

Chemical Age

incorporating

PETROCHEMICALS and POLYMERS

VOL. 85 No. 2185

27 MAY 1961

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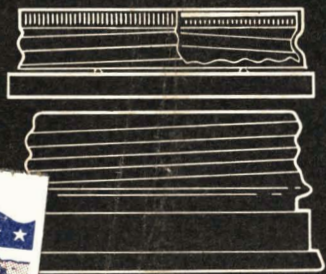
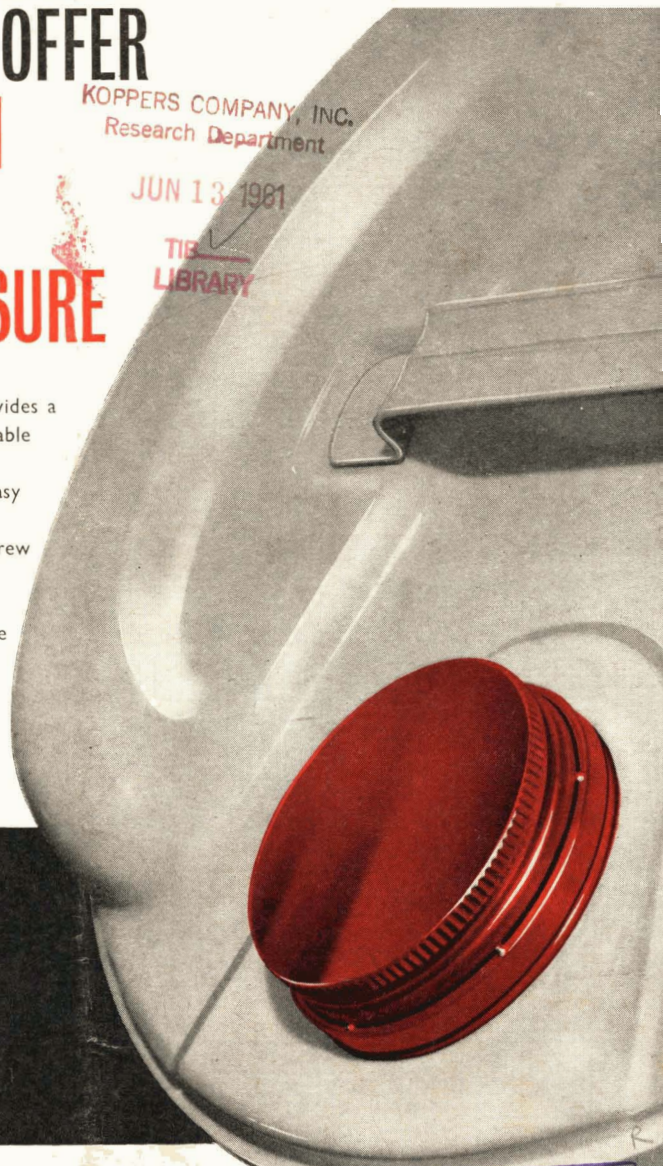
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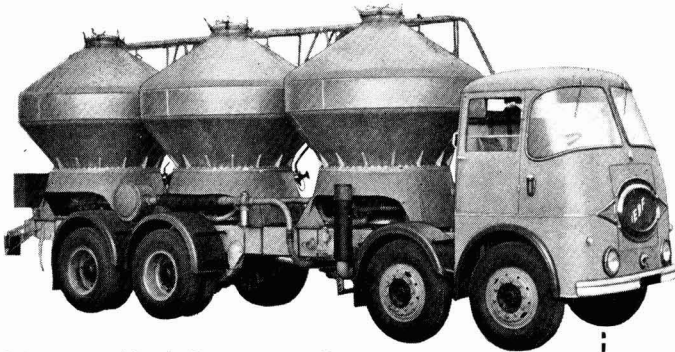
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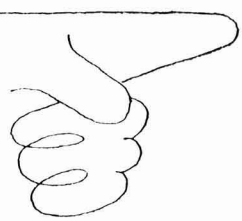
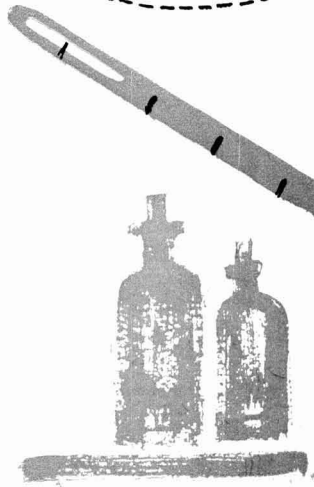


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INDEX TO ADVERTISERS

The first figures refer to advertisements in Chemical Age Directory & Who's Who, the second to the current issue

Page	Page	Page	Page	Page	
A.P.V. Co. Ltd., The	—	321 Broadbent, Thomas, & Sons Ltd.	842	Dunlop Rubber Co. Ltd. (G.R.G. Dunclad)	—
A. W. Instrumens (Guildford) Ltd.	—	163 Brotherhood, Peter, & Co. Ltd.	—	E.C.D. Ltd.	—
164 Acalor (1948) Ltd.	—	Brough, E. A., & Co. Ltd.	—	Electric Resistance Furnace Co.	—
African Pyrethrum Technical Information Centre	—	Brown, N. C., Ltd.	—	Electro-Chemical Engineering Co. Ltd.	—
148 Aimer Products Ltd.	—	132 Bryan Donkin Co. Ltd., The	—	Electrothermal Engineering Ltd.	—
121 Air Products Gt. Britain Ltd.	—	Bulk Liquid Transport Ltd.	—	Elga Products Ltd.	—
Air Trainers Link Ltd.	—	276 Bulwark Transport Ltd.	—	Book Mark Elliott, H. J., Ltd.	—
Aiton & Co. Ltd.	—	66 Burnett & Rolfe Ltd.	—	Elliott Brothers (London) Ltd.	—
147 Albany Engineering Co. Ltd., The	—	194 Bush, W. J., & Co. Ltd.	—	145 Elmatic	—
155 Alginate Industries Ltd.	—	124 Butterfield, W. P., Ltd.	—	Evans Electro Selenium Ltd.	839
123 Allen, Edgar, & Co. Ltd.	—	Butterworths Scientific Publications	—	168 Farnell Carbons Ltd.	—
130 Allen, Frederick & Sons (Poplar) Ltd.	—	Callow Rock Lime Co. Ltd., The	—	156 Feltham, Walter H., & Co. Ltd.	—
160 Allis-Chalmers Great Britain Ltd.	—	245 & 249 Calmie Engineering Co. Ltd.	—	152 Ferris, J. & E., Ltd.	—
Alumina Co. Ltd., The	—	Carless, Capel, & Leonard Ltd.	—	279 Ferrostatics Ltd.	—
Ancorite Ltd.	—	175 Causeway Reinforcement Ltd.	—	Fielen Electronics Ltd.	—
Andrew Air Conditioning Ltd.	—	Chappell, Fred, Ltd.	836	171 Flight Refuelling Ltd.	—
136 Anglo-Dal Ltd.	—	Chemical Age Enquiries	869 & 870	185 Foxboro-Yoxall Ltd.	—
Anthony, Mark, & Sons Ltd.	—	Chemical & Insulating Co. Ltd., The	—	187 Freeman, William, & Co. Ltd.	—
211 Armour Hess Chemicals Ltd.	—	Chemicals & Feeds Ltd.	—	207 Fullers' Earth Union Ltd., The	—
Ashley Associates Ltd.	865	Chemolimpex	—	122 G.O. Parachute Co. Ltd.	—
Ashmore, Benson, Pease & Co. Ltd.	—	Christy & Norris Ltd.	—	168 Gallenkamp, A., & Co. Ltd.	—
Associated Electrical Industries Ltd.	—	Ciba (A.R.L.) Ltd.	—	Gascoigne, Geo. H., & Co. Ltd.	—
Motor & Control Gear Division	—	158 Ciba Clayton Ltd.	—	Geigy Co. Ltd., The	—
Associated Electrical Industries Ltd. Turbine-Generator Division	—	Ciech Ltd.	—	183 General Precision Systems Ltd.	—
153 Associated Lead Mfrs. Ltd.	—	164 Citenco Limited	—	Glass Manufacturers' Federation	—
G/Card Audco Limited	—	Classified Advertisements	867 & 868	Giusti, T., & Sons Ltd.	—
B.S.A. Small Tools Ltd.	—	169 Clayton, Son & Co. Ltd.	—	Glebe Mines Ltd.	—
179 Baker Perkins Ltd.	Back Cover	138 Clydesdale Chemical Co. Ltd.	865	Goodyear Pumps Ltd.	—
173 Balfour, Henry, & Co. Ltd.	—	Cohen, George, Sons & Co. Ltd.	—	167 Graviner Mfg. Co. Ltd.	—
182 Barclay Kellett & Co. Ltd.	—	141 Cole, R. H., & Co. Ltd.	—	172 Greeff, R. W., & Co. Ltd.	—
Barytes (Shielding Products) Ltd.	—	Colt Ventilation Ltd.	—	Halex (Bex Industrial)	—
Begg, Cousland & Co. Ltd.	—	131 Comet Pump & Eng. Co. Ltd., The	—	144 Haller & Phillips Ltd.	—
128 Belliss & Morcom Ltd.	—	269 Commercial Plastics Ltd.	—	Hamilton Company Inc.	—
165 Bennett, Sons & Shears Ltd.	—	Consolidated Zinc Corporation Ltd.	—	156 Harris (Lostock Gramlam) Ltd.	866
G/Card Berk, F. W., & Co. Ltd.	—	Constable & Co. Ltd.	—	Harvey, G. A., & Co. (London) Ltd.	—
138 Black, B., & Sons Ltd.	—	G/Card Constantin Engineers Ltd.	—	6 Haworth, F. (A.R.C.) Ltd.	—
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Blaw Knox, Chemical Engineering Co. Ltd.	840 & 841	Controlled Convection Drying Co.	—	Hearson, Charles, & Co. Ltd.	—
190 Blundell & Crompton Ltd.	—	Cooke, Troughton & Simms Ltd.	—	Helmets Ltd.	—
Boby, William, & Co. Ltd.	—	Coulter Electronics Ltd.	—	161 Hercules Powder Co. Ltd.	—
Borax & Chemicals Ltd.	—	Cromil & Piercy Ltd.	—	Hindle, Joshua, & Sons Ltd.	—
205 Borax Consolidated Ltd.	—	Crosfield, Joseph, & Sons Ltd.	859	164 Holden, Chris, Ltd.	—
4 Boulton, William, Ltd.	—	180 Crow Carrying Co. Ltd., The	—	151 Huntingdon, Heberlein & Co. Ltd.	—
Braby, Frederick, & Co. Ltd.	—	133 Cruickshank, R., Ltd.	—	I.C.I. (Billingham)	—
Brackett, F. W., & Co. Ltd.	—	159 Curran, Edward, Engineering Ltd.	—	I.C.I. Catalysts	—
265 British Acheson Electrodes Ltd.	—	219 Cyanamid of Great Britain Ltd.	—	I.C.I. General Chemicals Division	—
132 British Carbo Norit Union Ltd.	Cover iii	213 Cyclo Chemicals Ltd.	—	I.C.I. Ltd. Heavy Organic Chemicals	835
British Ceca Co. Ltd., The	—	126 Cyclops Engineering Co. Ltd., The	—	I.C.I. Metals Titanium D.	—
193 British Celanese Ltd.	—	235 Dalglish, John, & Sons Ltd.	—	I.C.I. Plastics—Darvic	—
British Drug Houses Ltd., The	—	152 Danks of Netherton Ltd.	—	I.C.I. Plastics—Fluon	—
154 British Ermeto Corporation Ltd.	—	Davenport Engineering Co. Ltd.	—	I.C.I. Ltd. (Plastics Division), Corvic	—
Spine British Geon Ltd.	—	136 Davey & Moore Ltd.	—	I.C.I. (Flourbe) Ltd.	—
271 British LaBour Pump Co. Ltd.	—	144 Davey, Paxman & Co. Ltd.	—	I.M.P.A. Ltd.	—
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G/Card British Oxygen Company Ltd. (Heavy Industrial Dept)	—	Deutsche Steinzeugwarenfabrik	—	Isopad Ltd.	—
146 British Rototherm Co. Ltd., The	—	143 Distillers Co. Ltd., The	—		
122 British Steam Specialties Ltd., The	—	139 Distillers Co. Ltd., The (Chemical Div.)	863		
126 British Tar Products Ltd.	844	Distillers Co. Ltd., The (Industrial Group)	—		
British Thomson-Houston Co. Ltd., The	—	135 Dorr-Oliver Co. Ltd.	—		
G/Card British Titan Products Co. Ltd.	—	131 Douilton Industrial Porcelains Ltd.	—		
British Visqueen Ltd.	—	154 Dowlow Lime & Stone Co. Ltd.	—		
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(Continued on page 838)

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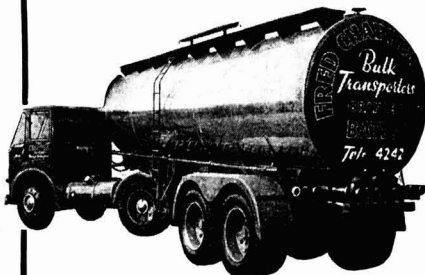
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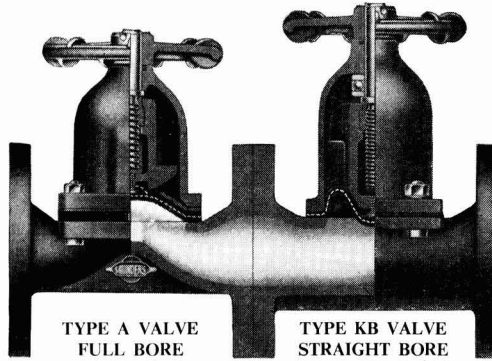
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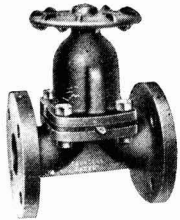
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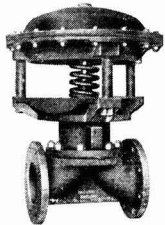
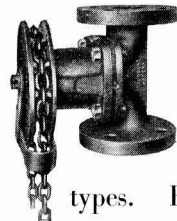
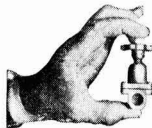


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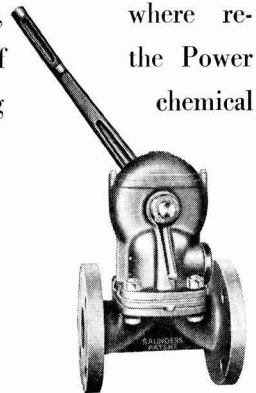


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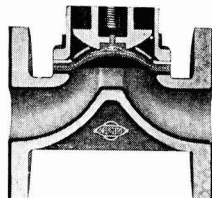
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INDEX TO ADVERTISERS

The first figures refer to advertisements in Chemical Age Directory & Who's Who, the second to the current issue

Page		Page		Page		Page		Page	
174	Jackson, J. G., & Crockatt Ltd.	—	National Industrial Fuel Efficiency Service	—	Shell Chemical Co. Ltd.	—		—	
172	Jamesales Ltd.	—	118 Neckar Water Softener Co. Ltd.	843	Shell-Mex & B.P. Ltd.	—		—	
	Jenkins, Robert, & Co. Ltd.	—	149 Negeretti & Zambra Ltd.	—	Shell Industrial Oils	—		—	
	Johnson, Matthey & Co. Ltd.	—	Newnes, George, Ltd.	—	Shirley, Aldred, & Co. Ltd.	—		—	
128	Johnsons of Hendon Ltd.	—	Back Cover Newton Chambers & Co. Ltd.	—	197 Siebe, Gorman & Co. Ltd.	—		—	
	Jones & Stevens Ltd.	—	Nordac Ltd.	—	157 Silvercrown Limited	—		—	
		—	Normalair Ltd.	—	40 Simon, Richard, & Sons Ltd.	—		—	
186	K.D.G. Instruments Ltd.	—	Northgate Traders (City) Ltd.	—	Sipon Products Ltd.	—		—	
	K & K Laboratories Ltd.	—	Nuovo Pignone	—	Sojuzchimexport	—		—	
170	K.W. Chemicals Ltd.	855		—	267 Southern Analytical Ltd.	—		—	
	Kaylene (Chemicals) Ltd.	—		—	Spence, Peter, & Sons Ltd.	851		—	
198	Kellie, Robert, & Sons Ltd.	—	162 Odoni, Alfred A., & Co. Ltd.	—	199 Spencer Chapman & Messel Ltd.	—		—	
	Kellogg International Corporation	—	190 Optical-Mechanical (Instruments) Ltd.	—	223 Standard Chemical Co.	—		—	
180	Kenton Fluorescent Mfg. Co.	—	Orthos (Engineering) Ltd.	—	320 Stanton Instruments Ltd.	—		—	
166	Kernick & Son Ltd.	—	Otford Paper Sack Co. Ltd.	—	Staveley Iron & Chemical Co. Ltd.	—		—	
319	Kestner Evaporator & Engineering Co. Ltd.	—		—	182 Steel Drums Ltd.	—		—	
	Kestner Evaporator & Engineering Co. Ltd. (Keebush)	838	G/Card P.G. Engineering Ltd.	—	196 Steel, J. M., & Co. Ltd.	—		—	
	Klinger, Richard, Ltd.	—	Palfrey, William, Ltd.	—	196 Sturge, John & E., Ltd.	—		—	
		—	Penrhyn Quarries Ltd.	—	Super Oil Seals & Gaskets Ltd.	—		—	
		—	215 Permutit Co. Ltd., The	—	Surface Protection Ltd.	—		—	
	Laboratory Apparatus & Glass Blowing Co.	—	G/Card Petrocarbon Developments Ltd., The	—	192 Synthite Ltd.	—		—	
	Laboratory & Electrical Engineering Co.	—	188 Retroderivatives Ltd.	—		—		—	
176	Laboratory Glassblowers Co.	—	Pickfords Limited	—	191 Taylor Rustless Fittings Co. Ltd.	—		—	
	Langley Alloys Ltd.	—	Pickstone, R. E., Ltd.	—	194 Thermal Syndicate Ltd., The	—		—	
124	Lankro Chemicals Ltd.	—	Plastic Constructions Ltd.	—	Fidy, S. M. (Haulage) Ltd.	—		—	
G/Card	Laporte Chemicals Ltd.	—	140 Plastic Filters Ltd.	—	156 Titanium Metal & Alloys Ltd.	—		—	
	Laporte Industries Ltd.	—	184 Platon, G. A., Ltd.	—	Todd Bros. (St. Helens & Widnes) Ltd.	—		—	
134	Leek Chemicals Ltd.	—	Podmores (Engineers) Ltd.	—	168 Towers, J. W., & Co. Ltd.	—		—	
176	Leigh & Sons Metal Works Ltd.	—	257 Polypenco Ltd.	—	261 Tylors of London Ltd.	—		—	
	Lennig, Charles & Co. (Great Britain) Ltd.	—	251 Polystyus Ltd.	—		—		—	
	Lennox Foundry Co. Ltd.	—	195 Pool, J. & F., Ltd.	—	Uhde, Friedrich, GmbH	—		—	
181	Lind, Peter, & Co. Ltd.	—	Pott, Cassels & Williamson Ltd.	—	180 Unicon Co. Ltd., The	—		—	
	Lloyd & Ross Ltd.	—	Potter, F. W., & Soar Ltd.	—	200 Unifloc Ltd.	—		—	
177	Lock, A. M., & Co. Ltd.	—	255 Powell Duffryn Carbon Products Ltd.	—	Unilever Ltd.	—		—	
	Longman Green & Co. Ltd.	—	G/Card Power-Gas Corporation Ltd.	—	Union Carbide Ltd.	—		—	
162	Longworth Scientific Instruments Co.	—	146 Price Stutfield & Co. Ltd.	—	170 United Filter & Engineering Co. Ltd., The	—		—	
188	Lord, John L., & Son	—	Prodorite Ltd.	—	196 United Wire Works Ltd., The	—		—	
	Loughborough Glass Co. Ltd.	—	Price's (Bromborough) Ltd.	—	G/Card Universal-Matthey Products Ltd.	—		—	
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188	McMurray, F. J.	—		—	188 W.E.X. Traders Ltd.	—		—	
187	Maine, B. Newton, Ltd.	—		—	189 Walker, P. M., & Co. (Halifax) Ltd.	—		—	
134	Manesty Machines Ltd.	—	154 Reade, M. G.	—	8 Waller, George, & Son Ltd.	—		—	
129	Marchon Products Ltd.	—	241 Reads Ltd.	—	Ward, Thomas W., Ltd.	—		—	
	May & Baker Ltd.	—	Reavell & Co. Ltd.	854	Warren-Morrison Ltd.	—		—	
	Mechans Ltd.	—	Recontainers Limited	—	148 Watson, Laidlow, & Co. Ltd.	—		—	
Front	Cover Metal Containers Ltd. Front Cover	—	Rheem Lysaght Ltd.	—	Watson-Marlow Air Pump Co.	—		—	
G/Card	Metalloc (Britain) Ltd.	—	Rhodes, B. & Son Ltd.	—	125 Wellington Tube Works Ltd.	—		—	
146	Metcalf & Co.	—	Richardson Scale Co. Ltd.	—	242 Whitaker, B., & Sons Ltd.	—		—	
	Metering Pumps Ltd.	—	Richmond Welding Co. Ltd.	—	Widnes Foundry & Engineering Co. Ltd.	—		—	
130	Metropolitan-Vickers Electrical Co. Ltd.	—	243 Rosin Engineering Co. Ltd.	—	253 Wilcox, W. H., & Co. Ltd.	—		—	
	Middleton & Co. Ltd.	—	Ross Ensign Ltd.	—	137 Wilkinson, James, & Son Ltd.	—		—	
	Mirrlees Watson Co. Ltd., The	—	260 Rotameter Manufacturing Co. Ltd.	—	142 Williams & James (Engineers) Ltd.	—		—	
178	Mirvale Chemical Co. Ltd., The	—		—	Wico Chemical Co. Ltd.	—		—	
	Mitchell, L. A., Ltd.	—	192 S.P.E. Company Ltd.	—	142 Wood, Harold, & Sons Ltd.	838		—	
120	Mond Nickel Co. Ltd., The	—	Sandiacre Screw Co. Ltd., The	—	184 Worcester Royal Porcelain Co. Ltd., The	—		—	
	Monkton Motors Ltd.	—	Saunders Valve Co. Ltd.	837		—		—	
	Monsanto Chemicals Ltd.	—	Scientific Design Co. Inc.	—	Yorkshire Engineering & Welding Co. (Bradford) Ltd.	Cover ii		—	
178	Morgan Refractories Ltd.	—	Scott, Bader & Co. Ltd.	—	150 Yorkshire Tar Distillers Ltd.	—		—	
	Moritex Chemical Engineering Co. Ltd.	—	Scottish Tar Distillers Ltd.	—	Young, A. S., & Co.	—		—	
		—	Sharples Centrifuges Ltd.	—		—		—	
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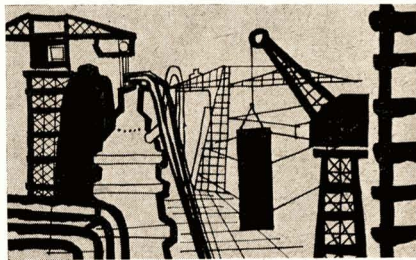
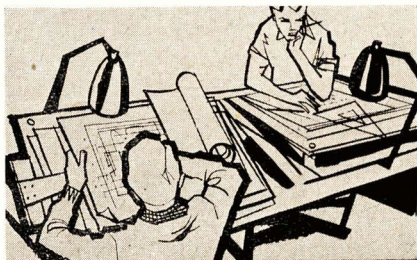
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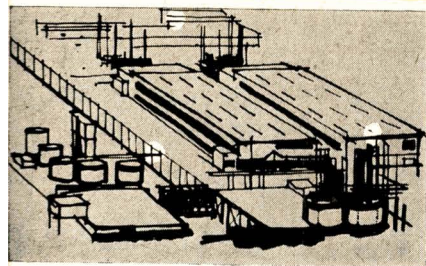
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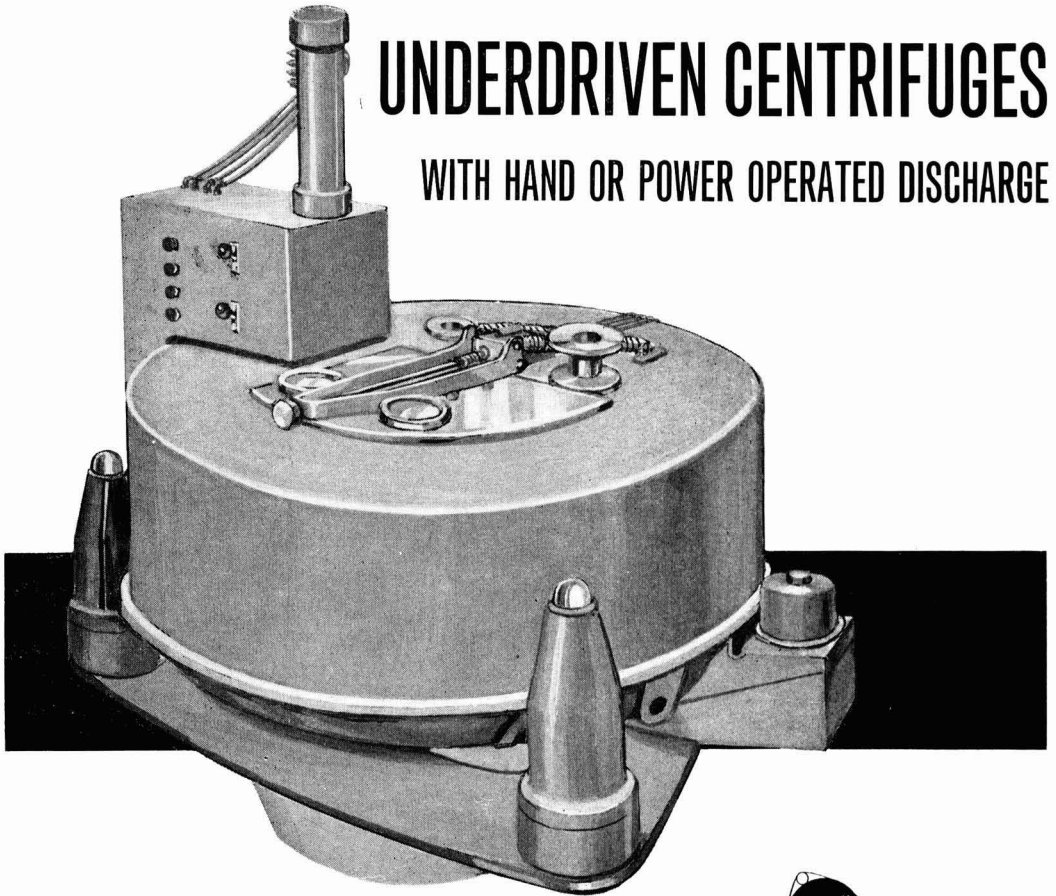
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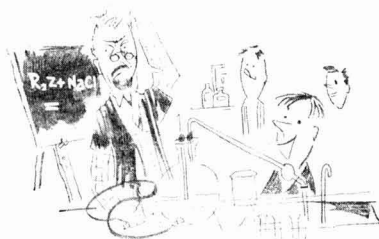
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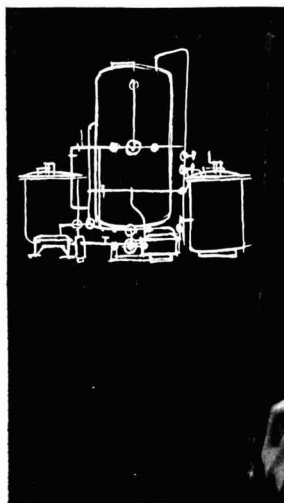
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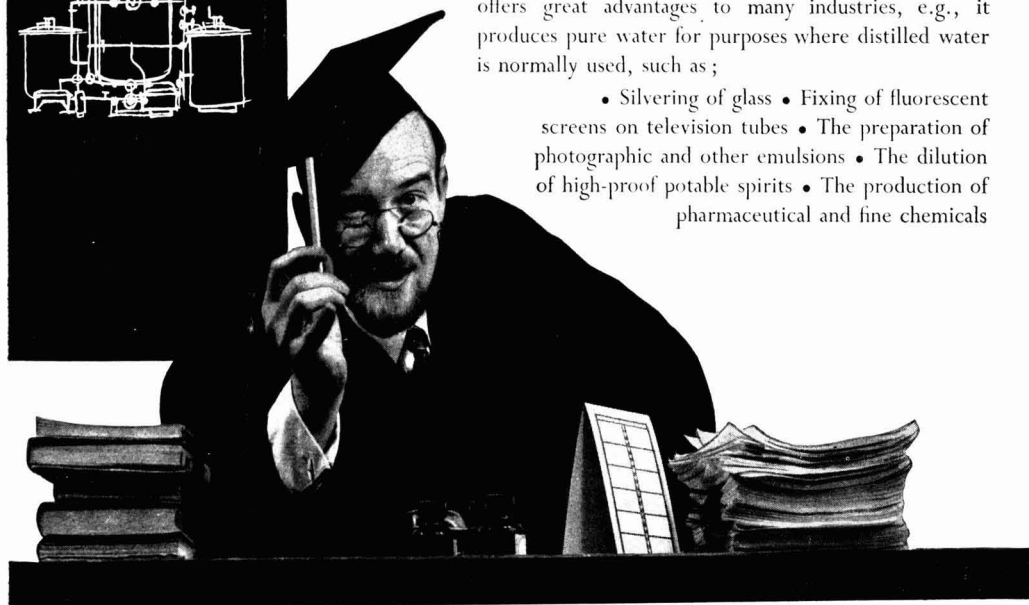
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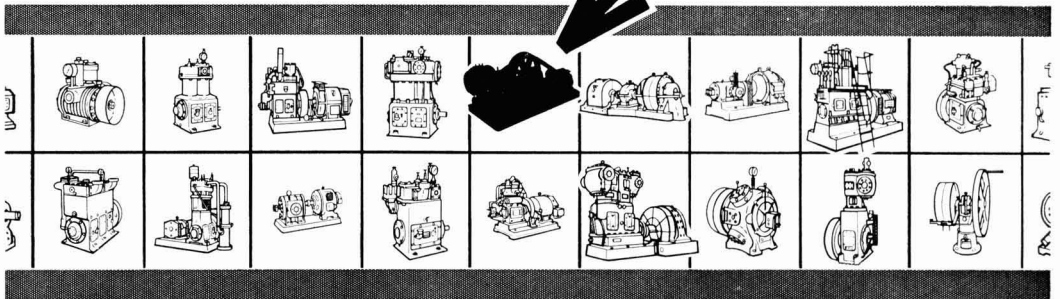
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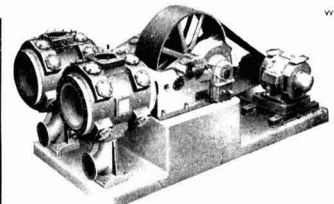
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VOL. 85

No. 2185

MAY 27 1961

Telephone: **FL**Eet Street 3212 (26 lines)Telegrams: **Benformula - Cent - London**

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Ministry Decision on Drugs	846
Project News	847
Mobil Bid for Kleemann	847
In Parliament	847
Distillates	848
I.C.I. Expansion Prospects	849
British Fair in Moscow	849
N.R.D.C. Licences Available	850
Oral Polio Vaccine Developed	850
People in the News	851
Italian Chemical Industry	852
Bookshelf	856
Market Reports	856
Overseas News	857
Commercial News	860
Chemical Prices	862
Trade Notes	864
Diary Dates	864
New Patents	866

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DRUGS AND POLITICS

THE cost of drugs supplied under the National Health Service has always been a source of political contention, although it represents only a small proportion of the total N.H.S. bill. The Government, which has until recently been unmoved by unfounded Opposition allegations that British pharmaceutical companies were making fat profits at the expense of the taxpayer, has now decided to invite tenders for proprietary drugs from unlicensed Continental suppliers.

This is a deplorable decision and surely a political expedient in view of all the facts. At present the Minister of Health has stated that the new policy is being implemented to deal with three main product groups—tetracyclines, chloramphenicol and chlorothiazides. As Mr. F. Goulding, a director of Pfizer Ltd., pointed out in *The Times* last week there is no indication that the Minister is likely to stop there.

The case for the apparently high cost of N.H.S. drugs was made in *CHEMICAL AGE*, 21 January, p. 137. The vast amount of original research carried out by companies in this country adds a high-cost factor to the price of drugs. Both Government and people have just cause to be thankful for that expenditure, heavy though it may be. It has led to the development and successful marketing of many drugs that have since alleviated suffering throughout the world.

Much of the ill-founded criticism aimed at the price of drugs made in this country can doubtless be put down to sniping on the part of those who are always only too willing to decry American commercial ventures in British industry. Part of it is due to the cost of promoting new drugs and stems from those politicians who are ready to snipe at any and every form of advertising. But if costly research adds to selling prices, then it is logical that companies should promote their products as widely as possible in order to earn maximum return on investment.

It is true that a minority of companies have over-stepped the mark in their promotional activities; on representations they have been quick to toe the line. This is certainly no reason why the whole industry should be pilloried.

One of the worst aspects of the Government's present decision is that unlicensed overseas suppliers, who are not involved in costly and well-organised research programmes, will now gain easy entry to the British market. There is no doubt that they can sell at well below the prices of U.K. companies; their products do not carry a margin for research. Now they are to be encouraged by the Health Minister exercising Section 46 of the Patents Act, which will effectively deprive British firms of their patent rights. Mr. Goulding described this as nationalising the principal asset of those pharmaceutical companies who are investing heavily in research and development. The Minister will compulsorily deprive them of private property which they have acquired laboriously and at great expense. This property does not consist of the inventions themselves, but the right to enjoy a monopoly in the inventions for the period of the patent.

If the Minister perseveres with this policy he will be doing a great disservice not only to the pharmaceutical industry but to medicine and

(Continued on page 846)

British Drug Industry Protests Against Ministry Decision to Break Patents Rights

THE British drug industry has been quick to criticise the decision of the Minister of Health to break patent rights by invoking Section 46 of the Patent's Act. The Minister now intends to obtain supplies of three drugs, from unlicensed sources abroad for the hospital service in the belief that this will cut costs.

Importers as well as British manufacturers will be invited to tender for supplies of tetracyclines, chloramphenicol and chlorothiazides. As stated in CHEMICAL AGE last week, p. 810, the Minister in a recent Parliamentary question indicated that if supplies of these three drugs had been bought on the Continent, the saving in hospital usage would have amounted to about £350,000. The hospital service spent more than £1 million in 1960 on purchases of these drugs, or one-fourteenth of the total hospital expenditure on drugs.

The Minister is invoking Section 46 to enable the Government to obtain drugs from unlicensed importers and then to negotiate direct with the patentees on the payment of royalties to them. If agreement on royalties cannot be reached, the terms will be settled in the High Court.

Buying for these three drugs for the hospital service will in future be done under central contracts determined by the Ministry; individual hospitals will no longer be able to buy them from unlicensed sources. Tenders will be invited by advertisement and both U.K. producers and importers will be able to tender. It is not proposed to favour im-

porters rather than home manufacturers who, it is hoped, will play their full part in the arrangements.

Proprietary drugs supplied by chemists under National Health Service prescriptions will not be affected by these arrangements, but the Health Ministry believes it likely that prices in this sector will respond to the prices for hospital drugs. The Minister of Health and the Secretary of State for Scotland will be responsible for the safety and quality of drugs supplied under their central contracts to hospitals. If any merit is proved in invoking Section 46 for the three drugs named, the Minister will then consider the benefits that might come from extending it to other drugs used by hospitals in substantial quantities.

The Association of British Pharmaceutical Industry views the decision with "grave misgivings". If it has the effect of so reducing prices as to make prohibitive the maintenance of research and development expenditure, the association believes it would be impossible for the industry to maintain its international competitive position. It is considered essential for satisfactory administrative procedures to be agreed between the Health Departments and the industry to ensure that the originator of a new product receives an adequate reward for the Crown use of his invention.

The Association is undertaking a full study of all the implications of the Minister's action and is to issue a further statement in due course.

Minister's Action Will Discourage Drug Research, Says Pfizer Director

A PROTEST against the Minister of Health's recent decision to invite tenders for patented drugs from unlicensed suppliers is made by Mr. F. Goulding, director, Pfizer Ltd., who says this decision has caused serious concern within the pharmaceutical industry. In a letter last week to *The Times*, Mr. Goulding points out that the industry has spent large sums of money on research in the past in the belief that any successful outcome of such work would enjoy the protection normally afforded to patented products in other fields of activity. Unlicensed foreign suppliers not involved in organised research have, in consequence, lower overhead charges and can offer cut-price material.

Mr. Goulding feels that the Minister's decision is at variance with the recent conclusion of the Government-appointed Hinchliffe Committee, that research is essential for advances in therapeutics, and with the Committee's recognition of

the valuable contribution which those firms that do research are making to the National Health Service. Pharmaceutical companies find little encouragement to increase their research effort in the Minister's present attitude, and feel that the Minister's proposed exercise of Section 46 of the Patents Act takes away the protection afforded by patent rights.

Principles of Metallic Corrosion

Monographs for Teachers No. 4, issued by the Royal Institute of Chemistry, is on the subject of metallic corrosion. "Principles of metallic corrosion" includes chapters on the corrosion of metals in gaseous and aqueous environments and the prevention of corrosion. Although intended primarily for teachers of chemistry, the monograph will be of value to others concerned with the subject.

Alterations to Restrictive Practices Register

Two chemical agreements feature in directions given by the Board of Trade to the Registrar of Restrictive Trading Agreements. Under Section 12 of the Restrictive Practices Act, the Board of Trade may, upon the representation of the Registrar, give directions authorising him to remove from the Register particulars which appear to the Board of Trade to be of no substantial economic significance.

In one of the agreements concerned, two sulphuric acid users agreed to buy sulphuric acid from a plant which they jointly own, in stated proportions and in quantities which will keep the plant fully operative.

The other agreement involves the re-bottling of sodium hypochlorite solution. Thirteen manufacturers of sodium hypochlorite solution agree to supply solution for re-bottling only to those customers who give undertakings not to rebottle in containers marked with any indication of food or drink, or of a shape associated by the public with particular brands of food or drink, also not to supply sodium hypochlorite to any one who refuses to sign or honour such an undertaking. Removal from the Register of the sodium hypochlorite agreement under Section 12 does not mean that the agreement is no longer in force of that those affected by it need no longer honour their obligations under it.

Particulars of the above agreements are included in the Register under No. 991 and 558 respectively.

Fisons Give 55s/Ton Fertiliser Rebates

A rebate of 55s/ton on all their 40 range compound fertilisers delivered to farms in England and Wales during May and June is to be given by Fisons Fertilizers Ltd.

Drugs and Politics

(Continued from page 845)

the nation in general. The net result can only be to discourage British companies from increasing their research effort, which the Government-appointed Hinchliffe Committee stressed was vital for advances in therapeutics. The committee declared that those firms doing research were making a valuable contribution to the N.H.S. and recommended that research spending should be increased. It was further stressed that conditions which favoured profits for research such as patent rights, should be accepted.

The Health Minister should reverse his deplorable decision as soon as possible and devote his energies to encouraging the British pharmaceutical industry to increase its research activities.

Project News

F.W.-built Aromatics Plant on Stream in Montreal

● A \$2,500,000 AROMATICS extraction plant, with a 6 million gall./year capacity of benzene, recently completed, is now on stream at **British American Oil Company's** Montreal East refinery. **Foster Wheeler Ltd.**, London, were main contractors for the project which was completed in the relatively short period of eight months following award of contract.

B.A.'s first, the plant is comprised of three general sections—feed preparation, extraction and fractionation. The extraction section includes the tallest tower in the unit—a 150-ft. stripper which separates aromatics from tiethylene glycol, used as a solvent in the process. The benzene produced is used in B.A.'s cumene operation. At the nearby B.A.-Shawinigan petrochemical plant, cumene is converted to phenol and acetone, which in turn are used by the plastics, resins and chemical industries.

The unit was designed with provision for future production of other aromatics such as toluene and xylenes which are used in the manufacture of plastics, explosives, industrial solvents and other chemical compounds.

Acid Recovery Plant for British Sidac

● CONTRACT valued at £500,000 has been awarded to **Process Plant Contractors (Campbell)** of Manchester, for the design and construction of an acid recovery and storage plant for British Sidac at St. Helens. The contract will be carried out in collaboration with **Wm. Neill and Son (St. Helens)**, who will supply the buildings, tanks and vessels. It is to be completed in 15 months.

Boby Plant for Pakistan Oil Refinery

● KELLOGG International Corporation, a subsidiary of the M. W. Kellogg Company of New York, has awarded a contract to **William Boby and Co.**, Herts., water treatment engineers, for the supply of a sodium-hydrogen blend and deaeration plant for a new oil refinery in Pakistan. The equipment will have a capacity of 150 U.S. gall./min.

U.K. Project to Produce German Hairdressing Chemicals

● FORMATION of a new company to manufacture and market the Schwarzkopf range of hairdressing preparations is the subject of an agreement between **Schwarzkopf**, of Hamburg, the hairdressing chemicals group and **John A. Fransen** whose Aylesbury factory premises will be purchased.

The first directors of the new U.K. company, which has a share capital of £100,000, are Mr. Bernard F. Fransen and Peter Schwarzkopf. The intention is to expand and develop the hair preparations side of the business.

SOCONY MOBIL'S £6M. OFFER FOR U.K. PLASTICS FIRM

THROUGH their U.K. subsidiary, Mobil Holdings Ltd., Socony Mobil are making a £6.7 million cash bid for the capital of O. and M. Kleemann Ltd., one of the largest U.K. suppliers of plastics moulding powders. An offer will shortly be made, subject to Treasury consent, to acquire the whole of the ordinary and preference capital of O. and M. Kleemann at 19s 6d for each ordinary unit of 2s 6d nominal and 22s 6d for each £1 nominal of 6½% redeemable cumulative preference stock. The directors of O. and M. Kleemann will strongly recommend acceptance; they own 42% of the ordinary capital and are accepting for their own holdings.

Mobil have only recently entered the U.S. chemicals industry and are due on stream this year with their first major plant, for ethylene at Bau Beaumont, Tex. An aromatics plant is under construction at Naples. Mobil have no other chemical plants in hand in Europe, although it has been known for some time that the company has been making a very careful and fundamental study of the European chemical industry. Recently, Mr. G. Carpenter was appointed European chemicals co-ordinator for Mobil.

Currently, Kellogg International are handling a contract for an extension of Mobil Oil Co.'s Coryton, Essex refinery. A new oil topping unit, part of the expansion, has been designed for an initial throughput of 15,000 barrels/day; capable of further expansion; it is due

on stream early in 1962.

O. and M. Kleemann were founded some years ago as a merchandising concern and developed into plastics moulding powders. The company has a very large stake in the polystyrene field holding a Shell Chemical distributorship and in fact competing for U.K. sales with Shell, O. and M. Kleemann also hold an agency for the Petrothene low-density polythene resins of U.S. Industrial Chemicals, as well as an agency for high-density polythene, trade-named Erinoid, and produced in the U.K. by the Phillips process, presumably by British Hydrocarbon Chemicals Ltd.

Other raw materials are cellulose acetate and casein sheets and blanks. Intermediate products include polystyrene sheet, polyester sheet, profile extrusions in rigid and flexible p.v.c., polystyrene and copolymers, polythene, polypropylene, cellulose acetate, acrylics and nylon, as well as dry colourants. The Kleemann companies have built up an extremely capable sales team.

The company has acquired Erinoid Ltd. and has a long-term arrangement with Kleemann Plastics Ltd., fabricators, who were formerly part of the Kleemann group, but since sold to Rosedale Associated Manufacturers Ltd.

Mr. Derrick Kleeman, chairman, who will continue to manage the Kleemann group if the acquisition goes through, has stated recently that the group would extend its interests in the raw materials field.

In Parliament

NO FURTHER LIMITS TO BE IMPOSED ON BULK ACID TRANSPORT

MR. S. S. AWBERY (Lab., Bristol, C) asked the Home Secretary if he was aware of the hazards of vehicles carrying dangerous chemicals, such as nitric and sulphuric acids, and the ever-increasing size of those bulk-carrying vehicles; and if he would take steps to reduce the danger to the public by limiting the amount of such chemicals which could be carried in them.

Mr. R. A. Butler replied that the Motor Vehicles (Construction and Use) Regulations, 1955, made by the Minister of Transport, placed a limit on the laden weight of a vehicle, and he had no reason to think that further action was necessary in that respect.

A.E.A. Research Contracts May Rise by £1 M.

Research, development and design contracts placed with industry by the U.K. Atomic Energy Authority totalled

£2.2 million in 1958-59, £3.7 million in 1959-60 and in the current year will reach an estimated £4.7 million. This was stated by Mr. Denzil Freeth, Parliamentary Secretary for Science, last week.

U.K. Synthetic Fibre Opportunities in Europe

A fourfold increase in consumption of synthetic textile fibres by Western Europe from 300 m. lb. in 1959 to an estimated 1,100 m. lb. in 1970 was forecast by Dr. A. Caress, overseas director, I.C.I., when he opened the annual conference of the Textile Institute at Harrogate.

By 1970, Dr. Caress maintained, West European consumption would almost equal consumption in the United States, whereas in 1959 it was only half. The U.K. textile industries should be able to become net exporters of synthetic fibre goods into the rest of Western Europe.



★ THAT the future of polypropylene for bottles is somewhat obscure was a point that came out in discussion at a recent Institute of Packaging meeting, following a talk by Mr. George Campbell of I.C.I. A questioner said that in abuse tests on 5 lb. polypropylene bottles packed with water, the bottles shattered completely on a single drop from a height of 3 ft.

This use for polypropylene is being investigated, but Mr. Campbell said that medium viscosity polypropylene was not recommended for general purpose bottle manufacture. Apparently in the U.S. liquid detergents are being packed in bottles based on blends of polypropylene and isobutylene. Mr. Campbell believes that this could be achieved in a straight polypropylene, obviously on completion of current research work.

★ ACCORDING to a list issued by the Indian Government, plastics, fertilisers, organic chemicals, fine chemicals and intermediates are among the industries in which foreign capital would ordinarily be welcome.

The Ministry of Commerce and Industry in New Delhi will give prompt and reliable guidance to prospective foreign investors interested in taking part in India's third five-year plan. An agency is to be established which will co-ordinate all aspects of a proposed project in consultation with the authorities concerned. In this way it is hoped to avoid delay in the consideration of projects involving large foreign investment or technical know-how.

★ SINCE its commercial introduction in the U.K., when it was mainly used for 'limelight' in the theatres, music halls and lantern lectures of the day, oxygen has come more and more into the 'limelight' for steel-making, welding and other industrial applications as well as for a whole range of medical and scientific uses. The complete story, starting from Priestly's discovery of oxygen in 1774, is told in a film called 'O for oxygen' which has been produced by British Oxygen Co. Ltd. to celebrate their 75th anniversary. Oxygen was first supplied commercially in the U.K. as a result of a process invented by the brothers Arthur and Leon Brin, who formed Brin's Oxygen Co. Ltd. in 1886. In 1906 the name was changed to the British Oxygen Co. Ltd.

Made for general interest by World Wide Pictures Ltd., 'O for oxygen' is photographed in Eastman colour, printed

by Technicolour and runs for 23 minutes. It is among the 15 films selected by the Federation of British Industries and the British Employers' Confederation to be included in the British entries for the Second International Festival of Industrial Films at Turin, 25-28 June. Copies of the film in 16 mm. and 35 mm. will soon be available on free loan from B.O.C. to schools, colleges and similar organisations.

★ TACTICS in discouraging starlings, pigeons and sparrows from perching on public buildings take on a more subtle, psychological approach with the introduction of Scarecrow Strip, a gel compound that is applied to ledges and sills in a narrow ribbon from a caulking gun. Birds do not like the wobbly feel of it when they perch on it, and go off to seek a more secure perch elsewhere. So effective is Scarecrow Strip that pigeons have been banished from one of their most traditional roosts—the National Gallery in Trafalgar Square.

Scarecrow Strip was developed in the research laboratories of the makers, Rentokil Products Ltd., Leatherhead, Surrey. I understand that it is being tried out extensively overseas, being marketed in the U.S. under licence to Rentokil.

★ RAYON, traditional material for tyre cord, already meeting stiff competition from nylon, is likely to have a new competitor in the manufacture. Goodyear Tire and Rubber of the U.S. have been testing polyester tyre cords for more than two years and state that these may be commercially available within a year.

Modifications to chemical dipping, heat treatment and stretch techniques are said to improve adhesion in commercial rubber formulations; until now adhesion has been the stumbling block to the development of this use. Polyester fibres are strong and do not form 'flat spots' on standing as does nylon.

★ I UNDERSTAND that the history of the growth of Imperial Chemical Industries Ltd. and the story of their present development will be told in a 24-page full size supplement to appear in *The Times* on Tuesday, 30 May.

I.C.I.'s position in the world chemical industry will be assessed by the chairman, Mr. Stanley Paul Chambers. There is also to be a note on the decision to move into

the Common Market and set up a factory at Rotterdam.

The close links which I.C.I. have with research laboratories are the subject of a special article by Sir Alexander Todd, F.R.S. There are also articles on the nature and the results of research initiated by the company. *The Times* labour correspondent will describe relations between management and labour.

Brief biographies of the first chairmen of the company, Lord Melchett and Lord McGowan, and an account of the negotiations that led to the formation of I.C.I. in 1926, will also be featured.

★ A SPECIAL oil-resistant foamed polystyrene—Montopore H—is used for the internal slats of a new cooling tower at the Newport factory of Monsanto Chemicals Ltd. Considerably lighter than the wood previously used, this plastics material reduces costs in manufacture and in the structure of the tower.

The plastics slats form an 'egg-crate' network over which the descending water spreads into thin films. Sawn into shape in exactly the same way as wood, the plastics slats cannot rot and weigh only 3 lb./cu. ft. compared with 60 lb./cu. ft. for waterlogged timber.

★ WHILE well able to take decisive, although deplorable, action on drugs and profits tax, oil duties and advertising the Government continues to dither on the Common Market. Official statements in recent weeks, while all favouring British participation in the C.M., all fall far short of saying that Britain would like to join in.

Perhaps I am a cynic where Whitehall is concerned, but it seems to me that the Government is doing nothing more than feeling out the opposition, largely from its own supporters. Of course there are strong ties with the Commonwealth which must not only be preserved, but strengthened, and before Britain can expect 'The Six' to make any concessions, our leaders must indicate that they would welcome the opportunity of linking with the Common Market.

There are difficulties within the six countries of the Common Market, but the arrangements are working very much better than was originally imagined. Industrialists on the Continent, no matter how much they would like to see Britain a member of their 'club' rightly see little reason to alter their established rules and regulations to admit a newcomer, who has not even declared his intention of joining. There can be little doubt that some concessions could be worked out provided that the U.K. Government made up its mind to seek admission; the longer a decision is put off, the more difficult it will be to negotiate entry under favourable terms.

Alembic

More I.C.I. Projects in Europe Foreseen in Chairman's Statement at Annual Meeting

THE very full utilisation of the company's manufacturing facilities, coupled in many cases with improved efficiency and the emergence of new products from the development stage into full commercial operation, was largely responsible for the higher profits achieved by I.C.I. over the past year, according to the statement of Mr. S. P. Chambers, chairman, at the annual general meeting. I.C.I.'s new record sales and profits for 1960 were discussed in *CHEMICAL AGE*, 1 April, p. 540 and 553, and 22 April, p. 653. Commenting on the current trend in sales, Mr. Chambers said that, so far, sales in 1961 were about equal in volume to those in the corresponding period of 1960 but the profit margins were likely to be kept down by home and overseas competition.

Referring to the I.C.I. project at Rotterdam, Mr. Chambers said it was likely that in years to come the company might also be manufacturing elsewhere within the European Economic Community. Secondly, it was expected that markets for I.C.I. products would expand and that production in Continental Europe would provide opportunities of reaching new markets; this development would not reduce sales from factories in U.K. which I.C.I. intend to go on developing and expanding as in the past. Nearly £40 million of capital expenditure was sanctioned during 1960; already in 1961 the expenditure of a further £45 million had been approved—this was some indication of the large developments now in hand.

Oil Processing on Tees-side

Mr. Chambers dispelled any impression that I.C.I.'s plans to change over from coal to oil as a raw material for synthesis at certain plants was due in any way to the high cost of coal; he said the new processes that I.C.I. had worked out were technically so much more efficient that I.C.I. would adopt them and abandon coal as a raw material even if the coal cost nothing. By using these processes I.C.I. expect to reduce their costs substantially, particularly of nitrogenous fertilisers, and to be fully competitive with producers who have the advantage of local natural gas or oil refinery gas supplies. Referring to the I.C.I. oil refinery project, Mr. Chambers pointed out that by having a refinery of their own the company were insuring against the possibility that the price of the special oil fractions needed as chemical raw materials might in future increase to a greater extent than the price of the basic crude oil.

On the new fuel oil tax provided for in the recent Budget proposals, Mr.

Chambers criticised the Chancellor for introducing this direct addition to costs at a time when British industry was being urged to reduce costs. It would be a serious blow to the competitive power of substantial sections of industry. To argue that some other countries had imposed a tax of this kind was no answer in the U.K. where the balance of payments was critical.

Speaking of the company's manufacturing activities in India, Mr. Chambers said the polythene plant at Rishra, near Calcutta, was working well above design capacity and extensions were being made to the paints and other plants there. Similarly, the explosives plant at Gomia (Bihar) was working at over 50% above design capacity. I.C.I. had plans to produce polyester fibre in India and to develop a site near Bombay for the manufacture of rubber chemicals and other products.

Forestral Acquire Cruikshank

FURTHER diversification into the chemical industry has been made by the Forestral Group of Companies. The Adelphi, John Adam Street, London W.C.2, with the acquisition of R. Cruikshank Ltd., Camden Street, Birmingham 1. Cruikshank produce industrial chemicals and supply chemicals and plant used in the electroplating and metal finishing industries.

The considerable technical resources of Forestral will be applied to extending the range of products and the level of technical service provided by Cruikshank. It is hoped that the large production capacity of Forestral plants throughout the world will improve the competitive position both at home and in overseas markets.

R. Cruikshank will continue under the guidance of Mr. A. J. L. Nash as managing director, the name of the company will remain unchanged.

Will

Mr. N. H. Williams, a director of Humphreys and Glasgow Ltd., chairman of Richard Scholefield (Est. 1868) Ltd., F. C. Construction Co. Ltd., Keighley Laboratories Ltd., and a former chairman and governing director of John Lund Ltd., who died on 15 January, left £11,244 net. (duty paid £625).

Russians Show Keen Interest in U.K. Products at Moscow Exhibition

EXHIBITORS at the British Trade Fair which began its 17-day run at the Sokolniki Park, Moscow, last Friday, have been agreeably surprised at the response the Fair has provoked, and deeply impressed by the calibre of the technical questions put by visitors, writes the Benn Brothers Group special correspondent at the Fair.

Out of the total 725 exhibitors, the largest single group is formed by plant and machinery (219 firms) including chemical plant and plastics machinery. Numerically, the second largest group covers textiles and ready-made clothing (151 firms). Leather and footwear supplies came third. Next largest group are the suppliers of materials—iron and steel, plastics, rubber, glass, wood, etc.—with their respective trade organisations. The British Iron and Steel Federation has a central site in this section, comprising some 79 exhibitors.

After the electrical and electronic engineering exhibitors and the suppliers of engineering components such as gears, belting, hose couplings, etc., come scientific instruments (38 firms), then chemicals and pharmaceuticals (31 firms), with impressive displays by I.C.I., Distillers, Fisons and others, as outlined in the *CHEMICAL AGE* preview of the Fair last week (page 809).

Technical films are being shown on a number of stands in the Fair's cinema

while a total of 30 scientific lectures is being given by exhibitors to audiences specially invited by the State Scientific and Technical Committee of the U.S.S.R. Council of Ministers.

It is claimed that the display of heavy machinery at the Fair is the biggest and most comprehensive ever sent overseas for Britain to an exhibition anywhere in the world. Among the exhibitors are Rustfya Ltd., the consortium which has won large contracts for tyre factories in the Soviet Union; Mather and Platt, who have been selling textile machinery to Russia for over a century; and the Lyddon Group who are working on pulp and paper equipment for the Soviet Union worth well over £12 m. Hungary, Czechoslovakia, Rumania and Poland have official delegations attending the Fair and China is expected to send purchasing missions.

Shell Xylenes for I.C.I.

In our survey of Europe's aromatics industry, published in *CHEMICAL AGE*, 15 April, p. 620, it was stated that Shell Chemical produced *p*-xylene at Stanlow for use by I.C.I. in Terylene manufacture. The reference should, of course, have been to mixed xylenes, which are purchased by the I.C.I. Heavy Organic Chemicals Division, from which *p*-xylene is made for supply to Fibres Division.

Potential Polymer Intermediates Now Available for Commercial Use Under N.R.D.C. Licence

AMONG the inventions developed by the National Research Development Council and now ready for commercial exploitation under licence are two series of compounds which may well prove useful in the production of polymers.

Cyclic phosphorus-nitrogen esters, developed by R. A. Shaw at Birkbeck College, London, and the subject of patent No. 7248/60, are a group of compounds consisting of cyclic phosphorus-nitrogen compounds containing substituted ester groupings; attached to the three phosphorus atoms in the six-membered ring are doubly linked oxygen atoms. The compounds are useful for intermediates as well as for the production of polymers.

Another development of R. A. Shaw (patent No. 23973/60) is concerned with the preparation of phenyl derivatives of triphosphonitrilic chloride. Of particular interest are the tetraphenyl dichloro-compounds and the fully substituted hexaphenyl derivatives. The tetraphenyl compound is of potential interest as a unique and stable intermediate having only two *gem*-dimethyl chlorine atoms available for substitution. This may prove useful in the preparation of high polymers.

Silicon derivatives feature in two of the developments. Developed by R. N. Haszeldine, M. J. Newland and J. B. Plumb at Manchester College of Science and Technology, fluorinated alkyl silanes are produced by an addition reaction in the presence of ultra-violet light between silane (or a fluorinated alkyl silane) and a fluoro-olefin. The fluoro-olefin is preferably trifluoropropane $CF_3CH=CH_2$. The addition reaction proceeds smoothly for several days at normal or moderately elevated temperatures and pressures.

Organo-silicon Chlorides

The same research team at Manchester are also responsible for the development of a series of organo silicon chlorides. Organo-substituted silicon-based compounds of the types $RSiH_3$, R_2SiH_2 and R_3SiH are reacted with elemental chlorine in a controlled manner in the liquid phase at low temperatures, e.g. -100° to $-150^\circ C$. When the organic radical R is a fluorinated alkyl radical such as the 3,3,3-trifluoropropyl radical the product is of particular interest. Products can be obtained with varying degrees of substitution of chlorine for hydrogen on the central silicon atom. The work on the silicon derivatives are the subject of patent Nos. 3998/60 and 3818/60 respectively.

A surface treatment for titanium that could assist further surface treatments as well as affording additional surface protection against oxidation and corrosion has been invented by L. L. Shreir

and R. A. Pigott at Battersea College of Technology (patent Nos. 19688/59 and 53/60). Titanium and its alloys may be subjected to an electrolytic technique whereby microporous pitting of the metallic surface permits the retention of conventional lubricants to assist cold drawing or sliding movement between surfaces with reduced tendency to gall. The microporous oxide film adheres strongly to the metal.

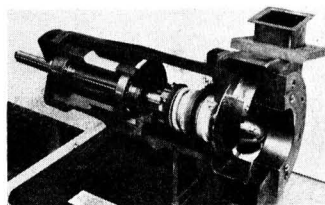
Further information on inventions offered under licence can be obtained from the Editor, *NRDC Bulletin*, 1 Tilney Street, London, W.1. The patent number or patent application number should be quoted.

Use of Titanium in New Submerged Nitric Acid Pump Gives Longer Life Says I.C.I.

SUCCESSFUL use of a submerged pump made from titanium for handling nitric acid is reported by I.C.I. Nobel Division, who have had such a pump in operation, at 1,440 r.p.m., for some 10 months. The idea of using titanium was to obtain a pump giving longer life and requiring less maintenance than one using 18/8/Nb stainless steel castings. As a result of the success with titanium, three more similar pumps have recently gone into operation.

The titanium pump was designed following discussions with Appleton and Howard Ltd., the St. Helen's, Lancs., chemical pump makers. As the submerged length of the pump was to be about 8 ft. 9 in., centre steady bearings were essential along the support tube and a loaded p.t.f.e. bearing previously developed by Appleton and Howard was found suitable for this application. After its 10 months' operation, the pump is reported to be running as smoothly as when it was installed, with no noticeable variation (usually due to wear on the steady bearings).

Because of the limitation in the size of pumps that can be lined, Appleton and Howard have departed slightly from the traditional pump shape and have



Cut-away model of a Gush centrifugal pump made by Appleton and Howard with all wetted parts fabricated in I.C.I. titanium by Marston Excelsior Ltd.

Wellcome's Breakthrough in Oral Polio Vaccine

ORAL polio vaccine is now available from the Wellcome Foundation Ltd. (Burroughs Wellcome and Co.), who become the world's first pharmaceutical company to offer the product on a regular commercial basis. The Foundation's vaccine was on 17 May approved by the Ministry of Health for sale throughout the world. The vaccine is of the type evolved by Dr. Sabin of Cincinnati and is prepared from strains provided by him. The Ministry are holding supplies in reserve for possible use in the U.K.

The problems of producing oral polio vaccine are highly complex and the official tests with which it must comply are extremely stringent. The Wellcome Foundation have, therefore, achieved a notable breakthrough for British science and commercial enterprise.

Living vaccine of the Sabin type has been used extensively in the U.S.S.R. Easy to give, it affords rapid protection and is less costly than killed vaccine.

designed their units to suit welded fabrication technique; instead of relying on a cast iron casing to provide the required strength, they use a slightly heavier gauge titanium and apply stiffening ribs where necessary.

A range of horizontal pumping sets is now available in the Gush series with heads from 10 to 150 ft. and capacities from 2 to 1,000 g.p.m. All wetted parts are in solid titanium and in all these units either packed glands or Crane type 10 mechanical seals are available. Where abrasive solids are present and a packed gland must be used, the titanium protective sleeve at the gland is coated with a minimum of 1 mm. of ceramic.

Appleton and Howard are now able to fit submerged pumps with loaded p.t.f.e. bearings, with the loading in ceramic powder, stainless steel, nickel, glass and carbon; the latest possibility is I.C.I. Fluon p.t.f.e. loaded with titanium.

Nitric Acid Fumes Dispersed by Firemen

A cloud of nitric acid fumes was formed over the district when a storage tank of A. H. Marks and Co., Wyke, Bradford, overflowed. Bradford fire brigade was called to disperse the fumes which were diluted and neutralised by firemen wearing breathing apparatus. The accident occurred when a 4,000 gall. storage tank was being filled from a road tanker.

Guide to U.K. Pump Makers

An 88-page buyers' guide relating to the various types of pumps and pumping plant manufactured by members of the British Pump Manufacturers' Association is now obtainable from the association at 94/98 Petty France, London S.W.1.

● **Mr. P. E. Ballard**, chief administrative director of Bramigk and Co. Ltd., and to that extent the chairman's deputy, is retiring on 31 May after 38 years' service to make way for the younger generation. Apart from service in World War I and in World War II as a Civil Defence officer, he has been continuously with Bramigk and a senior member of the board since 1945.

● **Mr. G. B. Reilly**, formerly the division's chief biologist, has been appointed manager of the Newton Chambers Chemicals Division technical advisory department at Thorncliffe, Sheffield. He is at the customer's disposal to make personal investigation of particular hygiene problems and to advise on treatment—whether by use of his company's wide range of products or by other special methods. Succeeding Mr. Reilly as chief biologist is **Mr. J. W. Liddell**, who is 28.

● **Mr. R. A. Ramsay**, who has been appointed assistant works manager, Horsham, of CIBA Laboratories Ltd., joined CIBA 12 years ago as a production pharmacist. For the past four years he has been chief pharmacist in the pharmaceutical development department and he continues to be responsible for this department.

● **Mr. T. L. Birrell** is retiring from the board of the British Xylonite Co. Ltd. on 30 June, after 33 years' service. He joined the company in 1928 and was sales manager of raw materials for a number of years. He became sales director of B.X. Plastics on its formation in 1939, and was elected to the board of the British Xylonite Co. in 1947. Since



T. L. Birrell

1949 he has been managing director of the Halax Division. He was an original subscriber of the British Plastics Federation Ltd. in 1933, and chairman of the Plastics Institute in 1942 and president in 1952.

● **Mr. T. H. Gallie** (overseas) and **Mr. J. R. H. Crane** (copper products) have been appointed directors of I.C.I. Metals Division. Mr. Gallie, who is 43, has been concerned with metal sales throughout his 25 years' service with the company and for the past two years has been metal sales manager, Midland region. Mr. Crane, who is 37, joined I.C.I. Metals Division as a laboratory assistant in 1939 but quickly developed a bent for the technical side of metal production. After two years as titanium production man-

PEOPLE in the news

ager, he was transferred in 1959 to Lighting Fasteners Ltd., Witton, as general manager.

● **Mr. A. A. Round**, assistant general manager of Dunlop's Chemical Products Division, has been re-elected chairman of the technical panel of the British Rubber and Resin Adhesive Manufacturers' Association.

● **Dr. W. G. Malcolm**, president of American Cyanamid Co., has been elected chairman of the board of directors and chief executive officer of the company. He succeeds **Mr. Thomas L. Perkins**, who resigned as chairman but will continue as a director and executive committee member. Dr. Malcolm retains full responsibility for the general management of the company, with particular emphasis on corporate policy and planning.

● The British Industrial Biological Research Association has appointed **Dr. Leon Goldberg, F.R.I.C.**, as its Director. Dr. Goldberg is at present medical research director of Benger Laboratories Ltd. It is expected that he will take up his appointment with the Association towards the end of the year.

The Research Association was formed in 1960, with the support of the D.S.I.R., to carry out toxicological investigations on substances used in the production, processing and packaging of food and cosmetics.

● **Dr. John Newton Bradley**, lecturer in inorganic and physical chemistry at Liverpool University since 1959, has been awarded the Meldola Medal for 1960 for his work in the field of physical chemistry with special reference to the kinetics of reactions involving free radicals and reactions in shock waves studied by mass spectrometry. From 1952 to 1955, he carried out research on the reactions of simple alkali radicals in the gas phase under Sir Harry Melville and Professor J. C. Robb. He received his Ph.D. in 1955 and then joined the Royal Air Force. He completed advanced flying training in 1957 and served as a flying officer. In 1957 he gained a Commonwealth Fund Fellowship at Harvard and

worked there until June 1959. Current research interests include the emission from shock-heated gases, combination of flash photolysis and shock tube techniques and the development of a modified 'chemical' shock tube, with improved time resolution. Both theoretical and experimental work is continuing on the reactions of free radicals at normal temperatures. Dr. Bradley is the author of a book on 'Shock Waves in Chemistry and Physics' which will be published by Methuen and Wiley later this year.

● **Mr. G. N. Hodson, M.B.E.** (Hathernware Ltd., Loughborough), was at the recent annual meeting elected chairman of the S.C.I. Chemical Engineering Group for 1961-62. Other officers elected are: hon. treasurer, **H. V. Potter** (Bakelite Ltd.); hon. secretary, **J. L. Sweeten** (A.P.V. Company); hon. assistant secretary, **F. W. Edwards**; hon. editor, **J. L. Edgar**; hon. recorder, **C. J. Smith**. New committee members are: **J. Bruce, A. R. Carr, E. W. Greensmith, G. Nonhebel, W. C. Peck, D. N. Podgham, I. M. Smallwood** and **O. G. Weller**. At the end of the meeting, **Lord Fleck, S.C.I.** president, presented a cheque to **Mr. F. A. Greene**, who retires after 34 years as group hon. treasurer.

● **Mr. J. B. Robertson**, chemicals and building products sales control manager since 1956, is to join the I.C.I. Billingham Division board on 1 July as commercial director.

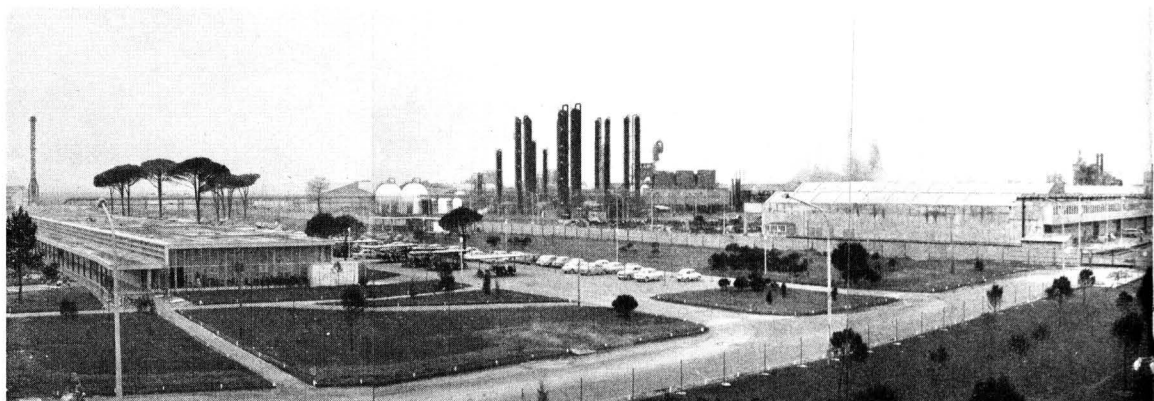
● **Mr. C. A. C. Petrie**, group engineer in the engineering department of the I.C.I. Heavy Organic Chemicals Division, has been appointed engineering manager of the company's European Council, which, with the same status of a division, will be concerned with the development of I.C.I.'s new 300-acre site near Rotterdam.

● **Mr. J. Lewin, A.M.I.C.E., A.M.I. Mech.E.**, formerly a senior assistant engineer with the Metropolitan Water Board, has been appointed materials handling engineer of BTR Industries Ltd., responsible for the development of mechanical handling techniques within the BTR Group.

● Silver medal of the Society of Dyers and Colourists was recently presented to **Mr. R. Grice**, who retired two years ago after 40 years with the Geigy Company. Among those who received Associate diplomas were: **Mr. B. Bennett** (Sandoz Products Ltd.), **Mr. D. J. Garner** (L. B. Holliday and Co. Ltd.) and **Mr. R. Sidlow** (Allied Colloids Ltd.).

● New directors have been appointed to three divisions of the International Atomic Energy Agency, Vienna. They are **D. W. Pearce** (U.S.), to head the Division of Health, Safety and Waste Disposal; **C. S. del Rio** (Spain), to head the Division of Reactors; and **C. Simano** (Czechoslovakia), to head the Division of Technical Supplies.

ITALY—Europe's Fastest G



CHEMICAL AGE SURVEY PIN IN DYNAMIC ITALIAN E

CURRENTLY the Italian chemical industry is expanding at a rate faster than any other European country, or even the U.S. One of the main reasons for this dynamic upsurge in the construction of new facilities—mainly for petrochemicals, plastics and fibres—has been the fact that Italy was slower to develop its chemical industry just after the war than most other European countries.

From 1954 onwards, however, the growth rate has been dramatic and with vast developments nearing fruition, particularly in the south, it is likely that the Italian industry will continue to set the pace. In considering the graph illustrating production growth trends, shown on page 854, it should be remembered that in 1955 the Italian chemical industry was still relatively small compared with Great Britain and West Germany; a truly massive investment programme has been crammed into the past five years—and Italy now ranks third in Europe as regards capital spending on chemical plant, surpassed only by this country and the German Federal Republic.

The industry is dominated by three large groups—Montecatini, the largest, ANIC of the ENI State-owned oil group and by the Edison Chemical Division and its associated chemical companies. In addition many other chemical companies are forging ahead with large scale developments, mostly in specialised fields.

Other reasons for the big growth rate are undoubtedly the need for large and economic plants if Italy is to take full advantage of the big potential market offered by the Common Market plus a

strong desire to bring new large-scale industry to the less developed southern part of Italy. Much Government encouragement has been given to the establishment of industry in the south and the discovery of large deposits both of mineral oil and natural gas in the area is helping to attract chemical planners. The biggest of development projects are now taking place in the south and in Sicily, where Gela, Priolo and Ragusa are becoming major new petrochemical centres. On the mainland Brindisi, Bussi and Ferrandina in the south are all to be developed with large-scale petrochemical complexes.

Apart from concessions on the purchase of raw materials, chemical companies turning to the south are likely to secure temporary exemption from taxes, with exemption from duty on imported machinery and equipment. There is also the incentive of a good reserve of labour which is generally highly intelligent and well able to adapt itself to the demands of modern industry. For foreign investors, there is the opportunity of being able to take both profits and capital out of the country.

The productive capacity of Italy's petroleum refineries is estimated at around 36 million tonnes/year, which, with current expansion plans will increase to some 46 million tonnes. In addition, the production of some 6,310 million cu. m. of natural gas in 1960 will, with the newer deposits to be exploited this year and next, help put Italian chemical producers in a commanding position so far as raw material supplies are concerned. The use of natural gas in

This report on the Italian chemical industry by the 'Chemical Age' correspondent with the Food and Agriculture Organisation from Italy have covered the Food and Agriculture Organisation's Anglo-Italian trade relations (C.A., 20 May, p. 807) and annual reports of Mo

Pictured above are the Ravenna fertiliser

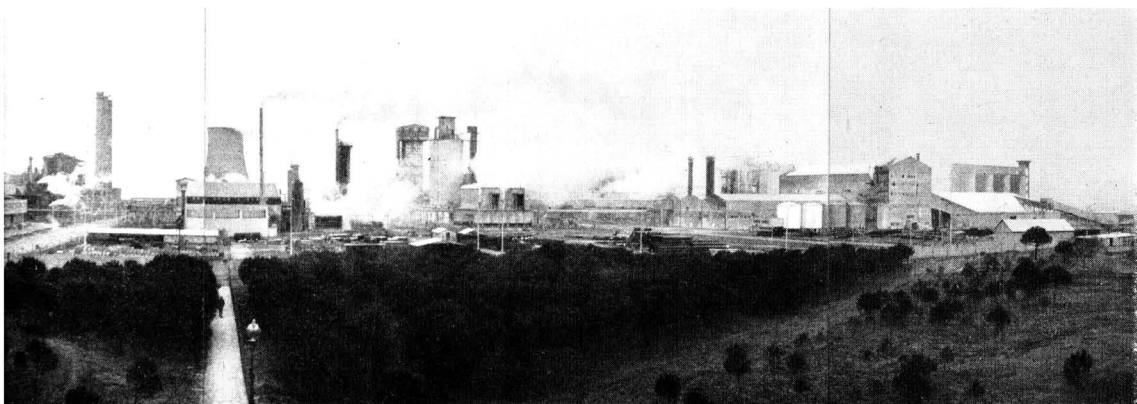
ammonia synthesis, for instance, is giving an estimated 10% saving compared with synthesis from oil.

Natural gas for chemical production sells at well below the cost for its use as fuel oil, and this is proving a big incentive to the chemical industry.

Italy would appear to be well served with statistics, but official production figures seldom tally with overall totals provided by individual companies or with those found in the literature. Industry spokesmen suggest that the following official production figures for 1960 supplied to CHEMICAL AGE err on the cautious side—the official 1960 figure for urea production, of 99,619 tonnes, compares with a figure of 119,000 tonnes that is frequently quoted for the previous year.

Product	Tonnes
Sulphur	102,250
Ammonium sulphate	
(20-21% N)	1,259,954
Ammonium nitrate —(total)	812,776
20-21% N	769,544
26.5% N	30,223
33-35% N	13 09

rowing Chemical Industry



POINTS GROWTH FEATURES EXPANSION PROGRAMME

was written following a tour of that country
the Royal visit to Italy. Recent C.A. reports
cultural Organisation (C.A. 13 May, p.767),
views of Montecatini's managing director
tecatini, ANIC and Sicedison (C.A., 20 May).
d synthetic rubber plants of ANIC.

Calcium nitrate—total	..	374,251
13-14% N	2,680
15.5% N	364,561
15-16% N	7,010
Calcium cyanamide (15-16% N)	127,014
Urea (45-46% N)	99,619
Superphosphates	1,528,398
Basic slag	98,864
Compound fertilisers	1,207,730
Sulphuric acid (50% Be)	3,321,691
Ammonia, synthetic	816,426
Dyestuffs, organic synthetic	18,013
Tanning extracts	101,516
Caustic soda (100% NaOH)	403,369

Whether one relies on the official statistics or on industry figures there is little doubt that throughout the heavy organics range, as well as in plastics and fibres, Italy is heading for over-capacities. This despite expanding domestic consumption and increasing export trade. The Italian industry prefers to build one really large unit first time, rather than start with a small unit and adding further small units to match rising demand.

Investment in chemicals in 1959 well exceeded the annual average of £60 mil-

lion for the period 1955-1958; expansion plans due for completion by the end of 1962 will, it has been estimated, call for the investment of another £85 million in the petroleum industry; nearly 2.5 million tons of liquid and gaseous feedstock will be needed annually in addition to the tonnage used in 1959. Output will be increased by the end of 1962 by 460,000 tonnes, in terms of carbon content, with the most marked development taking place in C₂ and C₃ chemicals. In 1959 Italian petrochemical production, in terms of carbon content, totalled 180,000 tonnes; one producer alone—Montecatini—claims a similar figure for its 1960 production.

In one section of the Italian industry—plastics materials—production has risen by more than 650% since 1953, when a total of 115 million lb. were produced. By 1959, production reached 557 million lb., a 40% rise on 1958; last year output rocketed to 660 million lb. (a rise of 19% on the previous year) and this year is expected to total 880 million lb., or 33% up on 1960.

All the main companies are confident that demand will take care of any current or future surpluses. It is pointed out that consumption per capita of plastics materials and synthetic fibres in the south of the country is negligible and that rising standards of living brought about by industrialisation will create new and large demands within Italy for the products of the chemical industry. It is also felt that the Common Market will give Italian producers a continually expanding outlet for their chemicals.

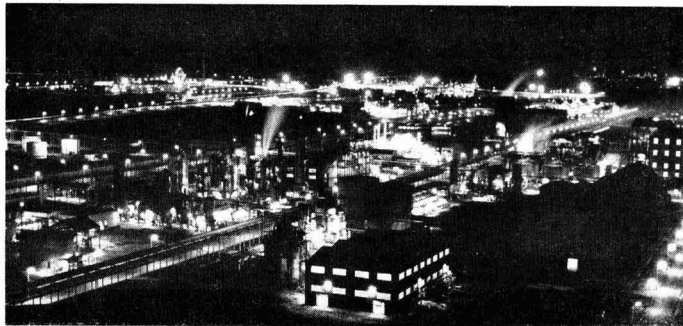
Currently, Italy is exporting a little more than 9% of its chemical turnover,

compared with France 16-17%, the U.K. 21%, and West Germany 25%. It is thought that the Italian figure could be doubled without too much difficulty. It must be stressed that as Italy develops her own synthetic organic and plastics industries, she will fade as a market for British speciality products. In fact, Italy is already providing strong competition in many traditional British markets with modern petrochemicals and their derivatives. This trend will continue.

Polythene is an extreme example of the present production trend in Italy. With capacity currently rated at double the consumption figure, Italy is heading towards even greater over-capacity. Capacity of the four producers—Montecatini, Celene, Solvay and A.B.C.D.—is now around 70,000 tonnes/year, with domestic consumption running at between 30,000 and 35,000 tonnes. By 1962-63, capacity will be close to 140,000 tonnes, but by then consumption will not, it is thought, exceed 90,000 tonnes.

Consumption last year was up by about 60% on 1959, when the increase over 1958 was of the order of 46%.

Since Montecatini first came into production with a 6,000 tonnes a year unit licensed from I.C.I., prices have fallen dramatically from Lire 900/kilo to about Lire 275 today. One result of this lowering of prices and intense competition, followed by drastic price cuts, has been an all-out attack on export markets. Inroads have been made into many markets previously the preserve of British producers, who if they are to maintain their position will have to bring down their prices also.



Night scene at the Priolo plants of SINCAT

In Italy, polythene has had to fight hard for its markets against p.v.c., current production of which is around 110,000 tonnes/year, with capacity rated at about 180,000 tonnes and domestic consumption at an estimated 60,000 tonnes in 1960. SNIA viscosa are to enter this field later this year, to be followed by Rumanianca next year. Because p.v.c. capacity built up quicker than that for polythene, p.v.c. had captured a number of markets which might otherwise have gone to the polyolefin. Two further factors have complicated the polythene market—Solvay's entry with a high-density product, the greater rigidity of which has enabled it to corner a large slice of the housewares market, and Montecatini's introduction of polypropylene, which is currently selling at around the price of the h.d. polythene—in the region of Lire 600 to Lire 700/kilo.

Of the current polythene producers, Montecatini have the largest capacity, with four units of 6,000 tonnes each at Ferrara; this group, which will have a 30,000 tonnes/year high pressure plant at Brindisi in 1962, also have a smaller 2,000 tonnes/year plant at Ferrara based on the Ziegler process. Next in size are Celene—the joint Soc. Edison/Union Carbide company—with 16,000 tonnes/year at Priolo, Sicily; Celene have plans for a 14,000 tonnes/year expansion. A.B.C.D., of the Bombrini-Parodi group, have a 12,000 tonnes/year plant at

Ragusa, Sicily, which uses the B.A.S.F. process; this capacity is to be raised to around 20,000 tonnes. The other producers, Solvay, use the Phillips process at Rosineano to produce some 8,000 tonnes/year, with expansion scheduled to raise this by 4,000 tonnes. New entrants to the polythene field will be A.N.I.C., associated with the E.N.I. group, who have announced plans for a 15,000 tonnes/year plant at Gela, Sicily.

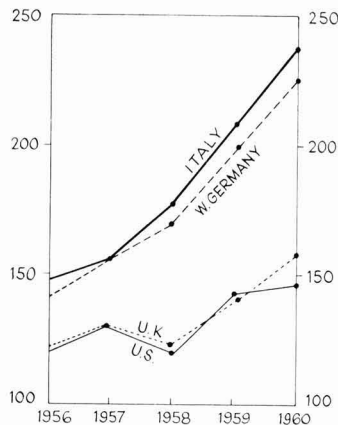
A spectacular build-up in aromatics capacity is also likely and by 1963 it is estimated that Italy may have at least 150,000 tonnes of surplus capacity. Shell Italiana will be the first Italian producer on stream with a petroleum-based aromatics unit, this being due in production by October this year. Using 100,000 tonnes of feedstock at Rho near Milan, this unit will produce 35,000 tonnes of aromatics. Mobil Chimica Italiana have already declared their intention of coming into production in 1962 with a 130,000 tonnes/year unit, and Montecatini will have a large-scale plant on their Brindisi site.

S.A.I.C.I. of Sardinia have plans for 160 tonnes/day of aromatics, while another Sardinian plant is envisaged with large-scale aromatics production. ANIC could well become producers at Gela, or one of their new Southern Italy sites.

Big surplus capacities are building up in other major products. In phthalic anhydride, for instance, total capacity

of 10 producers is around 60,000 tonnes/year, with about half of that owned by Ftalital, who are now said to be Europe's largest individual producers. Last year ACNA, the Montecatini subsidiary, raised their capacity from 1,000 to 10,000 tonnes and increases have been registered by Bombrini Parodi-Delfino, the other large-scale producers. By 1962, capacity will be around 80,000 tonnes; increasingly this will be based on *o*-xylene, which now accounts for well over 50% of phthalic capacity.

Maleic anhydride is also seeing much expansion and Bombrini by the end of this year or early in 1962 will have a new 6,000 tonnes/year Scientific Design on stream, giving them some 9,000 tonnes/year. Ftalital, with a 1,500-tonnes unit, have announced their intention of raising this first to 5,000 tonnes and then to 10,000 tonnes. Later this year Sicedison will enter the maleic field. Maleic capacity in 1960 was between 9,000 and 10,000 tonnes and by 1962 should total 20,000 tonnes.



Growth rate of chemical production in Italy, U.K., U.S. and West Germany—1953 = 100. Based on O.E.E.C. data

Montecatini also have in mind the production of phthalic at Brindisi, together with phthalate plasticisers; with their hitherto undisclosed plans to produce up to 25,000 tonnes/year of petronaphthalene—in addition to xylenes, at Brindisi, they would then have a completely integrated product range from raw materials to end products.

Despite these surplus capacities, which in some cases it seems will build up even quicker than domestic demand, Italian producers, as already stated, are not unduly worried.

Most of the new production sites are ideally situated for export trade to countries on both sides of the Mediterranean and it is to the expansion of exports that companies are immediately looking.

Potential for raising consumption in Italy of chemical products is well illustrated by the per capita figure for paints and varnishes. This is currently around 3 kg. per head, compared with almost three times that figure for the U.K. In the south, consumption of synthetic detergents is negligible, for in many

Italian Polythene Capacity with Planned Expansions

PRODUCER	PROCESS	SITE	CAPACITY	PLANNED
Montecatini	I.C.I.	Ferrara	24,000	—
	Ziegler	Ferrara	2,000	—
	I.C.I.	Brindisi	—	30,000
Celene	Union Carbide	Priolo	16,000	—
		"	—	14,000
ABCD	B.A.S.F.	Ragusa	12,000	—
		"	—	8,000
Solvay	Phillips	Rosineano	12,000	4,000
ANIC	I.C.I.	Ravenna	—	15,000
			66,000	71,000

villages soaps are produced at home from oils and fats which are readily available. It is estimated that syndet consumption in 1960 was around 120,000 tonnes, while soap production is thought to have totalled about 220,000 tonnes.

In yet another sector, too, Italy will shortly have total capacity for more than 56,000 tonnes of carbon black a year—in excess of current demand. This will, it is thought, be taken up somewhat quicker than other capacities.

The table below refers briefly to major Italian chemical projects, which are either on stream this year or planned for the future; production is given in metric tons (tonnes).

ABCD (Bombrini Group)

Ragusa, Sicily

50,000 t.p.a. ethylene unit to be expanded
Polythene output to rise to 20,000 t.p.a.

ANIC (ENI Group)

Gela, Sicily

60,000 t.p.a. LPG and 4,000 t.p.a. propylene for completion 2nd half 1962. Other plants to include: 15,000 t.p.a. polythene, 17,000 t.p.a. other ethylene derivatives; 65,000 t.p.a. synthesis ammonia, up to 100,000 t.p.a. urea, 100,000 t.p.a. sulphuric acid; plus solvents, fertilisers, petroleum coke, etc.

Ferrandina

Heavy organics, initially intermediates for plastics, fibres

Ravenna

Synthetic rubber output to reach 100,000 t.p.a. in 1961; cis-4-polybutadiene on stream this month

BOMBRINI PARODI-DELFINO

Colleferro

6,000 maleic anhydride plant on stream end-1961, or early-1962

CABOT ITALIANA

Ravenna

15,000 carbon black plant on stream

COLUMBIAN CARBON CONTINENTAL EUROPA

Treccate

27,300 t.p.a. carbon black (now on stream)

CYANAMID ITALIANA

Catania, Sicily

Pharmaceuticals plant planned

DOW CHIMICA ITALIANA

Leghorn

Polystyrene resins (16,000 t.p.a.) plant on stream mid-1962

EDISON CHEMICAL GROUP

Mantua

Expansion planned for Edison polyvinyl acetate plants, ammonia and fertiliser units Sicedison to expand capacities for olefins, p.v.c., plasticisers, solvents, etc. Plant for maleic anhydride is at an advanced stage. Units for cumene-phenol and acetone now on stream

Porto Marghera

ACSA to raise output of acrylic fibres from 6,000 to 10,000 t.p.a.

Sicedison to expand outputs of p.v.c., polystyrene, chlorinated solvents, plasticisers and dodecyl benzene
Plants for fluorocarbons and caprolactam monomer at advanced stage; to be on stream this year

Priolo, Sicily

CELENE to raise polythene capacity from 16,000 to 30,000 t.p.a. in 1961. Propylene glycol plant on stream soon; ethylene, ethylene derivatives and oxo chemicals plants due for expansion

SINCAT are putting to use unit for butadiene-from-LPG. Expansion in hand for fertilisers plus new thermal cracker and polymerisation units

ESSO STANDARD- SOC. P.R. AZIONI

Augusta, Sicily

200,000 t.p.a. lube oil plant scheduled for 1963

FTALITAL

Bergamo

Maleic anhydride capacity to be increased from 3,500 to 8,500 t.p.a. this year

W. R. GRACE AND CO.

Naples

Butadiene-styrene resin and latices plant planned

MOBIL CHIMICA ITALIANA

Naples

130,000 t.p.a. aromatics plant due on stream in 1962

MONTECATINI

Brindisi

First units due on stream by end-1961 or early-1962, inc. large olefins plant, plus 30,000 t.p.a. polythene, 30,000 t.p.a. polypropylene resin, polybutylene, ethylene-propylene copolymers, polypropylene fibres, 26,000 t.p.a. acetylene from oil, 50,000 t.p.a. methanol, aromatics (benzene, xylenes & toluene), 25,000 t.p.a. petronaphthalene, phthalic & maleic anhydrides, phthalate esters & plasticisers, oxo chemicals, solvents, etc.

Bussi

Heavy organics—still in planning stage

Cengio

ACNA phthalic output recently raised to 10,000 t.p.a.

Ferrandina

Heavy organics—still in planning stage

Ferrara

Third polypropylene unit due on stream soon

Porto Empedocle

Compound fertiliser output to be doubled

Priolo, Sicily

Augusta Petrochimica to raise synthesis ammonia capacity (now 33,000 t.p.a.) and that of N fertilisers

Rho

Polymethylmethacrylate in production

Spinetta Marengo

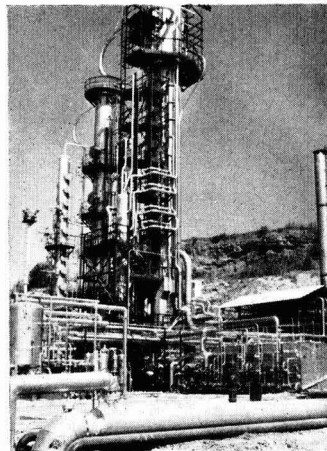
Titanium oxide plant on stream soon to raise capacity to 45,000-40,000 t.p.a. Output of fluorine derivatives to be trebled

Terni

P.v.c. output to rise to 120,000 t.p.a. by 1962
Polypropylene fibre output to rise to 10,000 t.p.a.

Vetrocoke

Major urea expansion under way



One of ANIC's first installations at Gela

PHILLIPS CARBON BLACK ITALIANA (Phillips & ANIC)

Ravenna

14,000 t.p.a. carbon black on stream soon

RUMANIANCA

Avenza

Large citric acid plant, due on stream now

Pieve Vergote

10,000 p.v.c. plant due on stream mid-1962

Sardinia

Complex of unspecified process plants planned to use local brown coal

SAICA

Porto Torres, Sardinia

1.2 million t.p.a. refinery, plus 160 tonnes/day aromatics, 100,000 t.p.a. olefins and other plants planned

SARDA INDUSTRIE RESINE

Porto Torres, Sardinia

1.2 million t.p.a. cellulose refinery planned, plus 240,000 t.p.a. olefins, derivatives, aromatics, detergent alkylate, polymers, etc.

SOC. CHIMICA RAVENNA (ANIC and Wacker Chemie)

Ravenna

Vinyl chloride monomer (30,000 t.p.a.) & p.v.c. (10,000-12,000 t.p.a.) units on stream

SNIA VISCOSA

Piazza Armerina, Sicily

30,000 t.p.a. cellulose from eucalyptus (due in production by end-1962)

Torviscosa

Large-scale plant for polymerisation of caprolactam

SAICI have p.v.c. plant in hand

Zaule, nr. Trieste

SNIA interest in plant to produce 20,000 t.p.a. caprolactam monomer from 90,000 t.p.a. ammonium sulphate

Second part of this survey, dealing with the major chemical producers, will appear in 'Chemical Age' next week

Bookshelf

MUCH NEW MATERIAL ADDED TO THERMODYNAMICS MASTERPIECE

THERMODYNAMICS, 2ND EDITION. By G. N. Lewis and M. Randall; revised by K. S. Pitzer and L. Brewer. McGraw-Hill, Inc., New York, London, 1961. Pp. xii + 723. 97s.

There are many who would claim that the original version of this book is the greatest of this century's texts in physical chemistry—great in that it presented in a coherent and brilliantly clear form the wide scope of thermodynamics in chemistry, great in its many original and lasting contributions to the subject, and great in the quality of its writing. Understandably, therefore, Professors Pitzer and Brewer write, "It seemed at first more appropriate to leave the masterpiece unchanged as a monument to its authors... Then we realised that the original edition would remain as that monument whatever we did, but that those portions of the masterpiece which are still timely could best be made available to the present generation by combining them with new discussion of the recent advances."

Rearrangements

Even if there has been rearrangement, at least half of the original expository text is incorporated unchanged in this revision. The first significant correction comes on page 46 where "reversible" is added in describing the work of an adiabatic expansion. A major rearrangement brings the Third Law to Chapter 12 (XXXI originally), before the applications of the Second Law are systematically treated. There is much to be said for this, especially in giving the student a lively appreciation of the significance of entropy and of the value of thermodynamic parameters.

The following chapters contain much new material and their titles indicate the extended range of this edition: 'Real gases and virial equations of state'; 'Non-electrolyte solutions'; 'Theories of electrolyte solutions'; 'Thermal properties of solutions'; 'Thermodynamic properties from spectroscopic data'; 'Irreversible processes'; 'Surface effects: estimation of thermodynamic quantities'; 'Vaporization processes'; 'Hydrogen and helium at low temperatures.'

The purists—and there are many of them in the thermodynamics field—will object to much of this material as being outside the scope of thermodynamics proper. But it is in the spirit of the original to develop the connections between thermodynamics and other studies and even to advance empirical correlations. To Lewis, thermodynamics was a tool to be used in chemistry, not a treatment to be left in its formal perfection.

Space does not allow of comments on the new material. Let it be emphasised

that it is valuable and stimulating. No one who teaches or uses the basic elements of chemical thermodynamics will wish to be without this new volume.

► German Plastics

WERKSTOFFE AUS MENSCHENHAND. By Hansjürgen Saechtling. Carl Hanser Verlag, Munich, 1961. Pp. 71. DM 6.80.

This small book is a survey of the field of plastics, synthetic rubbers and man-made fibres; it is not concerned with polymer chemistry—indeed only on one page does even the most fragmentary part of a formula appear. The book opens with a brief review of the development, over the last 100 years, of organic chemical industry seen through German eyes, and of the emergence and development of the plastics industry. Eight pages are then devoted to macromolecular chemistry, raw materials and intermediates. Both in this section and in the following one, where various groups of high polymers are considered in turn, some familiarity at least with technical terms seems to be expected in the reader. Technical references are never explained, and indeed a fair amount of the text consists in detailing the various milestones in the development of the field, and in referring to the principal investigators who have worked in it. It is difficult to see that this can hold much of interest or value for the lay reader. The

chemist on the other hand will find these recitals of well-known facts and names to be very boring. Of more value are the tables and production graphs, and the last section on the economies of the industry. There is a brief bibliography and an index of tables—but no general index. The book is nicely produced, but at least one British paper back offered, at a fraction of the cost, far more both to interest and to instruct.

► Process Hazards

SYMPOSIUM ON CHEMICAL PROCESS HAZARDS WITH SPECIAL REFERENCE TO PLANT DESIGN. Edited by J. M. Pirie. Institution of Chemical Engineers, London, 1961. Pp. vi + 117. 50s.

The prevention of accidents in chemical plants is very much a matter of unceasing vigilance and the application of the widest possible range of experience. A symposium is organised to bring experts together for the exchange of ideas. The publication of volumes such as this, which contains a record of the discussion as well as the papers is a useful supplement to the very few books on safety in chemical plants. The value of these meetings depends upon the collection of contributors from many organisations. The papers sub-committee has done well to recruit authors from H. M. Factory Inspectorate, Hedleys, Foxboro-Yoxall, Imperial College, I.C.I., D.S.I.R. (Boreham Wood), Gas Council, B.O.C., U.K.A.E.A., Associated Ethyl, and British Chemical Engineering.

The chemical industry has, in recent years, had a good safety record. This symposium should be widely distributed as it will help to stir up chemists to do even better. Safety must be the concern of everybody; it is too important to be left to 'safety officers'.

Market Reports

STEADY TRADING IN MOST SECTIONS

LONDON Steady trading conditions have been reported from most sections of the chemicals market during the past week with the chief industrial outlets taking good quantities against contracts. Prices generally are unchanged. The demand for agricultural chemicals has eased now that the peak of the buying season has passed, but in the coal tar products market a good flow of inquiry has been reported.

MANCHESTER Trading in chemicals on the Manchester market has been adversely affected by the Whitsun holidays, which had resulted in many textile factories and other industrial outlets being closed down for extended periods. Contract deliveries had been on a much smaller scale and a marked reduction in the volume on new business has been reported. However, this is the experience at this time of the year and an early

resumption of market activity is confidently expected. About the only price movement of any consequence since last report is a further stiffening of copper sulphate to £81 a ton, less 2%, f.o.b. Liverpool.

SCOTLAND A more or less unaltered position has prevailed during the past week in the Scottish heavy chemical market, with steady trading conditions in most sections of industry. Demands against immediate requirements have been predominant, with the delivery position an important factor; although varied in some respects these demands have mostly been for the usual range of general chemicals. Activity is still being maintained in agricultural chemicals and here again movement is mostly against current requirements. The improvement mentioned last week is still being maintained in the overseas market.

Overseas News

DU PONT MUST DISPOSE OF 63 MILLION SHARES IN GENERAL MOTORS

SIXTY-THREE million shares in the General Motors Corporation held by E.I. du Pont de Nemours must be disposed of within 10 years, under an order of the U.S. Supreme Court. This decision marks the end of Du Pont's 12-year fight to retain its \$3,000 m. holding in G.M., following the filing of an anti-trust complaint against Du Pont by the U.S. Department of Justice in 1949. The Department has maintained, throughout the talks, that only full divestiture could end Du Pont's violation of the Clayton Act.

Du Pont's counter-claim that distribution of the shares would seriously affect the market value of both Du Pont and G.M. stock, and raise the prospect of heavy tax liabilities for Du Pont shareholders, was accepted by the Chicago district court, which has now been directed to start divestiture proceedings.

The Chicago court preferred Du Pont's plan for transferring voting rights in G.M. to its shareholders, to the Justice Department's proposal for the sale of 20 m. shares on the open market over a ten-year period, and distribution of 43 m. shares to Du Pont holders, who would be liable for tax on distribution unless Congress, as the Justice Department has urged, passes special legislation to give them exemption.

Mr. Crawford H. Greenewalt, president of Du Pont, said that the Court decision called for urgent Congressional action "to protect more than 200,000 Du Pont shareholders and more than 800,000 General Motors stockholders who cannot by any stretch of the imagination be considered to have committed any wrongdoing."

Belgian Firm Plans New Carbide Furnace

Soc. Applications de Chimie Industrielle (SADACI) of Belgium plan to bring into operation a new, high-capacity calcium carbide furnace. The unit, construction of which is currently beginning, is due to come on stream at the start of next year.

Australian Levy on Imported Nitrogen Fertilisers

The Australian Minister of Trade has imposed a temporary duty on imported nitrogenous fertilisers as from 24 May. The duty will be levied on the nitrogen content of fertilisers at the rate of 25s a cwt. This duty will be in addition to the existing non-protective tariff. It will apply immediately to imports of sulphate ammonia, but will not apply to specified quantities of urea and other nitrogenous fertilisers imported for home use before 31 May. Exemption will also be granted

for any products containing nitrogen which are imported for use other than as fertilisers.

The temporary duty was recommended by the Tariff Board following a request by Australian manufacturers for emergency protection.

Franco-German Agreement on Chemical Plant

Compagnie des Ateliers et Forges de la Loire have signed an agreement with the West German chemical plant manufacturers, Adolf Messer GmbH, Frankfurt-on-Main, under which the French company will build under licence from Messer for sale within the franc zone production units for the liquefaction of oxygen, nitrogen, methane and other gases. The agreement covers plants with a capacity of over 1,000 cu. m./hour. The French subsidiary of the Messer concern, Société Française des Appareils et Procédés Messer, are also concerned in the new agreement.

Mobay Plan Further TDI Expansion

A fifth expansion to their tolylene diisocyanates capacity at New Martinsville, W.Va., is planned by Mobay Chemical to raise capacity to 50 million lb./year by the autumn of this year. Currently a fourth expansion project is going on stream, raising capacity to 40 million lb./year from 25 million.

Petrochemical Plans in Czechoslovakia

As part of its petrochemical development programme, Czechoslovakia has announced that it is to aim for an annual production by 1965 of 100,000 tonnes of ethylene. The output level for propylene is to be raised over the same period to over 50,000 tons, while quantities of butylenes, butadiene and acetylene are included in the 1965 plan total. Production of synthetic rubber is to begin in 1963 in Czechoslovakia with an annual output level of between 35,000 and 40,000 tonnes, or about one-half of national demand.

U.C.B. Expand Phthalic Anhydride Capacity

Union Chimique Belge are reported to have opened a new plant for the production of phthalic anhydride at their Schoonaarde, Belgium, works. The new unit will have an annual output capacity of 5,000 tonnes, thus raising total U.C.B. phthalic anhydride capacity to 15,000 tonnes a year.

G.A.F. to Produce More Caustic Soda

Antara Division of the General Aniline and Film Corporation, U.S., plan the large-scale expansion of their caustic soda plant at Linden, N.J. The unit's daily capacity will be increased from 50 short tons to 230 short tons. The extra production installations will be ready for production by the start of 1963.

Chemical Plant for Albania

In 1965 a chemical plant is to be opened in Albania as part of a chemical-metallurgical combine being constructed there with Czech aid. Although no details are yet available, it is believed that the chemical plant will be for the production of compounds from ore processing and metal refining by-products and the processing of such compounds and also possibly for the production of chemicals required in ore processing and metal refining processes.

Conoco and Ansul Plan Joint Methyl Chloride Plant

Continental Oil Co. and Ansul Chemical are to build a jointly-owned methyl chloride plant at Lake Charles, La., with a 60 million lb./year capacity. Start-up is scheduled for early 1962. Sales will be handled by Ansul Chemical.

Synthetic Fibre Plans in Poland

By 1965 polyester fibre production in Poland of the type Elana-Perylen is to have been increased to an annual level of 7,000 tonnes, while that of Anilana-Orlon polyacryl nitril fibre will stand at 10,000 tonnes per year. A new plant for the manufacture of the latter fibre is at present under construction at Lodz and will reach its full capacity by the target year. By the same year the Gorzów chemical fibre plant is to have raised to 12,000 t.p.a. its production of Stilon fibre. The Polish fibre plans connect with the quadrupling of the 1960 output figure over the same period for plastics—to 200,000 tonnes, or 6 kg. *per capita*.

U.S. to Spend More to Control Water Pollution

The U.S. House Public Works Committee has approved the spending of \$1,000 million in the form of grants for the construction of municipal waste treatment plants. The present limit is \$500 million.

£8 m. Phosphate Industry Plan in Israel

An £8 m. programme for the production of 200,000 tons/year of calcinated phosphates and 140,000 tons/year of concentrated phosphoric fertiliser and animal foodstuff additives is planned in Israel by the Government-controlled Negev Phosphate Co. Work has already started on the calcination plant, with an initial £400,000 worth of equipment due to arrive shortly, mainly from West Germany.

There is strong overseas interest in the project; one contract for the investment of £400,000 in one of the installations has already been signed with a foreign concern and negotiations with others are still under way, both for investments and the supply of know-how.

Other expansion projects in the Negev area were reported in *CHEMICAL AGE*, 21 January, p. 145, as well as the fact that Israel Mining Industries, along with Fertilizers and Chemicals Ltd., were considering the possibility of building a plant for the production of highly concentrated phosphoric acid based on a new Israeli process.

Ruhrchemie Oxo-chemical Expansion

In the next few weeks an extension to the existing oxo-chemical units of the West German chemical concern Ruhrchemie AG, of Oberhausen, is expected to come into operation. The extension will be in the form of two new oxo units which will work complementary to the two units already operated by Ruhrchemie. The company is owned one-third by Farbwerke Hoechst AG, one-third by the steel company Hüttenwerk Oberhausen AG, of Oberhausen, and one-third by the steel company Mannesmann AG, of Düsseldorf.

Rocket Fuel Safety Group Set Up in U.S.

Technical information on the safety aspects of manufacture, handling, storage and transportation of rocket propellants will be made available to the U.S. military services and applicable government agencies and their contractors through a chemical propellant safety sub-committee that has been organized by the Manufacturing Chemists' Association Inc. The technical group, which will operate under the guidance and direction of the Association's general safety committee, is composed of representatives of a dozen chemical propellant manufacturers.

Düsseldorf Plastics Fair to be Held in 1963

The Arbeitsgemeinschaft Deutsche Kunststoffindustrie, Frankfurt, has fixed the date of the next International Plastics Trade Fair for 19-27 October 1963. For the fourth time the Fair will be held in Düsseldorf and will be arranged by Nordwestdeutsche Ausstellungs-Gesellschaft mbH, Düsseldorf. Exhibits will comprise raw materials and semi-finished products for the plastics industry, finished products made of plastics, machinery, tools and appliances.

U.S. Report on Conversion of Uranium Hexafluoride

Conversion of hazardous depleted uranium hexafluoride to a relatively safe uranium trioxide is the subject of laboratory studies described in a U.S. Bureau of Mines manuscript just placed on open file at the Department of the Interior Library, Washington, D.C., and at the Bureau's offices in Reno and San Fran-

cisco, California.

Depleted uranium hexafluoride, a residual waste product in the manufacture of fissionable Uranium 235, is volatile, chemically active, and slightly radioactive. When converted to the more stable uranium trioxide it provides a convenient starting material in preparing other uranium compounds for catalysts and for metal reduction research.

Big Rise in Swiss Chemical Exports

According to a report issued from Berne by the Swiss Federal Customs Bureau, Switzerland exported over the first quarter of the current year chemicals and pharmaceuticals worth a total of S.Fr.405,400,000 (S.Fr.370,900,000). These totals consist of exports of chemicals worth S.Fr.192 million (S.Fr.179,400,000), of pharmaceutical products worth S.Fr.89,100,000 (S.Fr.79,200,000) and of synthetic organic dyestuffs worth S.Fr.110,600,000 (S.Fr.100,100,000).

Expansion of Sicedison Petrochemical Plants

Sicedison of Milan have been authorized to increase the capacity of their petrochemical plants from 200,000 to 400,000 tonnes a year.

International Cosmetic Chemists' Committee

The possibility of setting up international standards for materials and test methods was among matters discussed by the Comité de Direction of the International Federation of Societies of Cosmetic Chemists at its biannual meeting held in Paris recently. Hosts to the gathering were the Syndicat de la Parfumerie. The committee also discussed qualifications for 'participating' members of the Federation, clarified the functions of the committee and reviewed procedural and other matters relating to the Federation.

Next meeting of the committee will

coincide with the annual council meeting, now arranged for 2 September in Copenhagen.

Yugoslavia Plans Export Subsidy for Chemicals

Export subsidies of 10% are foreseen for most Yugoslav chemical products, according to a Yugoslav Government statement from Belgrade. Subsidies of 32% are planned for the export of plant and machinery.

Swedish Firm to Raise Chlorate Capacity

Fosfatbolaget, Sweden, state that the capacity of the chlorate plant being built at Stockviksverken, near Sundsvall, is to be larger than originally planned. While it was formerly intended that annual capacity of 6,000 tonnes of chlorates, it is now planned to work with a yearly capacity of 10,000 tonnes. This will be reached by Autumn of next year.

Grace to Market Moplen in U.S.

W. R. Grace will market polypropylene produced by Novamont, a subsidiary of Montecatini, under an agreement between Grace and the Italian company. The polypropylene will come from Novamont's 25 million lb./year plant being built at Neal, W. Va., and will be marketed by Grace under the Montecatini trade name, Moplen.

This is the third recent agreement between large chemical interests involving polypropylene. One of these provided for the custom production of polypropylene for Union Carbide Plastics by Shell Chemical Co., while Carbide in return will make high-pressure polythene for Shell. Last year, Spencer Chemical and Enjay Co. came to an arrangement which gives Spencer access to half the output from Humble Oil and Refining Co.'s 40 million lb./year polypropylene plant at Baytown, Texas, both Enjay and Humble being associates of Standard Oil Co. of New Jersey.

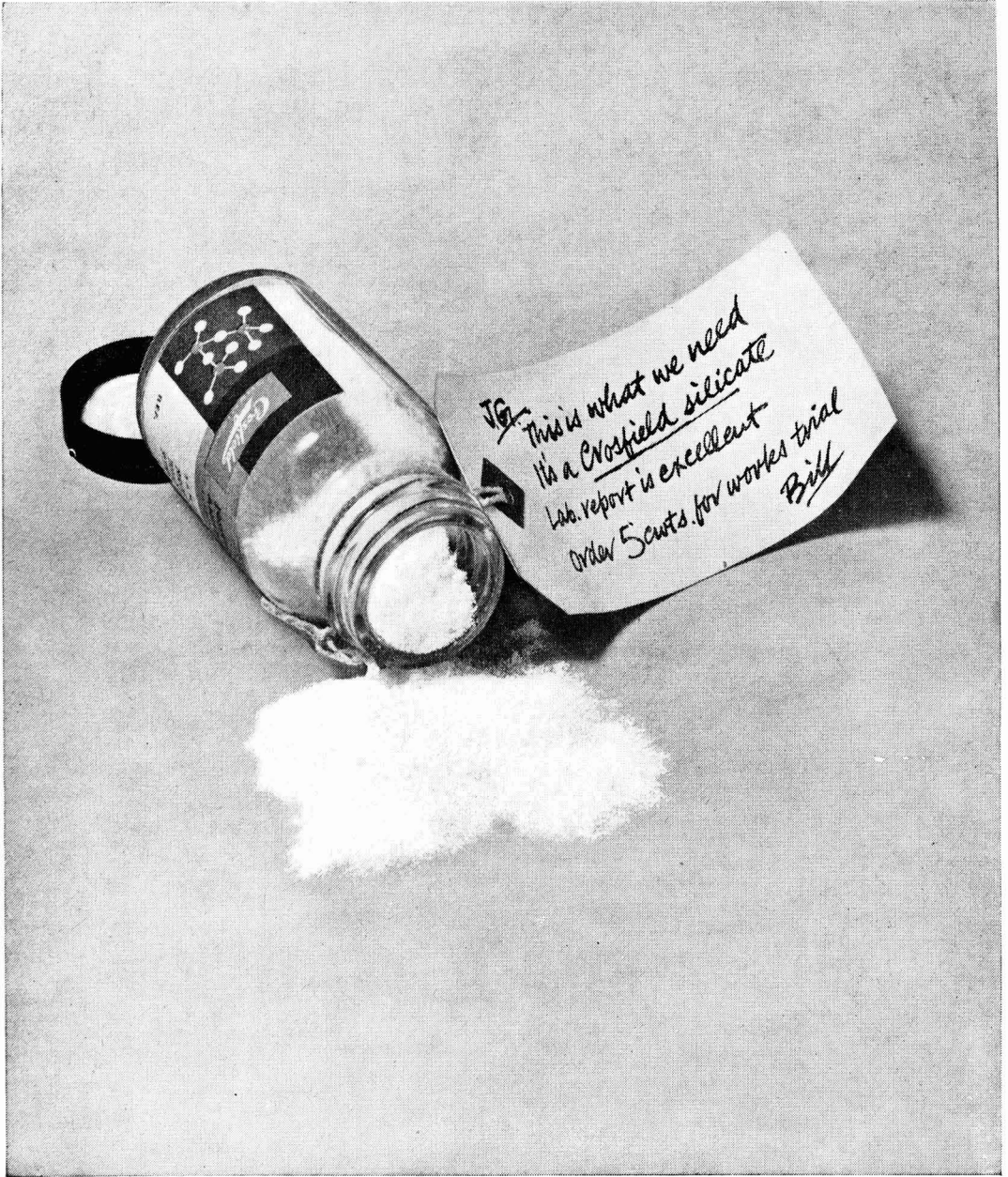
Plastics Filter Candles at Windscale

FILTER candles of Vyon, a porous plastics material produced from high density polythene of the Ziegler type, is being used for the filtration of active chemicals at the U.K. Atomic Energy Authority's Windscale works, where irradiated uranium fuel elements from the Calder Hall and Chapelcross nuclear power stations are processed and where facilities have been extended so that elements from the civil nuclear power stations at present under construction may also be handled in the future.

After the removal of the fuel element cans, the uranium rods are taken to the chemical separation plant where they are dissolved in acid to enable the plutonium fission products and uranium to be separated by solvent extraction. Improvements in technique have presented problems, including those associated with handling extremely corrosive liquids.

Filtration of active chemicals is a particularly exacting task for the equipment and it is essential to employ a material which is mechanically strong, chemically inert and has a large volume flow with a low pressure drop. For this purpose Vyon is supplied to the U.K. Atomic Energy Authority in the form of filter candles to protect pump valve packs and other equipment in the liquid chemical feed lines. The use of this material has also been extended to other nuclear plants.

Vyon is manufactured by Porous Plastics Ltd. of Dagenham Dock, Essex. For filter candles, the tube body is first made and the join effected by butt-welding. The flanges and cap are then welded on to opposite ends of the tube. The permeable candles in use at Windscale vary in length from 6 to 18 in. and in diameter from 1½ to 5 in.



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Commercial News

Ashe Chemical

A final dividend of 11% is proposed by Ashe Chemical Ltd., making 16% (same) for 1960. Group profit was £40,365 (£35,002) after tax of £40,214 (£43,635).

Beecham Group

Total sales of the Beecham Group in the year ended 31 March increased 12% to £56.34 million. Pretax group profits were up 7% from £7.42 million to £7.95 million. After tax and minority interests, the balance attributable to the group was £4.13 million (£3.79 million). Final dividend of 14% (11%) making 30% (27%) is declared.

Burt Boulton

Horlicks Ltd. have now sent their formal offer for shares of Burt Boulton and Haywood Ltd. to stockholders. Horlicks anticipate that consolidated pre-tax profits in the year ended 31 March will exceed £1 million and a final dividend of 20% is foreshadowed, for which stock to be issued under the offer would rank. This would maintain the year's total at 30%.

Horlicks are particularly interested in the chemical activities of Burt Boulton and Haywood and they claim that a merger would be of interest to their own associated continental companies—Soc. Belge de L'Azote (S.B.A.) and Hoechst Pharmaceuticals. As stated last week the directors of Burt Boulton have advised shareholders to take no action on the offer until they have received a letter from the chairman giving their reasons as to why they are unable to recommend acceptance.

Wm. Butler

It is very difficult to attempt a reliable forecast for the current year, says Mr. E. P. Butler, vice-chairman of Wm. Butler and Co. (Bristol) Ltd., in his annual statement. Aided by plant extensions, which have recently been completed, the volume of sales is substantially above the level being recorded at the same time last year. On the other hand, the company is having to accept reduced margins on some products due to increasing competition.

Distillers Company

The Distillers Company Ltd. are to launch a large-scale rights issue in the near future; details are expected in a few weeks, but the issue will raise many £ millions of new money. Ordinary shareholders will be offered one 10s. share for every 10 held on 1 June, at a price to be decided later. Between 195 million and 200 million shares are in issue and the existing ordinary shares closed on the issue news last week more than 1s. down at 39s. 9d.

An interim of 6% was declared in December and a final of not less than 7½% was forecast in February when the

- Beecham Report Pre-tax Profits Up 7%
- Competition Cuts Some Wm. Butler Margins
- £Multi-million Rights Issue Due from D.C.L.
- 19% Rise in Rhone-Poulenc Profit

Distillers' offer for British Xylonite Ltd. was made. It is felt that new money is needed to finance stocks and large-scale capital developments. D.C.L. have major chemical expansions in hand at Hull and Barry, Glam., as well as at the Grangemouth and Baglan Bay sites of British Hydrocarbon Chemicals Ltd., jointly owned by Distillers and British Petroleum owned by Distillers and British Petroleum. Projects announced last year will involve capital spending of some £30 million.

Head Wrightson

After tax of £672,893 (£628,580), net profit of Head Wrightson and Co. Ltd. for the year ended 31 January 1961 was £787,130 (£803,758). Final dividend is 12% (10%), making 16% (14%).

A.K.U.

Algemene Kunstzijde Unie NV, Arnhem, report for the first 1961 quarter sales of Fl.86,400,000 and net profit of Fl.5,500,000, compared with respective figures for the same period of last year of Fl.85 million and Fl.8,300,000.

Chatillon

The Italian synthetic fibre producer Chatillon S.A. Italiana per le Fibre Tessili Artificiali, of Milan, a member of the Società Edison group, records a net profit for last year of Lire 1,250,000,000 (880,000,000) and a decreased dividend of 10% (13½) on an increased capital of Lire 11,400,000,000. Depreciations over the year totalled Lire 2,000,000,000 (1,600,000,000).

W. R. Grace

W. R. Grace and Co., report 1960 consolidated net income of \$16,220,000 (\$16,466,000), net income per share of common stock was \$3.22 (\$3.35). Chemical sales and earnings showed a marked rise for the third consecutive year. Chemical earnings rose 11% and accounted for 76% company earnings. Chemical sales of \$229,414,100, were 9% ahead of 1959, representing 42% of total sales and revenues.

The improvement in chemical results was attributed to substantially higher sales of high density polythene; and rising demand for high analysis fertilisers. The Polymer Chemicals Division will expand its Baton Rouge plant by 50% and broaden its product line; Nitrogen Products Division has just raised its Memphis ammonia capacity by 60%; the Davison Chemical Division has expanded facilities at Bartow, Florida, for triple

superphosphate, diammonium phosphate and related materials.

Cosden Petroleum Corporation, a 53%-owned subsidiary, also increased its chemical activities and raised styrene capacity from 20 million to 70 million lb.

Eurunion

The international investment fund for shares of companies based in the Common Market, Eurunion, announces that chemical shares now play the leading single role in the fund's holdings. Over last year their share in the total fund rose from 12% to 15½%. Reckoned in German marks, the Eurunion fund is stated to have increased from DM79,010,000 to DM110,380,000 over 1960 and total dividend from DM2.49 plus 2% share bonus in the incomplete 1959 financial year to DM3.27 last year. The fund is administered by the Société de Gestion pour l'Investissement dans le Marché Commun S.A., of Luxembourg.

Reichhold Chemicals Inc.

Over the first quarter of the current year the U.S. chemical concern Reichhold Chemicals Inc. reported a net profit representing 1 cent/share. This corresponds to a profit-per-share figure for the first 1960 quarter of 16 cents.

Rhone-Poulenc

Net profit of Soc. des Usines Chimiques Rhône-Poulenc in 1960 was NF39,366,316 (£2.87 million), an increase of 19% on the 1959 figure of NF32,823,247. A net dividend of NF6.03 per share is being paid, on higher capital, compared with NF6.54 last year.

Rhône Poulenc's turnover last year totalled NF885 million, or 18.5% more than the 1959 figure of NF746 million.

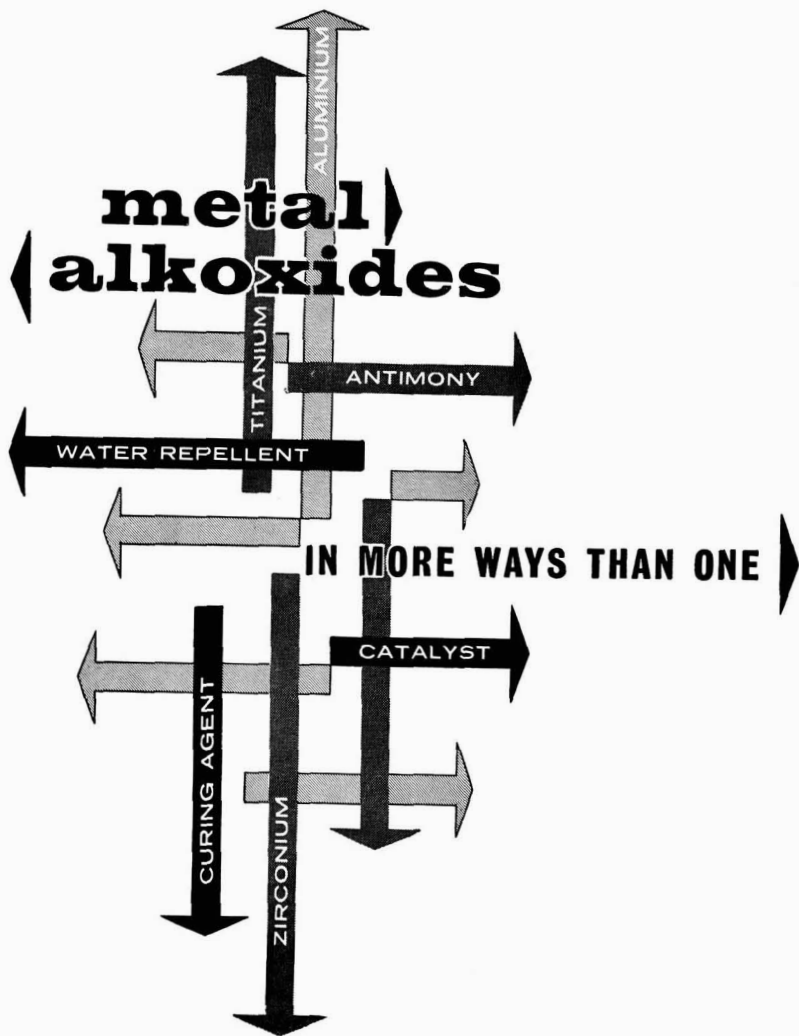
INCREASES OF CAPITAL

COOKE'S CHEMICALS LTD., Chemical Factory, Cwm Nantcol, Llanbedr, Merioneth. Increased by £5,000 beyond the registered capital of £10,000.

FERRO METAL AND CHEMICAL CORPORATION LTD., Victoria House, Vernon Place, London W.C.1. Increased by £40,000 beyond the registered capital of £10,000.

LINCOLNSHIRE CHEMICAL CO. LTD., Waterloo House, 20 Waterloo Street, Birmingham 2. Increased by £70,000 beyond the registered capital of £30,000.

ROBINSON BROTHERS LTD., Springfield Chemical Works, Oldbury, Birmingham. Increased by £250,000 beyond the registered capital of £350,000.



Industrial demand for Spence metal alkoxides continues to rise as existing uses expand and new uses are developed. Problems in such diverse fields as the modification of plastics, transesterification catalysis or the promotion of adhesion may yield to the use of metal alkoxides.

For further details of these and other versatile organic metal compounds write to **Product Development Department, Peter Spence & Sons Limited.**



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BRITISH CHEMICAL PRICES

GENERAL CHEMICALS

Acetic Acid. 10-ton quantities, 80% tech. in bulk, £77 per ton; in casks, £90 per ton; 80% pure in bulk, £83; in casks, £94; glacial, 98/100% in bulk, £93; in drums, £100.

Acetic Anhydride. Ton lots d/d, £128.

Alum. Ground, f.o.r., about £25.
MANCHESTER: Ground, £25.

Aluminium Sulphate. Ex-works, d/d, £15 10s to £18.
MANCHESTER: £16 to £18.

Ammonia, Anhydrous. Per lb., 1s 9d-2s 3d.

Ammonium Chloride. Per ton lot, in non-ret. pack, £33 2s 6d.

Ammonium Nitrate. D/d, 4-ton lots, £37 10s.

Ammonium Persulphate. Per cwt., in 1-cwt. lots, d/d, £6 13s 6d; per ton, in min. 1-ton lots, d/d, £123 10s.

Ammonium Phosphate. MAP., £106 per ton; DAP, £100 10s, per ton, d/d.

Antimony Sulphide. Per lb., d/d UK in min. 1-ton lots; crimson, 5s 8d d/d to 6s 2d; golden, 3s 11d d/d per lb. to 5s 4d d/d.

Arsenic. EX-store, £45 to £50.

Barium Carbonate. Precip., d/d, 4-ton lots or more, bag packing, £41 per ton.

Barium Chloride. 2-ton lots, £45.

Barium Sulphate [Dry Blanc Fixe]. Precip. 2-ton lots, d/d, £39.

Bleaching Powder. Ret. casks, c.p. station, in 4-ton lots. £30 7s 6d.

Borax. Ton lots, in hessian bags, c.p. Tech. anhydrous, £60 gran., £47 10s; crystal, £51; powder, £52; extra fine powder, £53; BP, gran., £56 10s; crystal, £60; powder, £61; extra fine powder, £62. £1 cheaper in 5-ply paper bags.

Boric Acid. Ton lots, in hessian sacks, c.p. Comm., gran., £78 10s; crystal, £87 10s; powder, £85 extra fine powder, £87; BP gran., £91 10s; crystal, £99 10s; powder, £97; extra fine powder, £99. £1 cheaper in paper bags.

Calcium Chloride. Ton lots, in non-ret. pack; solid and flake, about £15.

Chlorine, Liquid. In ret. 16-17 cwt. drums d/d in 3-drum lots, £41.

Chromic Acid. In 1-ton lots, per lb., 2s 2½d.

Chromium Sulphate, Basic. Powder, d/d, per lb., 8½d; per ton, £79 6s 8d.

Citric Acid—Granular. In kegs, 1-4 cwt. lots, per cwt., £10 1s; 5-19 cwt. lots, per cwt., £9 17s; 1-ton lots, per cwt., £9 16s; packed in paper bags, 1-4 cwt. lots, per cwt., £9 13s; 5-19 cwt. lots, per cwt., £9 9s; 1-ton lots, per cwt., £9 8s.

Cobalt Oxide. Black, per lb., d/d, bulk quantities, 13s 2d.

Copper Carbonate. Per lb., 3s 6d.

Copper Sulphate. £81 per ton less 2% f.o.b. Liverpool.

Cream of Tartar. 100%, per cwt., about £11 12s.

Formaldehyde. In casks, d/d, £40.

Formic Acid. 85%, in 4-ton lots, c.p., £91.

Glycerine. Chem. pure, double distilled 1.2627 s.g., per cwt., in 5-cwt. drums for annual purchases of over 5-ton lots and under 25 tons, £12 1s 6d. Refined technical grade industrial, 5s per cwt. less than chem. pure.

Hydrochloric Acid. Spot, per carboy, d/d (according to purity, strength and locality), about 12s.

Hydrofluoric Acid. 60%, per lb., about 1s 2d.

Hydrogen Peroxide. Carboys extra and ret. 27.5% wt., £115; 35% wt., d/d, £138.

These prices are checked with the manufacturers, but in many cases there are variations according to quality, quantity, place of delivery, etc. Abbreviations: d/d, delivered; c.p., carriage paid; ret., returnable; non-ret. pack., non-returnable packaging; tech., technical; comm., commercial; gran., granular.

All prices per ton unless otherwise stated

Iodine. Resublimed BP, under 1 cwt., per lb., 11s 6d; for 1-cwt. lots, per lb., 11s 3d.

Iodoform. Under 1 cwt., per lb., 24s 1d; for 1-cwt. lots, per lb., 23s 5d; crystals, 3s more.

Lactic Acid. Edible, d/d, 50% by wt., per lb., 16½d; 80% by wt., 26½d; C.P., 50% by wt., per lb., 14½d; 80% by wt., 23d; dark tech., ex-works, 44% by wt., per lb., 9d. 1-ton lots, loaned containers.

Lead Acetate. White, about £154.

Lead Nitrate. 1-ton lots, about £135.

Lead, Red. Bases prices: 15-cwt. drum lots, Genuine dry red, £102 5s per ton; orange lead, £114 5s per ton; Ground in oil: red, £123 15s, orange, £135 15s.

Lead, White. Bases prices: in 5-cwt. drums, per ton for 2-ton lots, Dry English £114 15s; Ground in oil, £135.

Lime Acetate. Brown, ton lots, d/d, £40; grey, 80-82%, ton lots, d/d, £45.

Litharge. In 5-cwt. drum lots, £104 5s per ton.

Magnesite. Calcined, in bags, ex-works, about £21.

Magnesium Carbonate. Light, comm., d/d, 2-ton lots, £84 10s under 2 tons, £97.

Magnesium Chloride. Solid (ex-wharf), £19 7s 6d per ton.

Magnesium Oxide. Light, comm., d/d, under 1-ton lots, £245.

Magnesium Sulphate. Crystals, £14 15s, ex-works.

Mercuric Chloride. Tech. powder, per lb., for 1-ton lots, in 28-lb. parcels, 20s; 5-cwt. lots, in 28-lb. parcels, 20s 6d; 1-cwt. lots, in 28-lb. parcels, 20s 9d.

Mercury Sulphide, Red. Per lb. for 5-cwt. lots in 28-lb. parcels, £1 10s 6d; 1-cwt. lots, in 28-lb. parcels, £1 11s.

Nickel Sulphate. D/d, buyers UK, nominal, £170.

Nitric Acid. 80° Tw., £35 2s.

Oxalic Acid. Home manufacture, min. 4-ton lots, in 56 lb. paper bags, c.p., about £125-£130.

Phosphoric Acid. TPA 1,700 ton lots, c.p., £103; BP (s.g. 1,750) ½-ton lots, c.p., per lb., 1s 4d.

Potash, Caustic. Solid, 1-ton lots, £95 10s; liquid, £36 15s.

Potassium Carbonate. Calcined, 96/98%, 1-ton lots, ex-store, about £76.

Potassium Chloride. Industrial, 96%, 1-ton lots, about £24.

Potassium Dichromate. Gran., per lb., in 5-cwt. to 1-ton lots, d/d UK, 1s 2½d.

Potassium Iodide. BP, under 1 cwt, per lb., 9s 0d., per lb. for 1-cwt. lots, 8s 9d.

Potassium Nitrate. 4-ton lots, in non-ret. pack, c.p., £63 10s.

Potassium Permanganate. BP, 1-cwt. lots, per lb., 1s 11½d; 3-cwt. lots, per lb., 1s 11½d; 5-cwt. lots, per lb., 1s 10½d; 1-ton lots, per lb., 1s 10½d; 5-ton lots, per lb., 1s 10d. Tech., 1-ton lots in 1-cwt. drums, per cwt., £9 18s; 5-cwt. in 1-cwt. drums, per cwt., £10; 1-cwt. lots, £10 9s.

Salammoniac. Ton lot, in non-ret. pack, £47 10s.

Salicylic Acid. MANCHESTER: Tech., d/d, per lb., 2s 6d, cwt. lots.

Soda Ash. 58% ex-depot or d/d, London station, 1-ton lots, about £16 11s 6d.

Sodium Acetate. Comm. crystals, d/d, £75 8s.

Soda, Caustic. Solid 76/77%; spot, d/d 1-ton lots, £33 16s 6d.

Sodium Bicarbonate. Ton lot, in non-ret. pack, £12 10s.

Sodium Bisulphite. Powder, 60/62%, d/d 2-ton lots for home trade, £46 2s 6d.

Sodium Carbonate Monohydrate. Ton lot, in non-ret. pack, c.p., £64.

Sodium Chlorate. 1-cwt. crums, c.p. station, in 5-ton lots, about £87 per ton.

Sodium Cyanide. 96/98%, ton lot in 1-cwt. drums, £126.

Sodium Dichromate. Gran. Crystals per lb., 1s. Net d/d UK, anhydrous, per lb., 1s 1½d. Net del. d/d UK, 5-cwt. to 1-ton lots.

Sodium Fluoride. D/d, 1-ton lots and over, per cwt., £5; 1-cwt. lots, per cwt., £5 10s.

Sodium Hyposulphite. Pea crystals, £38; comm., 1-ton lots, c.p., £34 15s.

Sodium Iodide. BP, under 56 lb. per lb., 11s 3d; 56 lb. and over, 11s 0d.

Sodium Lactate. Edible, 75% per ton, £168, d/d free drums, 1-ton lots.

Sodium Metaphosphate. Flaked, paper sacks, £136.

Sodium Metasilicate. (Spot prices) D/d UK in 1-ton lots, 1-cwt. free paper bags, £29.

Sodium Nitrate. Chilean refined gran. over 98%, 6-ton lots, d/d c.p., per ton, £29.

Sodium Nitrite. 4-ton lots, £32.

Sodium Perborate. (10% available oxygen) in 1-cwt. free kegs, 1-ton lots, £129 10s; in 1-cwt. lots, £139 5s.

Sodium Percarbonate. 12½% available oxygen, in 1-cwt. kegs, £170 15s.

Sodium Phosphate. D/d, ton lots: disodium, crystalline, £40 10s, anhydrous, £89; tri-sodium, crystalline, £39 10s, anhydrous, £87.

Sodium Silicate. (Spot prices) 75-84° Tw. Lances and Ches, 6-ton lots, d/d station in loaned drums, £12 10s; Dorset, Somerset and Devon, per ton extra, £3 5s; Scotland and S. Wales, extra, £2 17s 6d. Elsewhere in England, not Cornwall, extra, £1.

Sodium Sulphate [Desiccated Glauber's Salt]. D/d in bags, about £19.

Sodium Sulphate [Glauber's Salt]. D/d, up to £14.

Sodium Sulphate [Salt Cake]. Unground, d/d station in bulk, £10.

MANCHESTER: d/d station, £10 10s.

Sodium Sulphide. 60/62%, spot, d/d, in drums in 1-ton lots, solid, £38 2s 6d; broken, £39 2s 6d. Flakes, £40 12s 6d, crystals, £29 10s.

Sodium Sulphite. Anhydrous, £71 10s; comm., d/d station in bags, £27-£28 10s.

Sulphur. 4 tons or more, ground, according to fineness, £20-£22.

Sulphuric Acid. Net, naked at works, 168° Tw. according to quality, £11 10s—£12 10s per ton; 140° Tw., arsenic free, £9; 140° Tw., arsenious, £8.

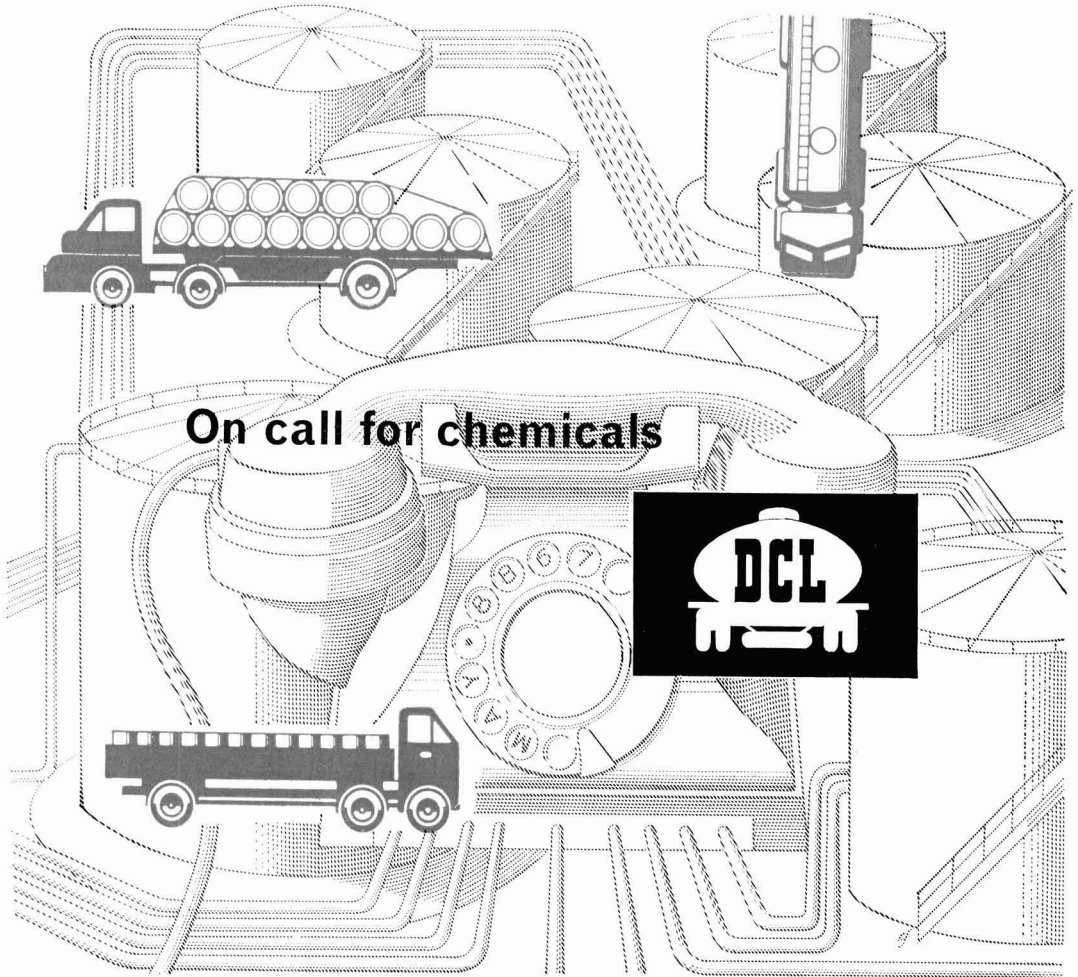
Tartaric Acid—Powder and Granular. Per cwt.: 10 cwt. or more, in kegs, 300s; in bags, 292s per cwt.

Titanium Oxide. Standard grade comm., rutile structure, £178; standard grade comm., anatase structure, £163.

Zinc Oxide. Per ton: white seal, £102 10s, green seal, £100 10s; red seal, £97 10s.

SOLVENTS AND PLASTICISERS

Acetone. All d/d. In 5-gal. drums, £124; in 10-gal. drums, £114; in 40-45 gal. drums, under 1 ton, £89; 1-5 tons, £84;



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5-10 tons, £82; 10 tons and up, £80; in 500-gal. tank wagons, £79. In bulk minimum 2,500 gal. £75 per ton.

Butyl Acetate BSS. 10-ton lots, £165.

n-Butyl Alcohol BSS. 10 tons, in drums, d/d, £137 10s.

sec-Butyl Alcohol. All d/d. In 5-gal. drums, £168; in 10-gal. drums, £158 in 40-45 gal. drums, under 1 ton, £133; 1-5 tons, £130; 5-10 tons, £129; 10 tons and up, £128; in 400-gal. tank wagons, £125.

tert-Butyl Alcohol. 5-gal. drums, £195 10s; 40/45-gal. drums: 1 ton, £175 10s; 1-5 tons, £174 10s; 5-10 tons, £173 10s; 10 tons and up, £172 10s.

Diacetone Alcohol. Small lots: 5-gal. drums, £185; 10-gal. drums, £175; 40/45-gal. drums: under 1 ton, £148; 1-5 tons, £147; 5-10 tons, £146; 10 tons and over, £145, in 400-gal. tank wagons, £142.

Dibutyl Phthalate. In drums, 10 tons, d/d per ton, £216; 45-gal. 1-4 drums, £222.

Diethyl Phthalate. In drums, 10 tons, per ton, £201; 45-gal. 1-4 drums, £207.

Dimethyl Phthalate. In drums, 10 tons, per ton, d/d, £194; 45-gal. 1-4 drums, £200.

Diethyl Phthalate. In drums, 10 tons, d/d, per ton, £287; 45-gal. 1-4 drums, £293.

Ether BSS. 1-ton lots, drums extra, per lb., 1s 11d.

Ethyl Acetate. 10-ton lots, d/d, £137.

Ethyl Alcohol Fermentation grade (PBF 66 o.p.). Over 300,000 p. gal., 3s 10½d; d/d in tankers, 2,500-10,000 p. gal. per p. gal., 4s 0½d. D/d in 40/45-gal. drums, p.p.g. extra, 2d. Absolute alcohol (74.5 o.p.), p.p.g. extra, 2d.

Methanol. Pure synthetic, d/d, £40.

Methylated Spirit. Industrial 66° o.p.: 500-gal. and up, d/d in tankers, per gal., 5s 7½d; 100-499 gal. in drums, d/d per gal., 6s 04d-6s 2½d. Pyridinised 66° o.p.: 500 gal. and up, in tankers, d/d, per gal., 5s 11d; 100-499 gal. in drums, d/d, per gal., 6s 4d-6s 6d.

Methyl Ethyl Ketone. All d/d. In 40/45-gal. drums, under 1 ton, £143 10s; 1-5 tons, £138 10s; 5-10 tons, £136 10s; 10 tons and up, £143; in 400-gal. tank wagons, £134 10s.

Methyl isoButyl Carbinol. All d/d. In 5-gal. drums, £203; in 10-gal. drums, £193; 40-45 gal. drums, less than 1 ton, £168; 1-9 tons, £165; 10 tons and over, £163; in 400-gal. tank wagons, £160.

Methyl isoButyl Ketone. All d/d. In 5-gal. drums, £209; in 10-gal. drums, £199; in 40/45-gal. drums, under 1 ton, £174; 1-5 tons, £171; 5-10 tons, £170; 10 tons and up, £169; in 400-gal. tank wagons, £166.

isoPropyl Acetate. 10 tons, d/d, 45-gal. drums £132.

isoPropyl Alcohol. Small lots: 5-gal. drums, £118; 10-gal. drums, £108; 40/45-gal. drums: less than 1 ton, £83; 1-9 tons, £81; 10-50 tons, £80 10s; 50 tons and up, £80.

RUBBER CHEMICALS

Carbon Disulphide. According to quality, £61-£67.

Carbon Black. GPF: Ex-store, Swansea. Min. 3-ton lots, one delivery, 6½d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 7d per lb.; ex-store, Manchester, London and Glasgow, 7½d per lb. HAF: ex-store, Swansea; Min. 3-ton lots, one delivery, 7½d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 8d per lb. Ex-store Manchester, London and Glasgow, 8½d per lb. ISAF: Ex-store Swansea, min. 3-ton lots in one delivery, 9½d per lb., min. 1-ton lots and up to 3-tons in one delivery, 10d per lb.

Ex-store Manchester, London and Glasgow, 10½d per lb.

Carbon Tetrachloride. Ton lots, £83 15s.

India-Rubber Substitutes. White, per lb. 1s 4½d to 1s 7d; dark, d/d, per lb., 1s 0½d to 1s 4d.

Lithopone. 30%, about £57 10s for 5-ton lots.

Mineral Black. £7 10s-£10.

Sulphur Chloride. British, about £50.

Vegetable Lamp Black. 2-ton lots, £64 8s. **Vermilion.** Pale or deep, 7-lb. lots, per lb., 15s 6d.

COAL TAR PRODUCTS

Benzole. Per gal., min. 200 gal., d/d in bulk, 90's, 5s 3d; pure, 5s 7d.

Carbolic Acid. Crystals, d/d bulk, per lb. 1s 3d; 40/50-gal. ret. drums extra, per lb., ½d.

Creosote. Home trade, per gal., according to quality, f.o.r. maker's works, 1s-1s 9d. **MANCHESTER:** Per gal., 1s 3d-1s 8d.

Cresylic Acid. Pale 99/100% per gal., 7s 9d D/d UK in bulk: Pale ADF, per imperial gallon f.o.b. UK, 8s; per US gallon, c.i.f. NY, 103.50 cents freight equalised.

Naphtha. Solvent, 90/160°, per gal., 5s 3d. heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 4s 1d. Drums extra; higher prices for smaller lots.

Naphthalene. Crude, 4-ton lots, in buyers' bags, nominal, according to m.p.: £22-£30; hot pressed, bulk, ex-works, £40; refined crystals, d/d min. 4-ton lots, £65-£68.

Pitch. Medium soft, home trade, f.o.r. suppliers' works, £10 10s; export trade, f.o.b. suppliers' port, about £12.

Pyridine. 90/160, per gal., 20s about.

Toluol. Pure, per gal., 5s 2d; 90's 2,000 gal. in bulk, per gal., 5s 0d. **MANCHESTER:** Pure, naked, per gal., 5s 6d.

Xylole. According to grade, in 1,000-gal. lots, d/d London area in bulk, per gal., 5s 6d-5s 8d.

INTERMEDIATES AND DYES

(Prices Normal)

m-Cresol 98/100%. 10 cwt. lots d/d, per lb., 4s 9d.

o-Cresol 30/31°C. D/d, per lb., 1s.

p-Cresol 34/35°C. 10 cwt. lots d/d, per lb., 5s. **Dichloraniline.** Per lb., 4s 6d.

Dinitrobenzene. 88/99°C., per lb., 2s 1d.

Dinitrotoluene. Drums extra. SP 15°C., per lb., 2s 1½d; SP 26°C., per lb., 1s 5d; SP 33°C., per lb., 1s 2½d; SP 66/68°C., per lb., 2s 1d.

p-Nitraniline. Per lb., 5s 1d.

Nitrobenzene. Spot, 90 gal. drums (drums extra), 1-ton lots, d/d, per lb., 10d.

Nitronaphthalene. Per lb., 2s 5½d.

o-Tolidine. 8-10 cwt. drums (drums extra), per lb., 1s 11d.

p-Tolidine. In casks, per lb., 6s 1d.

Dimethylaniline. Drums extra, c.p., per lb. 3s 2d.

TRADE NOTES

Improved Dispersant for Paper

An improved dispersing agent for use in paper production is now commercially available from Charles Lennig and Co. (Great Britain) Ltd., 26-28 Bedford Row, London W.C.1. This product, known as Orotan SN, is described chemically as the neutral salt of a complex, condensed organic acid. An improved grade of Orotan N, a dispersing agent which has long been used in many industries, it promotes dispersion and wetting of solids without causing frothing or foaming in milling, grinding and mixing operations. Effective dispersant action in both acidic and basic solutions, as well as good stability toward mineral acids and bases, is also reported in the new product.

Breon Book in German

A German language edition of British Geon Ltd.'s technical booklet on Breon nitrile rubbers has just been published by the company. The Breon range of oil-resisting synthetic rubbers are copolymers of butadiene and acrylonitrile, designed to provide a material for every nitrile rubber application.

Changes of Address

The Middlesbrough branch of Honeywell Controls Ltd. is being moved from Fletcher Street to new premises at 59-60 Albert Road (Middlesbrough 44331 and 44332).

Sales and Service Division of Goodyear Pumps Ltd., under general sales manager, E. H. Curry, have been moved to new and larger offices at Walmgate Road, Perivale, Middlesex (Alperton 1132/3). The firm retains a West End office at 44 Brook Street, W.1, London, headquarters of their parent company, Holman Brothers Ltd., Camborne, Cornwall.

The Lead Development Association is opening new offices at 34 Berkeley Square, London W.1, on 23 May. Telephone will be Grosvenor 8422.

Calcedin Clay

A new technical brochure on M.501 calcedin clay is available from the Mineral Products Division of English Clays, Lovering Pochin and Co. Ltd. M.501 is a calcedin clay in a very finely divided form, prepared by a special process. It is an X-ray amorphous aluminium silicate consisting essentially of silica (52-53%) and alumina (43-44%). The booklet deals with physical properties and industrial uses, which include use as a reinforcing filler in natural and synthetic rubber mixes and in p.v.c.

Obituary

Mr. W. A. Shaw, a director of Evershed and Vignoles Ltd., after 48 years with the company, has died in his 66th year. Mr. Shaw joined the test room staff of Evershed and Vignoles in 1913 and transferred to the commercial side in 1919. In April 1949 he became general sales manager and in November 1953 was elected to the board as sales director. Recently he was appointed company secretary.

DIARY DATES

SUNDAY 28 MAY

S.C.I.—Food Group's Summer Tour to Norway.

TUESDAY 30 MAY

I.Chem.E.—London: Royal Commonwealth Soc., Northumberland Avenue, W.C.2. Symposium on biochemical engineering.

Oil & Colour Chemists Assoc.—Biennial Conference at Torquay.

THURSDAY 1 JUNE

S.C.I.—Microbiology Group visit to Boots Pure Drug Co., Nottingham.

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Qualifications required include a good degree in Chemistry and experience in the supervision of a research team. Experience of metal/organic research and evidence of success in research work, e.g., publication, would be of advantage.

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NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 28 June

- Process for the separation of organic compounds. British Petroleum Co. Ltd., Desty, D. H., Dick, J. J. P., and Thomas, W. L. **871 491**
- Ion-exchange reagent. National Research Development Corp. **871 541**
- Production of ascorbic and dehydroascorbic acids. Coleby, B. **871 500**
- Process for the manufacture of moulding compositions from epoxy-resins and 4,4'-diaminodiphenylalkanes. Ciba Ltd. **871 350**
- Graft co-polymers. B.X. Plastics Ltd. **871 572**
- Thiophene-oxide compounds. Dann, O. **871 351**
- Vapour phase process for the manufacture of diphenylamine. American Cyanamid Co. [Addition to 752 859.] **871 511**
- Auto-hardening thermoplastic and thermosetting synthetic resin composition, shaped articles fabricated therefrom and method of preparing same. Dow Chemical Co. **871 335**
- Copper chloride sweetening of catalytic naphtha. Standard Oil Co. **871 512**
- Process for treating organic solid substances insoluble in water with aqueous solutions. Farbwerke Hoechst AG. **871 211**
- Process of cold welding organo-polysiloxanes. General Electric Co. **871 784**
- Catalytic polymerisation of ethylene. Eastman Kodak Co. **871 337**
- Catalytic polymerisation of olefins. Eastman Kodak Co. **871 338**
- Dithiophosphoric acid ester and pesticidal preparations containing the ester. Hoechst AG. **871 339**
- Azopyrimidine compounds and process of colouring fabricated polyacrylonitriles therewith. American Cyanamid Co. **871 624**
- Process for the separation of organic compounds. British Petroleum Co. Ltd., Desty, D. H., Dick, J. J. P., and Thomas, W. L. [Divided out of 871 491.] **871 492, 871 493, 871 495, 871 496, 871 497**
- Condensation products of carbonyl compounds with thioglycolic esters. Uclaf. **871 626**
- Propylene polymers and their preparation. Montecatini. **871 397**
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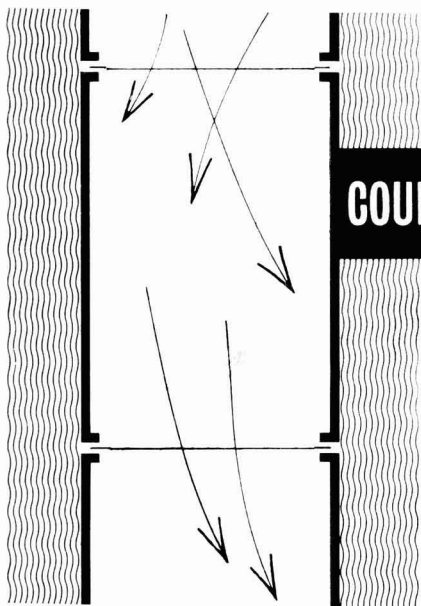
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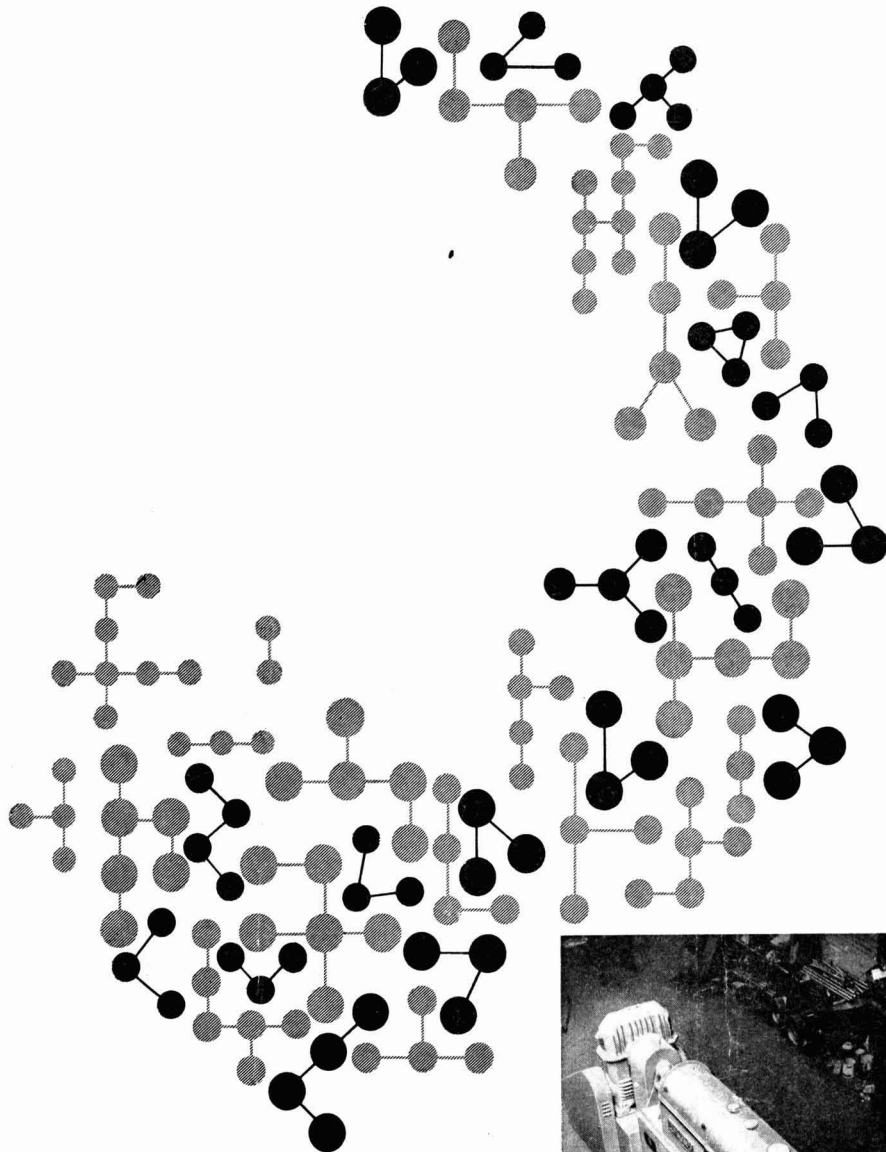
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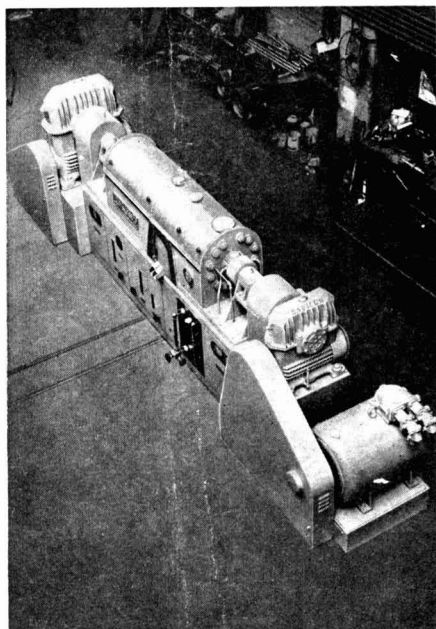
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