.5530 Anti-Seize Compound.

On existing aircraft the following procedure is to be carried out as soon as possible. Mix a quantity of DTD.5530 Anti-Seize Compound with petrol to obtain a flowing consistency. Inject this mixture from an oil can at the points indicated

in the sketch. The mixture will flow into the bearing and after the petrol has evaporated a film of Molybdenum Disulphide will be retained: no further treatment should be necessary until the next C. of A. when the bearing assembly should be stripped down and packed with DTD.5530. ROCOL Anti-scuffing Paste meets the requirements of Ministry of Aviation Specification DTD.5530.

BULLETIN No. A.5

A.109 AIRDALE

The following modifications have been classified as mandatory by the Air Registration Board and must be embodied as soon as possible, and in any case, not later than January 1st, 1964.

Mod. A.105. Introduction of Cooling Duct for Starboard Magneto

This cooling duct has been introduced to enable the aircraft to be cleared for tropical conditions (ISA +23°) and must be fitted to all aircraft.

Mod. A.118. Introduction of Increased Strength Door Hinge Bearings

Failures have occurred on the 2BA bearings fitted to the front and rear doors.

Mod. A. 118 has been introduced to cover the fitting of $\frac{1}{4}$ inch B.S.F. bearings. This is now incorporated in the standard aircraft; if Mod. A. 118 has been incorporated it will be listed in the aircraft log book.

At the hinge positions care must be taken when opening up to $\frac{1}{4}$ inch B.S.F. thread not to drill deeper than the bosses, damage to the fuel pipes and electrical cables immediately behind the hinge bearings will occur if this precaution is not taken.

Mod. A.140. Introduction of Revised Door Catch

Following reports that the cabin doors were liable to lock and remain locked when slammed to, Mod. A.112 'Introduction of Revised Cabin Door Lock Plate' was issued, and Service Bulletin No. A.5 (Advance Copy) was issued to owners only. Complimentary revised lock plates were enclosed with each bulletin.

It has since been found that this modification is not entirely successful and accordingly Mod. A.140 has been introduced and supersedes Mod. A.112.

Mod. A.140 involves changing the existing catch assembly fitted to the door and fitting an adjustable locking catch to the door surround. These revised parts will be available on an exchange basis.

Operators wishing to carry out the above Modifications themselves may obtain all required materials and fitting instructions from the Service Department.

Service Bulletin No. A.5 stated that Mod. No. A.140 is a mandatory modification and must be embodied as soon as possible, and in any case, not later than January 1st, 1964.

As a result of unavoidable delay in production it has not been possible to make modification kits available for incorporation by this date.

After consultation with the Air Registration Board the date has been extended to March 1st, 1964, for Mod. A.140 only.

BULLETIN No. A.6

A.109 AND A.61 AIRCRAFT ENGINE LUBRICATING OIL RECOMMENDATIONS

(Additive Oils)

De Havilland Gipsy Engines

De Havilland Technical News Sheets T.N.S.G. No. 68 dated 20th August, 1962 and T.N.S. G.M.10 No. 38 dated 23rd July, 1962, give the following recommendations—

AeroShell Oils W.80, W.100 and W.120 are now approved for use in Gipsy Major 1, 1C, 1D, 1F, 1G, 1J, and Series 10 engines under the following conditions—

W80 Artic (Below 0°C)

W100 Temperate (0-30°C)

W120 Tropical (Above 30°C)

These oils are alternative to those already cov-

ered by Specifications D.Eng.R.D. 2472 A/O, D.Eng.R.D.2472 B/O.. and D.H.E.227.

No special precautions are necessary when changing to AeroShell oils W.80, W.100 and W.120 from oils of the same specification.

Lycoming Opposed Series Engines

Lycoming Service Instruction No. 1014B dated 28th December, 1962 gives revised lubricating oil recommendations as follows:—

Recommended Grade of Oil	Average Ambient Air Temperature	Multi-Viscosity Grades
SAE 50	Above 60°F (16°C)	SAE 40 or SAE 50
SAE 40	30° to 90°F (−1°C to 32°C)	SAE 40
SAE 30	0° to 70°F (−18°C to 21°C)	SAE 40 or 20W-30
SAE 20	Below 10°F (−12°C)	SAE 20W-30

Previous recommendations were:—

SAE 50	Above 40°F (4°C)
SAE 30	Below 40°F (4°C)
SAE 20	Below 10°F (−12°C)

The addition of Grade SAE40 has been made so that where this is available it can be used as an intermediate step between SAE30 and SAE50.

AeroShell Oil W.80 (SAE30W-40) is recommended for Temperate conditions 30° to 90°F (−1°C to 32°C) and AeroShell W65 (SAE 20W-30) is recommended from below 10°F to +70°F (below −12°C to 21°C).

This Lycoming recommendation should be complied with anytime after initial 25 hour preservation run or when lubricating oil is changed or added.

Recommendations for changing oil

If an additive oil is used in a new engine, or a newly overhauled engine, high oil consumption might possibly be experienced. The anti-friction additives of some of these oils will retard the break-in of the piston rings and cylinder walls. This condition is easily corrected by the use of straight mineral oil until normal oil consumption is obtained, then change to the additive type.

In engines that have been operating on straight mineral oil for more than 100 hours, a change to detergent oil should be made with a degree of caution, the cleaning action of a detergent oil will tend to loosen sludge deposits and cause plugged oil passages, In fact, if an engine has been operating on straight mineral oil, and is known to be in an excessively dirty condition, the switch to detergent oil should be deferred until after the engine is overhauled.

When changing from straight mineral oil to detergent oil, the following precautionary steps should be taken.

1. Do not add detergent oil to straight mineral oil. Drain the straight mineral oil from the engine and fill with detergent oil.
2. Do not operate the engine longer than 5 hours before the first oil change.
3. Check all oil screens for evidence of sludge or plugging. Change oil every 10 hours if sludge conditions are evident. Resume normal oil drain periods after sludge conditions improve.

BULLETIN No. A.7

DESIGNATION OF GIPSY MAJOR 10 MK. 2 ENGINES

Models Affected—6A, A.61 & A.61/2

In order to facilitate the installation of the Gipsy Major 10 Mk. 2 engine in the above mentioned aircraft, certain changes were made to the build standard.

It has been agreed between Bristol Siddeley Engines Ltd., and Beagle Aircraft Ltd., that, due to these changes, the engine will, in future, be known as a Gipsy Major 10 Mk. 2-2. This change of designation is only clerical and no changes, apart from the performance data plate, are required to be carried out on the aircraft.

Revised performance data plates will be required stating the new designation; these are available from Beagle Aircraft Ltd.

Amendments will be issued for all the relevant publications requiring that wherever Gipsy Major 10 Mk. 2 is mentioned this is to be amended to read Gipsy Major 10 Mk. 2-2.

As only one Auster 6A aircraft is involved in this change it has, for convenience, been added to

this Beagle Service Bulletin 'A' Series, normally anything affecting a 6A would be the subject of a Beagle Service Bulletin 'Auster' Series.

BULLETIN No. A.8

A.109 AIREDALE

Main Fuel Tanks

Cases have been reported of main fuel tanks leaking at the outlet bosses.

This has also occurred at the inlet bosses where long range tanks have been installed. An improved boss attachment has been introduced to eliminate this fault and must be incorporated on tanks found to be leaking at these points.

The modification consists of heavier gauge material tank corner pieces to which are argon-arc welded the bosses incorporating a welding flange; all four tank corners are to be modified. It is necessary to remove the tank from the wing to carry out this modification, after which the tank must be pressure tested at $1\frac{1}{2}$ p.s.i. The tank serial plate is to have the drawing issue number raised to 'G'.

The modification is available as follows:—

1. Replacement parts are available, free of charge, if facilities exist for carrying out the work including the argon-arc welding. Replacement fabric and paint will also be supplied.
2. Owners who can fly to Rearsby can have replacement tanks fitted on an exchange basis. The work will be carried out at Rearsby by appointment.
3. Overseas owners can either use Scheme 1, or have modified tanks on an exchange basis. These exchange tanks would be sent to customers overseas on a chargeable basis including the cost of carriage. When the tanks removed from the aircraft are received by us at the address below, carriage paid, we would credit in full the cost of the new tanks less the cost of carriage.

SERVICE LETTER No. 1

A.109 AIRCRAFT

The following Mod. Kits are now available to owners of the A.109 aircraft.

1. Throttle/Propeller/Mixture Friction Device.

   Under damp conditions the fibre washers originally used on the friction device were liable to expand and bind. To overcome this, light alloy washers have been introduced as a direct replacement. The cost of this Mod. Kit is 17s. 6d.
2. Cabin Ventilation Jet Vents.

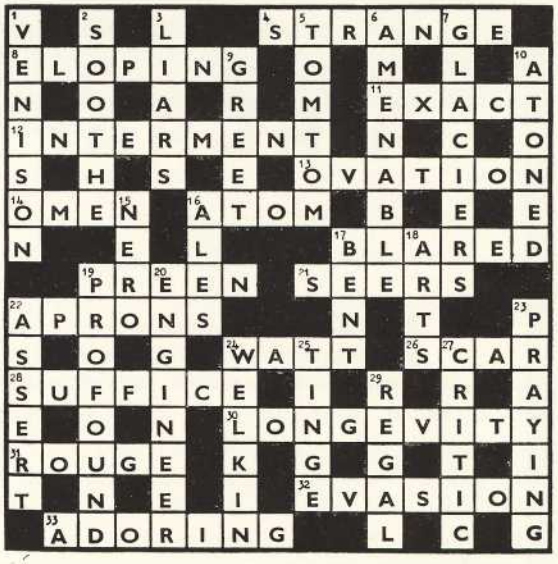
   It has been found that the jet vents do not shut off satisfactorily, thus allowing a continuous stream of cold air to enter the cabin. A modification has been introduced to eliminate these draughts by means of a further shut-off valve. The cost of this Mod. Kit is £14 7s. 6d.
3. Tyre inflation.

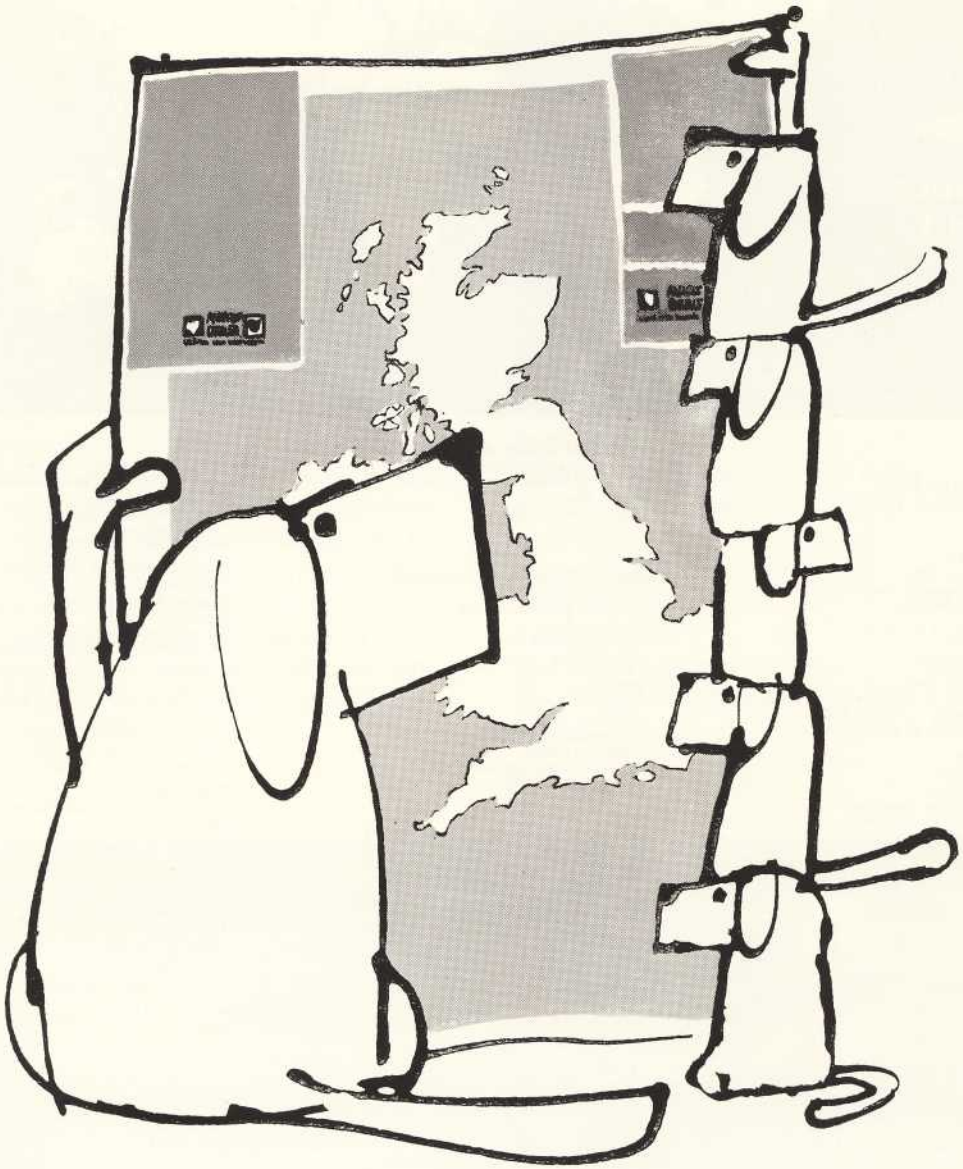
   Access doors are now available for fitment to the spats, thus facilitating the checking of tyre pressures. Access doors are also available for the standard 'Auster' spats. The cost of this Mod. Kit is 12s. 6d.

Owners may obtain details of these Mod. Kits from the Service Department.

* * * * * *

CROSSWORD SOLUTION





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The B.206 has been designed as an all-weather aeroplane to fill a wide variety of roles and to meet both British and American airworthiness standards in the transport category. Emphasis has been given to rugged construction and to the installation of well tried equipment throughout. Particular attention has been paid to high standards of furnishing and seating in the exceptionally wide cabin and, above all, the B.206 has been developed as a "pilots aircraft" with exceptional handling characteristics throughout the speed range, with provision for full airline standards of radio, navigational aids, auto-pilot and de-icing.

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SHOREHAM AIRPORT, SHOREHAM-BY-SEA, SUSSEX. TEL: 2301
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Design flexibility of the Three-Four Series

Developed primarily for use with general aircraft, the scope of the STC Lightweight VHF Com/Nav. equipment has been extended to satisfy the requirements of all types of fixed and rotary wing aircraft including those for full airline service. In addition to the panel-mounted system, the Series now includes a 'remote control' configuration suitable for the larger aircraft in which, due to space limitations, the control units and indicators only can be made accessible to the pilot. The fully transistorized basic communication unit has a frequency range 116-135·95Mc/s spaced 50kc/s and a power output of 150mW. By adding one or two alternative amplifier units, the output power can be increased to either 5 watts or 20 watts. The navigation system provides localizer/VOR, glide slope and marker facilities, including RMI presentation if required. The localizer/VOR receiver covers the frequency range 108-117·9Mc/s spaced 100kc/s. Separate communication and navigation remote control units are available, alternatively a combined com/nav/DME controller can be supplied. The equipment is designed to ARINC ATR case sizes. The Three Four Series is now being fitted in the Scout, Beaver and Beagle B206. To learn more about STC, visit the STC Stands 176-179 at the Farnborough Show or write, 'phone or Telex Standard Telephones and Cables Limited, Radio Division, Oakleigh Road, New Southgate, London, N.11. Telephone ENTerprise 1234. Telex 261912.

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