THE

AËRONAUTICAL JOURNAL.

The
Organ of the
Royal Aëronautical Society

Entered at Stationers' Hall.



Edited for the Council of the Royal Aëronautical Society by
W. Barnard Faraday,
LL.B., F.S.S.

Price to Non-Members and Non-Subscribers, 2s. 9d. post free.

No. 94.

OCTOBER. 1918.

Vol. XXII.

VICKERS LIMITED.

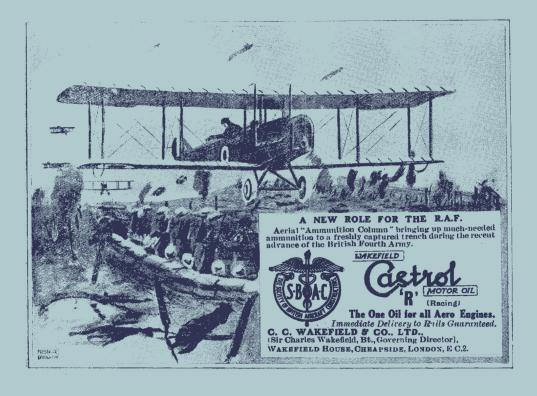
Contractors to H.M. GOVERNMENT.

Aviation Department, Imperial Court, Basil Street, KNIGHTSBRIDGE, S.W.3.

Telephone KENSINGTON 6520 (2 lines).



Telegraphic Address:
"VICKERFYTA-KNIGHTS, LONDON."



CRADOCK'S STEEL WIRE STRANDS&CABLES FOR RIGGING AIRCRAFT.

(AS THE QUESTION OF SOUND RIGGING IS ONE OF SUCH VITAL IMPORTANCE, THE BEST ONLY SHOULD BE USED.)

Since the Advent of Flying, this Company,-

WHO HAVE MANUFACTURED STEEL WIRE ROPES FOR OVER 60 YEARS, have made a special study of this class of work, and have for some years now supplied

SPECIAL FLEXIBLE STRANDS AND CABLES FOR AVIATION

constructed of 7, 19, 37, 49, 9 33, and 259 Galvanized or Plated Steel Wires of the greatest tensile strain possible compatible with the requisite ductility and toughness, and ranging from

BREAKING STRAINS of from 375 to 18230 Lbs

THERE IS NOTHING BETTER OBTAINABLE.

GEO. CRADOCK & Co. Ltd., WAKEFIELD,

CONTRACTORS TO THE ADMIRALTY AND THE WAR OFFICE.

DESCRIPTIVE BOOKLET WITH FULL DETAILS ON APPLICATION.

SUNBEAM-COATALEN AIRCRAFT MOTORS

CONTRACTORS

TO H.M.



CAR CO., LTD., WOLVERHAMPTON.

GOVERNMENT.





The SIDDELEY-DEASY Motor-Car Co. Ltd. Coventry. Contractors to H.M.Air Ministry. Designers & Constructors of Aero Engines, Aeroplanes & Luxurious Motor Carnages.

Godbolds.

ESTABLISHED 1912,

Contractors to H.M. Air Ministry.

THE

SUPERMARIN

AVIATION WORKS, Ltd.

Designers

Designers and Constructors of FLYING BOATS

Telephone:

WOOLSTON 37.

Telegrams:

"SUPERMARIN."



Offices, Works, Flying Waters,

SOUTHAMPTON, Eng.

H. SCOTT-PAINE, Director and General Manager.





BRAND

AIRCRAFT STEELS.

All Grades: by Electric, Siemens, and Grucible Processes

Heat-treated, Forged or Rolled,

to Airboard & Engineering Standard Specifications.

JNO. HY. ANDREW & Co., Ltd.,

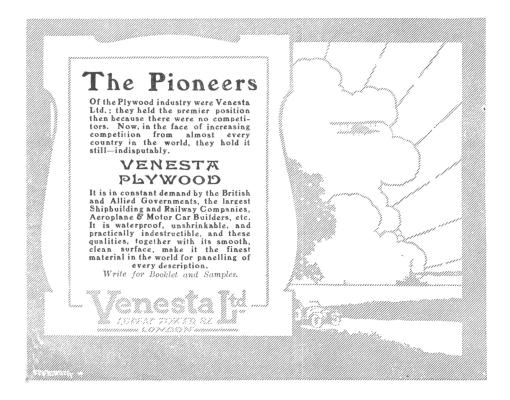
London Offices- Toledo Steel Works,

City: 118, Cannon St., E,C.4. Westminster: 17, Victoria St., S.W.1.

SHEFFIELD,

Telegraphic & Cable Address: "ANDREW, SHEFFIELD."

ENGLAND.



We Specialise in the Manufacture

OF

DROP FORGINGS FOR ALL TRADES.

SEND YOUR ENQUIRIES

TO

JOHN GARRINGTON & SONS, LTD.,
ALBERT WORKS,
DARLASTON, STAFFS.

Telegrams: "Garringtons, Darlaston."

Telephone: 53 Darlaston.





British Built

AERO ENGINES

The Chief requirement in the air is

RELIABILITY

Napier Aero Engines, like the famous Napier 6-Cylinder Car (the original and proved best), are manufactured by a firm with

Over a Century's

Engineering Experience

Behind It.

D. NAPIER & SON, LTD.,

WORKS: ACTON, LONDON, W.

14, NEW BURLINGTON STREET, LONDON, W.

AERO ENGINES



ARE YOU A SUBSCRIBER

to "Aircraft Supplies," our fortnightly House Journal, which contains articles of interest to Aircraft Manufacturers, an Enquiry Bureau, Articles by the Sales Manager at "Ascol" House, and a complete list of stock, with current prices, up to the time of going to press?

If not, order your Copy To-day.

The Subscription Rate is 10/= per annum (post free).

TIME

AIRCRAFT SUPPLIES

COMPANY LED

CONTRACTORS TO THE AIR BOARD.

ASCOL HOUSE, 125, LONG ACRE, LONDON, W.C.2.

Representatives in Birmingham, Manchester, Leeds, Belfast, Northern Counties and Scotland, South Coast and the London District.

Managing Director— G. H. MANSFIELD.

Works-Little James St. Telephone— Gerrard 276.

"Upcast, Rand," London.



THE BRITISH AND COLONIAL AEROPLANE Co., Ltd.,

FILTON, BRISTOL.

CONSTRUCTORS OF



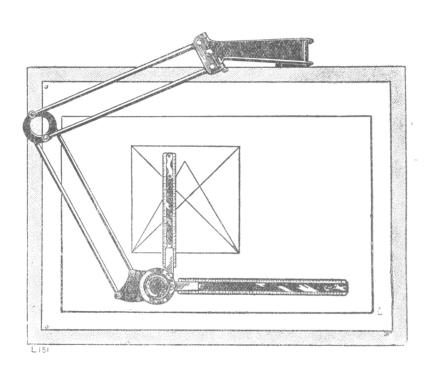
CONTRACTORS TO THE

ROYAL AIR FORCE.

TELEGRAMS:
"AVIATION, FILTON."



TELEPHONES: 3906 BRISTOL.



UNIVERSAL DRAFTING MACHINES.

When time presses, the Universal Drafting Machine proves its greatest worth. It is a remarkable aid to clearness of thought, accuracy and rapidity of expression. It considerably increases the efficiency of a draftsman owing to its accuracy and easy sensitive motion.

All our draftsmen use them; we could not afford to have our drawings made by the old method.

May we send YOU particulars?

ALFRED HERBERT LTD. COVENTRY.

TELEPHONE: -

OFFICE ... 912 REGENT.

WORKS ... 4762 KENSINGTON.

... 281-2-3 WEMBLEY.

TELEGRAMS:—
"SOCIABLE, PHONE, LONDON."

HOOPER & CO.



AEROPLANE BUILDERS TO H.M. AIR COUNCIL.



BY ROYAL WARRANT.



BY ROYAL WARRANT.



BY ROYAL WARRANT.

MOTOR BODY-BUILDERS AND COACHBUILDERS

BY APPOINTMENT TO

H.M. THE KING H.M. THE QUEEN H.M. QUEEN ALEXANDRA

54, St. James's Street,
PICCADILLY, LONDON, S.W.1

JAMES W. SOUTHERN & SON L., MANCHESTER



If you want the best

ASH

please let us know. We have got it.



Telephones: 253 Central 4600 City 5740 City 68 Trafford Pk.



Woodside Engineering Company, Limited, Possilpark, Glasgow.

AEROPLANE TIERODS

IN

STREAMLINE & ROUND SECTIONS
COMPLETE WITH

:: UNIVERSAL OR FORK JOINTS :: LARGE STOCKS.

PROMPT DELIVERY.

WORKS 1495 DOUGLAS (2 Lines).
OFFICE: 3456 CENTRAL (3 Lines).

(Private Branch Exchange).

TELEGRAMS: "FUSELAGE," GLASGOW.

Registered Office

50, WELLINGTON STREET

GLASGOW.



FOUNDED 1909.

Contractors to British and Allied Air Forces.

BUY

WAR BONDS.

Telephone:
Hampstead 7500.
(ten lines).

"Hydrop Ltd., Crickle,
London."

— HANDLEY PAGE Ltd., — CRICKLEWOOD, LONDON, ENGLAND.



Aerodrome and Auxiliary Works: BROOKLANDS.



Head Office and Works
WOKING
Surrey

GOOD CASTINGS

ARE ESSENTIAL TO YOUR AIRCRAFT PRODUCTION.

-100 M

We are Specialists in-

CASTINGS TO

Air Board Specifications.

 \mathbf{R}_2

 R_8

Gun Metal.

Phosphor Bronze. Manganese Bronze.

Send inquiry to-day .

NON-FERREOUS CASTING CO.

- COLONE

BROAD STREET, Dept. A.

BIRMINGHAM. Telegrams: "MANGBRONZ, BIRMINGHAM."

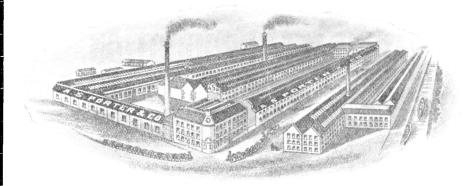
Contractors to the Admiralty, War Office and Allied Governments.

ARTHUR S. PORTER & CO.

Wapping Mills, LIVERPOOL.

Telegrams and Cables - "Magasins, Liverpoot." Codes—ABC, Engineering and Lieber's.

Telephones $\{\frac{4307}{3613}\}$ Bank.



Actual Manufacturers of

Cotton Cleaning Wastes Ropes, Cordage, Lines of Every Description. and Whipping Twin

Sponge Cloths, Mops, Wicks, etc., Kit Webbing.

Aeroplane Message Bags, Bunting, Flags and Banners, Gode Signals, Flags of All Nations.

Any Type of Flag made.

Ropes, Cordage, Lines
and Whipping Twines
of Every Description
In Manilla, Flax,
Cotton and Hemp.

Aeroplane, Balloon and Kite Cordage a Speciality.

Cotton and Linen Canvas, Tent, Marquee and Tracing Lines.

Shipping Orders a Speciality. Prompt Deliveries and Shipments.

LARGE STOCKS ALWAYS READY.

Correspondence invited in French, Spanish and Portuguese.



SPECIALISTS IN

ALUMINIUM-ALLOY

AERO-ENCINE CYLINDERS & CRANKCASES

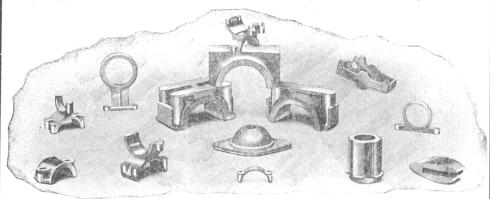
CAST IRON CYLINDERS PISTONS & PISTON RING POTS MOTOR ENGINES. FOR

YELLOW METAL CASTINGS BY OUR "EATONIA" PROCESS BEARING BUSHES, HIGH TENSILE RODS, ETC. CAST IRON STICK BY SPECIAL PROCESS-REDUCED POROSITY.

WILLANS & ROBINSON, LTD.,

Telegrams "WILLANS, RUGBY." RUGBY. Telephone $\begin{Bmatrix} 112\\113\\114 \end{Bmatrix}$ RUGBY.

AERATORS, Limited. PRANA WORKS, EDMONTON, LONDON, N.18.



ALUMINIUM DIE CASTINGS for ALL PURPOSES.

Speciality—

ALUMINIUM CASTINGS for AERO ENGINES, FIELD TELEPHONES, Etc., Etc.

TELEPHONE: GERRARD 7337.

TELEGRAMS: "GRATZELIM, OX LONDON."

GRATZE, Ltd., 44 to 46, Whitfield Street, LONDON, W.I.

Manufacturing, Mechanical, General and Electrical Engineers and Contractors.

Branch Works:

18, Tottenham Street, London, W.I., and 43, Beech Street,

Barbican, London, E.C.

Agents for Scotland:

CHISHOLM, MUIR & Co., 108a, West Regent Street, Glasgow.

CONTRACTORS TO H.M. GOVERNMENT and DEPARTMENTS.

War Office, Royal Aircraft Factory, Ministry of Munitions, Munitions Inventions Department The Air Board, Metropolitan Munitions Committee, etc.

For all classes of Machined Work, Repetition Work, Mechanical Apparatus, and Electrical Parts, etc.

AIRCRAFT WORK.—FITTINGS, COMPONENTS, ETC., PETROL COCKS, GAUGES, PUMPS FILTERS, UNIONS, ETC., OIL AND TANK FITTINGS AND CONNECTIONS, PRESSED WORK AND PARTS, OXY-ACETYLENE WELDING. SPINNING AND STAMPING.

MECHANICAL CORK PARTS AND CORK INSULATORS, DISCS AND PACKING FOR ALL PURPOSES

B.S.A. Twist Drill Points

POINT FOUR.

RELIABLE SERVICE.

As a result of the methods and care exercised during manufacture B.S.A. High-Speed Twist Drills possess both strength and durability. Their reliability under all conditions eliminates the possibility of delays, and renders them particularly valuable where important work is being carried out. Where increased efficiency and output are desired B.S.A. Twist Drills will prove of the greatest assistance, as they operate accurately and rapidly. From every point of view, B.S.A. Twist Drills give satisfaction.

WRITE FOR LATEST CATALOGUE.



Manufactured by The Birmingham Small Arms Co., Ltd., Birmingham.

SELLING AGENTS FOR ENGLAND

BURTON, GRIFFITHS & Co. Ltd., Ludgate Square, Ludgate Hill, London, E.C.4.

Also at Birmingham, Manchester and Glasgow.

PURE METALS AND ALLOYS
FOR USE IN
AIRCRAFT CONSTRUCTION.



REPAIRS
OF ALL KINDS.

REG.TRADE MARK.

THERMIT, L'-

(Proprietors: NOBEL'S EXPLOSIYES CO., LTD., GLASGOW.)

OWNERS OF THE ALUMINO-THERMIC PROCESS PATENTS.
(ESTABLISHED 1904).

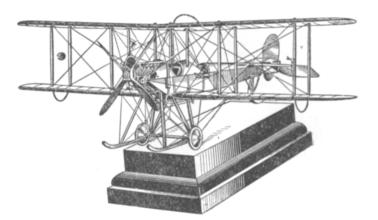
ALLOYS MADE TO ANY SPECIFICATION.

675, COMMERCIAL ROAD, LONDON, E.14.



We are the original firm, and have no connection with any other concern which has seen fit to adopt a title somewhat similar to our own.





Aeroplane Models

THE Silver Model of an Aeroplane illustrated shows how technical knowledge and skilled workmanship are allied in the models produced by the Goldsmiths and Silversmiths Company.

Infinite care is taken to ensure every detail being accurate and of proper proportions, and to reproduce an exact replica of the original.

Models can be prepared from the original or from a photograph. Estimates and designs will be submitted free upon application.

The Goldsmiths and Silversmiths Company have no other establishments in Regent Street, Oxford Street, or anywhere else in London, and no branches in the Provinces or Abroad.

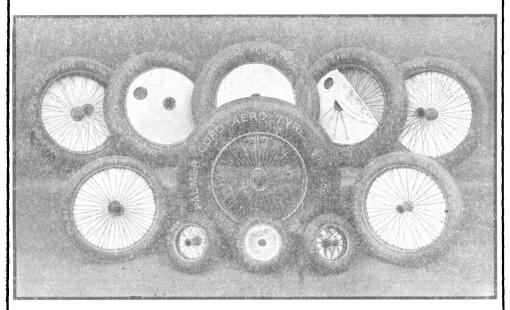
GOLDSMITHS & SILVERSMITHS COMPANY LTD with which is incorporated The Goldsmiths Established I'll ance it.

112, Regent Street, London, W. I.



PALMER

Landing Wheels and Tyres.



STANDARD SIZES:

Tyre	Wheel No.	Hub.		Track	Tyre	Wheel	Hub.		Track
Sizes.		Length	Bore.	Line.	Sizes.	No.	length.	Bore.	Line.
		m/m	m/m	m/m			m/m	m/m	m/m
300 x 60	16	111.12	25 4	Centr. 1	750 x 125	33	150.	38.09	Central
., {	17	72.39	12.7	Central	l "	77	178.	44.45	132/46
450 x 60	30	89.	31 75	Central	, ,	92	185.	55.	135/50
575 x 60	21	160.	28	Central	1 ,	95	185.	55.	Central
	34	150.	31.75	104/46	, ,	96	178.	55.	132/46
,,	111	150.	38.09	104/46	l ",	99	178.	38.89	132/46
650 x 65	78	178.	44.45	132/46	1 "	112	150.	40.	Central
,,	79	178.	44.45	Central	800 x 150	36†	185.	55,	135/50
,,	100	178.	38.09	132/46	,,	40†	185.	60.32	135 50
;, 1	101	178.	31.75	132/46		41†	185.	55.	Central
600 x 75	21	160.	28.	Central	i ,	82	185.	55.	135/50
,,	34	150.	31,75	104/46	,	85	185.	55.	Central
	111	150.	38 09	104/46	,,	106	185.	47.62	135/50
700 x 75	78	178.	44.45	132 46		205†	185.	60.32	Central
,,	79	178.	44.45	Central	1000 x 150	97	250.	65.4	Central
"	100	178.	38.09	132/46	,,	102	185.	55.	125/60
	101	178.	31.75	132/46	١,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	201	185.	60.32	125/60
700 x 100	33	150.	38,09	Central	900 x 200	107	185.	55.	Central
,,	77	178.	44.45	132/46] ,	108	185.	55.	125/60
,,	92	185.	55.	135/50	,,	120	185.	66 67	125/60
",	95	185.	55.	Central	,,	202	185,	60.32	Central
",	96	178.	55.	132/46		208	185.	60 32	125/60
,	99	178.	38.89	132/46	1100 x 200	52	185.	55.	116/691
,,	112	150.	40.	Central	,,	57	185.	55.	Centra
650 x 125	119	178.	55.	132/46	,,,	203	185.	60,32	116/69
	1	1)	}] ",	204	185.	60.32	Central

† Wheels Nos. 36, 40, 41 and 205 are of stronger type than the other wheels for 800 x 150 tyres.

THE PALMER TYRE LIMITED,

Contractors to the Admiralty, the War Office, and the Ministry of Munitions. 119, 121, 123, SHAFTESBURY AVENUE, LONDON, W.C.2.

Telegrams: "TYRICORD, WESTCENT, LONDON."

Telephone: GERRARD 1214 (Five Lines).

PARIS: 24, Boulevard de Villiers, Levallois-Perret.

HIDE GLUES

FOR

AIRSCREWS

AIRCRAFT CONSTRUCTION.

APPROVED GLUES.

WM. OLDROYD & SONS, Ltd., 9, MINCING LANE, LONDON.

TELEPHONE 4978 Avenue.

E.C. 3.

Contractors to H.M. Government.

Telegrams:—Aircraft, High Wycombe.

Telephones:—High Wycombe 84 and 235.

(Stores—High Wycombe 120.)

......HIGH WYCOMBE

ORIGINAL MANUFACTURERS OF STREAMLINE



BRUNTONS
MUSSELBURGH
SCOTLAND.——

ALUMINIUM CYLINDERS.

WATER AND AIR COOLED.

ALUMINIUM CASTINGS

Of every description for

AEROPLANE AND MOTOR ENGINES

IN SPECIAL STRONG LIGHT ALLOYS.

CAST IRON CYLINDERS

WATER AND AIR COOLED

FOR

AEROPLANE & MOTOR ENGINES.

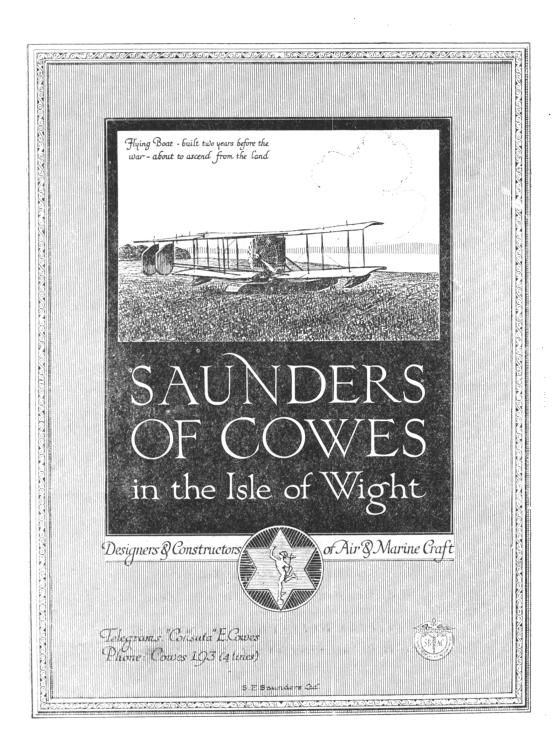
WILLIAM MILLS, Ltd.,

Contractors to H.M. Government,

Grove Street,

Telegrams -- "WILMIL, BIRMINGHAM."
Telephone—SMETHWICK 9.

BIRMINGHAM.



EXCELLENCE.



MOTOR CARS

Humber Limited, Coventry. UR Post-War Models will bear that impress of Excellence which has always been associated with the name of "HUMBER." Quality will not be sacrificed to output. Our energies will be constantly directed to giving the best value, both in first cost and upkeep.

Speciality—HIGH GRADE

ALUMINIUM ALLOYS

HIGH TENSILE, FOR AERO WORK & OTHER SPECIAL REQUIREMENTS.



T. J. PRIESTMAN

Metal Manufacturerand General Caster in all Metals



OFFICIAL REFINER of ALUMINIUM to H.M. MINISTRY OF MUNITIONS

Cupro Foundry - Leopold Street - Birmingham

Established 1872. Telephones: Works, Midland 281; Offices, Midland 282

Buyer of Every Description of Aluminium Scrap and Swarf.

ANN | GERTO

H.M. ADMIRALTY, WAR OFFICE, CONTRACTORS TO AIR MINISTRY.

Designers and Manufacturers of Proved Efficiency of all Types of **AIRCRAFT**

HEAD OFFICE AND WORKS

AIRCRAFT WORKS, NORWICH

SPECIAL DEPARTMENT for the manufacture of AIRCRAFT ACCESSORIES (Strainers, Bolts and Nuts, etc., etc.) 177, CLEVELAND ST., LONDON, W.



LONDON

NORWICH

IPSWICH

BURY ST. EDMUNDS.

G. D. PETERS & Co., LIMITED.

WINDSOR WORKS. SLOUGH,

BUCKS.

Contractors to H.M. WAR OFFICE AND AIR MINISTRY.

Telephones: Victoria 2900, 2901.

London Office: SLOUGH 201, 202, 203. 15, Dean's Yard, Westminster, S.W.1.

Telegrams: PETERS, SLOUGH. Peters, London.

DUGARD BROTHERS, LTD.

ROLLED METALS. Brass, Copper, Bronze, Gun Metal, etc., in Sheets, Rolls, Strips, Foil and Circles.

Solid drawn Brass and Copper Tubes, for Oil TUBES. Pipes, Petrol Pipes, Radiators and all Aircraft requirements. Also Mandril drawn Tube for Scientific and Optical Instruments.

RODS. Brass, Gun Metal and Bronze. Round, Hexagon and Square.

VULCAN MILLS, BRIDGE STREET WEST, BIRMINGHAM.

Telegrams: "Vulcan," BIRMINGHAM.

Telephone: CENTRAL 98.

Propellers : ONLY:

OUR TELEPHONE NOS. ARE NOW 20547 & 20548.

W. D. ODDY & Co.,

Globe Road, Holbeck, Leeds.

Telegrams: "AIRSCREWS, LEEDS."

"SCEPTRE" supersedes "SUPER"

ANNOUNCEMENT

When we adopted the name of the Super Aviation Co., Ltd., we had no idea it was likely to clash with another Company's name, but it having been suggested some confusion has arisen by reason of the adoption of the word "Super," and having no desire that this should be the result, we immediately offered to change our name on the matter being brought to our notice.

We therefore publish this announcement to acquaint our many customers that in future this business will be known as THE SCEPTRE AVIATION CO., LTD., and feel sure you will realise that though changed in name—the nature of the organisation remains the same—The Sceptre Aviation Co., Ltd., is as keenly anxious as ever to give you satisfactory service and to preserve your valued good-will.

The SCEPTRE AVIATION Co., Ltd.

CONTRACTORS TO THE AIR MINISTRY.

Dudden Hill Lane, Willesden, N.W. 10

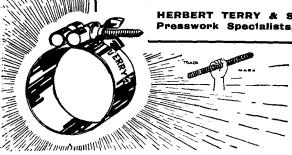
MANAGING DIRECTOR - N. LEWIN.
Telephone: -WILLESDEN 642 & 643 (2 lines)
Telegrams: - "Supavicol, Crick, London."

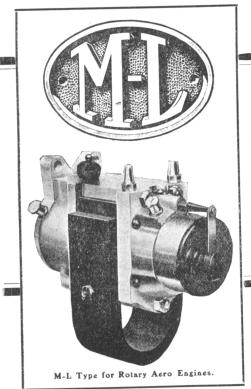
The TERRY Hoseclip radiates quality.

ACCURACY—WEAR QUALITY—SUITABLE FIXINGS. These factors must have consideration when buying Hoseclips.

Plain, grooved or cupped section metals, and an accurately made clip, built for service—this is our offer. May we help you for WAR WORK, or arrange for after war requirements?

HERBERT TERRY & SONS, LTD., The Spring and Presswork Specialists, Redditch, Eng.





More Spark Energy and Sparks at much lower speeds than any pre-war magnetos of equal size and weight.

The M-L Magneto Synd., Ltd., Coventry.





W. G. TARRANT,

Contractor to Air Board.

Aircraft Head Offices:

BYFLEET, SURREY.

TELEPHONE: BYFLEET 1.

2. 3. London Offices:

CLOCKHOUSE.

ARUNDEL STREET.

STRAND, W.C.

Telephone: Gerrard 8362.

FERRO-ALLOYS AND METALS

FERRO - SILICON 45/50% Silicon.

NICKEL

70/75% Chromium, 4/6% Carbon.

Immediate delivery from Stock.

MAGNESIUM METAL In Sticks MAGNESIUM COPPER

The best deoxidiser and scavenger for Copper, Bronze and Phosphor Bronze Castings.

ANTIMONY CADMIUM COPPER-SILICON

FERRO-COPPER COPPER-VANADIUM COPPER MANGANESE FERRO-MOLYBDENUM PHOSPHOR-TIN

FERRO-MANCANESE PHOSPHOR-COPPER FERRO-URANIUM TUNCSTEN VANADIUM

ZIRCONIUM

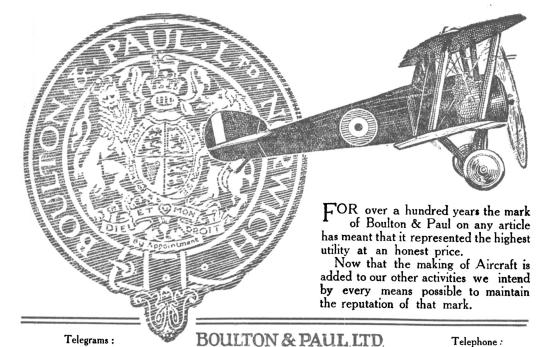
POLISHING POWDERS, PLUMBAGO, MANGANESE OXIDE.

「T & CO..

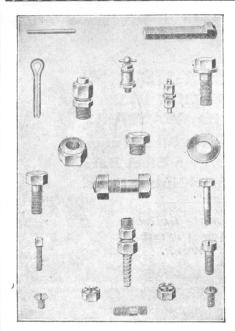
40, CHAPEL STREET,

LIVERPOOL

Telephone No. 1134 CHNTRAL. Telegraphic Address-"Persistent." Aviation, Norwich,



Makers of Aircraft NORWICH.



MANUFACTURERS OF

Norwich 851.

CAPSTAN & AUTOMATIC WORK

IN BRASS, STEEL, GUNMETAL, ETC.,

FOR ALL BRANCHES OF THE

MOTOR & AEROPLANE INDUSTRIES.

DROPFORGINGS

STAMPINGS ONLY OR FINISHED— MACHINED TO CUSTOMERS' REQUIREMENTS.

HEAD OFFICES: MOSELEY ST., BIRMINCHAM.

WORKS: BIRMINCHAM & OLD HILL (STAFFS).

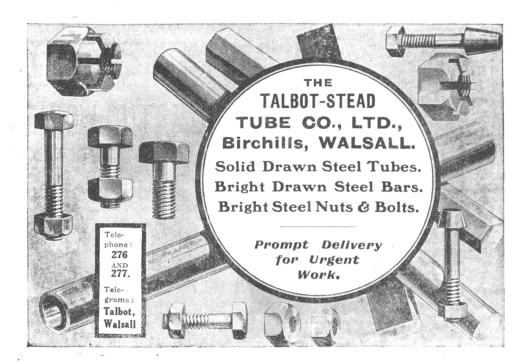
GROVE GLUES FOR AIRCRAFT

and all other purposes.

THE GROVE CHEMICAL Co., Ltd.,
APPLEY BRIDGE, near WIGAN.

Telegrams-" Crown, Appley Bridge."

Telephone-12 PARBOLD.





ST

PRE-WAR History of Aviation recorded the success of the Beardmore Aero Engine; the winning of the INTERNATIONAL AEROPLANE TRIALS at SALISBURY in CODY'S MACHINE being but one instance of Beardmore Superiority. The Premier Honours gained by the Beardmore during the early days of the war for Height, Speed and Distance have been augmented by brilliant achievements at the Front. And just as the Beardmore was the FIRST IN WAR, so will it be the FIRST IN PEACE. Watch Beardmore Progress.

THE BEARDMORE AERO ENGINE LTD.

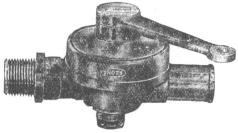
LONDON SHOWROOMS AND DEPOT:



112, CREAT PORTLAND STREET, W.1.

Telephone: 238 GERARD.

@.D.C.



Trade Mark



Registered.

PETROL COCKS

POSITIVELY PETROL TIGHT UNDER PRESSURE.
WILL NEITHER SEIZE NOR SLACKEN.

A.G.S. 408, 409 & 410. Patent Number 102850.

THE ENTIRE OUTPUT OF THESE AND OTHER

AIRCRAFT COMPONENTS

IS AT PRESENT ABSORBED BY

THE AIR BOARD, ADMIRALTY & WAR OFFICE.

ILLUSTRATED CATALOGUE WILL BE SENT TO RECOGNISED CONTRACTORS
BY THE MANUFACTURERS and



ENOTS WORKS,

BIRMINGHAM,

ENGLAND.

Telephone: Central 1449.

Cable & Telegraphic Address: "Cantonia," Sheffield.

THE

CANTON STEEL & TOOL CO.,

CANTON STEEL WORKS.

CORNISH STREET, SHEFFIELD.

Manufacturers of . . .

Canton" High Speed Steel.

CAST & TOOL STEELS for EVERY DESCRIPTION of TOOLS.

- CERSO-

AIRCRAFT STEELS to A.I.D. Inspection and Tests.

Contractors to H.M. Government.

On "Lloyd's Register."

Hors Concours Membre du Jury: Brussels International Exhibition, 1910. Grand Prix London, 1908, and Buenos Aires, 1910. REGISTEREN



Telegrams: JONAS.

SHEFFIELD.



No. 4660. PRIVATE BRANCH EXCHANGE.



Manufacturers of Steel of every description, including

GRADE FORGINGS NICKEL STEEL and

for Naval and General Marine Purposes.

Special Heat Treated Alloy and other Steels Automobile Purposes.

IMPORTANT SPECIALITIES:

A SPECIAL NICKEL CHROME GEAR STEEL.

FOR AIR OR OIL HARDENING. When treated this steel has exceedingly tough properties and is specially suitable for Gear Wheels, Connecting Rods, etc.

A NICKEL CHROME STEEL in 4 GRADES.

Eminently suitable and strongly recommended for Gears, Crankshafts, and other highly stressed parts, and having exceptional machining qualities. Combines unusually heavy shock-resisting and wearing properties with silent running.

A HIGH GRADE ALLOY CASE HARDENING STEEL for severely strained parts, such as Gear Wheels, Gudgeon Pins, etc.

Continental Steel Works and Novo Steel Works, Sheffield.

SANDERSON BROTHERS & NEWBOULD, LTD.,

ATTERCLIFFE FORGE and ROLLING MILLS,
SHEFFIELD.

Makers of High-Class

AIRCRAFT STEELS

Either Rolled or Heat Treated to

AIR-BOARD SPECIFICATIONS.

Ask for our Special Book on

HIGH TENSILE STEELS.

BRITISH MADE CHUCKS.



Independent 4-Jaw Chucks.

Reversible Jaws and Heavy Bodies.

Screws have Double-thrust Bearings (10in. size and upwards). STANDARD SIZES: -4½, 5, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 22 and 24in. diam.



3-Jaw Geared Scroll Chucks.

Self-Centring.

SIZES IN PROGRESS: 5in., 6in., 7½in. and 9in. diam. With One or Two Sets of Jaws as required.

Price Lists on Application.

Can be had from all Merchants and Dealers,

F. PRATT & CO., LTD., HALIFAX, Eng.

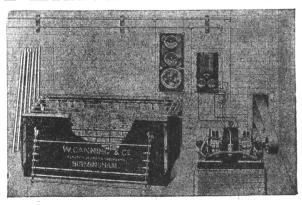
Telegrams: "Pratt, Halifax."

Telephone: No. 161.

W. CANNING & Co.,

MANUFACTURERS OF

PLANT AND MATERIALS



ELECTRO-ZINCING,
NICKEL PLATING,
TIN PLATING,
LEAD PLATING,
COPPER PLATING,
BRASS PLATING,
SILVER PLATING.

FOR

etc., etc.

POLISHING MACHINERY AND MATERIALS. ENAMELLING AND DRYING STOVES. LACQUERING AND DRYING TABLES.

Great Hampton St., BIRMINGHAM.

18-20, St. John's Square, Clerkenwell, LONDON.



"NIEUPORT"

-- AND --

General Aircraft Company, Ltd.

Contractors to H.M. Government.

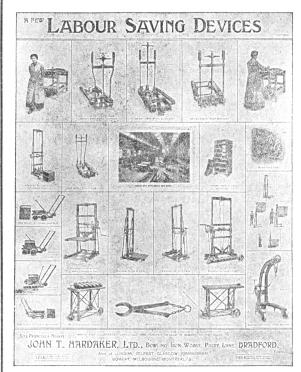
REGISTERED OFFICE AND WORKS:

LANGTON ROAD, CRICKLEWOOD, LONDON, N.W.2.

Telephone (3 lines): WILLESDEN 2455.

Telegrams:

NIEUSCOUT, CRICKLE, LONDON



JACKTRUCKS.

Specially designed for transporting Aeroplane Engines on working benches.

Used by all the leading Aero Engine makers and Aircraft Stores, etc.

Write for full Illustrated Catalogue to

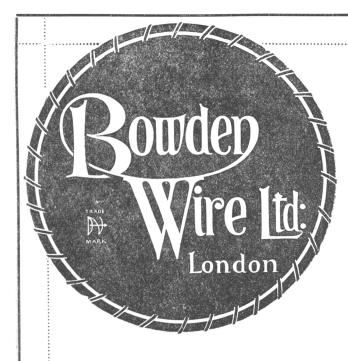
(Sole Makers and Patentees):

JOHN T. HARDAKER,

(AERO TRUCK DEPT.),

Bowling Ironworks, BRADFORD, YORKS.

Telegrams: "GIMP, BRADFORD."
Telephone: 120 DUDLEY HILL.



BEING wholly engaged upon production for the British and Allied Governments, we regret that we are unable for the present to execute any orders for private purposes.

Established 1897.

Victoria Road, Willesden Junction, N.W. 10.

Godbolds.

Thomas Andrews & Co. Ltd.

—ROYDS WORKS AND—SHEFFIELD.

High ALLOY STEELS

MADE TO AIR BOARD AND E.S.C. SPECIFICATIONS

FOR AIRCRAFT AND AUTOMOBILE CONSTRUCTION

Telegrams—Bits, B'ham.

ESTABLISHED 1800.

Telephone-355 Northern.

R. COOPER & Sons Ltd.

10 YEARS' EXPERIENCE IN

THE MANUFACTURE OF

<u>AIRCRAFT</u>

METAL

DETAIL FITTINGS, COMPONENTS,

TANKS,

EXHAUST PIPES, COWLINGS, ETC.

40, High Street, Aston New Town, BIRMINGHAM.

Contractors to the Admiralty and Air Board.



THE CENTRAL AIRCRAFT COMPANY,

DESIGNERS AND CONSTRUCTORS
OF AIRCRAFT.

Office and Works: KILBURN, N.W.6.

Telegrams: AVIDUCTION, PHONE, LONDON.

Telephone: HAMPSTEAD 4403, 4404.

BRICHT GOLD ROLLED STEEL STRIP.

BRICHT DRAWN STEEL RARS.

FOR ALL -PURPOSES.

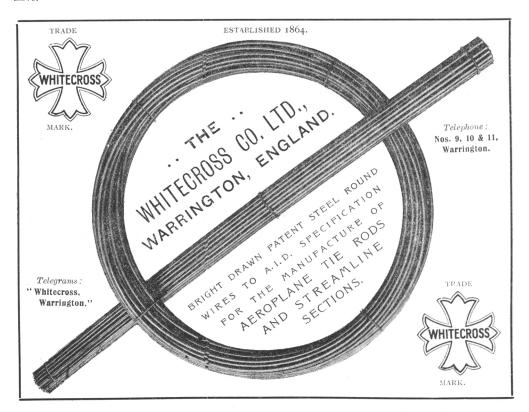
W. WESSON & CO., LTD., VICTORIA IRON & STEEL WORKS, MOXLEY, WEDNESBURY.

Telegrams_

"IRON, WEDNESBURY."

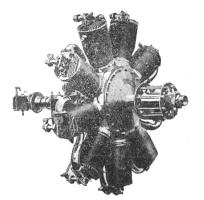
On Admiralty, War Office and other Government Lists.

Telephone... 62 WEDNESBURY.



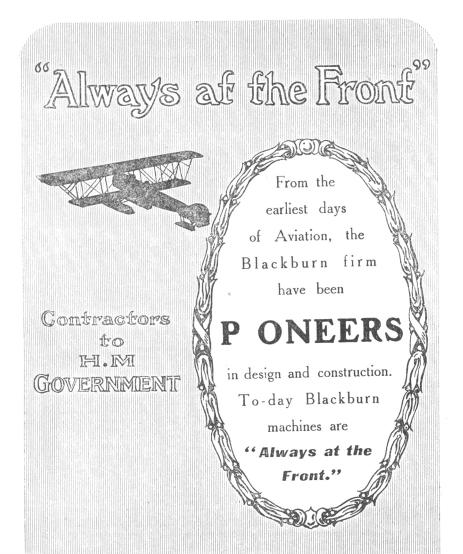


W. H. ALLEN SON & CO. LTD.



AIRCRAFT ENGINES

QUEEN'S ENGINEERING WORKS, BEDFORD.



Blackantin AIRCRAFT

Steele's Ad. Serv

The BLACKBURN AEROPLANE AND MOTOR Co., Ltd.,

Olympia, LEEDS, and at Hull.

AND MOST MODERN PLANTS IN THE COUNTRY, BEING EQUIPPED FOR THE MANUFACTURE OF ALL KINDS OF STAMPINGS, DROP FORGINGS AND PRESSINGS. WE HAVE OUR OWN LABORATORIES, HEATING & TESTING PLANTS, CONTROLLED BY EXPERTS, WHICH ENABLE US TO DEAL EFFICIENTLY WITH ALL THE DIFFICULT PROBLEMS CONNECTED WITH THESE TECHNICAL TRADES.



For many years Engineers who used leather for clutches and brakes have substituted FERODO FRICTION SURFACES which are vastly more efficient.

Over twenty years ago we invented Ferodo Fabrics. Since then, by specialising on the one product, and as a result of practical experience, we have so improved them that they are to-day readily acknowledged to be the finest friction surfaces in the world.

They are entirely unaffected by water, oil or acid, and absorb more foot lbs. of energy per square inch than any other material known. Wood and leather linings char and quickly wear out. Ferodo Fabrics are spark-proof and non-inflammable.

Ferodo Fabrics have the name stamped on each foot. Look for it when ordering your new linings.



FRICTION SURFACES

Contractors to the War Office and Admiralty, London General Omnibus Company, and Underground Electric Railways of London and Paris, List "A.J.," from

THE HERBERT FROOD CO., LTD.

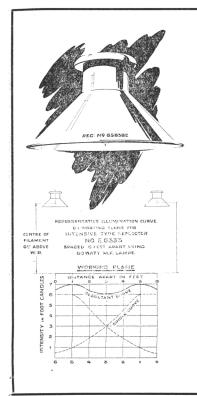
Works: CHAPEL-EN-LE-FRITH.

'Phone-19 and 20 Chapel. Wires—"Friction, Chapel."

Depots at London, Eirmingham, Felfast, Bristol, Cardiff, Edinburgh, Glasgow,
Liverpool, Manchester and Newcastle.







IMPLEX SCIENTIFIC LIGHTING REFLECTORS

Specially designed for Factories Aerodromes. With Simplex Steel Reflectors properly installed every ray of light is diverted to useful work, and there is no glare.

Write for special leaflet.

A PRINT THE WAR AND A PARTY OF THE PARTY OF

SIMPLEX · CONDUITS · LTD.,

GARRISON LANE, BIRMINGHAM.

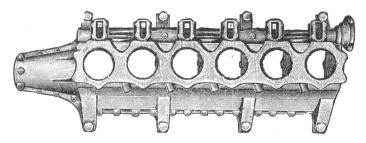
113-117, CHARING CROSS ROAD, LONDON. AND AT

MANCHESTER - GLASGOW - NEWCASTLE BRISTOL LIVERPOOL - LEEDS SWANSEA AND CARDIFF.

THE ALUMINIUM CASTINGS CO LD

ESTABLISHED 1901.

SOUND CASTINGS.



PROMPT DELIVERIES.

Ingleston Foundry, CREENCCK,

The Alliance Aeroplane Company Ltd.

CONTRACTORS

Ministry of Munitions of War Air Board.



Registered Offices:
45, CASTLE ST. EAST
LONDON
W. 1.

CAMBRIDGE ROAD HAMMERSMITH.

NOEL: ROAD, ACTON.

FOR AERO ENGINES.

MANUFACTURED BY

THE SELSDON

AERO & ENGINEERING CO., L. 1, ALBEMARLE STREET, PICCADILLY, W.1.

OIL, AIR, WATER, PETROL.

Anti-BEARINGS

FOR ALL PURPOSES.

TO ENSURE

ACCURACY, EFFICIENCY, AND ECONOMY, instal ANTI-FRICTION BEARINGS made and lined under THE WALKER-HANNA PATENTS

MOTOR CARS, ELECTRIC MOTORS, TRAMWAYS, AND ALL OTHER PURPOSES.

NO MACHINING REQUIRED, absolute INTERCHANGEABILITY with those you are at present using.

Write us on any question concerning Bearings.

IMPERIAL WORKS, GREAT JACKSON STREET,

'Phone: 85 OPENSHAW.

WEST GORTON, MANCHESTER.

AGENTS-

E. T. WHITE & CO., Albemarle Mansions, 1 Albemarle Street, Piccadilly, London, W.1

Better be Sure than Sorr



A TRITE TRIPLEX TRUISM.

"Better be Sure the

A TRITE TRIPLEX TRUISM

Many an air fighter has cause to be thankf

Safety Glass. Ordinary glass gives clear vis
is fraught with danger. Mica is safe—but be
and is easily scratched. Triplex Safety Glas
advantages of these while eliminating the bac
is why on land, in the air, on sea, Triplex is
front—the acknowledged best because it
dependable. Write for the Triplex Catalogu

Triplex secret is frankly disclosed.

An Airman who has made sure writes:

"My aeroplane was set on fire
shell at a considerable height, and I think I v
my sight and c usequently my life if I had no
your Triplex Goggles. As it was, I was a
landing in spite of the flames. The machine of
destroyed in a very short time.

PLEASE SEND ME ANOTHER PAIR OF GO

THE TRIPLEX SAFETY GLA

(Reginald Delpech, Managing Dire
1. ALBEMARLE STREET, LONDON
Phone: Regent 1310. Telegrams: "SHATTERL Many an air fighter has cause to be thankful for TRIPLEX SAFETY GLASS. Ordinary glass gives clear visibility—but it is fraught with danger. Mica is safe—but blurs the vision and is easily scratched. TRIPLEX SAFETY GLASS combines the and is easily scratched. IRPLEX SAFETY GLASS combines the advantages of these while eliminating the bad points. That is why on land, in the air, on sea, Triplex is forging to the front—the acknowledged best because it is consistently dependable. Write for the Triplex Catalogue, wherein the Triplex secret is frankly disclosed.

An Arman who has made sure writes:

". My aeroplane was set on fire by a German shell at a considerable height, and I think I would have lost my sight and c nsequently my life if I had not been wearing your Triplex Goggles. As it was, I was able to effect a landing in spite of the flames. The machine was completely decreased in a year short time.

PLEASE SEND ME ANOTHER PAIR OF GOGGLES. . ."

CO., LTD. GLASS

(REGINALD DELPECH, Managing Director).

1. ALBEMARLE STREET, LONDON. W.1.
Phone: REGENT 1340. Telegrams: "Shatterlys, Piccadilly, London."

For all High-Class Engineering Work requiring Special Steel Allov and plain Carbon Grades.

BILLETS.

FORGINGS.

SHEETS.

Output

2,500 Tons Weekly.

Pentardawe Steel Nr. SWANSEA.

SUTCLIFFE.

WARMING AND VENTILATING PLANTS

FOR DOPE ROOMS.



DUST COLLECTING PLANTS

FOR GRINDING and POLISHING SHOPS.

CONTRACTORS TO THE WAR OFFICE AND ADMIRALTY.

Ask for copy of New Booklet, just issued, "The Warming and Ventilating of Dope Rooms and Aeroplane Factories to satisfy Home Office requirements." Sent post free on request.

SUTCLIFFE VENTILATING & DRYING Co., Ltd.,

Cathedral Gates, MANCHESTER.

T.N,-3920 City Manchester.

T.A.-Ventilabro, Manchester.

MARTINO'S TREATING AND TESTING WORKS LTD.

HEAT TREATMENT OF STEEL TO AIR BOARD SPECIFICATIONS.

Telephone:
No. 845
COVENTRY.

NORMALISING.
ANNEALING.
HARDENING.
OIL QUENCHING
and TEMPERING.

Telegrams:
"QUENCHING,"
COVENTRY.

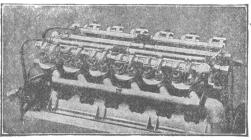
SANDY LANE, COVENTRY.

CASE HARDENING.

HOYT BEARING METALS,

IN LARGEST USE FOR AERO ENGINES.

300-H.P. "GREEN" **AERO** ENGINE.



BEARINGS: HOYT METAL LINED.

NUMBER ELEVEN-THE WORLD'S BEST.

OUTLASTS ALL OTHERS.



ABSOLUTELY THE HIGHEST QUALITY WHITE METAL MADE. SPECIMEN TWISTED AND HAMMERED COLD, SHOWING TOUGHNESS. COMPRESSION REQUIRED TO CRACK TEST SAMPLES: 20'55 TONS So. IN.

THE HOYT METAL CO., LTD.,

(WORKS: MILLWALL, E.) 189, HAMMERSMITH ROAD, LONDON, W.6.

PETTERS LIMITED.

AIRCRAFT CONSTRUCTORS TO THE ADMIRALTY.

Orders can be accepted for Complete Machines **Propellers** Parts.

WESTLAND AIRCRAFT WORKS

(Branch of Petters Limited),

YEOVIL. ENGLAND.

Telegrams: "Aircraft-Yeovil."

Telephone: Yeovil 129.

Sopwith Aviation Co.

CONTRACTORS TO H.M. GOVERNMENT.

OFFICE AND WORKS - KINGSTON-ON-THAMES

Telephone, KINGSTON 1988 (5 lines).
Telegrams: SOPWITH, KINGSTON.



Paris Office.
21. RUE DU MONT THABOR

The Aëronautical Journal.

THE ORGAN OF THE ROYAL AËRONAUTICAL SOCIETY.

CONTENTS, OCTOBER, 1918.

For the opinions expressed in papers that are signed or initialled the authors alone are responsible. None of the papers or paragraphs must be taken as expressing the opinion of the Council of the Royal Aëronautical Society, unless such is definitely stated to be the case.

												PAGE
I.	Notices		•••	•••	•••	•••	•••	•••	•••	•••	•••	311
11.	DESIGN OF	AEROPLA	NE ST	RUTS,	BY W.	н. в	ARLING	, A.R.	C.Sc.,	B.Sc.,	AND	
	H. A. WEI	вв, М.А.	•••	•••	•••	•••	•••	•••	•••	•••	•••	313
III.	CORRESPOND	ENCE	•••	•••	•••	•••	•••	•••	•••		• • •	330
IV.	ABSTRACTS		•••	•••	•••	•••	•••	•••	•••	•••	•••	331
V.	ABRIDGMENT	s of Rec	ENT F	PATENT	SPECI	FICATI	ions (A	ERONA	utics)	•••	•••	334
VI.	RECENT ADD	OITIONS TO	THE	Libra	RY	•••	•••	•••	•••	•••	•••	338
VII.	BIBLIOGRAPH	IY	•••	•••	•••	•••	•••	•••	•••	•••	•••	338

All communications respecting Editorial Matters should be addressed to-

THE EDITOR, 7, Albemarle Street, W.I.

Telegrams: "DIDASKALOS, PICCY, LONDON."

TELEPHONE: 7373 GERRARD.

All communications respecting Advertisement Matters should be addressed to-

The Advertisement Manager, 63, Ludgate Hill, London, E.C. 4.

AEROPLANE and AIRSHIP COMPONENTS.

TRADE MARK.



MEANS LONG LIFE.

WE ARE MAKERS of tubular and presswork parts, steel tubing in all qualities, sections and gauges, plain and manipulated, including welding, tapering, flanging, brazing, necking, expanding, clipping, slotting, etc.

We are also makers of aircraft ferrules in all sizes and patterns, "Apollo" tubular box spanners, and "Apollo" Mykarms—a tool for temporarily turning any micrometer into a high or low limit gauge.

SEND FOR OUR LISTS

The firm with the widest aircraft experience.



OLDBURY, BIRMINGHAM.

Telegrams: "Accles, Oldbury." Telephone: Oldbury III (4 lines).

Code: A.B.C. 5th Edition.

