

JOURNAL OF THE INSTITUTE OF PETROLEUM

~~2477/1202.~~

Honorary Editor :

A. E. DUNSTAN, D.Sc., F.I.C., F.C.S., F.Inst.Pet.

Honorary Associate Editor :

F. H. GARNER, Ph.D., M.Sc., F.I.C., F.Inst.Pet.

VOLUME TWENTY-NINE

1943

Published by
THE INSTITUTE OF PETROLEUM
MANSON HOUSE,
26, PORTLAND PLACE,
LONDON, W. I.



P.102/43/I

THE INSTITUTE OF PETROLEUM

(Founded 1913 as The Institution of Petroleum Technologists)

Past-Presidents :

- 1914-1916 SIR BOVERTON REDWOOD, Bart., D.Sc., F.R.S.E. (died 1919.)
1916-1917 THE RT. HON. LORD CADMAN OF SILVERDALE, G.C.M.G., Hon. LL.D., D.Sc., D.Eng.,
M.Inst.M.M. (died 1941.)
1917-1919 THE RT. HON. LORD GREENWAY OF STANBRIDGE EARLS. (died 1934.)
1919-1921 SIR FREDERICK W. BLACK, K.C.B., B.A.(Lond.). (died 1930.)
1921-1923 PROF. JOHN SAMUEL STRAFFORD BEAME, C.B.E., F.I.C., F.C.S.
1923-1925 HERBERT BARRINGER, M.Inst.C.E., M.I.Mech.E., M.I.N.A., M.Inst.Mar.Eng. (died 1932.)
1925-1927 SIR THOMAS H. HOLLAND, K.C.S.I., K.C.I.E., Hon. LL.D., D.Sc., F.R.S.
1927-1929 ALFRED C. ADAMS.
1929-1931 A. E. DUNSTAN, D.Sc., F.I.C., F.C.S.
1931-1933 JAMES KEWLEY, M.A., F.I.C., F.C.S., M.I.Chem.E.
1933-1935 T. DEWHURST, A.R.C.Sc., F.G.S.
1935-1937 THE RT. HON. LORD CADMAN OF SILVERDALE, G.C.M.G., Hon. LL.D., D.Sc., D.Eng.,
M.Inst.M.M. (died 1941.)
1937-1939 LT.-COL. S. J. M. AULD, O.B.E., M.C., D.Sc.
1939-1942 PROF. A. W. NASH, M.Sc., M.I.Mech.E. (died 1942.)

COUNCIL

1943

President :

C. DALLEY, M.I.E.E.

Past-Presidents :

ALFRED C. ADAMS.

S. J. M. AULD, O.B.E., M.C., D.Sc.

J. S. S. BRAME, C.B.E., F.I.C.

T. DEWHURST, A.R.C.S.

A. E. DUNSTAN, D.Sc., F.I.C.

Sir THOMAS H. HOLLAND, K.C.S.I., K.C.I.E.,
D.Sc., F.R.S.

J. KEWLEY, M.A., F.I.C.

Vice-Presidents :

ASHLEY CARTER, A.M.I.Mech.E.

G. H. COXON.

F. H. GARNER, O.B.E., Ph.D., F.I.C.

A. C. HARTLEY, O.B.E., F.C.G.I.

V. C. ILLING, M.A.

J. A. ORIEL, M.C., M.A.

Members of Council :

R. CRICHTON, J.P.

A. FRANK DABELL, M.I.Mech.E.

E. A. EVANS, M.I.A.E.

E. B. EVANS, M.Sc., F.I.C., Ph.D.

W. E. GOODAY, A.R.S.M., D.I.C.

J. S. JACKSON, B.Sc., F.I.C.

E. R. REDGROVE, Ph.D., B.Sc.

C. A. P. SOUTHWELL, M.C., B.Sc.

H. C. TETT, B.Sc., D.I.C.

F. B. THOLE, D.Sc., F.I.C.

A. BEEBY THOMPSON, O.B.E.

A. WADE, D.Sc., A.R.C.S.

W. J. WILSON, F.I.C., F.C.G.I.

C. W. WOOD, F.I.C.

Honorary Treasurer :

THE RT. HON. LORD PLENDER, G.B.E.

Joint Honorary Secretaries :

ARTHUR W. EASTLAKE, A.M.I.Mech.E.

ASHLEY CARTER, A.M.I.Mech.E.

Chairmen of Branches :

Burma Branch :

Iranian Branch :

Northern Branch : J. CUTHILL.

Rumanian Branch :

Scottish Branch : R. CRICHTON.

South Wales Branch : A. E. HOLLEY.

Stanlow Branch : J. S. PARKER.

Trinidad Branch : L. K. WHITE.

United States Branch : Dr. G. EGLOFF.

Students' Section : *Birmingham Branch :* G. K. ASHPORTH,

London Branch :

LIST OF OFFICERS

Joint Honorary Secretaries :

ARTHUR W. EASTLAKE, M.I.Min.E., A.M.I.Mech.E.
ASHLEY CARTER, A.M.I.Mech.E.

Honorary Treasurer :

THE RT. HON. LORD PLENDER OF SUNDRIDGE,
G.B.E.

Honorary Editor :

A. E. DUNSTAN, D.Sc., F.I.C., F.C.S.

Honorary Associate Editor :

F. H. GARNER, O.B.E., Ph.D., F.I.C.

Secretary :

F. H. COE.

Solicitors : Messrs. ASHURST, MORRIS, CRISP & Co.

Auditors : Messrs. PRICE, WATERHOUSE & Co.

Bankers : WESTMINSTER BANK LIMITED, 21 Lombard Street, London, E.C.3, and 115 Old Brompton Road, London, S.W.7.

Offices : Manson House, 26, Portland Place, W.1.

Telephone : LANGHAM 2250.

Telegraphic Address : Instpetech, Westdo, London.

COMMITTEES OF COUNCIL

The President and the Joint Honorary Secretaries are ex-officio Members of all Committees.

Benevolent Fund Committee :

A. E. DUNSTAN (Chairman).
ASHLEY CARTER.
C. DALLEY.

E. A. EVANS.
V. C. ILLING.

Election Committee :

ASHLEY CARTER (Chairman).
S. J. M. AULD.
G. H. COXON.
C. DALLEY.
E. B. EVANS.
F. H. GARNER.

A. C. HARTLEY.
V. C. ILLING.
J. A. ORIEL.
C. A. P. SOUTHWELL.
H. C. TETT.
CECIL W. WOOD.

Finance Committee :

C. DALLEY (Chairman).
ASHLEY CARTER.
G. H. COXON.
J. KEWLEY.

J. A. ORIEL.
E. R. REDGROVE.
W. J. WILSON.

Housing Committee :

C. DALLEY.
S. J. M. AULD.
ASHLEY CARTER.
G. H. COXON.

A. E. DUNSTAN.
J. A. ORIEL.
H. C. TETT.

Publication Committee :

A. E. DUNSTAN (Chairman).
ASHLEY CARTER.
G. H. COXON.
C. DALLEY.
E. A. EVANS.
E. B. EVANS.
F. H. GARNER.
A. C. HARTLEY.

V. C. ILLING.
J. S. JACKSON.
J. A. ORIEL
C. A. P. SOUTHWELL.
H. C. TETT.
A. BEEBY THOMPSON.
CECIL W. WOOD.

Co-opted Members.

W. H. CADMAN.

D. A. HOWES.

Advisory Editorial Board.

A. E. DUNSTAN (Chairman).
ASHLEY CARTER.
F. H. GARNER.

V. C. ILLING.
J. A. ORIEL.
C. A. P. SOUTHWELL.

Standardization Committee :

F. H. GARNER (Chairman).
G. H. COXON.
A. E. DUNSTAN.
E. A. EVANS.
E. B. EVANS.

V. C. ILLING.
J. S. JACKSON.
J. A. ORIEL.
E. R. REDGROVE.
W. J. WILSON.

Co-opted Members.

W. E. J. BROOM.
D. A. HOWES.
H. HYAMS.
C. D. LAWRENCE.

D. S. PAUL.
J. E. RAMSBOTTOM.
K. E. W. RIDLER.
A. R. STARK.

Electrical and Allied Matters Committee.

C. DALLEY (Chairman).
ASHLEY CARTER.

J. A. ORIEL.

Co-opted Members.

G. S. AMBROSE.
O. L. G. AUST.
BLAGRAVE DEANE.
P. A. FRENCH.

A. D. MACLEAN.
D. H. MCLACHLAN.
W. S. MORRIS.
C. E. SPEARING.

HON. SECRETARIES OF BRANCHES

Northern Branch : E. J. DUNSTAN, Manchester Oil Refinery Ltd., Twining Road, Barton, Manchester.

Scottish Branch : Prof. W. M. CUMMING, Royal Technical College, Glasgow.

South Wales Branch : E. THORNTON, National Oil Refineries, Llandarcy, Glam.

Stanlow Branch : J. C. WOOD-MALLOCK, Lobitos Oilfield, Ellesmere Port, Cheshire.

Trinidad Branch : A. F. CASTLE, Apex(T) Oilfields, Ltd., Siparia, Trinidad.

CONTENTS.

	PAGE
Engineering Development in the Petroleum Industry. Christopher Dalley	1
Institute Luncheon	19
New Edition of the I.P. Standard Methods for Testing Petroleum and its Products. J. Cantor, E. P. Driscoll and A. Osborn	21
Compaction and Some Oilfield Features. G. D. Hobson	37
The Analysis of Trinidad Crude Oils. F. Morton and A. R. Richards	55
The Oil-Fields of Western Canada. Campbell M. Hunter, O.B.E.	75
Institute Meeting	84
Oil—An Additional Basic Material for the British Plastics Industry. G. Tugendhat	89
Viscosity Measurement and Viscosity Index. J. C. Cragg and E. A. Evans	99
Institute Meeting	110
Wartime Chemicals from Natural Gas. G. Egloff	124
Peacetime Values from a War Technology. G. Egloff	135
Fractional Distillation on Binary Mixtures. Number of Theoretical Plates and Transfer Units. A. J. V. Underwood	147
Recent Developments in Welding. C. W. Brett	157
Chemistry and the Petroleum Industry. A. E. Dunstan	163
Standard Temperature for Specific Gravity Determination and Volume Correction	190
The Permeability of Porous Solids to Gases and Liquids. L. Grunberg and A. H. Nissan	194
Phase Transformations of Normal Paraffins. C. G. Gray	226
Calibration of C.F.R. Reference Fuels.	235
The Solvent Extraction of Lubricating Oils. H. Ter Meulen	237
Institute Meeting	249
A Modification of the C.F.R. Bouncing Pin Spring-Tension Balance and Instructions for Use. P. Draper	253
Education and the Petroleum Industry. V. C. Illing	259
Institute Meeting	278
Annual Luncheon	284
Trinidad Branch Report	292
A Study of Oil Oxidation as Related to Lubrication. Part I—Apparatus, Technique, and Preliminary Results. Paul G. Exline, W. E. Kramer, and John R. Bowman	295
Petroleum as a Source of Synthetic Materials	308
Estimation of Mercaptan Sulphur Alone or in Presence of Elementary Sulphur in Petroleum Products. E. R. H. Davies and J. W. Armstrong	323
The Filter Freezing Temperature of Aviation Fuels. J. M. A. Court	329
Synthetics for the Petroleum Industry. E. A. Evans	333
Institute Meeting	353
Correlation of I.P. Lovibond and Saybolt Chromometer Measurements on Motor Fuels and Refined Petroleum	357
Definitions for Waxes, etc., Derived from Petroleum	361
Author Index	364
Subject Index	366