

MONTHLY 10/-

The Journal of
**THE ROYAL
AERONAUTICAL
SOCIETY**



CONTENTS

OCTOBER 1951

THIRTY-NINTH WILBUR WRIGHT MEMORIAL LECTURE—
THE WELL-TEMPERED AIRCRAFT

ARTHUR E. RAYMOND

HIGH-SPEED FLYING

SQUADRON LEADER JOHN D. DERRY

POWER PLANTS FOR HIGH-SPEED AIRCRAFT

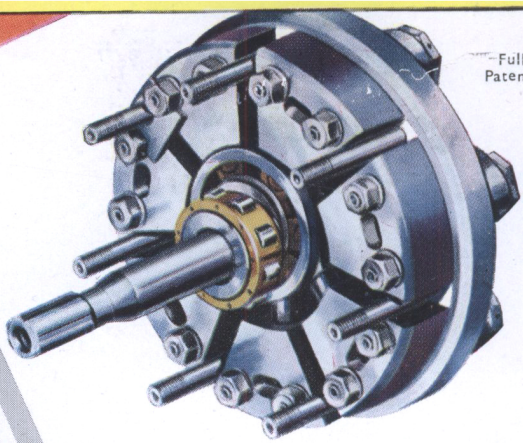
A. D. BAXTER, F.R.Ae.S., M.Eng., M.I.Mech.E.

REVIEWS

●
LONDON

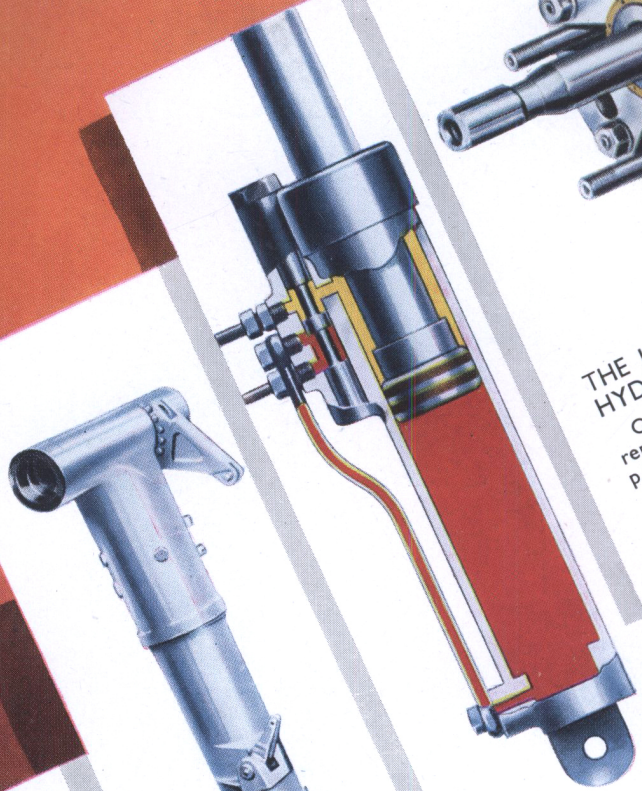
ROYAL AERONAUTICAL SOCIETY, 4 HAMILTON PLACE, W.1

Fully
Patented



**THE LOCKHEED MARK 7
HYDRAULIC PUMP**

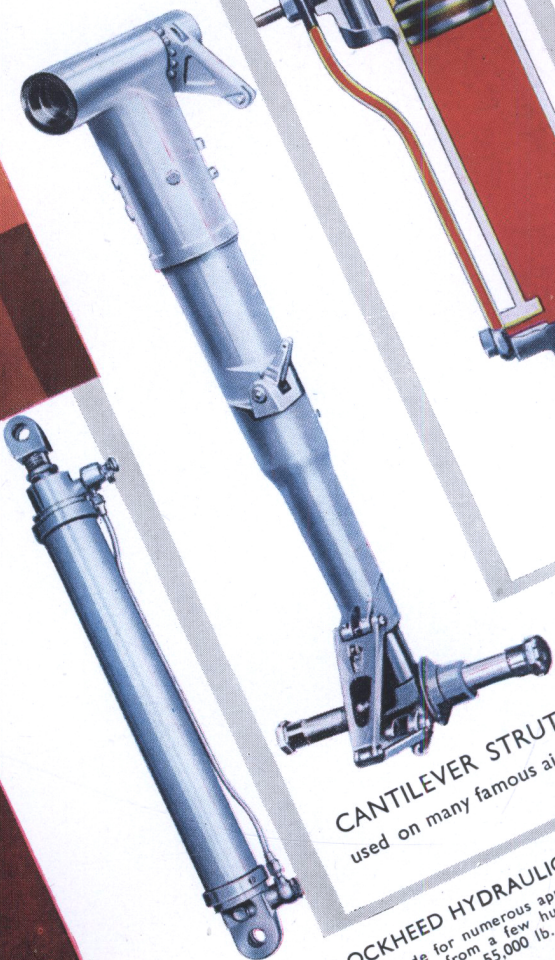
Outstanding in performance and
reputation. For pressures up to 3,000
p.s.i. at 4,000 r.p.m.
Weight only 7 lb. 6 oz.



THE SERVODYNE*

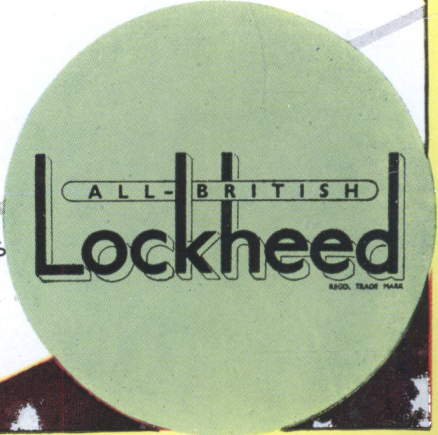
The perfect system of power
assistance for flying controls.
Basic principle minimises 'dead
points.'

* Regd. Trade Mark

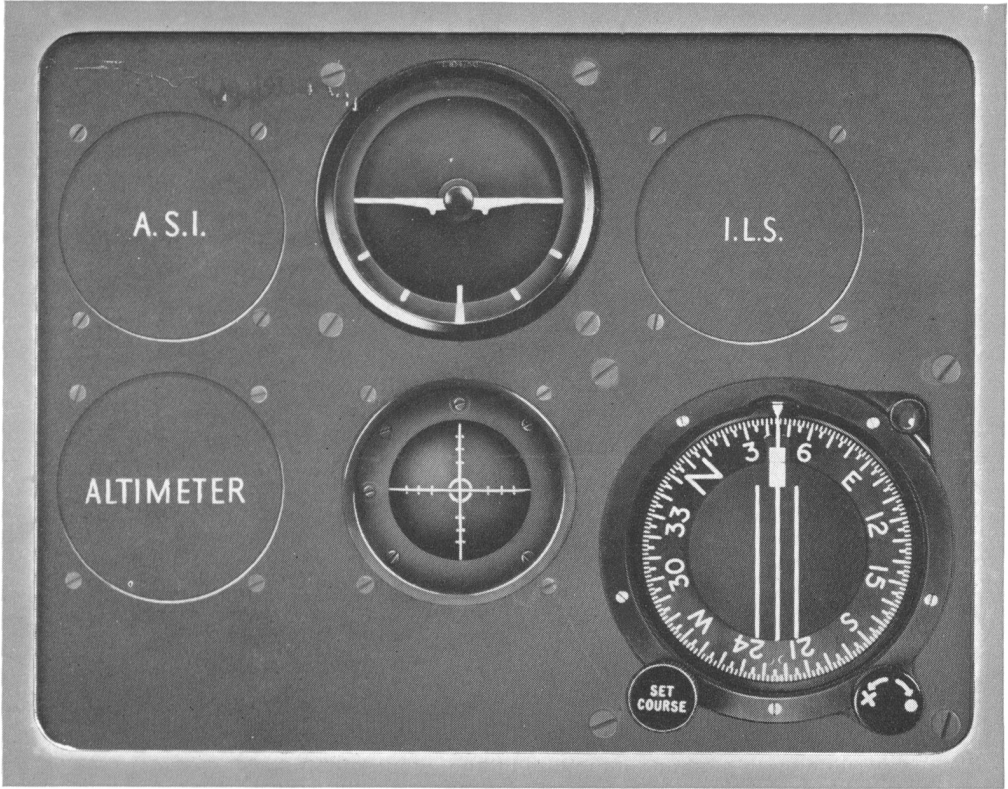


CANTILEVER STRUTS
used on many famous aircraft.

LOCKHEED HYDRAULIC JACKS
As made for numerous applications
ranging from a few hundred lb.
thrust to 55,000 lb.



AUTOMOTIVE PRODUCTS COMPANY LTD., LEAMINGTON SPA



The New Look

As aircraft progress towards all-weather operation the demand for increased accuracy and improved layout of flight instrumentation becomes more insistent. Sperry's latest products to meet these demands, the Gyrosyn Compass and Electric Gyro Horizon, have now been adopted almost universally for military and civil use. These two instruments are now being joined by the Zero Reader master flight instrument, and already B.O.A.C. and B.E.A. have agreed on a standard layout for the panel of their new and future aircraft.

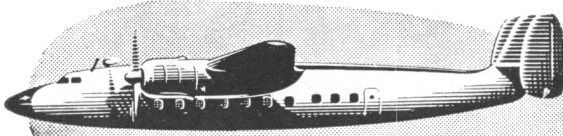
Similar layouts incorporating these three Sperry instruments will be adopted for military and other civil aircraft.

SPERRY

INSTRUMENTS THAT INSPIRE CONFIDENCE



THE SPERRY GYROSCOPE CO., LTD., GREAT WEST ROAD, BRENTFORD, MIDDX. EALing 6771

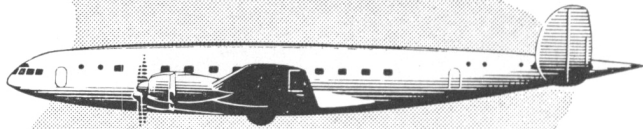


AIRSPEED AMBASSADOR — 2 Centaurus Engines

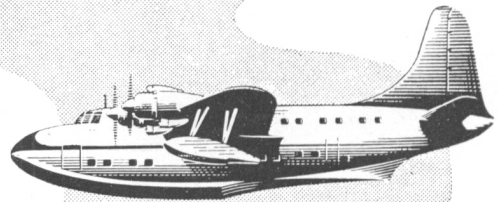
Bristol

**engined
aircraft**

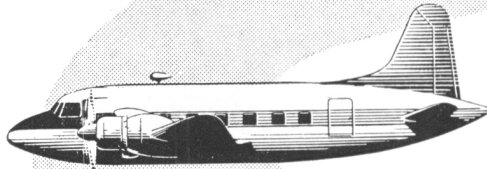
In 30 years "Bristol" piston engines have built up a tradition of reliability and efficiency, which is being worthily upheld by sleeve-valve engines in world-wide service today. Concurrently with continued development of the Hercules and Centaurus, experience is being gained, on the test-bench and in service, with a range of gas turbines which will sustain and enhance the high reputation of "Bristol" aero engines.



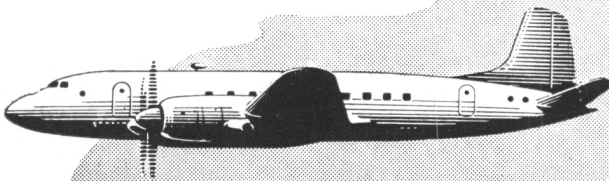
BREDÁ-ZAPPATA 308 — 4 Centaurus Engines



SHORT SOLENT — 4 Hercules Engines



VICKERS VIKING — 2 Hercules Engines

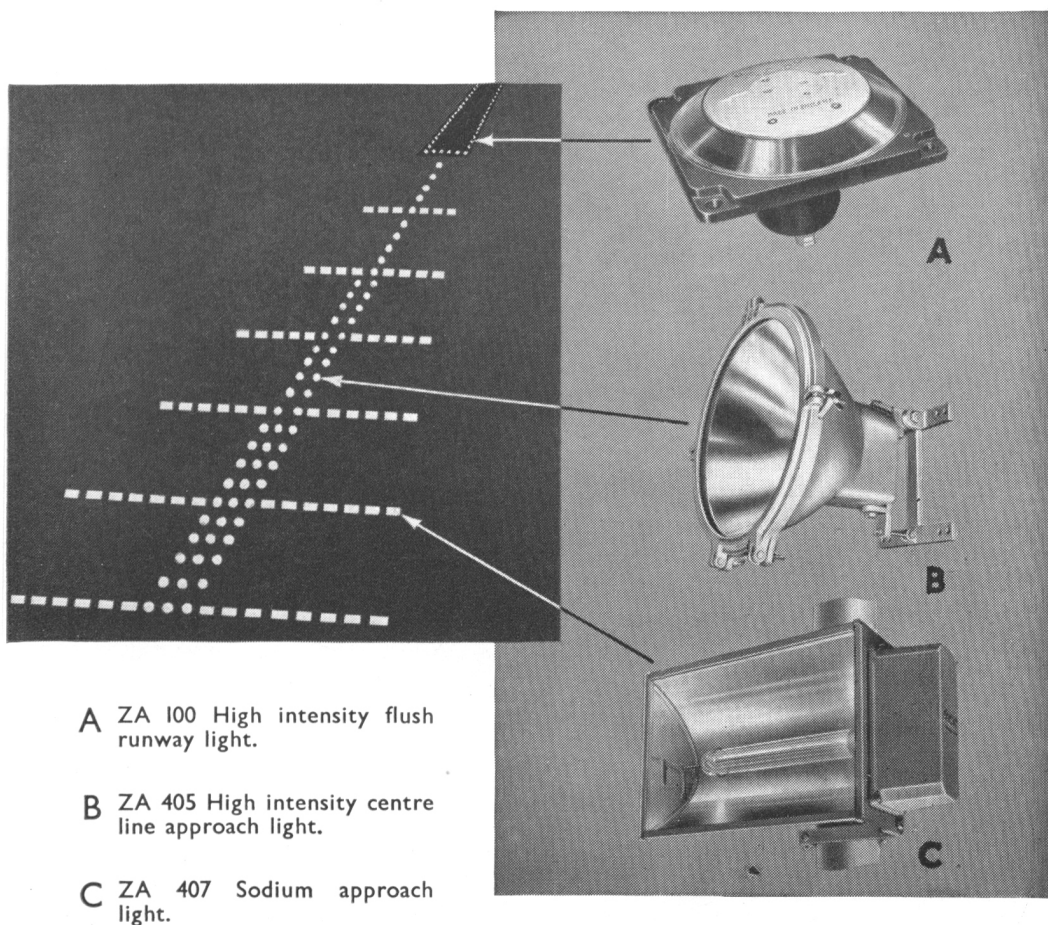


HANDLEY PAGE HERMES 5 — 4 Theseus Propeller Turbines

THE *Bristol* AEROPLANE COMPANY LIMITED · ENGLAND

Consult the G.E.C. on

COMPLETE AIRPORT ELECTRIFICATION



A ZA 100 High intensity flush runway light.

B ZA 405 High intensity centre line approach light.

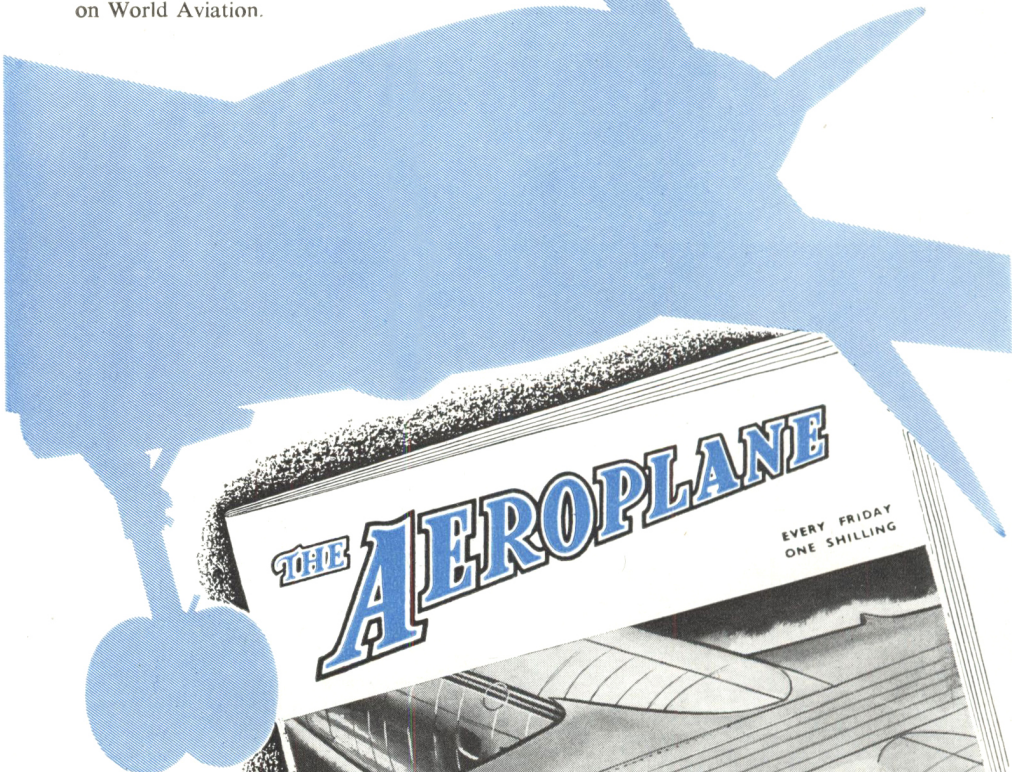
C ZA 407 Sodium approach light.

Three examples of G.E.C. Airport Lighting equipment designed for use in bad visibility; the diagram showing how they are incorporated in a "Line and Bar approach" landing system.

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON W.C.2

Filling in the *Outlines...*

... and placing in true perspective the significance of current aeronautical developments, THE AEROPLANE provides a weekly source of reliable information and sound comment on World Aviation.



ONE SHILLING
WEEKLY
ANNUAL RATE
£3 · 3 · 0
POST FREE

TEMPLE PRESS LIMITED

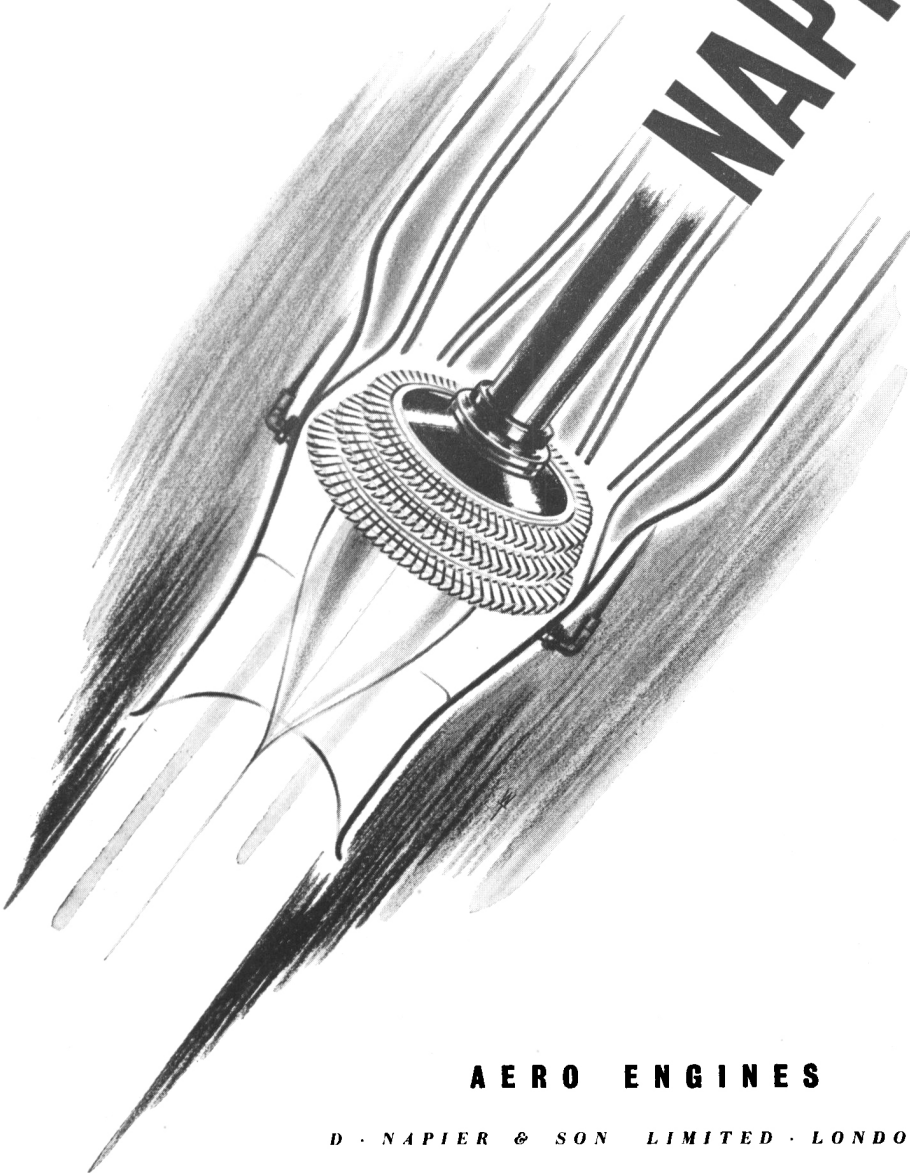


BOWLING GREEN LANE, LONDON, E.C.1, TERMINUS 3636

- THE MOTOR
- THE AEROPLANE
- LIGHT METALS
-
- THE COMMERCIAL MOTOR
- THE MOTOR SHIP
- FARM MECHANIZATION
-
- CYCLING
- THE LIGHT CAR
- MOTOR CYCLING
-
- PLASTICS
-
- THE OVERSEAS ENGINEER
- THE MOTOR BOAT AND YACHTING
- THE OIL ENGINE AND GAS TURBINE



NAPIER



AERO ENGINES

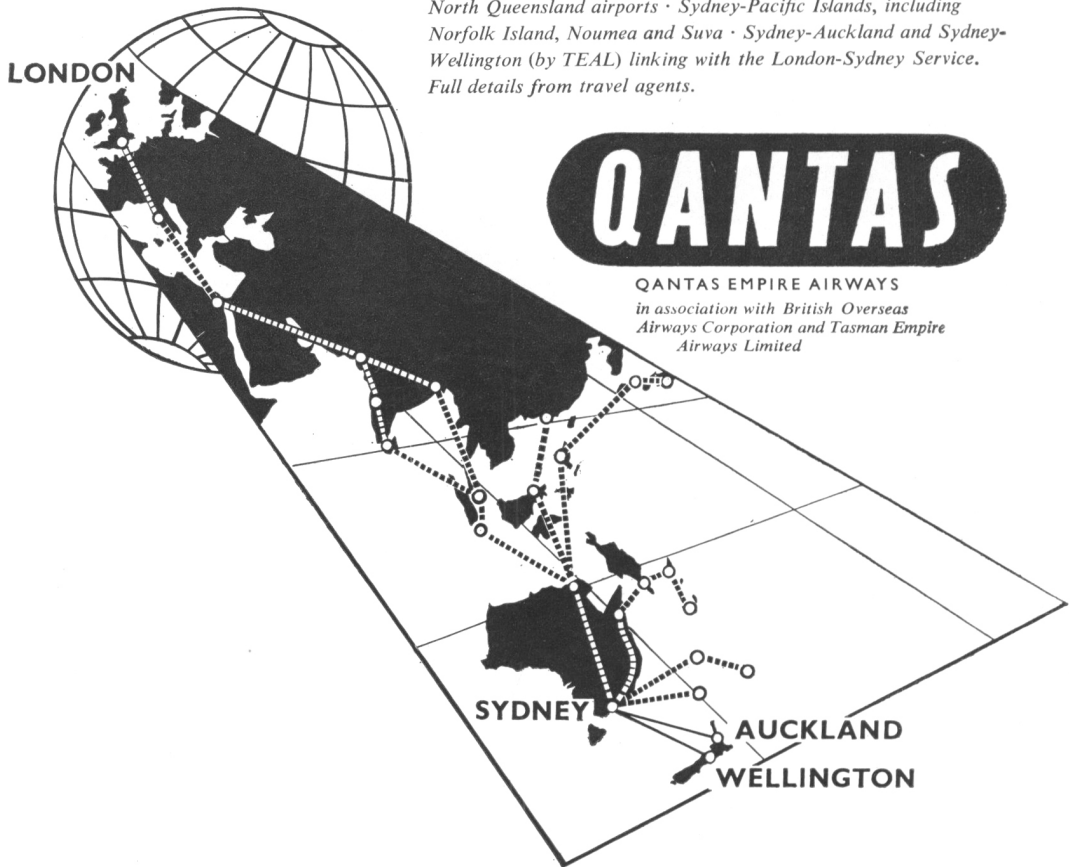
D · NAPIER & SON LIMITED · LONDON · W3

Linking England with sixteen Countries...

AUSTRALIA'S INTERNATIONAL AIRLINE

In meeting today's requirements of trade and travel by air to the East, Australia, and the Pacific, Qantas provides a valuable international service—qualified by the experience of 30 years. Services covering over 30,000 miles of unduplicated air routes include—London-Sydney via Rome, Cairo, Karachi, Calcutta (alternatively via Bombay and Colombo), Singapore, Darwin, Sydney—in parallel with B.O.A.C.

Sydney-Hong Kong, via Labuan (North Borneo) · Sydney-Tokyo, via Manila · Sydney-New Guinea, New Britain and Solomon Islands, via North Queensland airports · Sydney-Pacific Islands, including Norfolk Island, Noumea and Suva · Sydney-Auckland and Sydney-Wellington (by TEAL) linking with the London-Sydney Service. Full details from travel agents.



Tailor made

FOR COMFORT



AT 141

The dimensions of an aircraft chair are decided by the shape of fuselage in which it is to be used, and the class of traffic it is to serve—so every chair must be tailor made to the operator's requirements. But every Vickers-Armstrongs chair embodies the same principles of comfort, convenience and strength that have led to their adoption in so many of the leading airliners. The Mark 33, illustrated here, is a fully-reclining single-seat chair for long-range luxury travel. It incorporates the well-known B.O.A.C. adjustment principle, and can be fitted with tables and other accessories. The passenger controls the angle of recline by two handles on the front armrest: intermediate positions are locked between fully upright and fully reclined.



VICKERS-ARMSTRONGS LIMITED · AIRCRAFT DIVISION · WEYBRIDGE · SURREY

The 11.00 plane from Nairobi...

A.M.2

...owes much to DURALUMIN

REGD. TRADE MARK

The world of aeronautics owes much to James Booth & Co. Ltd., manufacturers of 'Duralumin', who pioneered the use of strong, light aluminium alloys in this country. Today, aircraft—such as the Handley Page Hermes—that keep Britain's reputation high on the air routes of the world, continue to make use of 'Duralumin'.



JAMES BOOTH & COMPANY LIMITED · ARGYLE STREET WORKS · BIRMINGHAM 7

Electric Equipment for Aircraft

With unrivalled manufacturing resources, backed by continual research and development and fifty-three years' experience, BTH enjoys an enviable reputation for the quality of its products. Reliability is of prime importance on land, but is vital in the air, hence the success of BTH aircraft magnetos, and electrical equipment including :

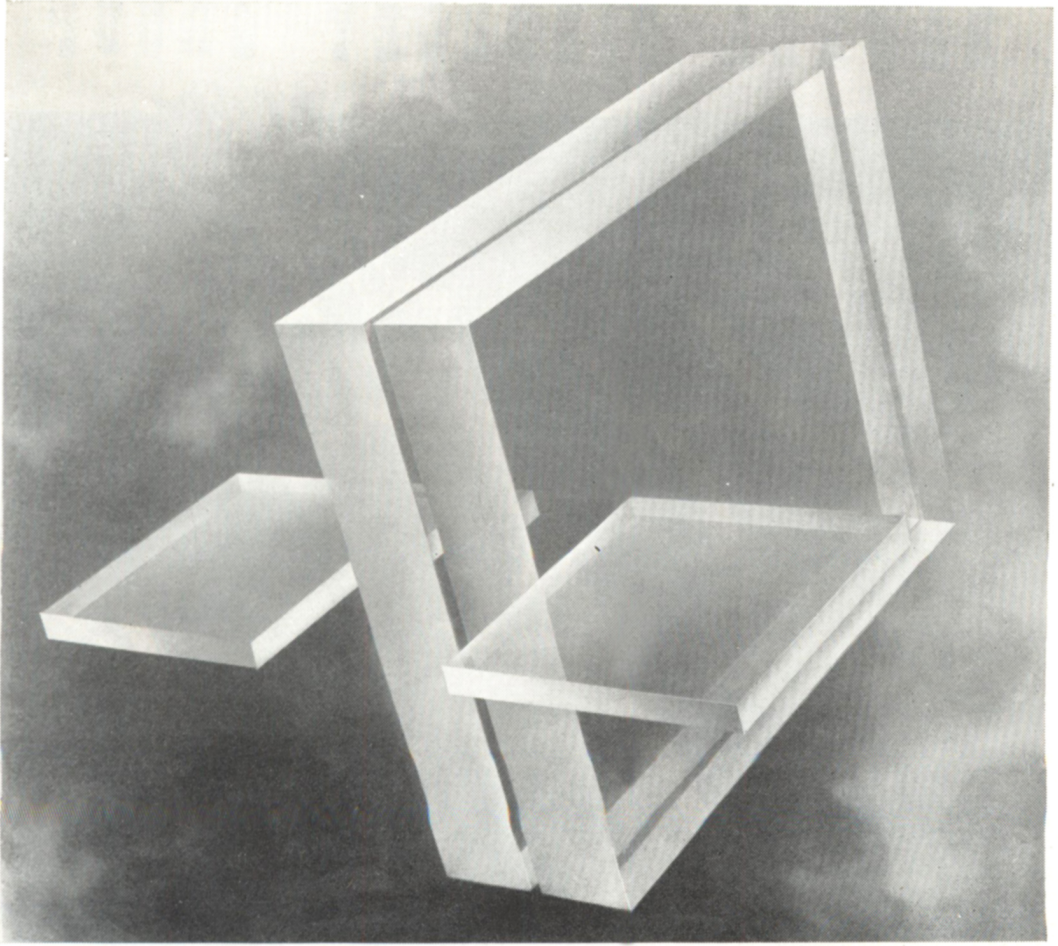
Motor-generating sets with electronic regulators · A.C. and D.C. Motors · Actuators · Gas-operated turbo-starters · Generators · Mazda lamps, etc.

BRITISH THOMSON-HOUSTON

THE BRITISH THOMSON-HOUSTON CO., LTD., COVENTRY, ENGLAND

Member of the AEI group of companies

A403B



'PERSPEX' flies high

'Perspex' acrylic sheet meets the exacting requirements of the aircraft industry

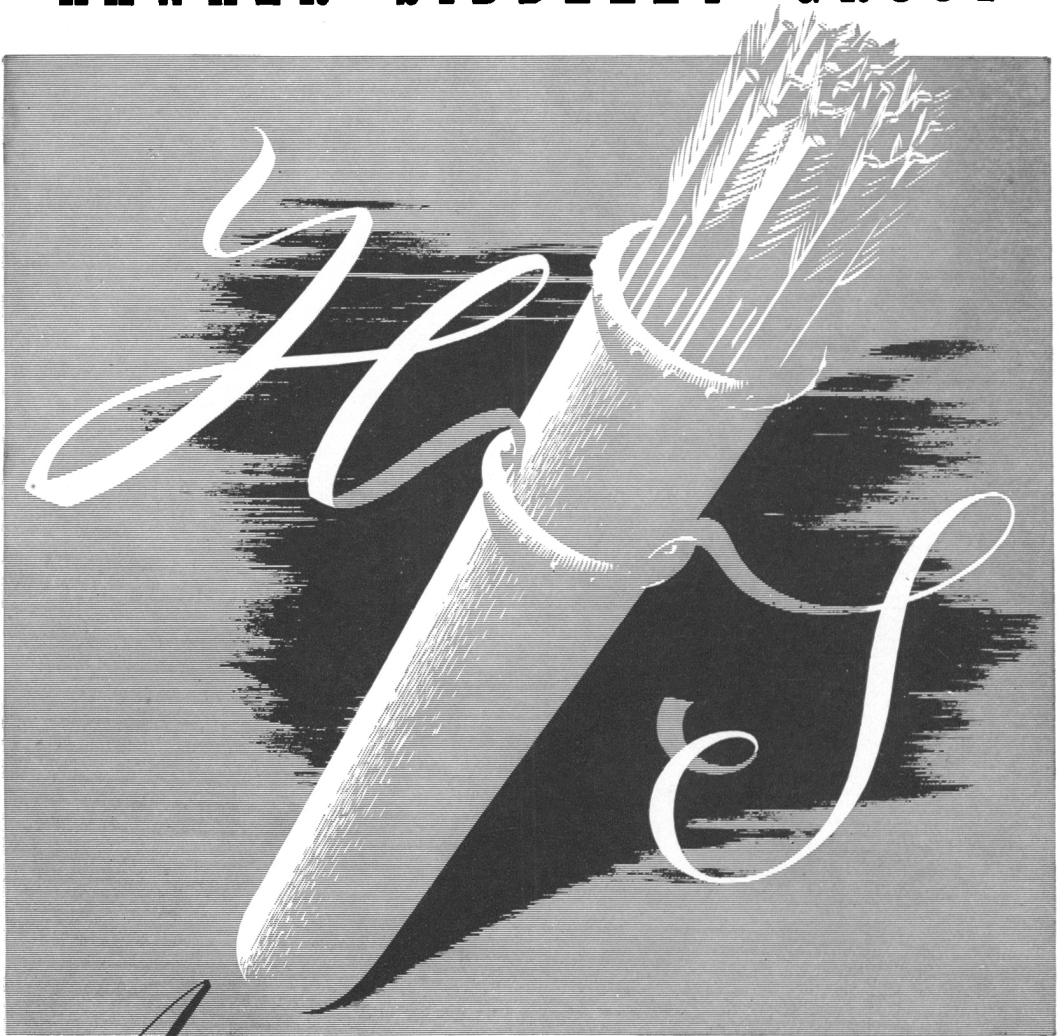


P.472

'Perspex' is the registered trade mark of the acrylic sheet manufactured by I.C.I.

IMPERIAL CHEMICAL INDUSTRIES LTD LONDON SW1

HAWKER SIDDELEY GROUP



A full quiver for freedom's defence

A. V. ROE
A. V. ROE CANADA
ARMSTRONG WHITWORTH AIRCRAFT
GLOSTER AIRCRAFT
HAWKER AIRCRAFT
ARMSTRONG SIDDELEY MOTORS
AIR SERVICE TRAINING
HAWKSLEY CONSTRUCTIONS
HIGH DUTY ALLOYS

For the third time in their history, the principal companies of the Hawker Siddeley Group are again engaged in all-out, large scale production . . . their current aircraft covering every military requirement . . . their entire resources devoted to development of new aircraft and aero engines . . . their leadership unchallenged.



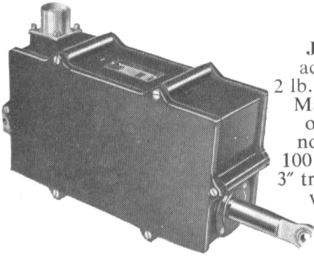
18 ST. JAMES'S SQUARE, LONDON, S.W.1. TEL: WHITEHALL 2064

EVERY BRITISH AIRCRAFT RELIES ON PLESSEY

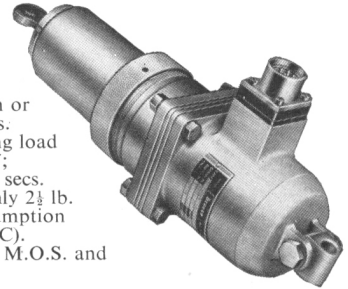
Plessey

electric ACTUATORS

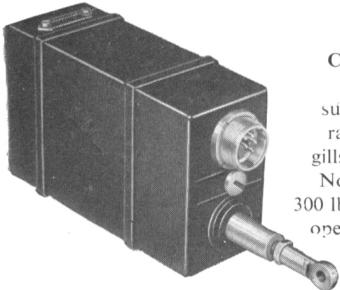
Aircraft designers and manufacturers who have problems involving the remote control of any inaccessible equipment are invited to write to Plessey for literature giving technical specifications of the wide range of electric actuators available.



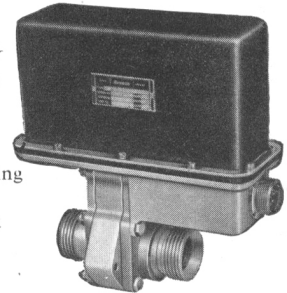
JAGUAR Linear actuator weighing 2 lb. Max. stroke 3"; Max. load 150 lb.; operating time at normal loading of 100 lb. is 7 secs. for 3" travel. Available with various end fittings to suit particular installations. Fully tropicalised M.O.S. and A.R.B. approved.



COUGAR This inline unit is (like all Plessey linear actuators) capable of tension or compression loads. Maximum working load 400 lb.; stroke 1½"; operating time 10 secs. Total weight is only 2½ lb. and current consumption 2.9 amp. (24 v. DC). Fully tropicalised M.O.S. and A.R.B. approved.

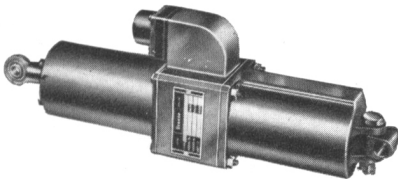


CHEETAH A more powerful actuator suitable for operating radial engine cooling gills, etc. Weighs 4 lb. Normal working load 300 lb.; max. stroke 3½"; operating time 13 secs. Current 2.25 amp. Fully tropicalised.



LYNX This fuel cock unit incorporates the Vickers-Armstrongs A1792 Mark H "P" type reciprocating action cock. Operating time 1.8 secs.; total weight 3½ lb.; current 1.1 amp. (24 v DC). Fully tropicalised.

ACBR



CUB PUMA A compact inline actuator for tension or compression loads. Maximum working load is 250 lb.; stroke 1"; operating time 9 secs. Weight 2½ lb. Current consumption 1.75 Amps. Fully tropicalised. M.O.S. and A.R.B. approved.

The Plessey range also includes rotary actuators, for the operation of fuel cocks and other equipment up to a maximum load of 600 lbs. ins.

Plessey

PUMPS · VALVES · CARTRIDGE STARTERS · PRE-FORMED WIRING SYSTEMS · ELECTRIC ACTUATORS · RADIO COMMUNICATIONS

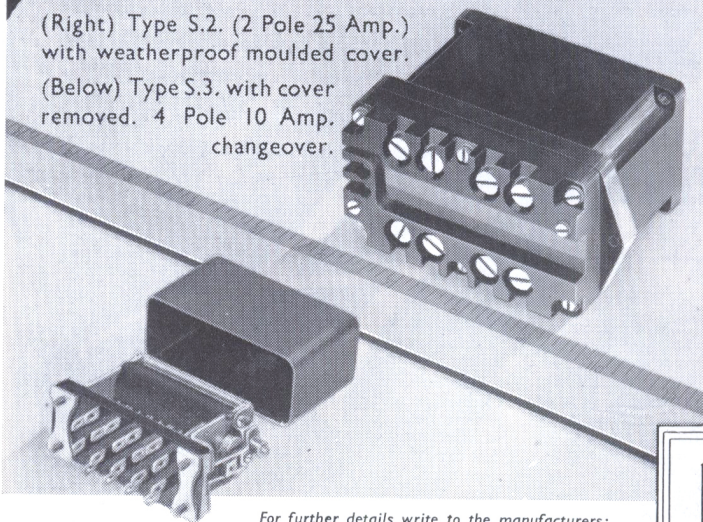
THE PLESSEY COMPANY LIMITED · ILFORD · ESSEX



Precision MULTI-POLE RELAYS

(Right) Type S.2. (2 Pole 25 Amp.) with weatherproof moulded cover.

(Below) Type S.3. with cover removed. 4 Pole 10 Amp. changeover.



LOW-VOLTAGE HEAVY DUTY RELAYS

Fully approved for 12 or 24 V.D.C. Compact, robust, light in weight. Consumption is less than five watts. These changeover relays are adaptable for operation under many varied conditions.

For further details write to the manufacturers:

R. B. PULLIN & CO LTD. PHOENIX WORKS, GT. WEST RD. BRENTFORD, MIDDX. 15747B

Tel.: EAL 0011/3 3661/3

PULLIN

Aircraft Engines of the World, 1951

by
**PAUL H.
WILKINSON**

This work has no equal for up-to-date, accurate information on the world's aircraft engines. The Jet Engines and Gas Turbines section is greatly enlarged and now comprises 128 pages, including complete specifications with photographs of six basic U.S.S.R. jet engines. An indispensable reference work for all concerned with engines. 324 pages. 50/- net.

"Among the standard reference books."—JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY.

Parachutes

By W. D. BROWN, M.Sc., A.M.I.Mech.E. An important new work, and the first technical book on parachutes, by a world authority on the subject. Illustrated. 336 pages. 40/- net.

From booksellers. Published by

PITMAN

Parker Street · Kingsway · London WC2

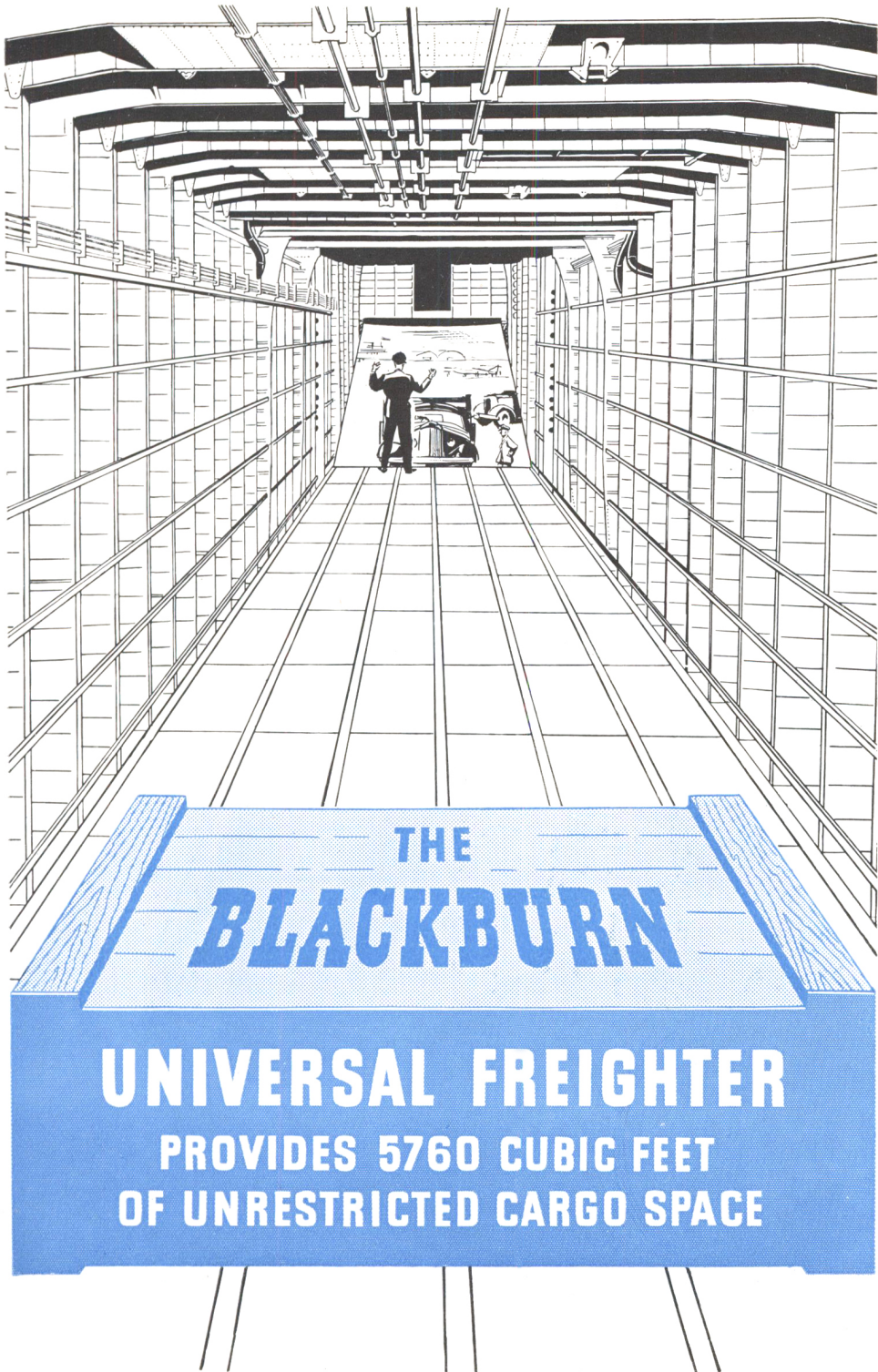
Third Anglo-American Aeronautical Conference

Proceedings

A limited number of copies of the complete proceedings, containing the 20 papers, discussions and Authors' replies, and the list of Delegates, will be available later this year, price £5 5s 0d.

Place Your Order Now

The Royal Aeronautical Society
4 HAMILTON PLACE · LONDON W 1
Telephone: Grosvenor 3515-19



THE
BLACKBURN

UNIVERSAL FREIGHTER

**PROVIDES 5760 CUBIC FEET
OF UNRESTRICTED CARGO SPACE**



ACCLES & POLLOCK

**KNOW HOW TO
MANIPULATE TUBES**

BRANCH PIPE

*by courtesy of
The Bristol
Aeroplane
Company, Ltd.*

Definitely!

ACCLES & POLLOCK LTD · OLDBURY · BIRMINGHAM

MAKERS AND MANIPULATORS OF SEAMLESS TUBES, IN STAINLESS AND OTHER STEELS

A  COMPANY
T&P 1/2

LODGE

AVIATION SPARKING PLUGS

*serve leading
airlines of the world*

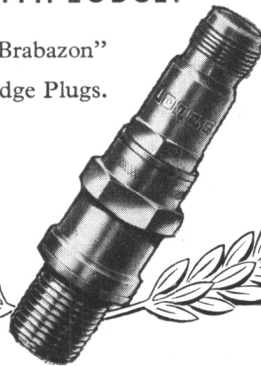
B.E.A., B.O.A.C., Aer Lingus, Aerolineas Argentinas, Air India, "Alitalia", Australian National Airways, Braathen's South American Airways, British West Indian Airways, Central African Airways, Danish Airlines, Malayan Airways, New Zealand National Airways, Norwegian Airlines, Pakistan Aviation, Sabena, South African Airways, Swedish Air Lines, Tasman Empire Airways, Trans Australia Airlines, Trans-Canada Air Lines.

THESE FAMOUS ENGINE MAKERS FIT LODGE:

Alvis, Armstrong-Siddeley, Bristol, De Havilland, Rolls-Royce.

**THE WORLD'S LARGEST CIVIL AIRLINER
IS FITTED WITH LODGE:**

The Bristol "Brabazon"
uses 288 Lodge Plugs.



LODGE SPARKING PLUGS — THE EXPERTS' CHOICE

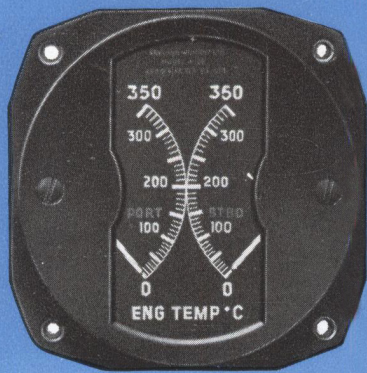
British made throughout by LODGE PLUGS LTD., RUGBY

WESTON

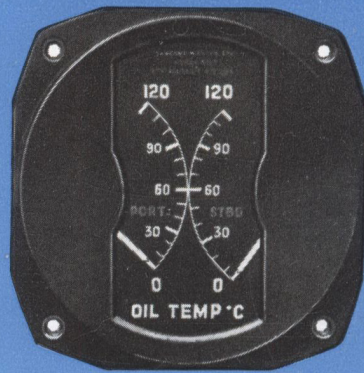
AIRCRAFT INSTRUMENTS

No. 1. Temperature Measuring

The comprehensive range of Weston temperature measuring instruments covers the requirements of existing production aircraft, as well as types now under development. In addition to thermometry for the indication of cylinder, air, oil and radiator temperatures, Weston equipment for aircraft includes instruments for supply, navigational aid instruments, selector switches, etc.



Model S. 128. Dual Engine Temperature Indicator, comprising two Millivoltmeters of 100° scale housed in large-size S.A.E. case. For use in conjunction with copper/constantan, iron/constantan, or chrome/alumel thermocouples.



Model S. 127. Dual Ratiometer Indicator comprising two 100° ratiometer movements housed in large-size S.A.E. case. For use in conjunction with thermometer bulbs, electrical oil pressure transmitters, electrical position indicators or any combination of two of these to indicate a variety of temperatures, pressures or positions.

SANGAMO WESTON LIMITED • Enfield • Middlesex

Tel. : Enfield 3434 (6 lines) and 1242 (4 lines).

Grams : Sanwest, Enfield

Scottish Factory : Port Glasgow • Renfrewshire • Scotland

Branches :

Glasgow, Manchester, Newcastle-on-Tyne, Leeds, Wolverhampton, Bristol, Southampton, Brighton, Liverpool, Nottingham.



PNEUMATIC RAMS

A wide range of rams is available for working pressures up to 1,500 p.s.i. The rams are suitable for operation at maximum efficiency between temperatures of minus 50°C. to plus 90°C.

DUNLOP RUBBER CO. LTD. (AVIATION DIVISION) FOLESHILL, COVENTRY

1H/614



PROVING TEST

This vertical drop test machine is 35 ft. high and is stressed for a vertical reaction of 150 tons with side loads of 0.3 and drag loads of 0.4 vertical reaction. This is just one of the features of the testing carried out by Electro-Hydraulics Limited enabling undercarriages to be built combining the lowest weight with the utmost strength for the longest life.

**ELECTRO-
HYDRAULICS**
LIMITED
WARRINGTON



All a matter of Hot Air?

ONE of my dictionaries—and I shall consult scores of them before this article is completed—defines jet as . . . yes, here it is . . . “a compact, velvet-black mineral. . . .” No, wait a minute . . . what’s this? “*Jet propeller (Naut.). A device for propelling vessels by means of a jet of water ejected from the stern.*”

Well there’s nothing very new in that; the squid’s been jet-propelled for millions of years. D’you mean to say there’s nothing in the whole dim volume about jets? Not even among the Addenda? Here, what’s the date of this thing?

Very well; I shall have to make it up as I go along. Er . . . are we agreed that the gas-turbine jet engine will eventually prove at least as important to aeronautical progress as the original rotary engine, the variable-pitch constant-speed propeller, the highly supercharged engine using high-octane *Esso*, and high-tensile fatigue-resistant aluminium and other light alloys? We are? Good.

And are we agreed that a sketchy explanation of the scientific basis of jet propulsion might be that action and reaction are equal in magnitude but opposite in direction, that the force on a body is directly proportional to the rate of change of momentum of the body, or that (steady!) the propulsive thrust is proportional to the product of the mass of material ejected from the vehicle and the amount its velocity has

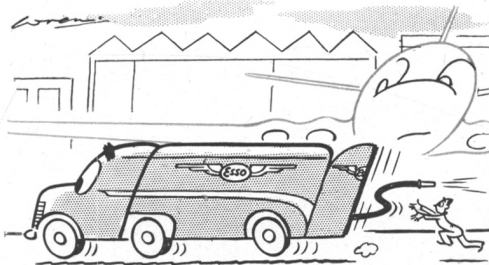


been increased in a given time? Excellent—let’s settle for Newton’s third law of motion.

“Jet propulsion” is used to cover a lot of ground and other natural elements. Rockets were used, I am told, as long ago as 1232 when they were applied to the defence of Kai-feng; at another period in history things called Buzz-bombs or Doodle-bugs were fairly common; and skyrockets have been the pyrotechnician’s pride and joy ever since the invention of gun-powder.

Today there is much talk among escapists about the possibility of rocket space-ships, of interplanetary vehicles powered by liquid fuel—petrol plus liquid oxygen, say.

If, however, we are content, we little stay-at-homes, to travel *within* the earth’s atmosphere we can economise by filching the oxygen needed for combustion from the air.



Now we’re really getting somewhere. I’ve got as far as thermal-jet air engines. How about you?

For the sake of argument let’s say that thermal-jet air engines include ramjets (flying stove-pipes or athodyds), gas-turbine jets, gas-turbine-with-gear-propeller-and-exhaust-jets, and supercharged-reciprocating-engine-with-gear-propeller-and-exhaust-jets. There are others, but their names are hopelessly unwieldy on this basis.

Now all of the above-mentioned engines burn fuel—not any old fuel, of course, but those specially concocted in the *Esso* laboratories. There are fuels for every type of internal combustion engine; fuels that are safe, efficient and economic; fuels that help the aircraft industry to design *better* jets; fuels given the okay for heat of combustion, freezing point, viscosity, distillation, flash point, aromatics, sulphur content, residue, accelerated gum, water tolerance and specific gravity.

No, it isn’t only a matter of hot air—even though one jet, six inches in diameter, will release as much heat as several hundred oil burners.

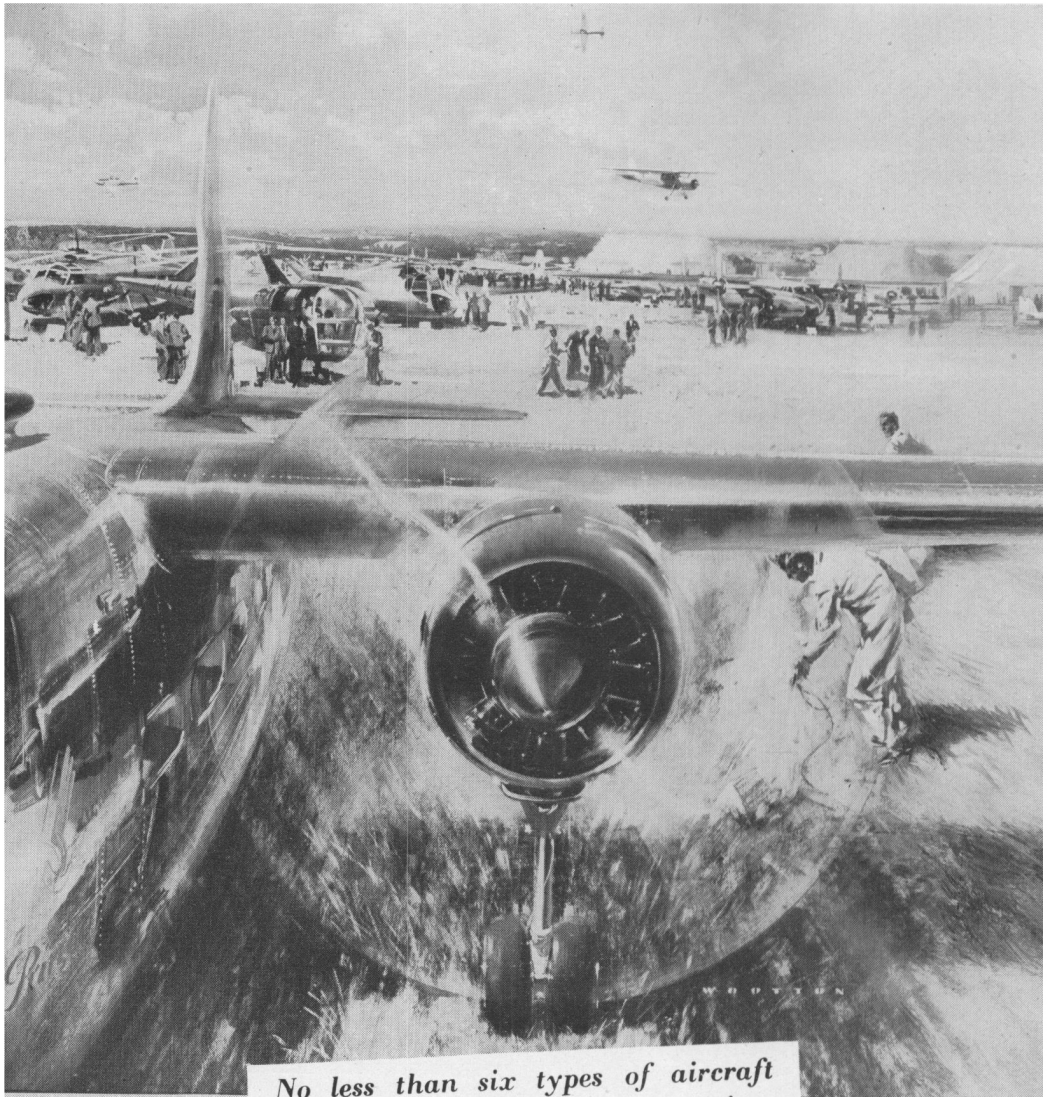
Jets are still in their infancy—and so, let’s admit it, are jet fuels. But the aircraft industry and the fuel philosophers are moving fast, getting to know the ropes and the lingo. And one very important lesson they’ve already learned is that . . .

It pays to say



FOR ALL PETROLEUM PRODUCTS

ESSO PETROLEUM COMPANY, LIMITED, 36 QUEEN ANNE’S GATE, LONDON



*No less than six types of aircraft
fitted with Alvis Leonides engines
were on show at the S.B.A.C. Display*



LEONIDES

ALVIS LIMITED, COVENTRY, ENGLAND

THE ROYAL AERONAUTICAL SOCIETY



COUNCIL 1951 – 1952

PRESIDENT

MAJOR F. B. HALFORD, C.B.E. (*Fellow*)

PAST PRESIDENTS

MAJOR G. P. BULMAN, C.B.E., B.Sc. (*Fellow*)

SIR JOHN S. BUCHANAN, C.B.E. (*Fellow*)

H. ROXBEE COX, Ph.D., B.Sc., D.I.C. (*Fellow*)

VICE-PRESIDENTS

S. CAMM, C.B.E. (*Fellow*)

G. H. DOWTY (*Fellow*)

G. R. EDWARDS, M.B.E., B.Sc. (*Fellow*)

COUNCIL MEMBERS

AIR COMMODORE F. R. BANKS, C.B., O.B.E.
(*Fellow*)

LORD BRABAZON OF TARA, M.C. (*Honorary Fellow*)

E. B. DOVE (*Associate*)

A. G. ELLIOTT, C.B.E. (*Fellow*)

W. S. FARREN, C.B., M.B.E., M.A., F.R.S.
(*Fellow*)

SIR A. H. ROY FEDDEN, M.B.E., D.Sc. (*Fellow*)

SIR ARTHUR GOUGE, B.Sc. (*Fellow*)

A. A. HALL, M.A. (*Fellow*)

S. SCOTT HALL, C.B., M.Sc., D.I.C., F.C.G.I.
(*Fellow*)

N. J. HANCOCK (*Associate Fellow*)

E. T. JONES, O.B.E. (*Fellow*)

P. G. MASEFIELD, M.A. (*Fellow*)

E. S. MOULT, Ph.D., B.Sc. (*Fellow*)

W. E. W. PEITER, B.A. (*Fellow*)

N. E. ROWE, C.B.E., B.Sc., D.I.C. (*Fellow*)

J. G. ROXBURGH (*Graduate*)

W. TYE, O.B.E., B.Sc. (*Fellow*)

C. F. UWINS, O.B.E., A.F.C. (*Fellow*)

Honorary Treasurer: C. F. UWINS, O.B.E., A.F.C.
(*Fellow*)

Honorary Librarian: J. E. HODGSON
(*Honorary Fellow*)

Solicitor: L. A. WINGFIELD, M.C., D.F.C.
(*Associate*)

Secretary: A. M. BALLANTYNE, T.D., Ph.D.
(*Associate Fellow*)

DR. A. M. BALLANTYNE took over his duties as Secretary of the Royal Aeronautical Society on 2nd July 1951. He met many members during the Third Anglo-American Aeronautical Conference in September and, as he says in the October "Secretary's News Letter," he hopes to visit all the Branches of the Society and to meet many more members during the next few months. The following brief details may help members to know something about their new Secretary.

Dr. Ballantyne is a Scotsman. Born in Glasgow, he was educated at Hutchesons' Grammar School in that city and took his B.Sc. at Glasgow University in 1930. He served an apprenticeship on the Sandwich system in civil engineering under the late W. C. Easton, Consulting Engineer of Glasgow, being engaged on Water Supply and Sewage Treatment.

In 1932 he returned to his old University as an Assistant Lecturer in Civil Engineering and Aeronautics, working with Dr. (now Professor) A. Thom, under the late Professor J. D. Cormack. He gained his Ph.D. in 1936 with a thesis on "The Prevention of Erosion at the Foot of Weirs by Sills of Various Sections." That same year he came south to University College, London, as an Assistant Lecturer in Civil and Mechanical Engineering, working under Professor G. T. R. Hill. He was appointed Lecturer in 1939.

Dr. Ballantyne received his commission as a Territorial in January 1938 and was attached to the University of London O.T.C. He was called up early in 1940 and, after a period with the School of Survey, Larkhill, he instructed R.A. Cadets at the University of Glasgow until 1942. He was then attached to the Army Photographic Research Branch, School of Artillery, Larkhill.

Early in 1943 he was seconded to the Inspector General of Armaments with whom he served for the rest of the war, on fire control instruments, survey equipment and tank sighting telescopic instruments. He received his Territorial Decoration early in 1951.

Dr. Ballantyne was demobilised in October 1945 and returned to University College, London. In 1949 he was made Senior Lecturer in the Civil and Municipal Engineering Department.

Although much of his work has been in Mechanical and Civil Engineering, with hydraulics as his main interest, Dr. Ballantyne is also an aerodynamicist and has done some work on air survey. He did much flying with friends at the Scottish Flying Club, Renfrew. His main hobbies and recreations are cinéphotography, golf, sailing and writing novels. At University College before the War he was the Founder and Editor of the *Engineering Society Journal* and on his return in 1945 became Business Manager. He has written a number of technical papers. He is an Associate Member of the Institute of Civil Engineers, an Associate Member of the Institute of Structural Engineers, an Associate of the Royal Institution of Chartered Surveyors, and in 1948 was elected an Associate Fellow of the Royal Aeronautical Society.

Dr. Ballantyne is married and has two children, a daughter aged seven and a two-year old son.



Leigh Hyde

Amballantyne
Secretary.

OFFICIALS OF THE BRANCHES OF THE SOCIETY IN THE UNITED KINGDOM

BELFAST

President: G. T. R. HILL, M.C., F.R.Ae.S.
Chairman: Rear Admiral M. S. SLATTERY, C.B.,
 F.R.Ae.S., R.N. (Retd.).
Hon. Secretary: D. N. SCARD, A.F.R.Ae.S.,
 Short Brothers & Harland Ltd., Belfast.

BIRMINGHAM

President: Professor S. C. REDSHAW, F.R.Ae.S.
Hon. Secretary: C. P. HOMES, A.R.Ae.S.,
 81 Peplins Way,
 Kings Norton, Birmingham, 30.

BRISTOL

President: Prof. A. ROBERTSON, A.F.R.Ae.S.,
Chairman: F. H. POLLICUTT, F.R.Ae.S.
Hon. Secretary: J. M. HAHN, Grad.R.Ae.S.,
 Structures Dept., Aircraft Division,
 Bristol Aeroplane Co. Ltd., Filton, Bristol.

BROUGH

President: R. BLACKBURN, F.R.Ae.S.
Chairman: G. E. PETTY, F.R.Ae.S.
Hon. Secretary: F. A. WILKINSON, A.F.R.Ae.S.,
 Blackburn & General Aircraft Ltd., Brough.

CHESTER

Chairman: J. G. DAWSON, A.F.R.Ae.S.
Hon. Secretary: J. G. SHARP, A.F.R.Ae.S.,
 Thornton Research Centre, P.O. Box 1,
 Chester.

COVENTRY

President: H. M. WOODHAMS, C.B.E., F.R.Ae.S.
Chairman: W. J. PETERS.
Hon. Secretary: C. T. SCULTHORPE, A.F.R.Ae.S.,
 Sir W. G. Armstrong Whitworth Aircraft
 Baginton, Coventry. [Ltd.]

DERBY

President: LORD HIVES, C.H., M.B.E., F.R.Ae.S.
Chairman: A. G. ELLIOTT, C.B.E., F.R.Ae.S.
Acting Secretary: F. E. PICKLES, A.R.Ae.S.,
 Rolls-Royce Ltd., Derby.

GLASGOW

Chairman: Dr. M. ROTHMAN, A.F.R.Ae.S.
Hon. Secretary: R. C. HUNTER, A.R.Ae.S.,
 4 Lyle Place, Hunterhill, Paisley.

GLOUCESTER AND CHELTENHAM

President: G. H. DOWTY, F.R.Ae.S.
Chairman: A. E. BINGHAM, F.R.Ae.S.
Hon. Secretary: C. E. HUTT,
 S. Smith & Sons Ltd., Bishops Cleeve,
 Cheltenham.

HALTON

President: Marshal of the Royal Air Force
 VISCOUNT TRENCHARD, Hon.F.R.Ae.S.
Chairman: Group Capt. RAPLEY, A.F.R.Ae.S.
Hon. Secretary: J. N. ANGLESS, A.R.Ae.S.,
 Station Headquarters, R.A.F., Halton.

HATFIELD

President: Sir GEOFFREY DE HAVILLAND, C.B.E.,
 A.F.C., R.D.I., Hon.F.I.Ae.S., F.R.Ae.S.
Chairman: R. H. T. HARPER.
Hon. Secretary: E. J. MANN, A.R.Ae.S.,
 de Havilland Aircraft Co. Ltd., Hatfield.

ISLE OF WIGHT

President: Sir ARTHUR GOUGE, F.R.Ae.S.
Chairman: H. KNOWLER, F.R.Ae.S.
Hon. Secretary: L. W. ROSENTHAL, A.F.R.Ae.S.,
 Saunders-Roe Ltd., Osborne, I.o.W.

LEICESTER

Chairman: W/Cdr. H. E. FALKNER, A.F.R.Ae.S.
Hon. Secretary: F. WATKIN, A.F.R.Ae.S.,
 Auster Aircraft Ltd., Rearsby, Leicester.

LUTON

Chairman: F. S. LESTER, A.R.Ae.S.
Hon. Secretary: P. A. DRILLIEN, A.R.Ae.S.,
 D. Napier & Son Ltd., Luton.

MANCHESTER

President: Sir ROY H. DOBSON, C.B.E., J.P.,
 F.R.Ae.S.
Chairman: C. E. FIELDING, O.B.E., A.F.R.Ae.S.
Hon. Secretary: J. A. E. WATERFALL,
 56 Manor Avenue, Ashton-on-Mersey,
 Cheshire.

PORTSMOUTH

President: A. TOWNSLEY.
Chairman: G. H. M. TWYMAN.
Hon. Secretary: E. M. BELLAMY,
 Airspeed Ltd., The Airport, Portsmouth.

PRESTON

President: Sir GEORGE NELSON.
Hon. Secretary: J. C. KING, A.F.R.Ae.S.,
 Aircraft Division, English Electric Co. Ltd.,
 Warton Aerodrome, nr. Preston.

READING

President: Sir FREDERICK HANDLEY PAGE,
 C.B.E., Hon.F.R.Ae.S.
Chairman: E. W. GRAY, A.F.R.Ae.S.
Hon. Secretary: E. L. PEARSON, A.R.Ae.S.,
 Handley Page (Reading) Ltd.,
 The Aerodrome, Woodley.

SOUTHAMPTON

Chairman: Prof. E. J. RICHARDS, F.R.Ae.S.
Hon. Secretary: H. C. SMITH, A.F.R.Ae.S.,
 Vickers-Armstrongs Ltd., Supermarine
 Works, Hursley Park, Winchester.

WEYBRIDGE

President: G. R. EDWARDS, M.B.E., F.R.Ae.S.
Chairman: H. H. GARDNER, F.R.Ae.S.
Hon. Secretary: J. H. SINCLAIR, A.F.R.Ae.S.,
 Vickers-Armstrongs Ltd., Weybridge.

YEOVIL

Hon. Secretary: L. A. LANSDOWN, A.F.R.Ae.S.,
 Westland Aircraft Ltd., Yeovil.