

present, averaging about 8.5, 6.4, 0.6 lb. of solution per cubic foot of wood for red pine, jack pine and heartwood inland fir, respectively, in the sections between pinholes.

The treated arms were stacked for curing by a method recently devised by the Bell Laboratories to keep end checking, splitting and warping to a practical minimum. They were laid on a sturdy foundation of 8 in. by 8 in. timbers with their ends well protected by overlapping alternate tiers. After curing, part of the arms were X-piled, to determine their tendencies, if any, to bleed, warp and split.

Breaking tests on sample arms indicated that inland fir is practically as strong as the current standard coast-type fir and southern pine arms, and that red and jack pine are about 80 per cent as strong.

Successful non-pressure treatment of red pine, jack pine and inland fir cross-arms with hot creosote, followed by cold pentachlorophenol dissolved in a suitable petroleum, opens new avenues of relief in a restricted lumber field. Other woods may be used provided they are strong enough and will take preservative treatment. For example, ponderosa pine, western hemlock and larch are all worth considering, if the supply situation warrants it. On the basis of work already done, the Bell Laboratories recommend the more promising substitute woods for cross-arms, and standard specifications have already been revised to include red pine, jack pine, lodgepole pine and inland fir.

## FORTHCOMING EVENTS

### Saturday, January 6

ROYAL INSTITUTION (at 21 Albemarle Street, London, W.1), at 2.30 p.m.—Sir Harold Spencer Jones, F.R.S.: "Astronomy in our Daily Life", 5: "Clocks and Time Keeping" (Christmas Lectures).

### Monday, January 8

FARMERS' CLUB (at the Royal Empire Society, Craven Street, Strand, London, W.C.2), at 2.30 p.m.—The Rt. Hon. the Earl De La Warr: "British Agriculture and World Conditions".

ROYAL GEOGRAPHICAL SOCIETY (at Kensington Gore, South Kensington, London, S.W.7), at 5 p.m.—"The Burmese Scene" (Recent Kodachrome Films with Commentary by U. Myat Tun).

INSTITUTE OF FUEL (NORTH-EASTERN SECTION) (at the Central Station Hotel, Newcastle-upon-Tyne), at 5.15 p.m.—Prof. H. L. Riley, Mr. J. Blaydon and Mr. H. E. Gibson: "The Molecular Nature of Coking Coal Bitumens".

### Tuesday, January 9

ROYAL INSTITUTION (at 21 Albemarle Street, London, W.1), at 2.30 p.m.—Sir Harold Spencer Jones, F.R.S.: "Astronomy in our Daily Life", 6: "Finding Position at Sea and in the Air" (Christmas Lectures).

ILLUMINATING ENGINEERING SOCIETY (at the E.I.M.A. Lighting Service Bureau, 2 Savoy Hill, London, W.C.2), at 5.30 p.m.—Mr. R. Gillespie Williams: "The Poetry of Light".

INSTITUTION OF CIVIL ENGINEERS (ROAD ENGINEERING DIVISION) (at Great George Street, Westminster, London, S.W.1), at 5.30 p.m.—Discussion on "Lay-out of Road Intersections" (to be opened by Mr. A. J. H. Clayton).

### Wednesday, January 10

ROYAL SOCIETY OF ARTS (at John Adam Street, Adelphi, London, W.C.2), at 1.45 p.m.—Mr. G. R. Critchley: "How Wrecked and Sunken Ships are Salvaged" (Dr. Mann Juvenile Lecture).

INSTITUTE OF FUEL (at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2), at 2.30 p.m.—Sir Alfred Egerton, F.R.S., and Mr. Malcolm Pearce: "Methane".

INSTITUTE OF PETROLEUM (at 26 Portland Place, London, W.1), at 4.30 p.m.—Dr. G. B. M. Sutherland and Dr. H. W. Thompson: "Spectrographic Methods Applied to the Petroleum Industry".

### Friday, January 12

INSTITUTION OF MECHANICAL ENGINEERS (in conjunction with the APPLIED MECHANICS GROUP) (at Storey's Gate, St. James's Park, London, S.W.1), at 5.30 p.m.—Mr. A. Fogg: "Fluid Film Lubrication of Parallel Thrust Surfaces"; Dr. D. Clayton: "An Exploratory Study of Oil Grooves in Plain Bearings".

NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS (in the Lecture Theatre of the Mining Institute, Newcastle-upon-Tyne), at 6 p.m.—Mr. H. O. Walker: "Notes on the Buchi System".

### Friday, January 12—Saturday, January 13

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (DIVISION FOR SOCIAL AND INTERNATIONAL RELATIONS OF SCIENCE) (at the Royal Institution, Albemarle Street, Piccadilly, London, W.1)—Conference on "The Place of Science in Industry" (to be opened by Sir Richard Gregory, Bart., F.R.S.)

## APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

MECHANICAL ENGINEER by the Government of British Honduras for the Public Works Department—The Ministry of Labour and National Service, Central (T. and S.) Register, Room 5/17, Sardinia Street, Kingsway, London, W.C.2 (quoting Reference No. C.2406.A) (January 10).

LECTURER (full-time) IN THE DEPARTMENT OF CHEMISTRY—The Principal, Derby Technical College, Normanton Road, Derby (January 10).

ASSISTANT CHIEF CHEMIST (essential qualifications are supervision and direction of Laboratory Staff engaged in investigational work and routine testing of production samples in entomological, physical, organic and colloidal chemistry, with particular reference to detergents and emulsification) for a permanent superannuable appointment in Yorkshire—The Ministry of Labour and National Service, Central (T. and S.) Register, Room 5/17, Sardinia Street, Kingsway, London, W.C.2 (quoting Reference No. F.3039.XA) (January 10).

ASSISTANT TO THE ADVISORY OFFICER IN ANIMAL HUSBANDRY—The Secretary, West of Scotland Agricultural College, 6 Blythwood Square, Glasgow (January 10).

EDUCATIONAL PSYCHOLOGIST—The Director of Education, County Offices, Oxford (January 15).

METALLURGIST (must hold a University degree in Metallurgy and be well versed in the Metallography and Heat Treatment of Alloy Steels and Aluminium Alloys) by progressive firm on the South Coast—The Ministry of Labour and National Service, Central Register, Room 5/17, Sardinia Street, Kingsway, London, W.C.2 (quoting Reference No. F.2363.XA) (January 16).

RESEARCH ASSISTANT (male) in the Agricultural Entomology Division of the Ministry of Agriculture—The Assistant Secretary (Establishments), Ministry of Finance, Stormont, Belfast (January 16).

SENIOR POST as RUBBER RESEARCH CHEMIST with a large Company in the North of England engaged in rubber manufacture—The Ministry of Labour and National Service, Central (T. and S.) Register, Room 5/17, Sardinia Street, Kingsway, London, W.C.2 (quoting Reference No. F.3360.XA) (January 17).

TEACHER (full-time) OF ENGINEERING SUBJECTS for senior and junior students in the Northampton College of Technology—The Secretary for Education, Borough Education Office, Springfield, Cliftonville, Northampton (January 20).

LECTURER IN THE MECHANICAL AND CIVIL ENGINEERING DEPARTMENT of the Sunderland Technical College—The Director of Education, Education Office, 15 John Street, Sunderland (January 20).

HEAD OF THE SCIENCE DEPARTMENT of the Blackburn Municipal Technical College—The Director of Education, Education Offices, Library Street, Blackburn (January 20).

HEAD OF THE PHYSICS DEPARTMENT—The Principal, Derby Technical College, Normanton Road, Derby (January 22).

REGIUS CHAIR OF ANATOMY at Glasgow University—The Private Secretary, Scottish Office, Fielden House, 10 Great College Street, London, S.W.1 (February 24).

DIRECTOR OF MUSEUMS—The Town Clerk, Municipal Buildings, Dale Street, Liverpool 2 (February 28).

LABORATORY STEWARD IN THE DEPARTMENT OF PATHOLOGY—The Secretary and Registrar, The University, Bristol.

DEPUTY ASSISTANT RADIUM CUSTODIAN (female) in the Radium Department—The Clerk to the Governors, St. Bartholomew's Hospital, London, E.C.1.

GRADUATE ASSISTANT MASTER qualified to teach MATHEMATICS, SCIENCE and ENGINEERING DRAWING in the Junior Technical School and National Certificate Classes in the Ashton-under-Lyne Technical School—The Director of Education, 8 Warrington Street, Ashton-under-Lyne, Lancs.

TEACHER OF BIOLOGY who can also offer service in CHEMISTRY and/or PHYSICS, and a TEACHER (full-time) IN THE MATHEMATICS AND PHYSICS DEPARTMENT—The Principal, Municipal Technical College, Hopwood Lane, Halifax.

## REPORTS and other PUBLICATIONS

(not included in the monthly Books Supplement)

British Rubber Producers' Research Association. Publication No. 53: Distribution of Oxygen in Oxidised Rubbers. By R. F. Naylor. Pp. 10. Publication No. 54: The Interaction between Rubber and Liquids. Part 5: The Osmotic Pressures of Polymer Solutions in Mixed Solvents; Part 6: Swelling and Solubility in Mixed Liquids. By G. Gee. Pp. 18. (London: British Rubber Producers' Research Association.) [2112]

Hope for the North-East. Pp. 16. (Newcastle-upon-Tyne: Association of Scientific Workers.) 3d. [2812]

### Catalogue

Annotated Catalogue of Works on Physics, including also Items on Collateral Sciences, and comprising the Library of Prof. John Tyndall. (No. 873.) Pp. 88. (London: Henry Sotheran, Ltd.)