

Chemical Age

incorporating

PETROCHEMICALS and POLYMERS

VOL. 86 No. 2194

29 JULY 1961

**FOR
HIGH
QUALITY
BORON
PRODUCTS**

20 MULE TEAM



Dehybor **ANHYDROUS BORAX** **Boric acid**

Boron products bearing the 20 MULE TEAM symbol are backed by the technical services of a world-wide group of companies whose constant research is yielding new and improved boron materials to match modern techniques.

20 MULE TEAM and DEHYBOR are Registered Trade Marks

**BORAX
CONSOLIDATED
LIMITED**

*BORAX HOUSE
CARLISLE PLACE
LONDON SW1*

Tel: VICToria 9070

"REDAC" PRODUCTS

ACID RESISTING EARTHENWARE



Enquiries Welcomed

**ACID RESISTING
TILES • BRICKS
ACID TOWER
PACKINGS
RINGS AND BALLS**

Successfully used in

**GAILLARD TOWERS • ACID OIL
SETTLING TANKS • GAS WASHERS
CHIMNEY LININGS • ASH SLUICES
HYDROCHLORIC PICKLING TANKS
ETC.**

B. WHITAKER & SONS, LTD.

ST. STEPHENS HOUSE, WESTMINSTER

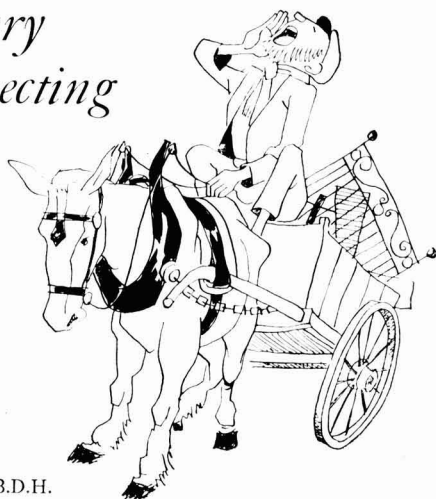
Phone: Whitehall 3616

Works: ACCRINGTON, LANCs.

Grams: Bricavity, Parl, London

Do many people know that B.D.H. recover and refine selenium from scrap rectifier plates, sludge from sulphuric acid plants and scrap material from various other sources? Or that B.D.H. recovery of selenium during the selenium shortage a few years ago exceeded total U.K. imports by a considerable margin? During and since the shortage, however, the B.D.H. Poole factory has recovered and refined well over a quarter of a million pounds of selenium. In addition, it makes a wide range of selenium compounds—selenyl chloride, selenic and selenous acid, selenates and selenites, for example—all available in up to 100 kg lots normally and in larger quantities if necessary.

Twentieth Century Prospecting



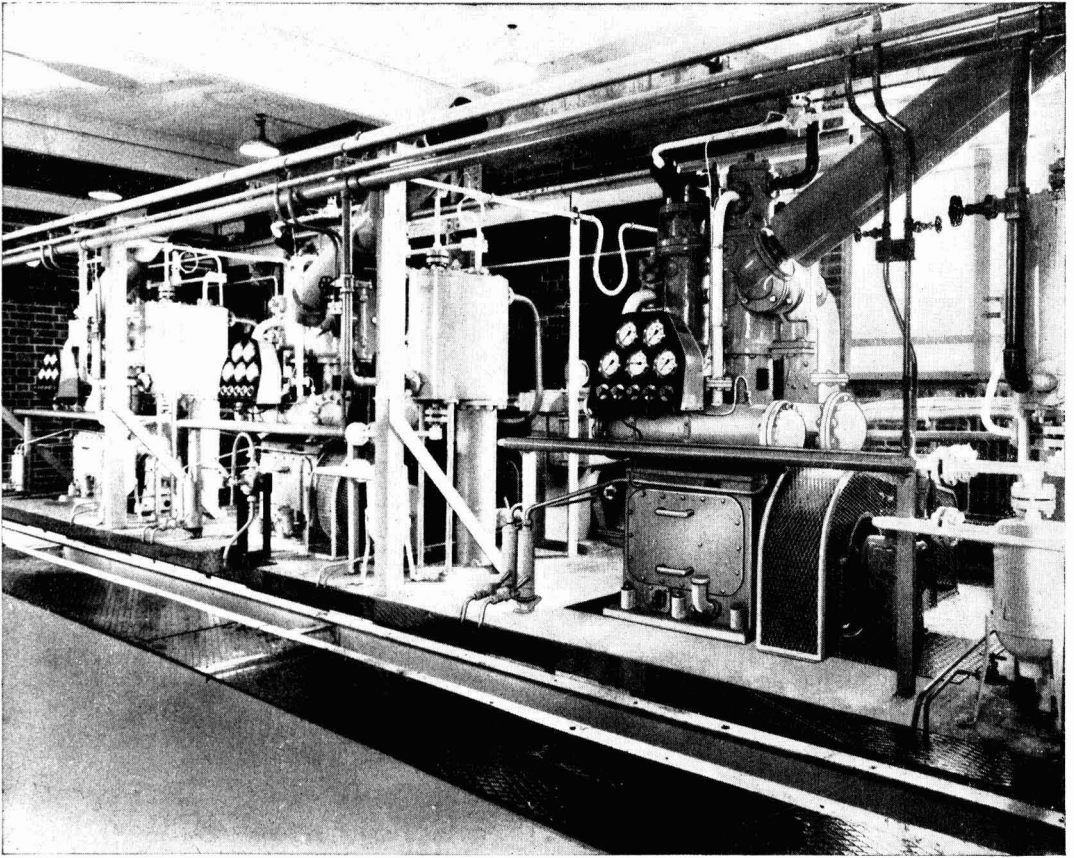
For the finest of industrial fine chemicals the first choice is B.D.H.



FINE CHEMICALS FOR INDUSTRIAL USE

THE BRITISH DRUG HOUSES LTD. POOLE DORSET

B.D.H. LABORATORY CHEMICALS DIVISION



COMPRESSORS FOR SCIENTIFIC RESEARCH



Three Brotherhood two-crank four-stage compressors supplied to the University of Cambridge for a high speed wind tunnel installation.

Brotherhood compressors are designed to customers' exact requirements.

PETER BROTHERHOOD LTD

PETERBOROUGH ENGLAND

Compressor and power plant specialists for nearly a century

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	Page
A.P.V. Co. Ltd., The	—	321 Broadbent, Thomas, & Sons Ltd.	154	154 Dowlow Lime & Stone Co. Ltd.	—
A. W. Instruments (Guildford) Ltd.	—	163 Brotherhood, Peter, & Co. Ltd.	145	127 Dryden, T., Ltd.	—
164 Acalor (1948) Ltd.	—	Brough, E. A., & Co. Ltd.	—	Dunlop Rubber Co. Ltd. (G.R.G. Dunclad)	—
African Pyrethrum Technical Information Centre	—	Brown, N. C., Ltd.	Cover iii	E.C.D. Ltd.	—
148 Aimer Products Ltd.	—	Bruno Pahlitzsch	—	Electric Resistance Furnace Co.	—
121 Air Products Gt. Britain Ltd.	—	132 Bryan Donkin Co. Ltd., The	—	Electro-Chemical Engineering Co.	—
Air Trainers Link Ltd.	—	Bulk Liquid Transport Ltd.	—	Electrothermal Engineering Ltd.	—
Aiton & Co. Ltd.	—	276 Bulwerk Transport Ltd.	152	Eiga Products Ltd.	—
147 Albany Engineering Co. Ltd., The	—	66 Burnett & Rolfe Ltd.	—	Book Mark Elliott, H. J., Ltd.	—
155 Alginatc Industries Ltd.	—	194 Bush, W. J., & Co. Ltd.	—	Elliott Brothers (London) Ltd.	—
123 Allen, Edgar, & Co. Ltd.	—	124 Butterfield, W. P., Ltd.	—	145 Elmatic	—
130 Allen, Frederick & Sons (Poplar) Ltd.	146	Butterworths Scientific Publications	—	Endcoats (Filters) Ltd.	—
160 Allis-Chalmers Great Britain Ltd.	—	Callow Rock Lime Co. Ltd., The	—	Evans Electro Selenium Ltd.	—
Alumina Co. Ltd., The	—	245 & 249 Calmic Engineering Co. Ltd.	—	Evered & Co. Ltd.	—
Ancorite Ltd.	—	Carless, Capel, & Leonard Ltd.	—	168 Farnell Carbons Ltd.	—
Andrew Air Conditioning Ltd.	—	175 Causeway Reinforcement Ltd.	—	156 Feltham, Walter H., & Co. Ltd.	—
136 Anglo-Dal Ltd.	—	Chappell, Fred, Ltd.	—	152 Ferris, J. & E., Ltd.	—
Anthony, Mark, & Sons Ltd.	—	Chemical Age Enquiries	179 & 180	279 Ferrostatics Ltd.	—
211 Armour Hess Chemicals Ltd.	—	Chemical & Insulating Co. Ltd., The	—	Fielden Electronics Ltd.	—
Ashley Associates Ltd.	—	Chemicals & Feeds Ltd.	148	171 Flight Refuelling Ltd.	—
Ashmore, Benson, Pease & Co. Ltd.	—	Chemieausrustungen Deutscher Innen-Und Außenhandel	—	Fireproof Tanks Ltd.	—
Associated Electrical Industries Ltd. Motor & Control Gear Division	—	Chemolimpex	—	185 Fosboro-Yavall Ltd.	—
Associated Electrical Industries Ltd. Turbine-Generator Division	—	Christy & Norris Ltd.	—	Fraser, W. J., & Co. Ltd.	—
153 Associated Lead Mfrs. Ltd.	—	158 Ciba Clayton Ltd.	—	Freeman, William, & Co. Ltd.	—
G/Card Audco Limited	—	Ciesh Ltd.	—	207 Fullers' Earth Union Ltd., The	—
B.S.A. Small Tools Ltd.	—	164 Citenco Limited	—	122 G.Q. Parachute Co. Ltd.	—
179 Baker Perkins Ltd.	—	Classified Advertisements	178	168 Gallenkamp, A., & Co. Ltd.	—
173 Balfour, Henry, & Co. Ltd.	—	Clayton, Son & Co. Ltd.	—	Gascoigne, Geo. H., & Co. Ltd.	—
182 Barclay Kellett & Co. Ltd.	—	138 Clydesdale Chemical Co. Ltd.	—	Geigy Co., Ltd., The	—
138 Barytes (Shielding Products) Ltd.	—	Cohen, George, Sons & Co. Ltd.	—	183 General Precision Systems Ltd.	—
Begg, Cousland & Co. Ltd.	—	141 Cole, R. H., & Co. Ltd.	—	Glass Manufacturers' Federation	—
128 Belliss & Morcom Ltd.	—	Colt Ventilation Ltd.	—	Giusti, T. & Sons Ltd.	—
165 Bennett, Sons & Shears Ltd.	—	131 Comet Pump & Eng. Co. Ltd., The	—	Glebe Mines Ltd.	—
G/Card Berk, F. W., & Co. Ltd.	—	269 Commercial Plastics Ltd.	—	Goodyear Pumps Ltd.	—
138 Black, B., & Sons Ltd.	—	Consolidated Zinc Corporation Ltd.	—	167 Gravier Mfg. Co. Ltd.	—
2 Blackman, Keith, Ltd.	—	Constable & Co. Ltd.	—	172 Greeff, R. W., & Co. Ltd.	—
Blaw, Knox Chemical Engineering Co. Ltd.	—	G/Card Constantin Engineers Ltd.	—	144 Halex (Bex Industrial)	—
150 & 151	—	Constructors John Brown, Ltd.	—	Haller & Phillips Ltd.	—
190 Blundell & Crompton Ltd.	—	Controlled Convection Drying Co.	—	Hamilton Company Inc.	—
Boby, William, & Co. Ltd.	—	Cooke, Troughton & Simms Ltd.	—	156 Harris (Lostock & Gralam) Ltd.	—
Borax & Chemicals Ltd.	—	Coulter Electronics Ltd.	—	Harvey, G. A., & Co. (London) Ltd.	—
205 Borax Consolidated Ltd.	Front Cover	Cromil & Piercy Ltd.	Cover iii	6 Haworth, F. (A.R.C.) Ltd.	—
4 Boulton, William, Ltd.	—	Crossfield, Joseph, & Sons Ltd.	—	Heafield Industries Ltd.	—
Braby, Frederick, & Co. Ltd.	—	180 Crossley, Henry (Packings) Ltd.	—	Hearson, Charles, & Co. Ltd.	—
Brackett, F. W., & Co. Ltd.	—	Crow Carrying Co. Ltd., The	—	161 Helms Ltd.	—
265 British Acheson Electrodes Ltd.	—	133 Cruickshank, R., Ltd.	—	Hercules Power Co. Ltd.	—
132 British Carbo Norit Union	—	159 Curran, Edward, Engineering Ltd.	—	Hindle, Joshua, & Sons Ltd.	—
British Ceca Co. Ltd., The	—	219 Cyanamid of Great Britain Ltd.	—	164 Holden, Chris., Ltd.	—
193 British Celanese Ltd.	—	213 Cyclo Chemicals Ltd.	—	Humphreys & Glasgow Ltd.	—
British Drug Houses Ltd., The	Cover ii	126 Cyclops Engineering Co. Ltd., The	—	151 Huntingdon, Heberlein & Co. Ltd.	—
154 British Ermeto Corporation Ltd.	—	235 Dalglish, John, & Sons Ltd.	—	I.C.I. (Billingham)	—
Spine British Geon Ltd.	—	152 Danks of Netherton Ltd.	—	I.C.I. Catalysts	—
271 British LaBour Pump Co. Ltd.	—	136 Davey & Moore Ltd.	—	I.C.I. General Chemicals Division	—
British Lead Mills Ltd.	—	144 Davey, Paxman & Co. Ltd.	—	I.C.I. Ltd. Heavy Organic Chemicals	—
G/Card British Oxygen Company Ltd. (Heavy Industrial Dept)	—	Davy & United Instruments Ltd.	—	I.C.I. Metals Titanium D.	—
146 British Rototherm Co. Ltd., The	—	140 Dawson, McDonald & Dawson Ltd.	—	I.C.I. Nobel Chemicals	—
122 British Steam Specialities Ltd., The	—	Deutsche Steinzeugwarenfabrik	—	I.C.I. Plastics—Darvic	—
126 British Tar Products Ltd.	—	143 Distillers Co. Ltd., The	—	I.C.I. Plastics—Fluon	—
British Thomson-Houston Co. Ltd., The	—	139 Distillers Co. Ltd., The (Chemical Div.)	173	I.C.I. Ltd. (Plastics Division), Corvic	—
G/Card British Titan Products Co. Ltd.	—	Distillers Co. Ltd., The (Industrial Group)	—	I.C.I. (Flourube) Ltd.	—
British Visqueen Ltd.	—	135 Dorr-Oliver Co. Ltd.	—	I.M.P.A. Ltd.	—
	—	131 Doulton Industrial Porcelains Ltd.	—	Interscience Publishers Ltd.	—
	—	Dow Chemical International S.A.	—	Isopad Ltd.	—

(Continued on page 148)

FOR CALCIUM OXALATE

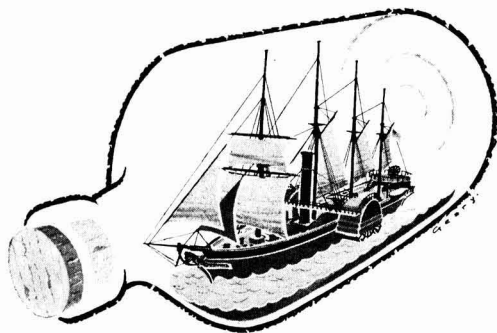
CONSULT

FREDERICK ALLEN & SONS (POPLAR) LTD.

PHOENIX CHEMICAL WORKS, UPPER NORTH STREET, LONDON, E.14.

Telephone: EAST 2673 (5 lines)

Cables: NITRIC, POP, LONDON



**IT'S A SMALL WORLD
AND MARCHON SURFACTANTS PLAY A BIG PART IN IT**

It's plain sailing for chemical manufacturers in many parts of the world, for Marchon ships much of its output of surfactants to overseas customers. Buyers in more than 50 countries rely on Marchon's raw materials.

PRIMARY FATTY ALCOHOLS

These are essential raw materials for a large number of chemical processes, and are of special importance to the cosmetic and detergent industries. Marchon are the only manufacturers in Great Britain with the full range of C8-C18 even-numbered homologues. Why not write for data, samples or advice?

Marchon

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	Page			
174	Jackson, J. G., & Crockatt Ltd.	190	Naisea Engineering Co. Ltd.		Sharples Centrifuges Ltd.			
172	Jamesales Ltd.		National Coal Board	3	Sheepbridge Equipment Ltd.			
	Jenkins, Robert, & Co. Ltd.		National Industrial Fuel Efficiency Service		Shell Chemical Co. Ltd.			
	Johnson, Matthey & Co. Ltd.	118	Neckar Water Softener Co. Ltd.	Back Cover	Shell-Mex & B.P. Ltd.			
124	Johnsons of Hendon Ltd.	149	Negretti & Zambra Ltd.		Shell Industrial Oils			
	Jones & Stevens Ltd		Newnes, George, Ltd.		Shirley, Aldred, & Co. Ltd.			
			Back Cover Newton Chambers & Co. Ltd.		Siebe, Gorman & Co. Ltd.			
186	K.D.G. Instruments Ltd.		Nordac Ltd.	157	Silvercrown Limited			
	K & K. Laboratories Ltd. *		Normalair Ltd.	40	Simon, Richard, & Sons Ltd.			
170	K.W. Chemicals Ltd.		Northgate Traders (City) Ltd.		Sipon Products Ltd.			
	Kaylene (Chemicals) Ltd.		Nuovo Pignone		Souzichimexport			
198	Kellie, Robert, & Sons Ltd.			267	Southern Analytical Ltd.			
	Kellig International Corporation	162	Odoni, Alfred A., & Co. Ltd.		Spence, Peter, & Sons Ltd.			
180	Kenton Fluorescent Mfg. Co.	190	Optical-Mechanical (Instruments) Ltd.		Spencer Chapman & Messel Ltd.			
166	Kernick & Son Ltd.		Orthos (Engineering) Ltd.		Spencers Joinery Ltd.			
319	Kestner Evaporator & Engineering Co. Ltd.		Oxford Paper Sack Co. Ltd.	223	Standard Chemical Co.			
	Kestner Evaporator & Engineering Co. Ltd. (Keebush)			320	Stanton Instruments Ltd.			
	Klinger, Richard, Ltd.		G/Card P.G. Engineering Ltd.		Staveley Iron & Chemical Co. Ltd.			
	Laboratory Apparatus & Glass Blowing Co.		Palfrey, William, Ltd.	182	Steel Drums Ltd.			
	Laboratory & Electrical Engineering Co.	215	Peebles, Bruce & Co. Ltd.	196	Steel, J. M., & Co. Ltd.			
176	Laboratory Glassblowers Co.		Penrhyn Quarries Ltd.	196	Sturge, John & E., Ltd.			
	Langley Alloys Ltd.		Permutit Co. Ltd., The		Super Oil Seals & Gaskets Ltd.			
124	Lankro Chemicals Ltd.		G/Card Petrocarbon Developments Ltd., The		Surface Protection Ltd.			
	Laporte Industries Ltd.	188	Petroderivatives Ltd.	192	Synthite Ltd.			
	Lechler, Paul Firma		Pfizer Ltd. (Chemical Division)					
134	Leek Chemicals Ltd.		Pickfords Limited	191	Taylor Rustless Fittings Co. Ltd.			
176	Leigh & Sons Metal Works Ltd.	152	Pickstone Limited	194	Thermal Syndicate Ltd., The			
	Lennig, Charles & Co. (Great Britain) Ltd.		Plastic Constructions Ltd.		Tidy, S. M. (Haulage) Ltd.			
	Lennox Foundry Co. Ltd.	153	Platon, G. A., Ltd.	156	Titanium Metal & Alloys Ltd.			
	Light, L., & Co. Ltd.		Podmores (Engineers) Ltd.		Todd Bros. (St. Helens & Widnes) Ltd.			
181	Lind, Peter, & Co. Ltd.		257	Polypenco Ltd.	168	Towers, J. W., & Co. Ltd.		
	Lloyd & Ross Ltd.		251	Polysius Ltd.	261	Tylors of London Ltd.		
	Lock, A. M., & Co. Ltd.		195	Pool, J. & F., Ltd.				
177	Longman Green & Co. Ltd.			Pott, Cassels & Williamson Ltd.	180	Unicone Co. Ltd., The		
	Longworth Scientific Instruments Co.			Potter, F. W., & Soar Ltd.	200	Unifloc Ltd.		
188	Lord, John L., & Son			255	Unilever Ltd.			
	Loughborough Glass Co. Ltd.			G/Card Powell-Duffryn Carbon Products Ltd.		Union Carbide Ltd.		
	Low & Bonar Ltd.			146	Price Stuffed & Co. Ltd.	149	United Coke & Chemicals Co. Ltd.	
	Lurgi Verwaltung GmbH				Prodorite Ltd.	170	United Filter & Engineering Co. Ltd., The	
	Luwa (U.K.) Ltd.				Price's (Bromborough) Ltd.	196	United Wire Works Ltd., The	
					Pye, W. G., & Co. Ltd.		G/Card Universal-Matthey Products Ltd.	
162	McCarthy, T. W., & Sons				Pyrene Co. Ltd.		Volcrepe Ltd.	
188	McMurray, F. J.				Pyrene-Panorama Ltd.			
187	Maine, B. Newton, Ltd.				Q.V.F. Ltd.	188	W.E.X. Traders Ltd.	
134	Manesty Machines Ltd.				Quickfit & Quartz Ltd.	189	Walker, P. M., & Co. (Halifax) Ltd.	
129	Marchon Products Ltd.	147				8	Waller, George, & Son Ltd.	
	May & Baker Ltd.		154	Reade, M. G.			Ward, Thomas W., Ltd.	
	Mechans Ltd.		241	Reads Ltd.			Warren-Morrison Ltd.	
	Front Cover Metal Containers Ltd.			Reavell & Co. Ltd.	176		Watson, Laidlow, & Co. Ltd.	
	G/Card Metalcol (Britain) Ltd.			Recontainers Limited			Watson-Marlow Air Pump Co.	
146	Metcalf & Co.			Rheem Lysaght Ltd.	125		Wellington Tube Works Ltd.	
	Metering Pumps Ltd.			Rhodes, B. & Son Ltd.	242		Whitaker, B., & Sons Ltd.	
	Metrimplex			Richardson Scale Co. Ltd.			Whidnes Foundry & Engineering Co. Ltd.	
	Metropolitan-Vickers Electrical Co. Ltd.			Richmond Welding Co. Ltd.	253		Wilcox, W. H., & Co. Ltd.	
130	Middleton & Co. Ltd.			243	Rosin Engineering Co. Ltd.	137	Wilkinson, James, & Son Ltd.	
	Mirrless Watson Co. Ltd., The			260	Ross Ensign Ltd.	142	Williams & James (Engineers) Ltd.	
178	Mirvale Chemical Co. Ltd., The				Rotamer Manufacturing Co. Ltd.		Wico Chemical Co. Ltd.	
	Mitchell, L. A., Ltd.			192	S.P.E. Company Ltd.	142	Wood, Harold, & Sons Ltd.	
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.		Yorkshire Engineering & Welding Co. (Bradford) Ltd.	
	Monsanto Chemicals Ltd.				Scientific Design Co. Inc.	150	Yorkshire Tar Distillers Ltd.	
	Morgan Refractories Ltd.				Scientific Glass Blowing Co.		Young, A. S., & Co.	
178	Moritz Chemical Engineering Co. Ltd.				Scott, Bader & Co. Ltd.	171		
					174	Scottish Tar Distillers Ltd.	150	Zeal, G. H., Ltd.
							152	

CHEMICALS AND FEEDS LIMITED

ADELAIDE HOUSE · KING WILLIAM STREET · LONDON E.C.4

Tel.: Mansion House 9621 (5 lines)

Cables: "Chemifeed" London

Telex 23209

ZINC CARBONATE - PRILLED UREA
 - ZINC SULPHATE MONOHYDRATE -
 BENTONITE - MANGANESE CARBONATE
 (Rhodochrosite)

Associated with: P. Leiner & Sons (Wales) Ltd., The Glamorgan Alkali & Acid Co. Ltd., and other U.K. and Overseas manufacturers

More Union Carbide* Morpholine

Do you use morpholine—

for the manufacture of rubber chemicals?

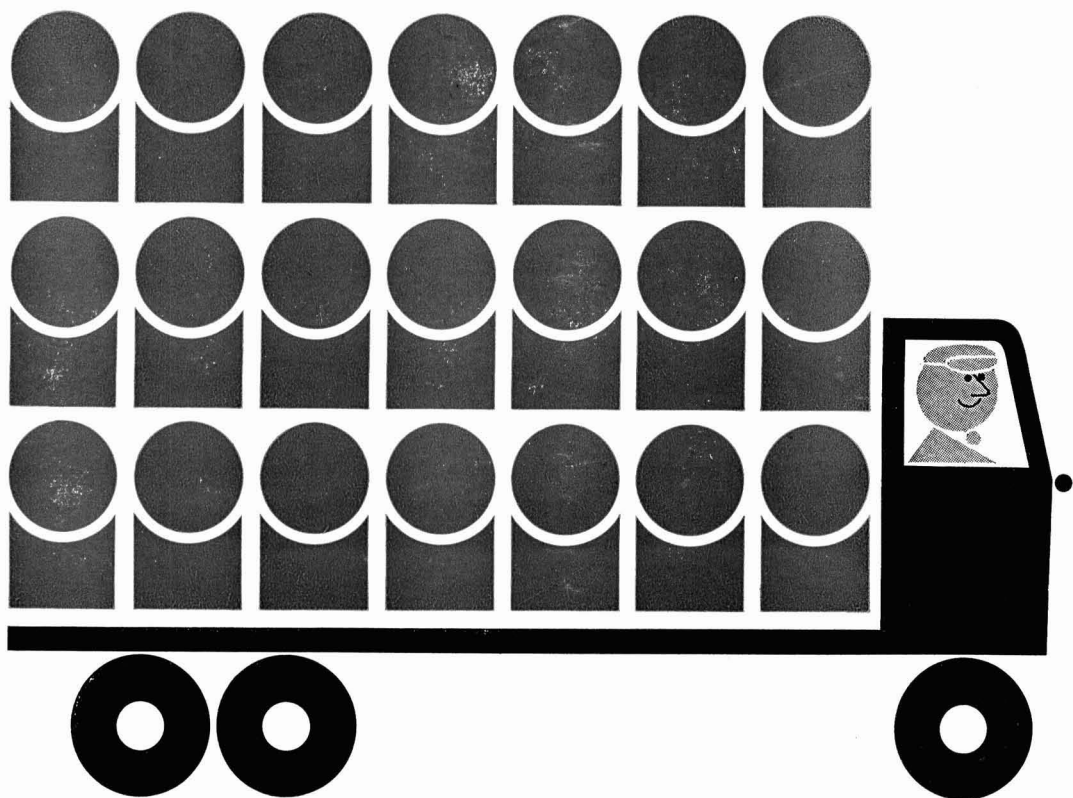
as a chemical intermediate?

in the formulation of self-polishing waxes?

in the manufacture of speciality soaps and emulsions?

as a corrosion inhibitor in boiler feed water?

If you use—or are planning to use—morpholine in any way, make a note that Union Carbide offer supplies of a particularly high quality product. We shall be very happy to arrange for a representative to call and give you fuller information.



*The term UNION CARBIDE is a trade mark of UNION CARBIDE CORPORATION

UNION CARBIDE LIMITED · CHEMICALS DIVISION · 8 GRAFTON STREET · LONDON W1 · MAYFAIR 8100

CRC 82

FROM FIRST SURVEY TO THE SNIP OF THE TAPE...

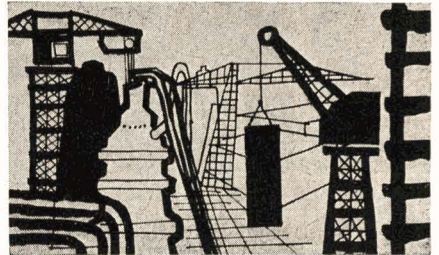
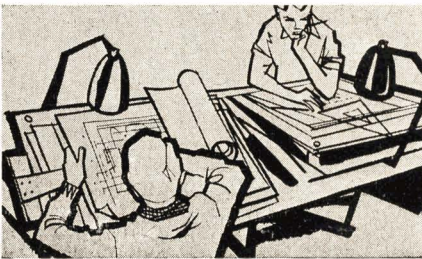
At every stage of chemical and petroleum plant construction, let Blaw Knox experience see you through. Fifty years' leadership in every aspect and every phase of this specialised type of work guarantees high quality designs which ensure the use of the latest processes and methods of operation to anticipate future trends and markets.

Technical appraisal—economic survey—site selection—plant design and engineering—procurement—complete erection (including civil engineering and building)—training of operatives—initial operation.

Blaw Knox will handle any type or size of project, including single stages, and will be pleased to advise you on any developments you may have in mind.

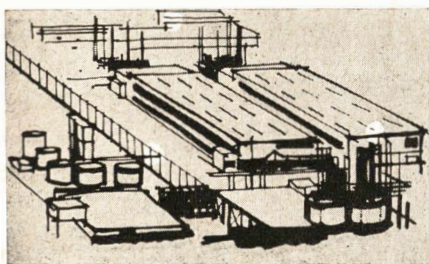
Blaw Knox specializes in Process Plant and Equipment for :

Industrial chemicals, fine chemicals, pharmaceuticals, organics, dyes, intermediates, food processing, fertilizers, pesticides, high and low temperature processes, natural and synthetic fuels, metals processing and treatment, waste treatment, chlor-alkali production, resins and plastics, fats and oils, petroleum and petrochemicals.



BLAW KNOX CHEMICAL ENGINEERING COMPANY LIMITED

20, Eastbourne Terrace, London, W.2. Paddington 9051.



BLAW KNOX

FILTER CRUCIBLES of Porous Porcelain

Made by

The **WORCESTER
ROYAL PORCELAIN CO.
LIMITED**

Supplied by all recognised Laboratory Furnishers.

retain the finest precipitates and filter rapidly. They are not affected by acids, remain constant in weight within very fine limits and can be heated to high temperatures.

Thermometers ...

HIGH-PRECISION INSTRUMENTS, FOR SCIENTIFIC RESEARCH—ANSCHUTZ, CALORIMETER AND SECONDARY STANDARDS.

ZECOL
REGD. TRADE MARK

ZECOL
REGD. TRADE MARK

EST.
1888

Hydrometers ...

PLAIN AND COMBINED FORMS. PRECISION TYPES FOR SPECIFIC GRAVITY, DENSITY AND ALL ARBITRARY SCALES MADE TO I.P., B.S., S.T.P.T.C. AND A.S.T.M. SPECIFICATIONS.

A.S.T.M. 45F Kin. Vis
Thermometer

Instruments N.P.L. Certified if required

Obtainable from all leading Wholesalers

G. H. ZEAL LTD.

Lombard Road, Morden Road, London, S.W.19

PHONE—
LIBERTY 2283/4/5/6

GRAMS:
ZEALDOM, SOUPHONE, LONDON



**LEIGH
& SONS
METAL
WORKS**
Orlando LTD.
St., BOLTON

CARBOY HAMPERS

CARBOYS · PACKED CARBOYS
CARBOY TILTERS AND BARROWS
SAFETY CRATES TOP PROTECTORS

Turn your surplus equipment into cash!

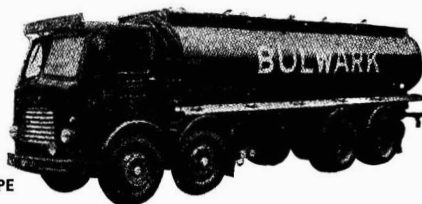
A buyer for any plant which you now regard as obsolete can be found through the Classified Advertisement Section of Chemical Age.

A small ad, costing only a few shillings will be seen by potential users, not only in the U.K. but also in those overseas countries where second-hand plant is given a new lease of life.

Full details of advertisement rates will be found at the top of page 177.

For Bulk Liquid Transport consult

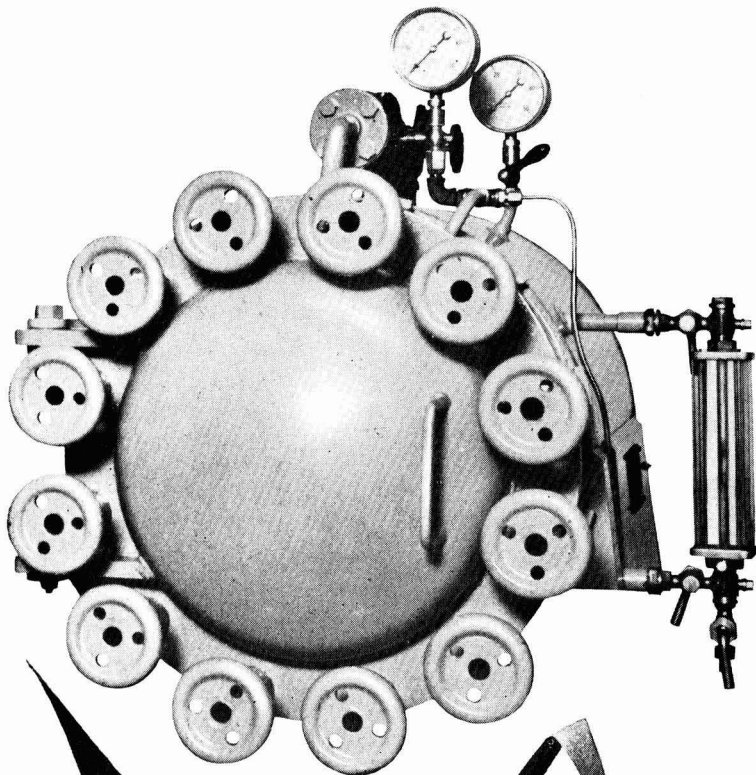
DEPOTS AT
LONDON,
GLOUCESTER,
WARRINGTON,
MANCHESTER,
STANFORD-LE-HOPE
and SOUTHAMPTON



BULWARK

the Specialists

- Fleet of over 350 tankers, suitable for most commodities, capacities from 1000 to 4000 gallons. Write for brochure and quotation.
- **BULWARK TRANSPORT LTD.**
CHIPPENHAM WILTS TELEPHONE · 3221 (5 lines)
LONDON OFFICE
17 STRATTON ST., W.1 TELEPHONE · GRO 7943



HERE'S
AN
INTERESTING
PLANT

PRODUCED BY LENNOX

In their 50 years and more of producing equipment for the Chemical Industry, Lennox Foundry have met some highly individual demands. "Specialised unit plants", they call them, designed for a very specific purpose. This, bear in mind, is in addition to the mainstream of their activities which is the manufacture of plant for a wide range of less unorthodox processes.

Experience of this length and breadth in the world of chemical engineering is embodied in every piece of equipment that Lennox provide. It might be a complete plant or simply a single item such as a Pump or a Valve, a Pipe or a Fitting, a Nozzle for mixing or a Dish for etching—all these and more of the apparatus that industry needs are supplied by Lennox and thus backed by the 'know-how' and skill that ensure satisfaction.

And much of it in Tantiron, which is the original and still the finest acid-resisting ferrous metal in the world.

Lennox introduced this high grade silicon iron in 1910. Since that time, constant improvement in casting techniques has widened the scope of its application. Today castings of the finest quality—from the simplicity of a length of pipe work to the intricacy of an absorption tower—are serving every sphere of industry where corrosion and erosion are encountered. If yours is such an industry—Steel, Gas, Petroleum, Textiles, Chemicals—get in touch with Lennox—they're bound to produce something that will interest you.

Lennox

LENNOX FOUNDRY COMPANY LIMITED
Chemical Engineers

Tantiron Foundry, Glenville Grove, London, S.E.8.
Tel: TIDeway 2401/2 Telex: Equifex Green, London.

28" TYPE EIGHTY ONE
CENTRIFUGE

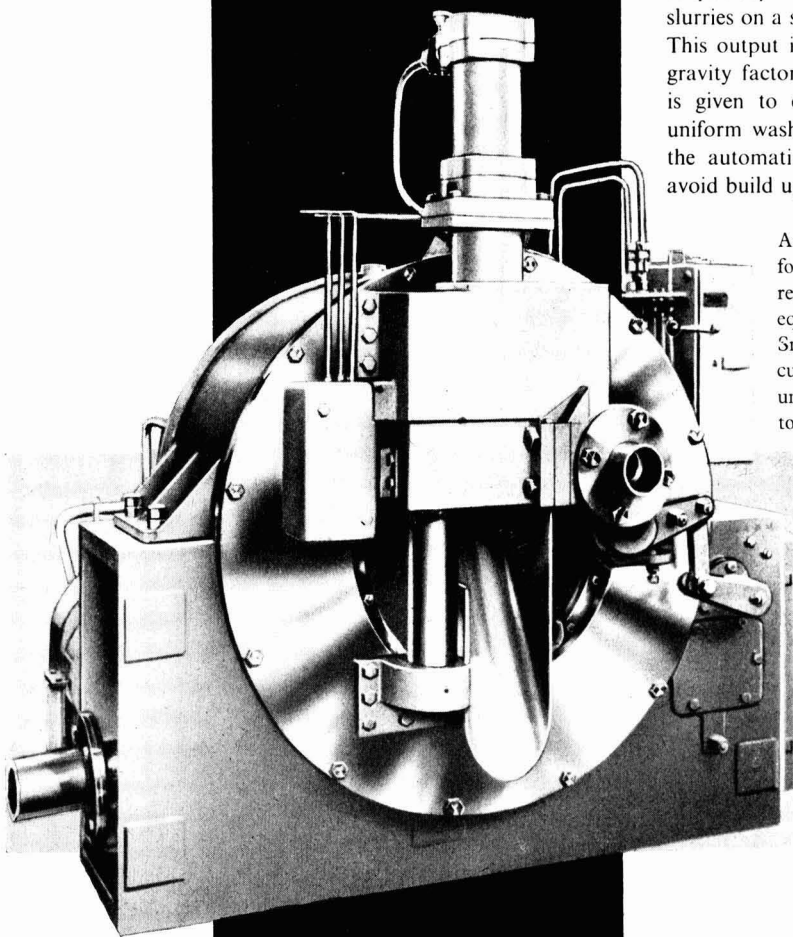
Completely

automatic

and expressly designed for the chemical manufacturer requiring high output separation of freely filtering slurries on a short time cycle.

This output is achieved by the high gravity factor. Special consideration is given to even feed distribution, uniform washing, and the design of the automatic plough discharge, to avoid build up of solids.

Arrangements can be made for upper floor mounting if required, and flameproof equipment can be provided. Small and full scale tests of customers materials can be undertaken in our laboratory.



THOMAS BROADBENT & SONS LTD CENTRAL IRONWORKS HUDDERSFIELD
TELEPHONE 5520-5

VOL. 86

No. 2194

JULY 29 1961

Telephone: FLEET Street 3212 (26 lines)

Telegrams: Benformula - London E.C.4

Editor

M. C. HYDE

Manager

R. C. BENNETT

Director N. B. LIVINGSTONE WALLACE

Midland OfficeDaimler House, Paradise Street,
Birmingham. [Midland 0784-5]**Leeds Office**Permanent House, The Headrow,
Leeds 1. [Leeds 22601]**Scottish Office**116 Hope Street, Glasgow C2.
[Central 3954-5]**IN THIS ISSUE**

M.T.D. and Tar Agreement	156
B.D.H. and Mead Johnson	156
New Boehringer Sales Company	156
Project News	157
Distillates	158
Dutch Salt-Ketjen Merger	159
Vinyl Acetate Expansion for D.C.L.	160
Prof. Frazer on Antibiotics in Food	160
B.R. Weedkiller Train Uses Triazines	162
Report on French Chemical Industry	163
New Flame Detection Method	164
Overseas News	165
Fifty Years of A.K.U.	166
People in the News	167
Commercial News	168
Distillers Annual Meeting	169
Chemical Prices	172
Trade Notes	176
New Patents	177
Market Reports	178

Annual subscription is: home, 57s 6d,
overseas, 65s, single copies 1s 9d (by
post 2s)

c

Chemical Age

Incorporating

PETROCHEMICALS and POLYMERS

BOUVERIE HOUSE · 154 FLEET STREET · LONDON · EC4

**WORLD GROWTH IN
SULPHURIC ACID**

WHILE world production of sulphuric acid is not expanding at anything like a rate comparable to growth in production of synthetic organic materials, it is still by far the most important chemical in the world so far as tonnage is concerned. Between 1950 and 1960 world production of sulphuric acid saw an expansion of 84% from 27,318,000 tonnes of 100% acid to 50,434,000 tonnes, topping the 50 million-tonne mark for the first time.

Over the same period, free world production rose 24,183,000 tonnes to 40,994,000 tonnes, an increase of nearly 70%. Communist countries recorded a rise in production of sulphuric acid over the same 10 year period of 201%, from 3,135,000 tonnes to 9,440,000 tonnes.

The increase in world production to 50.4 million tonnes is shown in a preliminary survey carried out by the British Sulphur Corporation and published in the June issue of their journal, *Sulphur*.

Sulphuric acid production last year represented a rise of 5.8% over the figure of 47,644,000 tonnes recorded in 1959. The 1960 production of free world countries was 4.9% up on the 39,044,000 tonnes produced in 1959, while the Communist-bloc total of 9,440,000 tonnes was 8.1% higher than the 1959 figure of 8,600,000 tonnes.

Countries producing more than 1 million tonnes of acid a year now total 12 in the Free World and two in Communist countries. The U.S. remains by far the world's largest producing country, with 15,445,000 tonnes in 1960. Production in other countries was as follows, the U.K. being fifth in world importance: U.S.S.R., 5,400,000 tonnes; Japan, 4,452,000 tonnes; West Germany, 3,174,000 tonnes; U.K., 2,745,000 tonnes; Italy, 2,065,000 tonnes; France, 1,983,000 tonnes; Canada, 1,499,000 tonnes; Belgium, 1,404,000 tonnes; Spain and China, 1,300,000 tonnes each; and Australia, 1,127,000 tonnes.

Throughout the world sulphuric acid capacities are still being increased and new plants built. Among countries where acid plants have been completed this year, or are under construction or planned are the following: Argentine, Austria, Australia, Bulgaria, Canada, Chile, Eire, Holland, India, Japan, Italy, Mexico, Poland, Thailand U.A.R., U.K., U.S., U.S.S.R. The combined total capacities of these plants is of the order of 2.2 million tonnes a year.

It was estimated in *CHEMICAL AGE*, 14 January, p. 83, that U.K. consumption of acid would this year top 3 million tons for the first time, representing an increase of some 300,000 tons. There is capacity for well over 3 million tons and whether this will be fully utilised remains to be seen, but it must be considered unlikely, particularly in view of lower fertiliser sales reported by some companies.

แผนกห้องสมุด กรมวิทยาศาสตร์

M.T.D. Are Making Separate Contracts Following End of Tar Agreement

NOTICE of intention earlier this year that the tar agreement would be referred to the Restrictive Practices Court has led to the cancellation of the agreement, declared Mr. R. B. Robinson, chairman of Midland Tar Distillers Ltd., in his annual report. Mr. Robinson added that the company was now entering into separate contracts with each producer—these do not require to be registered under the Act, and in each case would provide the same period of security as previously.

Referring to the abandonment of the phenol selling arrangements, following a hearing before the Restrictive Practices Court, Mr. Robinson said that M.T.D. had found themselves "able to accept the consequences of this with equanimity". The case, however, had caused tar distillers to scrutinise their selling arrangements generally and the overall effect had been a tendency towards greater individual independence.

Up to last year, the company's extensive research and development departments were devoted to work strictly connected with the distillation and refining of tar. The costs of the departments were therefore a proper charge in the accounts drawn up to conform to the tar agreement to arrive at the price payable for crude tar. Now, however, work had begun on the development of products which were wholly or partly for the benefit of the company, rather than for the benefit of the crude tar producers. In those cases, the costs of the preliminary research and development must be borne wholly or partly by the company; this change of allocation had been mainly responsible for the reduction in trading profit, to £368,693, for the year ended 31 March.

Capital Spending

Benefits of that expenditure should begin to be felt in 1962-63, although the projects in hand, which already committed the company to capital spending of £500,000, were not likely to yield a full year's benefit until 1962-64.

Supplies of crude tar had fallen slightly and M.T.D. had paid the highest price ever to the tar producers. That implied a higher revenue to the company, but the lion's share went to the producers under the provisions of the crude tar agreement.

U.K. phenol sales had been very good and tar acid sales as a whole were limited only by the company's ability to produce. The white products situation, however, was not so attractive, for the company was to-day up against the ability of the oil companies to produce solvents by the use of modern techniques. In addition there were doubts about continuation of the preferential excise duty

of 1s 3d/gall, after 1964.

Plans were in hand to increase considerably production of pyridine and pyridine bases and their derivatives. M.T.D. used relatively large quantities of alpha-picoline for the production of 2-vinylpyridine. Promintic, a new product consisting of a pyridine-base derivative that was developed by M.T.D. had been found of great value by I.C.I. and the company now had an agreement with I.C.I. for the supply of the chemical.

A new continuous naphthalene crystallising plant was put to work at Four Ashes during the year and had settled down well enabling the company to cut costs and raise output.

Boehringer to Take Over U.K. Sales

SALES of their products in the U.K. have grown to such an extent that C. H. Boehringer Sohn, Ingelheim-am-Rhein, will shortly form a new subsidiary company to handle marketing in the U.K. and Eire. At present U.K. sales are handled through Pfizer Ltd., Sandwich, Kent, but early next year, Pfizer's will cease this activity.

Similarly, Pfizer have found that the growth of their trade in West Germany has necessitated the building of their own plant and on completion they will market their own products in that country. At present distribution is handled by Boehringer.

Wills

Mr. Ernest Robert Andrews, formerly chemist in chief to London County Council, who died on 28 December, aged 84 years, left £4,435 net (duty paid £89).

Mr. Herbert Arthur Berens, formerly a director of Biddle, Sawyer and Co. Ltd., who died on 30 January, left £33,082 net (duty paid £6,981).

B.D.H. Still Support Mead Johnson Offer, But Will Meet Warner's

COMPLAINTS by William R. Warner and Co., U.K. subsidiary of Warner-Lambert Pharmaceutical Co., U.S., that they had not been given sufficient information by British Drug Houses Ltd. to formulate merger terms, have been firmly rejected by Mr. Geoffrey Eley, B.D.H. chairman.

The Warner approach (C.A., 22 July, p. 124) followed that of another U.S. pharmaceutical company, Mead Johnson and Co. (C.A., 15 July, p. 88) who are seeking a 35% holding in B.D.H. in return for £5 million of fresh capital. Mr. Eley says that his directors firmly believe that shareholders should not risk losing all the benefits that would stem from the Mead Johnson plan "when no clear alternative is before them".

B.D.H., declares Mr. Eley, have given Warner's all the information requested "insofar as such information was in existence and could properly be given". The disclosure is said to have been as extensive—possibly rather more so—than that made to Mead Johnson. B.D.H. directors do not consider that a meeting between accountants would be proper at this stage because it could not possibly evaluate the growth potential of B.D.H. and because it could only be of value on the basis of a complete exchange of information. That information would have to be passed on to Warner's to enable them to frame their proposals.

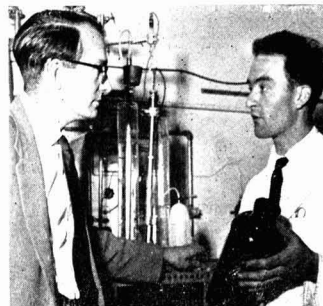
Should such proposals not be accepted by B.D.H. shareholders, the company would be in the position of having given to Warner's and their U.S. parent information that would be of the greatest assistance to a vigorous competitor. But to co-operate with Warner's, the B.D.H. managing director will meet the chairman of that company as soon as possible to exchange information on what

is described as all practical or business matters affecting the two companies, including the reasons for the very substantial capital and development spending incurred and contemplated by B.D.H.

Mr. Eley's present letter is in the nature of an interim report and he will write shareholders again later this week "if it should be necessary to do so".

New Oral Penicillin Introduced by Beechams

A NEW oral penicillin has been introduced by Beecham Research Laboratories. Called Penbritin, it is active against more varieties of bacteria than any previous penicillin. It is capable of dealing not only with organisms normally sensitive to penicillin but also those associated with urinary tract infections and others associated with chronic bronchitis.



Dr. Frank Doyle, head of the chemistry department of the Beecham Research Laboratories, talking to one of his staff who holds a flask of Penbritin

Project News

Fluor Complete Contracts Worth £20 M. Since Formation in 1957

AMONG the projects currently being undertaken by **Fluor Engineering and Construction Co. Ltd.** are the butadiene extraction unit at Grangemouth for **British Hydrocarbon Chemicals** and a steam cracking plant for the production of ethylene and butadiene for **Svenka Esso**, in Sweden.

Fluor Engineering and Construction Co. were established in 1957 in order to make the know-how and experience of The Fluor Corporation of Los Angeles available to the U.K. and overseas. The company design, engineer, procure and construct plants in the petroleum, petrochemical, chemical and allied industries, and, according to a booklet recently published on their activities, they have already undertaken major projects in excess of £20 million in the U.K. and overseas.

The contract for the B.H.C. butadiene extraction plant awarded to Fluor was announced in April last year (see *CHEMICAL AGE*, 9 April 1960) and involved the engineering procurement and extraction of the plant. It will be complete by August.

The much more recent contract for Svenska Esso (see *CHEMICAL AGE*, 6 May 1961) was also for the engineering, procurement and construction of the project and this is expected to be completed by March 1963. The engineering of the plant is well under way, procurement has also started and orders have been placed, and construction is due to begin in August.

A platformer for the **Iranium Oil Refinery** at Abadan is scheduled for completion in May 1962, and the Alkar and Hydeal units for **Petroleos Mexicanos (Pemex)**, the engineering and procurement of which were contracted to Fluor, are 60% complete.

As well as these major enterprises already being undertaken, Fluor have put out tenders for others.

Soviet Contract for Rubber Machinery to Daglish

● Two complete plants for the filtration, drying, wrapping and packing of butyl rubber are to be supplied to Russia by **John Daglish and Sons Ltd.** The contract is worth £1.5 million and the equipment will be delivered to the U.S.S.R. between July and December 1962. Daglish were awarded two smaller contracts in March for butyl synthetic rubber equipment worth £200,000.

Another Gas Board Orders Stretford Process

● ANOTHER contract for the construction of a Stretford liquid purification plant has been gained by **W. C. Holmes and Co. Ltd.**, Turnbridge, near Hudders-

field, who earlier this year announced conversion of an existing plant in Manchester. The latest contract is for the supply of plant for the West Hartlepool Works of the **Northern Gas Board** for the complete removal of hydrogen sulphide content of some 1% from 3 million cu. ft. of coke-oven gas that is supplied from a steelworks.

The Stretford process was developed by the North Western Gas Board and the Clayton Aniline Co. Ltd. W. C. Holmes are one of six licensees and have also received contracts from Courtaulds Ltd. and Midland Tar Distillers Ltd.

U.K. Interest in Sardinian Magnesium Oxide Plans

● ON his return from a visit to the U.K., Dr. Garzia, president of **Credito Industriale Sardo**, Cagliari, said that some British businessmen were interested in the project to build a large magnesium-oxide plant at Sant'Antioco, Sardinia. The scheme hinges on a project to build a large thermo-electric power station that would utilise local brown coal.

Boby Awarded Contract for Ion Exchange Plants

● CONTRACTS for the supply of two dealkylisation-base plants have been awarded to **William Boby and Co. Ltd.** by **British Glue and Chemicals Ltd.** The total value of the orders is more than £10,000. The plant will be installed at the Luton and Bermondsey works, and will have capacities of 3,000 and 4,000 gall. per hour respectively.

Nordac Acid Recovery Plant for Rheinpreussen

● A NUMBER of overseas contracts for the installation of sulphuric acid recovery units have been secured by **Nordac Ltd.**, Uxbridge, Middlesex. According to *Sulphur*, June, a submerged combustion unit for Rheinpreussen AG, will reconcentrate acid obtained as by-product in a process used for the production of isobutanol.

Two large recovery plants sent to the Soviet Union will reconcentrate waste acid to prevent river pollution, while other units have been sent to Czechoslovakia for the recovery of both sulphuric acid and hydrochloric acid from mixed effluent.

Bone Degreasing Plant Doubles Intake

● AFTER only three months in operation, the bone degreasing plant of **Leiner-De Mulder Ltd.**, Doncaster, has reached an intake of 600 tons of butcher's bone a week. Leiner-De Mulder were formed at

the end of last year by the merger of a division of P. Leiner and Sons Ltd., the world's largest ossein gelatine producers, and a division of Prosper De Mulder Ltd., Doncaster.

Following the merger, the bone degreasing plant, the only one of its kind in existence, was transferred to Doncaster from Treforest where the maximum intake capacity was 350 tons a week. The rise in intake capacity has been achieved by improvements to the process. The current weekly intake of 600 tons can be immediately increased by 50%, providing adequate raw material supplies are forthcoming. The yield of de-greased bone for gelatine production is some 35-40% of the raw bone intake.

Two Euratom Contracts Awarded

● EURATOM have signed contracts with the Italian group, **Societa Elettro-nuclearia Nazionale (SENN)** for a boiling water power reactor near Naples and with the Dutch Government for the research centre at Petten.

The total cost of the Italian reactor will be about \$70 million.

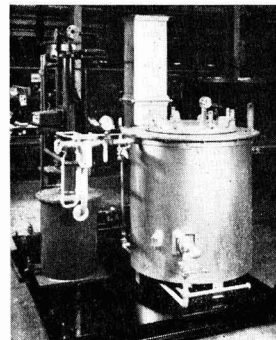
Kellogg Distillation Unit Due for Completion

● THE 5,000 b.p.d. combination atmospheric vacuum crude distillation unit that **Kellogg International Corporation** are building on a turnkey basis at Ellesmere Port for **Lobitos Oilfields Ltd.**, is due for completion in the autumn. It will produce straight-run gasoline, white spirit, gas oil, lube stocks and asphalt.

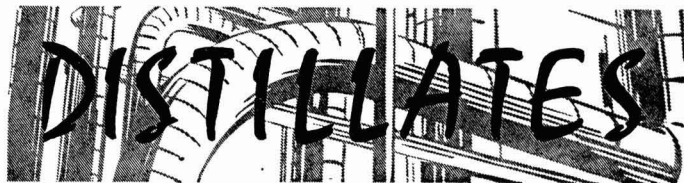
Cyanamid Italian Plant Due for Completion in February

● CONSTRUCTION on the new antibiotics plant announced by **Cyanamid International** at Catania, Sicily, started on 3 July and will, it is estimated, be completed by February 1962. General contractors are **Compagnia Tecnica Industrie Petroli SpA**, with architecture and construction by **Compagnia Grassetto Catania**. (See also 'Project News', 22 July).

HOLMES-ANDRE DEBONDING PLANT



Compactness is a feature of this Holmes-Andre rubber de-bonding plant at the Hemel Hempstead works of the Empire Rubber Co. The plant, supplied by W. C. Holmes and Co., Huddersfield, was described in *C.A.*, 15 July, p. 91



★ AFTER promises of new approaches to our frequently recurring economic crises, the Chancellor of the Exchequer has come up with the depressingly familiar austerity measures. While in the short run these will doubtless dampen home consumption, it is difficult to see how they will do anything to meet the vital and fundamental problem of boosting productivity.

Until British production can expand at a pace comparable with other West European countries, along with increasing exports, our economy will continue to be unstable. Full competitiveness with European industry will only come when Britain joins the Common Market.

In the meantime, the new proposals can only add to costs of production that have already risen as a result of the Budget proposals in April. The disappointing aspect of our fiscal policy is that it does nothing to encourage investment, without which productivity cannot be expected to show any dynamic upswing.

As Sir Miles Thomas said on Tuesday the measures proposed are nothing like what needs to be done.

★ BRITISH chemical producers are not the only ones in the world to come under fire for the mis-use of their products by farmers and market gardeners. My Italian correspondent writes to tell me that there have been complaints that the indiscriminate use of pesticides has been causing deaths.

So far the Italian authorities are more concerned at accidents to humans, rather than the effect on wild life and the Health Commission of the Senate, after a study of the problem, proposes that new regulations should be drawn up. These would cover the sale and utilisation of chemical pesticides which were harmless to man.

★ A COMPANY to exploit British inventions that has reached the commercial stage but which lacks the necessary finance is likely to be formed as a result of negotiations now in hand in the City. Instigator of these negotiations, Sir John Benn, chairman and managing director of the United Kingdom Provident Institution, has vigorously taken up the Radeliffe Committee's call for a company to provide genuine risk capital.

The project already has the approval and support of a number of scientific and technical organisations, both private and Government sponsored. Sir John's own company has made a generous grant and

other companies have been approached to subscribe to what Sir John hopes will be a company of substantial resources. Such a company would not only help provide new products and processes for British industry, but should also prove a useful source for investments.

It is too early to say when the company will begin to operate, but in view of present co-operation Sir John expects to make a statement in some months time. The new company will be financed entirely by City institutions and in due course hopes to make reasonable profits.

★ DEPARTMENT of Leather Industries at Leeds University, well known to generations of leather chemists, is being retitled 'Procter Department of Food and Leather Science'. This is because new courses leading to honours and ordinary B.Sc. degrees in food science are to be introduced from October 1962. Post graduate students will be able to take a diploma in food science or carry out research for the M.Sc. and Ph.D. degrees. Research is already in progress or planned in several branches of food science.

The new course has been designed to give an integrated approach to the basic physical, chemical and biological properties of both raw materials and end products of food manufacture. New title of the department commemorates the late Professor H. R. Procter, founder and first professor, whose work on the swelling of gels has been of importance in food science as well as leather science.

Professor A. G. Ward becomes Procter Professor of Food and Leather Science. Before joining the department in October 1959 he was director of research at the British Gelatine and Glue Research Association. His new laboratories will be equipped by next spring, when the first additional members of the staff will have been appointed.

In view of the continuing decline of the U.K. leather industry, this development should give the department a new lease of life. Adequate substitutes might have been found for sole leathers, but never I hope for food.

★ To Moscow by road, with a cargo of valuable scientific glassware for exhibition at the fifth International Congress of Biochemistry is the assignment for Mr. Walter Zuber, export sales manager of Quickfit and Quartz Ltd., and Mr. Roger N. Jukes, manager of the Instruments Division recently established at Ock Mill, Abingdon, Berks.

The Quickfit men, who leave Stone on 31 July, will take turns at the wheel along

the 1,500-mile route. The overland route has been chosen to obviate the possibility of breakages and other mishaps in transit.

Main exhibit will be a steady state distribution machine—a new instrument of considerable importance in the continuous preparation of materials hitherto difficult to separate, and in research dealing with compounds of natural origin.

The new machine, first product of the company's Instruments Division, aroused considerable interest at Achema in June. This is the third exhibition staged by Q. and Q. in the Soviet Union. This year, at the British Trade Fair they sold every item on display.

★ FROM the London E.C.4 office of Unilever Ltd. a booklet entitled 'Surface activity' reaches me, this being the first title in the company's new advanced series of educational booklets, intended principally for sixth form pupils as a supplement to school text books.

Written by R. J. Taylor of the Unilever Research Division, the booklet gives a remarkably clear exposition of the subject and the large, coloured diagrams are excellent. After a brief introduction, the theoretical treatment of surface activity is dealt with, then follows a description of experimental methods of measuring the surface properties of liquids. The final section describes some of the important industrial applications of surface activity, including water conservation, emulsification, detergency, flotation and foams.

I am sure that any science master seeing this booklet will wish to take up Unilever's offer to supply, free of charge, enough copies for one class in a school.

★ INCREASE in patents fees is not likely to be welcome in the chemical industry, which produces such a proliferation of new patents each year. However, the strength of the Government's case cannot be denied.

Deficit for the year is likely to be £74,000 without taking into account full effects of the salary increases granted to patents examining staff and other civil servants. Even though receipts for this year are likely to increase by £100,000, without raising fees it is estimated that the deficit will amount to £187,000.

Parliament has now approved an order increasing the minimum on filing of complete specifications from £4 to £15 and on sealing of patents from £5 to £6. Present fees are £4 and £3 respectively. It is not proposed to raise the £1 fee payable on application for a patent. A graduated scale for maximum renewal fees is substituted for the existing scale under which a renewal fee of £10 is charged for the 5th, 6th, 7th and 8th year, a fee of £15 in the 9th and 10th years and a fee of £20 for each of the 11th to 16th years.

Alembic

ROYAL DUTCH SALT AND KETJEN MERGE TO FORM BIG NEW CHEMICAL VENTURE

FOLLOWING a statement at the end of last year that merger talks were in progress, Royal Dutch Salt Industries and Ketjen now announce full details of the amalgamation. Full titles of the companies concerned are: N.V. Koninklijke Nederlandsche Zoutindustrie and Koninklijke Zwavelzuurfabrieken voorheen Ketjen N.V.

Ketjen started producing sulphuric acid in 1835, while K.N.Z. started the extraction of mineral salt at Boekelo in 1918. Long standing relations, initially those of customer and supplier, have deepened. Since 1947, the chemical products of both groups have been sold through the Neerlandisch Verkoopkantoor voor Chemische Producten N.V. (N.V.C.P.), in whom both hold a share interest. Ketjen were one of the founders in 1954 of N.V. Koninklijke Nederlandse Soda-industrie, now a wholly-owned subsidiary of K.N.Z.

Extending Co-operation

The link between the two firms was extended through the acquisition of K.N.Z. of Chemische Fabriek Gembo N.V. at Winschoten. This company, which produces sodium water-glass from soda, set up plant at Amsterdam to serve Ketjen's needs of water-glass in the production of catalysts, now one of Ketjen's main product lines. The supply of sodium hydroxide by K.N.Z. to Ketjen will be greatly increased after completion of the phenol plant now under construction for Ketjen in Amsterdam.

The merger of K.N.Z. and Albatros Superfosfaatfabrieken N.V., Utrecht, processors and producers of sulphuric acid, added to the links between the two companies. Ketjen set up a carbon black unit jointly with the U.S. Cabot Corporation in the Botlek area, where K.N.Z. have a salt-electrolysis plant under construction and where, through Albatros K.N.Z. participate with N.V. Billiton Maatschappij, who are to produce TiO₂.

Negotiations between K.N.Z. (Albatros), Shell and Hoogovens (Mekog) on the merger of interests in fertiliser production have led to a basic agreement which will be carried out after the K.N.Z.—Ketjen merger.

A new holding company with assets of Fl.317,497,000 (£31.7 million) has been set up under the title of Koninklijke Zout-Ketjen N.V. with Ir. P. M. van Doormall (Ketjen president) and Ir. H. M. van Broekman (K.N.Z. chairman) as joint managing directors. Shareholders of the two concerns will be invited to exchange their shares for holding company shares in the ratio of Fl.1,000 nominal K.N.Z. against Fl.1,000 nominal in the new company and Fl.750 nominal Ketjen against Fl.375.

Net earnings of K.N.Z. for 1960 totalled Fl.15,560,660 (Fl.9,459,808),

while those of Ketjen amounted to Fl.6,485,302 (Fl.6,355,575). Combined earnings in 1960 were worth £2.2 million. Both companies had satisfactory results in the first quarter of this year, the combined results not falling short of those of the same period of 1960.

The holding company will control a vast network of chemical plants and ancillary services. The following is the structure of the new organisation:

K.N.Z.

K.N.Z.: Salt; caustic soda; hydrogen; hydrochloric acid; bleaching liquor; sodium sulphate; sodium hydrosulphite; copper oxychloride.

Stork Chemie: Monochloroacetic acid and sodium salt; sodium trichloroacetate; hydrochloric acid; glycine; chloromethyl ether.

K.N.S.: Soda ash.

Electro (and 83.33% subsidiary, Holland Electro Chemical Industries): Calcium carbide; acetylene; acetic acid; vinyl acetate; trichloroethylene; oxygen; nitrogen; argon.

Gembo: Sodium and potassium silicates; soda crystals; metasilicate borax; paints, lacquers and inks.

Albatros (with foreign subsidiaries (mainly 50%). Albatros Zwavelzuur (55.55%) and Titaandioxyde (22.5%)): Superphosphates; mixed fertilisers; phosphoric acid; sodium phosphates; ammonium phosphates; sodium fluor-silicate.

Zout-Chemie Botlek: Chlorine; caustic soda; hydrogen.

Stader Saline (79.44%): Salt.

Electro-chemie Ibbenburen (50%): Chlorine; caustic soda; hydrogen.

In addition, on the sales and service side, K.N.Z. own Bad Boekelo (50%); Centrale Research; Twenthe Rijn (shipping); Ij-Bunker (storage and shipping of salt); Konezo (94%—storage and sales of salt); Kolff and Vis (storage of salt); N.V.C.P. (20%—sales of chemicals).

Ketjen

Ketjen: Sulphuric acid; liquid sulphur dioxide; chlorosulphonic acid; catalysts; phenol and derivatives; diphenylpropane; sodium sulphite; plasticisers; saccharine; chloramines.

Ketjen-Carbon (60%): Carbon black.

Cyanamid-Ketjen (50%): Platinum-catalysts.

Activit (subsidiary, Duper Water-reiniging): Ion-exchange resins; decolourising resins; processes and installations for the purification of liquids.

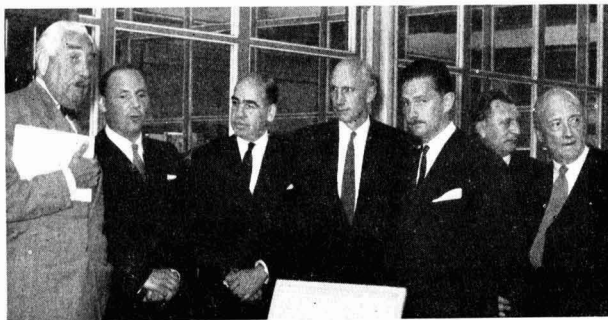
In addition, for service, sales and imports, Ketjen own N.V.C.P. (35%—sales of chemicals); D.E.F.A. (chemicals, dye-stuffs and synthetic fibres); Agfa Photo (photographic materials); Nedigepha (pharmaceuticals).

I.C.I.—Solvay Committee Meets at Wilton

SENIOR members of the Belgian firm of Solvay et Cie recently visited the Wilton works of I.C.I. to attend one of the periodic meetings of the I.C.I.—Solvay Committee—a link between the two firms that springs from their association of more than 80 years' standing, dating from the time when Ludwig Mond and John Brunner began to use the Solvay process for manufacturing soda ash at Winnington, Cheshire. Since that time there has been the closest technical co-operation between what is now the Alkali Division of I.C.I. and Solvay and

for many years there have been regular meetings between the two companies.

Among those representing Solvay at the latest meeting were two of the partners, Baron Boël and M. Jacques Solvay—great grandson of Ernest Solvay, founder of the firm, who developed the process and from whom Ludwig Mond negotiated the original agreement. Also representing Solvay were Messrs. R. Pourbaix, commercial general manager; A. Bietlot, technical general manager; and R. Bertaux, general manager in charge of plastics.



Members of the I.C.I./Solvay Committee at Wilton Works. L. to r.: Baron Boël; N. J. Cooper, Wilton education officer; E. A. Bingen, I.C.I. deputy chairman; D. M. Bell, chairman of European Council; J. Solvay; J. C. H. McEntee, chairman of Wilton Council; J. K. Batty, chairman of Alkali Division

Distillers Annual Report

Expansion for Lube-oil Additives, Vinyl Acetate and P.V.C. Planned

MORE new projects for the Industrial Group of the Distillers Company Ltd. are disclosed by Sir Graham Hayman in this annual statement as chairman. These include a large increase in lubricating oil additive capacity for Oribis Ltd., while under consideration are further expansions to the vinyl acetate plant of Hedon Chemicals Ltd. at Hull and the p.v.c. plant at Barry of British Geon; improved antibiotics plants have been commissioned for the Biochemicals Division.

D.C.L. plans to produce synthetic rubber by an improved route, and increases in capacity for acetic acid and carbon dioxide were disclosed in CHEMICAL AGE, 15 July, p. 89.

In his statement, Sir Graham says that to counteract the trend of world prices to lower levels, D.C.L. are pursuing a policy of broadening the range of products and increasing the production of certain existing materials.

The year to 31 March saw a satisfactory rise in turnover of the Industrial Group, particularly in chemicals and plastics, although in the latter part of the year this was largely offset by lower selling prices which led to reduced margins. Competition was keen and aggravated by a large increase in dumping. While it was clear that strong competitive influences would continue, there was a substantial growth potential in the chemical and plastics industries and D.C.L. expected to share in this.

New Plants at Hull and Carshalton

During the past year new plants were commissioned at Hull and Carshalton, increasing the range and volume of production of intermediates and specialty chemicals. The continuous phthalate plasticiser plant had proved satisfactory but had to be operated well below capacity owing to the world shortage of phthalic anhydride. In this connection, the associated Grange Chemicals Ltd. had plans to produce 15,000 tons/year of phthalic at Hull.

The Kenfig calcium carbide factory worked to capacity and all production was sold. Carbon dioxide capacity was substantially increased and sales reached a new record level. Much attention has been given to improving efficiency and there has been steady progress in instrumentation and automation.

Pending completion of new lube-oil additive capacity for Oribis, production had been augmented by imports. Extensions to Hedon Chemicals vinyl acetate plant had been commissioned on

schedule and further expansion was now being considered.

Both British Hydrocarbon Chemicals Ltd. and Grange Chemicals had satisfactory trading results and B.H.C. had recently brought into operation their new ethylene dichloride plant, which will supply material for an improved method for the production of p.v.c. New B.H.C. plants for methanol and butadiene would be commissioned shortly.

Work was in hand on the new B.H.C. Baglan Bay site and a large cracking unit was being installed as "a base for our long-term expansion programme". Sir Graham added that the Baglan Bay development would afford the company adequate facilities in the years ahead for

increasing its scale and range of petrochemicals.

Increased capacity for Geon p.v.c. was nearing completion and in view of potential demand growth, a further extension was under consideration. Distrene's polystyrene plant was operating at full capacity and British Resin Products also had increased sales. The amalgamation of British Xylonite with D.C.L. chemical and plastics activities should produce economies and benefit both companies in the pooling of research and engineering facilities.

In view of the constant need to develop new products, the Biochemicals Division had set up a new pharmaceutical laboratory at Speke and improved plants for processing antibiotics had been commissioned incorporating new techniques evolved from D.C.L.'s own development work.

Additional laboratory and library facilities were being installed at the central Research Department, Epsom. Total D.C.L. budget for research for the year was nearly £2.5 million. (See also 'Commercial News'.)

Food Research President Outlines Plan for Additives Administration

ADMINISTRATIVE machinery for handling food additive problems was discussed by Professor A. C. Frazer in his presidential address at the recent annual meeting of the British Food Manufacturing Industries Research Association.

Food additives, Professor Frazer stated, had an important part to play in the struggle to increase world food production and the administrative machinery should not be allowed to hamper research and development in food technology.

Professor Frazer suggested that there were at least four steps in the machinery required and each step would involve a group of suitably experienced people.

Group I would consist of analytical chemists and manufacturers working in conjunction with a panel of analytical laboratories that could test new methods. Its job would be to agree reasonable specifications of composition for the additive and define tests for identification and methods of analysis.

The second group should include people experienced in food science and technology and those from industry concerned with the needs and reactions of the consumer. This group should decide whether the food additive would serve a useful purpose and was efficacious. It should be closely associated with the food research associations.

Evaluation of biological information about the additive would devolve on Group III, comprised of specialists in the fields of biochemistry, pharmacology, toxicology and medical science, especially pathology and nutrition. It was important that this group should be consulted at an early stage on the pattern of bio-

logical investigations necessary for a particular additive. It should be closely associated with the new Research Association.

The final group should decide whether the food additive is to be used and the levels of use acceptable in particular foods. This group should include people experienced in food science and technology, food consumption surveys, medicine, nutrition, law and government administration.

Provided that a food additive is shown by adequate scientific investigations to be acceptable within these defined limits it should be included on appropriate permitted lists. Once a substance is placed on a permitted list it should not be removed on the basis of one-sided or inadequate evidence by people who may be more concerned with other matters than assurance of safety in use. Regular review of permitted lists, say every seven years, is desirable.

Oral Polio Vaccine Approved

The Ministry of Health has approved the sale of a live oral polio vaccine, Sabin, made by Pfizer at Sandwich, Kent. The clearance was given after tests carried out by the Medical Research Council. The vaccine will be used by the Ministry only in cases of emergency.

Anti-dumping on Ammonium Sulphate and Detergent

The Board of Trade has under consideration applications for anti-dumping duties on ammonium sulphate imported from East Germany and alkyl (dodecyl) benzene detergent alkylate from Italy.

NEW METHOD YIELDS VITAL INTERFACE DATA IN PULP BLEACHING OPERATIONS

HOW to apply the temperature differential method of detecting the interface to a high density stage of wood pulp bleaching where little or no temperature differential exists under normal operating conditions is a problem that has been successfully overcome by engineers of the Buckeye Cellulose Corporation at their Foley, Florida, U.S., wood pulp mill. The method has proved inexpensive to install and maintain and extremely satisfactory in performance.

In the high density stages of continuous wood pulp bleaching, bleaching chemicals and steam are added to pulp in a mixer, from which the pulp drops into the top of a retention tower. Consistencies of 10-15% are generally maintained at this point. Pulp is removed from the bottom of the tower by injecting water to dilute it to about 3%, agitating it and then pumping it out. A sharp division, or interface, occurs between the dilute pulp below and the high density pulp above. The movement of this interface must be kept within a narrow range in order to maintain adequate retention, ensure uniform operation and prevent plugging of the discharge pipe. So it is very important to know just where the interface is.

Interface Detection

Since high density and dilute stock are seldom at the same temperature, the normal method of interface detection is by temperature differential. Two thermometer bulbs are installed in the tower, one just above and the other just below the desired interface level. As the interface rises, the upper thermometer reading approaches that of the lower one and corrective action can be taken. Similarly, a descending interface will cause the lower thermometer to register a temperature approaching that of the upper one.

This standard temperature differential method had been used at the Foley wood pulp mill since the beginning of operations. The big problem arose, however, when a second mill and a parallel bleaching system were installed in which, for economy reasons, hot water from waste heat was made available for washing after passing through several hot, high density towers. As a result, the temperature of the dilution, or mining, water approached that of the pulp in the tower, rendering the standard interface detection method unsatisfactory.

The answer was eventually found in the injection of a small stream of cool water just above the top thermometer. At a rate of 10-15 g.p.m. this was found to cool a small portion of high density downward flowing pulp, registering a cooler temperature on the upper thermometer, while the lower one remained hot

from the well agitated low-consistency slurry below the interface. So, as the interface drops or rises, the temperature difference is shown by the two thermometers.

While the exact mechanism of the cooling is not known (injected water may cool the high density pulp, the tower wall or a combination of the two), the results have been consistently satisfactory. Buckeye engineers believe the method would be practical for interface detection in cool high density pulp storage systems also, with injection of hot rather than cool water above the thermometers.

Automatic Treatment of Process Effluent at New Semi-conductor Device Plant

APLICATION of modern instrument techniques to the strict control of pH during the treatment of process effluent is well illustrated in the recently completed plant constructed for the Texas Instrument Co. at Manton Lane, Bedford. The plant has been designed to facilitate the most efficient production methods for the manufacture of semi-conductor devices, instrument control methods being employed wherever possible.

During semi-conductor device processing considerable quantities of effluent are produced. This effluent is made of hydrofluoric, acetic, and nitric acids of varying composition, together with water-miscible solvents and large quantities of process water. The pH value of the effluent can vary between 0.5 and 5.0 and have a biochemical oxygen demand of approximately 2,000. Quantities of up to 74,000 gall./day with peak flows of 7,000 gall./hr. are continuously and automatically treated before disposal into the local authorities' drains.

Treatment of the effluent comprises a single stage chemical treatment followed by settling of solids and a final biological treatment. The effluent is first collected in two 3,000 gall. balancing tanks from which it is pumped under level control into a 1,500 gall. treatment tank where lime slurry is added under pH control. Precipitation of solids takes place most effectively at pH values between 7.5 and 8.0 and Pye industrial pH measuring equipment coupled to a Taylor pneumatic controller adjust the rate of lime slurry addition to maintain these optimum conditions.

From the treatment tank the neutralised effluent is passed through a large settling tank where the suspended solids, mainly in the form of insoluble calcium fluoride, are removed. The final biological treatment, where the water-miscible solvents are reduced to an acceptable level, pre-

Chemistry Teaching Block for Bristol University

A CONTRACT to build a chemistry teaching block for Bristol University at a cost of £630,000 has been awarded to Holland and Hannen and Cubitts (Great Britain) Ltd. The contract is part of an overall scheme to build a new School of Chemistry at a total cost of about £1½ million. Work on the teaching block will start in September and other new buildings, including research blocks, lecture theatres and library, will be added by 1965. Cubitts are already building the University's new Medical School, at a cost of £1,200,000, and are carrying out the site preparatory contract for the School of Chemistry valued at £130,000.

The new teaching block will measure 125 ft. by 105 ft., with an overall height of 84 ft. A cantilever lecture theatre will form a prominent feature on the south elevation. Architects and consulting engineers are Courtaulds Technical Services Ltd.

cedes a final pH check. As the clarified liquor leaves the effluent plant a continuous sample is taken and passed through a Pye flow type electrode assembly and a continuous recording of the final effluent pH value is taken before the effluent is passed into the drains.

The treated effluent conforms to the local authorities requirements with fluorides below 30 p.p.m., metals in suspension and solution 20 p.p.m., suspended solids 20 p.p.m., B.O.D. 300 and a pH value between 6.0 and 9.0.

The automatic pH control equipment employed on this plant was supplied and installed by W. G. Pye and Co. Ltd., Cambridge, to a rigid specification laid down by Texas chemical engineers.

Major Reorganisation for Whessoe

A MAJOR reorganisation is being carried out by Whessoe Ltd., Darlington, who build tanks and plant for the oil, chemical, gas and, more recently, nuclear power industries. The chairman's annual review shows that this reorganisation is aimed at dealing more efficiently with the problems created by the company's widened activities.

The company is now re-formed into five divisions, three of which are operating divisions, covering heavy equipment, light products and engineering services, while the other two are service divisions, covering research and development, finance and administration. It is expected that it may be a year or two before this organisation is in full operation.

The operating divisions are particularly active overseas and the light products division is building a factory in the Calais area which should be opened in the autumn.

Fisons Design Weedkilling Special to Make Optimum Use of Geigy Triazines

A TOUR of nearly 5,000 miles has just been completed by a special train, which was designed and built by the Chesterford Park Research Station of Fisons Pest Control Ltd., under the sponsorship of the British Transport Commission, for the purpose of destroying the grass and weeds growing alongside and between railway tracks.

Known as the Mark III Railway Sprayer, the train consists of a single coach, two break vans, two water tenders, and a box wagon. The coach contains, besides the spraying equipment, living quarters for a staff of four. One of the features of the sprayer is that it delivers a uniform quality spray whatever the variations in the speed of the train. The track itself is covered from a spray bar slung under the coach, while on each side are four so-called turret jets, about 10 ft. from the ground, which are used for treating the strip of ground between the rails and the bank. The spray, put on at high volume and low pressure, is so controlled that there is virtually no danger of it falling upon the grass covered banks or drifting to neighbouring fields.

The equipment was developed to exploit the optimum use of the new triazines discovered by Geigy—Simazine and Atrazine. These weedkillers are completely safe to use, presenting no danger to humans or wild life and they have no corrosive effect or fire hazard. Simazine and Atrazine have made possible preventive spraying—that is, spraying in advance of the growing season to prevent weed establishment.



Mark III Railway Sprayer for destroying weeds and grass on railway tracks

In the spraying operation, a diesel pump in the coach draws water from the tenders (holding 7,000 gall. between them), and delivers it to the spray nozzles at a constant volume. On its way to the jets it is combined to a concentrated suspension of the chemical, which is mixed in two 80 gall. tanks.

Output of the chemical suspension is controlled by a metering pump driven from the axle of the coach, so that the strength of the spray is directly related to the rate at which the train is travelling over the swath width covered. A speedometer, also driven from the axle, enables a check to be kept on the efficiency of the metering pump.

The equipment also contains an arrangement whereby, if necessary, a stronger spray can be applied to the sides of the track without increasing the overall dosage rate.

New Polythene Resins From Monsanto

NEW polythene resins for the production of tough, high clarity films have been introduced by Monsanto Chemicals Ltd., Monsanto House, 10-18 Victoria Street, London S.W.1. Three of the new grades produce high clarity film recommended for use wherever first-rate optical properties are required.

They are: M.311, natural grade; M.311-1, natural medium slip grade; M.311-2, natural medium slip and anti-static grade. These grades have a nominal melt index of 2.0 and nominal density of 0.924.

The other new resins—M.505 and M.505-1, the base resin and slip grade respectively—are recommended both for blown film extrusion and chill roll casting. They are similar to resins in the M.311 series, but their higher melt index—5.0 compared with 2.0—provides exceptionally good draw down characteristics.

Monsanto polyethylene is produced at Fawley, where capacity is currently being raised from 17,000 tons to more than 25,000 tons a year.

Obituary

Dr. T. Corlett Mitchell, deputy chairman of the I.C.I. Central Agricultural Control until his retirement in 1959, and a former director of Scottish Agricultural Industries Ltd., died on 9 July. Dr. Corlett Mitchell spent more than 30 years with I.C.I., 22 of them with the Billingham Division.

Mr. T. C. Hale, joint managing director of the Cape Asbestos Co. Ltd., died in London recently after a long illness at the age of 57. He joined the board as technical director in 1953, becoming joint managing director in 1957; he was a member of the Asbestos Research Council.

Mr. Norman Sheldon, who died on 18 July, at the age of 69, had been with the Worcester Royal Porcelain Co. Ltd. and John Moncrieff Ltd. for 36 years and took an active part in management until his death. He was a Fellow of the Royal Institute of Chemistry.

In Parliament

Drugs Bill Cut by Voluntary Regulation

The voluntary price regulation scheme adopted by the pharmaceutical industry has so far resulted in a cut of £1,750,000 in the drug bill on a full year usage. The drug bill has been costing the National Health Service £100 million a year. The Minister of Health, Mr. Enoch Powell said that he considers this only a beginning.

No Statement on Methane

In answer to a question in the House of Commons, Mr. Wood, Minister of Power, said it was unlikely that a statement on the importation of liquid methane will be made before the next session of Parliament.

B.I.P. Resins to be Made in Holland

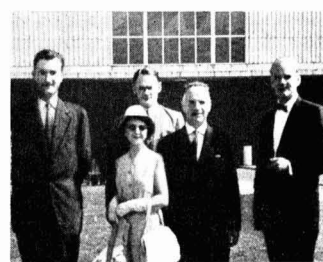
CERTAIN Beetle coating resins are to be produced in the Netherlands as the result of an agreement reached between British Industrial Plastics Ltd. and N.V. Kleefstoffenfabriek Gebr. Struyck, Suthphen. Struyck produce all types of industrial adhesives which are sold in Europe under the trade name Strucol.

Agents of B.I.P. Chemicals Ltd., Merrem and La Porte N.V., Amsterdam, will continue to handle sales in the Netherlands of Beetle coating resins.

U.K. Chemical Companies at Indian Fair

Among chemical companies exhibiting in the U.K. pavilion at the Indian International Industries Fair in New Delhi from 14 November to 1 January will be May and Baker Ltd., Glaxo Laboratories (India) and the British Oxygen Co. Ltd. Imperial Chemical Industries Ltd., Dunlop Rubber Co. Ltd., British Nylon Spinners Ltd. and Hindustan Lever Ltd. will have separate stands of their own.

Czech Chemical Engineers Visit A.P.V.



Mr. Bucik (second from right), Czechoslovak Minister of Chemical Engineering, with Mrs. Bucik, visited the A.P.V. Co. Ltd., Crawley, Sussex, during his recent stay in England. They are seen here outside the A.P.V. factory, with (l. to r.) Mr. Galushka, Czech Ambassador in London, Mr. J. L. Sweeten, A.P.V.'s chemical engineering manager, and Mr. W. Blois Johnson, export sales manager

Formation of Common Market Leads French Chemical Industry to Seek Greater Collaboration

THE French chemical industry,* the fourth largest industry in France, has been largely dominated since the 1930's by the 'six grands' as they are called: Péchiney, Saint-Gobain, Kuhlmann, Ugine, Rhône-Poulenc and Air Liquide. The ten largest chemical firms in France account for one quarter of the turnover and another quarter is accounted for by the next 100 largest. The position is, therefore, very different from that in the U.K., Italy and Germany where I.C.I., Montecatini and the successors to I.G. Farben hold dominating positions. The French industry is in fact more in keeping with the U.S. industry where the largest company, Du Pont, accounts for only 15% of the total turnover.

Increasing Collaboration

In an industry requiring large capital investment in plant and instrumentation and the maintenance of large research departments, the arguments for large firms are very strong, and the French chemical industry has for some time, particularly since the formation of the Common Market, been forced to think in this direction. A recent agreement between Péchiney and Saint-Gobain to combine certain activities in the chemical field, and reported discussions between Kuhlmann and Rhône-Poulenc are the result of the increasing realisation of French companies that a greater measure of collaboration is called for.

The rich marine salts obtained from the Mediterranean coast and the rock salt mines and alluvial deposits, together with the readily-available hydro-electric power from the Alps and Pyrenees, have provided France with the basic chemicals. The discovery of Lacq gas will provide sulphur, the one basic chemical which France lacked in sufficient quantity.

A survey carried out by the Union des Industries Chimiques a year or two ago revealed that the French chemical industry spent 3-4% of its annual turnover in research. All the larger companies have important research facilities. The industry receives more in royalties for the use of its patents abroad than it pays for the use of foreign patents and this in a country which has an overall deficit in its exchange of patent rights with other countries.

The largest and best known Government laboratory is the Institut National de Recherche Chimique Appliquée (I.R.C.H.A.). This is mainly financed by the Ministry of Industry and Commerce but also earns money by undertaking sponsored research for industry. The research programme at present includes research in cellulose and its de-

rivatives, macromolecules and catalysis. The Centre National Recherche Scientifique, which is the nearest French equivalent to the Department of Scientific and Industrial Research, maintains a number of laboratories carrying out chemical and biochemical research.

Government-supported or privately financed co-operative research centres included the Institut des Corps Gras for the fats and oils industry, the Société d'Etude Chimique pour l'Industrie et l'Agriculture which is primarily interested in fertilisers, the Institute Française du Caoutchouc and the Centre d'Etude des Matières Plastiques. Special mention should be made of the Institut Française du Pétrole which is financed by the petroleum industries. With a staff of over 1,000 and an annual budget of some £2 million, this organisation has played an important part in the development of Lacq gas and Saharan oil.

The larger chemical firms are also responsible for a great deal of the research carried out in the industry. Under an agreement signed in 1959, Péchiney and Saint-Gobain will collaborate in research and production in the chemical field. This agreement excludes petrochemicals and leaves unaffected Saint-Gobain's interests in glass and Péchiney's in aluminium. Péchiney have been prominent in the development of new derivatives of chlorine at their St. Auban factory. A recent installation will provide 4,000 tons a year of hexachlorocyclohexane for insecticides.

In recent years Saint-Gobain have made considerable contribution towards the solution of the problem of the quantity production of polyvinyl chloride of high purity. The rotating horizontal drum method developed in the factory of St. Fons has been adopted by a number of other factories in France and abroad.

Kuhlmann have been discussing with Rhône-Poulenc the possibility of closer

collaboration between them. It has also been reported that Kuhlmann have been contemplating a tightening of their links with the Badische Anilin- und Soda-Fabrik through the Compagnie Française de Matières Colorantes.

Rhône-Poulenc differs from the other companies of the 'six grands' in that their interests are predominantly in organic chemicals. The company owns May and Baker in the U.K. and also owns or has connections with pharmaceutical firms in Germany, Belgium, Switzerland, Italy, Spain, U.S., Canada, and in South America.

Rhône-Poulenc are partners with Kuhlmann and Compagnie Française de Raffinage in the Compagnie Normande de Polyéthylène set up to produce polythene from the ethylene produced by the refineries at Gonfreville.

Ugine, primarily concerned with the production of electro-chemicals and the extraction of metals, has close ties with Péchiney with whom they have common marketing agreements.

The main centre of research is located at Lyons. Among their achievements is the development of a new technique for the continuous production in the gaseous phase of the chlorofluoromethanes 11, 12 and 13. This technique has been licensed to a U.S. company.

* This summary on the French chemical industry is taken from a paper published by the Department of Scientific and Industrial Research and is available free from D.S.I.R., Charles House, 5-11 Regent Street, London, S.W.1.

Chemical Firms Co-operate in Export Assistance Register

CHEMICAL, plastics and fertiliser manufacturers, as well as chemical plant and instrument manufacturers, are among the 600 companies who have offered export assistance to non-competing concerns and are listed in the first 'Export Assistance Register' published by the Institute of Directors, 10 Belgrave Square, London S.W.1. The register is compiled from answers to a questionnaire sent to the Institute's 37,000 members asking if their companies need help to begin selling overseas, or, alternatively, were able and prepared to give it.

Soviet Researchers at I.C.I. Dyestuffs Works

Russian technologists visiting the cotton dyeing section I.C.I. Dyestuffs Division, Manchester, see fabrics woven from materials dyed with I.C.I. 'Procion' dyes. With them (with dark ties, centre) are Mr. I. D. Rattee and Dr. W. E. Stephen, responsible for the discovery of these reactive dyes



Flame Detection Method Based on Reflection of Sound Waves

NEW method of flame detection is based on the fact that flame envelopes of all types act as 'mirrors' and reflect sound waves. It is believed that this is due to the difference in densities of the flame compared to the surrounding, even hot, gases. By utilising this discovery it is possible to project sound waves of high or even ultrasonic frequency and provide a reliable method of detecting whether the flame is present or not.

The new method is now in the final stages of development by the research department of Elcontrol Ltd., Wilbury Way, Hitchin, Herts, who state that the device can be used with normal flicker circuitry of the Elcontrol type together with the company's printed circuit modules. Operation is not affected by oil and other mists and any reflection from solid surfaces are completely ignored since the final relay circuit responds only to the modulation of the carrier, and even the 'steadiest' of flames give a considerable amount of flicker, while solid components in the reflected path give none.

It is further claimed that the device is completely insensitive to radiation, flickering or direct, whatever the wave-

length, and is unaffected by electric sparks. It is also quite insensitive to noise whether from flames or from furnace auxiliaries. No electrode of any type is in contact with the flame. It can be used to pinpoint the position of a flame envelope accurately, and is in effect a type of 'echo sounder' for detecting a flame envelope. However rugged or smooth a flame envelope appears, a flickering sonic echo is produced. The device is, of course, quite different from the previously used 'acoustic' method which detected the actual flame noise which can, of course, be greatly obscured by other noises.

The phenomenon of reflection of sound waves from a flame envelope has not been noted before and is believed to be a basically new contribution to the art of flame detection. All aspects of the system as applied to flame detection are covered by a series of Elcontrol patents pending. The company is exploring its applications in many fields as a supplement to their existing range of flame detection units. They do not regard it as universal panacea for flame detection, but believe it will take its place alongside existing methods for certain difficult applications.

Auto-thermatic Fire Detection for I.C.I. Plastics

TO counteract the possibility of fire outbreak in the research area—particularly a hazard when overnight tests are run without supervision—I.C.I. Plastics Division have installed Auto-thermatic fire detection at their Welwyn Garden City headquarters.

The Auto-thermatic system was chosen since it is designed for use out of conduit and changes in the positioning of the detectors are easily made. A fixed fire detection system would have to a certain extent diminished the flexibility of the layout which has been specially designed for easy adjustment.

The system used is the Mark IV Auto-thermatic type which has over 30 detec-

tor systems, 22 of which have been connected for immediate use. Future extensions can be made at a later date without any expensive additions to control equipment.

The types of detector used include the Dimac fixed head detector and the break link cable type. The break link cable type is used to span the larger roof areas of the store buildings.

The Auto-thermatic system is manufactured by Sound Diffusion (Auto-thermatic) Ltd., 243 Coastal Chambers, London, S.W.1. Similar installations are now in use at the I.C.I. offices at Billingham and at the works of British Visqueen Ltd., Stevenage.

Solvent-resisting Silicone Fluids

THE U.S. General Electric have developed a new class of nitrile-containing silicone fluids. The presence of nitrile groups in the fluids gives them high polarity and results in properties such as solvent resistance, limited electrical conductivity and high dielectric constant. The N.S. (nitrile silicone) fluids, which are similar to dimethyl silicone fluids in that they have low surface tensions, have unusual properties that suggest their possible use as non-aqueous antifoams, base stocks for solvent resistant greases and coatings, antistatic agents, plasticisers

and additives for plastics, or as components of polishes.

The high polarity of the nitrile group gives them insolubility in non-polar solvents such as aliphatic and aromatic hydrocarbons. These fluids are soluble in certain polar solvents such as alcohols, ketones and ethers. This type of solubility makes them valuable where oil and solvent resistant fluids or coatings (such as lubricants or greases) are desired. Varying degrees of insolubility in non-polar solvents are possible depending on the nitrile content of the grade of N.S. Fluid selected.

More Synthetic Rubber Used in Fabrication

A FURTHER increase in the proportion of synthetic rubber used in finished products was witnessed in 1960, according to the annual report for 1960 of the Natural Rubber Bureau (available free of charge from 19 Buckingham Street, London W.C.2). The report says that coupled with the expanding facilities for the production of synthetic rubber of various types, especially in Europe, was the fact that the price of the natural product remained at a fairly high level during the greater part of the year and the incentive of consumers to utilise synthetic rubber at a lower cost was predominant.

Consumption of all types of rubber tended to fall away towards the end of the year, due particularly to the recession in the motor industries in the U.S. and U.K. Sales of natural rubber during the year from Government stockpiles amounted to 88,937 tons in the U.S. and 48,013 tons in the U.K.

Determination to maintain and further improve the competitive position of natural rubber is reflected in the role of the new co-ordinating advisory committee for scientific research and a further development of technical service for natural rubber.

Accident Spotlights Need to Mark Road Tankers

THE need for identification of bulk liquids carried by road tankers has been indicated by the Tay River Purification Board following an incident when an overturned tanker seeped acids into the water system in the area. In the absence of the driver in this incident, rescue workers were unaware of the contents of the tanker and hampered in their work of righting the tanker and clearing the roadway. Contents had to be spilled off to avoid a possible explosion or fire. Had the tanker's contents been adequately identified, fire brigade men would have known the precise risks and the action to be taken.

The board approved a decision to investigate the legal position regarding the marking of contents of road tankers handling bulk liquids, in view of the increasing use of such transport and their potential involvement in accidents.

Farmers See Fison's Wild Oat Killer at Work

SUCCESSFUL results of using Carbyne selective weedkiller to eliminate wild oats from cereal crops were shown to a party on a special train tour of East Anglia by Fisons Pest Control Ltd. The party consisted of some 150 leading agriculturalists made up of farmers, agricultural merchants, N.A.A.S., representatives of leading seed houses, etc.

The owner of one farm visited said this was the first time he had been able to see his barley crops at this time of the year as in the past they had been smothered with wild oats; another farmer said he had had well over 90% control of wild oats.

Overseas News

QUEBEC LITHIUM PLAN TO MAKE HYDROXIDE MONOHYDRATE IN NEW FACILITY

QUEBEC Lithium Corp., Canada's producers of lithium concentrates and lithium chemicals, are planning to enlarge their lithium refinery facilities in N.W. Quebec. The expanded plant will produce a second lithium salt—lithium hydroxide monohydrate. The present refinery now turns out an ultra-pure lithium carbonate. The addition of the hydroxide product will give the company access to a major percentage of the world markets for lithium salts.

To meet additional requirements for carbonate, the present capacity of the carbonate plant is also to be expanded. It will require mainly the addition of a second autoclave into the existing circuit. Other existing equipment is capable of handling the projected new production rate. The process is entirely new to the lithium industry and was developed by the Quebec Department of Mines.

Expansion of the carbonate plant is scheduled to be completed about the end of this year to coincide with start of the hydroxide plant. Current production of the carbonate is at a rate of about 2,000,000 lb./year, or about one-third of existing plant facility.

Jordan Phosphate Rock for India

An agreement has been concluded between the State Trading Corporation of India and Jordan Phosphate Mines, Amman, on the import of phosphate rock from Jordan against the exports of chemical and pharmaceutical products, etc.

Du Pont to Expand TiO₂ Pigment Capacity

An increase in capacity from 45,000 tons to about 58,500 tons a year is planned by Du Pont for their titanium oxide pigment plant at Johnsonville, Tenn. This is the first step in a major expansion planned for the Tennessee plant. Du Pont also make titanium oxide at Baltimore, Md., in a 55,000 tons/year plant, and at Edgemoor, Del., in an 85,000 tons/year plant.

New Sicily Potash Mine Uses Demag Equipment

A new potash mine recently started operating in the Sicilian mountains, near the town of Caltanissetta, for the supply of potash to the fertiliser and match industries. Inside the mine the unrefined potash is carried to collecting bins by conveyors and cars via the crushers. Crushed material is then carried to the filling installation by means of a 295.2 ft. long rubber belt conveyor, where it is dumped into measuring pockets for loading into the conveyor vessels. Con-

tents of the measuring pockets are weighed by a pressure cell. When the payload of the vessel has been reached, a diverter directs the incoming material to the next measuring pocket. In this way continuous operation of bunkering in coordination with filling the measuring pockets and supplying the conveyors is achieved.

The skip winding unit was the eighth supplied by Demag for potash mining.

Italian Built Urea Plant for Argentina

The State-controlled Finmeccanica is negotiating an order for a \$12 million plant for the production of urea in Argentina. About \$8 million more will be required for subsidiary work.

It is understood that designing of this plant and the technical assistance necessary will be supplied by Montecatini.

Small New Refinery Planned in Sicily

Societa' Asfalti Bitumi Cementi e Derivati (A.B.C.D.), Ragusa, who are affiliates of Bombirini Parodi Delfino, Rome, have obtained from the Sicilian Government permission to process 250,000 tonnes/year of crude oil produced in Sicily by Gulf Italia Co. A.B.C.D. will build a refinery with a yearly potential of 625,000 tonnes.

Purification of Organics by Continuous Zone Freezing

A process for the purification of organic chemicals by continuous zone freezing has been developed by the U.S. company, Quantum Inc., Wallingford, Conn. In the laboratory apparatus the impure feed is pumped into a freezing chamber where the material to be purified crystallises and is forced upwards into a second stage. The remaining liquid, containing the impurities, is recycled to mix with the feed. The process is repeated in subsequent stages and the product can be withdrawn at any stage. Quantum have purified organic liquids to 99.9% purity starting with a 95% purity, in four stages. They think that, with more stages, it might be possible to purify some chemicals in semicommercial quantities to 99.9999% purity.

G.B.A.G. to Expand Petrochemical Interests

Petrochemical production now forms one of the stress-points in the investment programme of Gelsenkirchener Bergwerks-AG, of Essen, one of Germany's main coal-mining concerns. This was announced at the company's annual meeting held in Essen last week, which

stated that petrochemicals would play an increasingly important part in the concern's activities.

Petrochemical output is to be raised to an initial 1,500,000 tonnes/year throughput of crude oil, from refineries near Carlsruhe and in the Bavarian region, of the G.B.A.G. subsidiary Gelsenberg Benzin AG, as well as a further refinery extension of an existing Gelsenberg unit from 4,500,000 to 5,000,000 tonnes/year.

Large Potassium Export Order for Israel

The Israeli Ministry of Development has stated that an order has been obtained for \$29 million worth of Israeli potassium spread over eight years. The same order covers more than \$700,000 worth of phosphates which are to be supplied during 1961 and it is hoped to secure a further order for \$500,000 worth of phosphates spread over the coming five years. It is believed in Israel that the order originated in Japan.

Chemico Complete French High-purity Hydrogen Unit

The high-purity hydrogen plant constructed for Soc. Rhodiacaeta at Lyons by Chemical Construction Corporation is now on stream. Production will be 2.5 million s.c.f.d. of hydrogen by reforming natural gas in a two stage carbon monoxide removal and shift conversion process.

Rhodiacaeta use the hydrogen for the production of nylon. According to Chemico, hydrogen produced in this plant is of the highest purity yet obtained (99.9%) with the CO shift conversion process.

Austrian Polypropylene Plant on Stream

The new polypropylene plant built by Danubia Petrochemie AG at Schwechat, near Vienna, went on stream on 13 July. The company is owned on a 50-50 basis by Montecatini, Milan, and Oesterreichische Stickstoffwerke, Linz. Initial output is scheduled at 5,000 tonnes/year.

Mauchant-Armour Link-up for Pharmaceutical

From 1 July, the French pharmaceutical concern Laboratoire Mauchant, of Paris, has taken up production and marketing rights for products of Armour Pharmaceutical Co., U.S.

Houdry Make Halide-Free Platinum Reforming Catalyst

Development of a new commercial halide-free platinum reforming catalyst, culminating years of research, has been announced by Houdry Process Corporation, U.S. The catalyst is now being used in Houdriforming units in Japan and is reported to be producing high yields of motor gasoline of the desired high octane number, at relatively mild operating conditions and without addition of halogen compounds to the feed. Hydrogen purity—a measure of reforming selectivity—is also at a very high level.

The new catalyst contains the same

amount of platinum as other Houdriforming catalysts. It is readily regenerated in place for restoration of activity after prolonged use. The catalyst is being produced at Houdry's manufacturing plant in Paulsboro, N.J.

In the field of catalytic reforming with platinum catalyst, it has hitherto been generally assumed that halogen, such as chlorine, was a necessary component of the catalytic system.

ANIC and Montecatini to Build at Ferrandina

On 29 July, work will start on the construction of three new petrochemical plants in the area of Ferrandina, South Italy, where extensive natural gas reserves have been discovered.

One of the new plants will be built by ANIC (of the E.N.I. group) on a site situated between Ferrandina and Pisticeci. Another will be erected by Montecatini close to the Ferrandina, while the third (designed for production of plastics materials) will be built by Ceramica Pozzi at Macchia di Ferrandina.

U.S. Refinery Planned for Liberia

American Hunt International Petroleum Co. are to build a 15,000 b.p.s.d. at Monrovia, Liberia, under an agreement with that country's Government. Products will include jet and bunker fuels and will cover all Liberia's fuel needs, leaving large quantities for export to nearby countries.

Fall in Italian Sulphur Production

During the first quarter of this year, 17,866 tonnes of sulphur were produced in Italy, or about 9% less than in January to March 1960. During the same period, 5,544 tonnes of sulphur were exported, or some 16% less than in 1960.

Details of Brazil's Plans for Synthetic Rubber

Details of the plans of a newly formed company, Cia de Borracha Sintetica de Pernambuco, to produce 27,000 tons/year of synthetic rubber have been published. The Brazilian National Bank for Economic Development is being asked to guarantee financing abroad of U.S. \$13 million and to lend the new company Cr.\$1,500 million to help cover construction costs.

It is hoped that the new plant will be completed towards the end of 1963. The U.S. Firestone process will be used, with feedstock based on alcohol derived from sugar cane.

Chemico to Build Nitric Acid Plant in Kansas

Contract to design, erect and supply equipment for a 120 tons/day nitric acid plant at Lawrence, Ka., has been awarded to Chemical Construction Corporation, New York, by the Cooperative Farm Chemicals Association. Chemico have previously designed and erected ammonia, urea and nitric acid plants for C.F.C.A. at Lawrence.

Last year, Chemico brought a 120 tons/

day nitric acid plant on stream at this site in six months from the date of contract—a record time for a plant of this size and type.

Australian Exports Show Oil Refinery Expansion

Australian exports of refined petroleum products in 1960 exceeded for the first time the volume of imports of such products, the exports amounting to nearly £A22 million compared with £A15.5 million for 1959. This reflects the progress of oil refining projects in Australia, where at least £A80 million will be spent in the next few years on construction of new refineries and additions to existing plant.

Plans for new refineries include those of Amoco Australia Pty. Ltd. for an £A11 million refinery at Bulwer Island in Queensland, at the mouth of Brisbane River.

Jute-like Synthetic Fibre Produced in Poland

The chemical fibre combine at Tomaszów, Poland, has started production of a new cellulose-type synthetic fibre called Celjuta, which can be used as a jute substitute. Over this year alone production will be of some 2,000 tonnes, bringing about a saving in jute imports worth some 4 million zloty.

Abbott Experiment with Alcoholism Drug

Abbott Laboratories, U.S., are experimenting with a new drug for the treatment of alcoholism. It is diphosphopyridine nucleotide (DPN), which is extracted from brewer's yeast. Research indicates that DPN acts as a co-enzyme in some manner which inhibits the

accumulation of acetaldehyde, one of the toxic metabolic products of alcohol. Preliminary studies with opium indicate that DPN may also be useful for treating narcotic addiction.

Sugar Ester Plans of Ledoga

Ledoga S.p.A., Milan, are to start technical-scale production of sugar esters of fatty acids. It is understood that the production process will be based on ester transposition of the acid's methyl esters. The sugar esters will act as detergents and emulsifiers for food products and in cosmetic manufacture. Ledoga plan production units in Jamaica and Brazil.

Sulphur Ores Discovered in Norway

Extensive deposits of cupreous sulphur ores have been found in Norway. Surveys made by the state-owned Sorna Bergverk A/S estimate that the deposits consist of 15 to 20 million tons.

Cumene Phenol Plant for Sardinia

The new company, Societa Italiana Resine Gulf SpA, based at Sassari, Sardinia, is to start construction immediately of a Cumene phenol plant at Porto Torres, Sardinia. Capacity will be 70,000 tons/year and the plant is due on stream by mid-1962. Contract has been awarded to Officina Porto Torres. As stated in our survey of the Italian chemical industry, 27 May, p. 855, a 1.2 million tons/year refinery is also projected for Porto Torres (plus olefins, aromatics, detergent alkylate and polymers).

Gulf Oil Corporation, Pittsburgh, are taking part in the management of the new company as part of their plans to expand in petrochemicals.

A.K.U. Have Developed into World-wide Organisation in Fifty Years

HOW a company that started with the production of rayon yarn in Holland in 1913 has developed into a world-wide organisation making such diverse products as nylon and polyester fibres, cellulose film, synthetic rubber, glass fibres, plastics-covered cables and anti-corrosion paints, is revealed in an illustrated brochure published by A.K.U., otherwise known as Enka, to commemorate their fiftieth anniversary. Established in 1911, the company started production of rayon two years later at Arnhem. In 1928 the company acquired a major interest in N.V. Hollandsche Kunstzijde Industrie, the same year that American Enka Corporation was formed in the U.S. Three years earlier British Enka Ltd. and Italo Olandese Enka S.p.A. had been established in the U.K. and Italy respectively, while H.K.I. had founded La Seda de Barcelona S.A. in Spain.

The initials 'A.K.U.' date from 1929 when the interests of N.V. Nederlandsche Kunstzijde Industrie and

Vereiniged Glanzstoff-Fabriken A.G. were combined in 'Algemene Kunstzijde Unie'. The name of Nederlandsche Kunstzijdefabrik was perpetuated in the Dutch phonetic version of its initials, 'En-ka'.

As far back as 1938, the A.K.U. Group, then with 31 plants, accounted for about 16% of world production of man-made yarns and fibres. World War 2 destroyed almost 40% of A.K.U.'s Dutch capacity, while plants in Eastern Europe became estranged from the parental group. A vigorous reconstruction and expansion programme carried out since the war has increased the number of plants from 26 to 35, while in the period 1946-1960 the group's annual sales rose from Hfl.500 million to Hfl.1,700 million. Diversification has been the keynote of A.K.U.'s post-war policy, as is shown by the fact that although sales of man-made, cellulose-based textile yarns have risen by 35% since 1948, they represent today only about a quarter of the group's total sales.

● **Mr. H. J. Cotes** has retired from the board of British Glues and Chemicals Ltd., Berkshire House, 168-173 High Holborn, London W.C.1, and is succeeded as chairman by **Mr. D. N. Walton**.

● **Mr. A. M. Baer**, deputy chairman of the Consolidated Zinc Corporation Ltd., has been appointed chairman in succession to the late **Mr. L. B. Robinson**. **Lord Baillieu** has been appointed deputy chairman.

● **Mr. Godfrey Winters**, who has been appointed manager of the Heat Exchange Division of the Wellington Tube Works Ltd., Great Bridge, Tipton, Staffs, is a member of the Institution of Chemical Engineers and an associate of the Royal Institute of Chemistry.

● **Mr. G. le B. Diamond** is retiring at the end of this month from the chairmanship of the West Midlands Gas Board and as a director of Midland Tar Distillers Ltd.

● **Mr. G. V. Cox** has been appointed general manager of sales, plastics products, of Monsanto Chemicals Ltd., and **Mr. M. W. Waugh** general manager of sales, chemical products. Both general managers will report to the director of sales, **Mr. D. C. M. Salt**. **Mr. Cox**, who joined Monsanto in 1951, will be responsible for sales of polythene and styrene plastics. **Mr. Waugh**, who came to the company in 1947, will be responsible for sales of fine, heavy and technical chemicals.

● **Mr. B. H. Oldfield**, director and engineering manager of Laporte Chemicals Ltd., who is to retire in September, will be succeeded as engineering manager by **Mr. Maurice Ruddick**. The engineering manager is responsible for the operations of the Engineering Construction Department based on Oyez House, Fetter Lane, London E.C.4. Although this department is part of Laporte Chemicals Ltd., it carries out design work and construction planning for certain companies in the Laporte Group, including some overseas projects. **Mr. Oldfield** joined Laporte Chemi-



M. Ruddick

cals in 1947 from the Ministry of Supply. For most of the war he was chief engineer at the Royal Ordnance Factory at Bishopton. **Mr. Ruddick** has spent two years on the development of gas turbines with C. A. Parsons Ltd., later joining I.C.I. Alkali Division. With I.C.I.

PEOPLE in the news

he worked on the development and design of chemical plant, before joining Laporte Chemicals as assistant engineering manager in May 1960.

● **Dr. J. B. Stenlake**, at present senior lecturer in pharmaceutical chemistry, Royal College of Science and Technology, Glasgow, has been appointed to the Chair of Pharmacy with effect from 1 September.

● **Dr. R. A. Fairclough**, research department manager of I.C.I., Billingham Division, has taken over the new post of development and technical sales service general manager. **Dr. A. J. Harding** has become research department manager and is succeeded as project and process group manager in the research department by his deputy, **Dr. T. J. P. Pearce**.

● **Mr. J. P. Catchpole** of the Department of Chemical Engineering, University of Birmingham, has become the first recipient of the prize of 25 guineas for student members introduced by the Institution of Chemical Engineers in 1960. He won the award for his paper entitled 'Frequency response techniques for the study of packed bed characteristics'. The prize is for the best paper on a chemical engineering subject published in a college chemical engineering magazine and/or read before a meeting of the appropriate college society during the university year.

● Among appointments announced for Leeds University are: **Dr. P. R. Brook**, lecturer in the Organic Chemistry Department; **Mr. R. S. Davidson**, formerly demonstrator to be Brotherton research fellow in the Organic Chemistry Department; **Dr. G. A. Morrison** to be lecturer in the Organic Chemistry Department; and **Dr. G. A. Salmon**, to be J. W. Wootton research fellow in the Chemistry Department.

● **Mr. G. H. W. Cullinan**, deputy managing director, Shell Chemical Co. Ltd., will be relinquishing his executive duties at the end of this month. However, he will remain a director and will still represent the company on the council of the Association of British Chemical Manufacturers, and on various committees of the chemical industry and the Federation

of British Industries. **Mr. Cullinan** joined Shell from Oxford in 1926, serving in the Middle East, and from 1936 to 1939 was manager of the company's affairs in Palestine, later returning to Cairo to become general sales manager for the whole area. In 1944 he became general manager of the Shell Co. of East Africa Ltd. In 1946 he returned to the U.K. to become general manager, Technical Products Ltd., and when this became Shell Chemical Co. in 1955 he was appointed commercial director and, later, deputy managing director. Since the formation of Technical Products Ltd. to the present time **Mr. Cullinan** has played a leading part in the company's rapid expansion.

● **Mr. C. W. Tickner** has been appointed deputy managing director of E. Nickerson and Co. Ltd., Grimsby, chemical and fertiliser merchants, coal distributors, etc.

● **Mr. Trevor Jackson**, manager of Duphar Ltd., a British holding company and subsidiary of Philips Electrical Industries Ltd., which has shareholdings in Pebec Ltd., of Northolt, and The



T. Jackson

Crookes Laboratories of Park Royal, London, has been made a director of the Crookes Laboratories. Pebec Ltd. manufacture fine chemicals for Duphar Ltd. and others.

● **Mr. Glanvill Benn**, chairman of Benn Brothers Ltd., publishers of CHEMICAL AGE, has been elected president of the National Advertising Benevolent Society for 1961-62. Familiarly known as 'NABS', this organisation helps those in need in the advertising business. The first president in 1913 was Lord Northcliffe and **Mr. Glanvill Benn's** father, Sir Ernest Benn, held this office in 1928. **Mr. Benn** is also a trustee of the society and among other activities in the advertising world he is hon. treasurer, Advertising Association; chairman, Advertising Advisory Committee, Independent Television Authority; member of council, Audit Bureau of Circulation.

● **Mr. Godfrey Davies**, 50, sales director of Humphreys and Glasgow Ltd., Carlisle Place, London S.W.1, has been appointed assistant managing director. **Mr. Roy Withers**, 37, chief engineer of the company, and **Mr. Derek Lennon**, 33, who is responsible for all overseas chemical plant, have both joined the board. **Mr. Donald Yates** has been appointed an associate director and head

(Continued on page 170)

Commercial News

Benn Brothers

The directors of Benn Brothers Ltd., publishers of *CHEMICAL AGE*, recommend the payment of a final dividend of 6% on ordinary, making 9% for the year ended 30 June.

Berry Wiggins

Berry Wiggins and Co. Ltd., oil refiners, announce an interim dividend for 1961 of 5% (4½%).

Bowmans Chemicals

Bowmans Chemicals Ltd. announce an interim dividend for the year ending 31 October to 5% compared with an equivalent of 3.85%. The directors hope to recommend a final of 7½%, making 12½% equal to 11.35% paid last year. Due to higher costs and lower export demands, profit for 1960-61 is expected to be lower than in the previous year.

Courtaulds

Trading profits of Courtaulds Ltd. in the first three months of the current financial year which began on 1 April were less than the 1960 period, which was the best quarter of last year. This was stated by Sir John Hanbury-Williams in his annual statement, in which he said that last year's profits, £18,696,544, had fallen from the £21 million of the previous year.

The remaining nine months of the current year should show some improvement over those of last year, although the widespread uncertainty of the present economic situation must increase the difficulty of maintaining profits at last year's level.

Despite the poorer profit result last year, exports rose 25% to a record level of £26 million. They were the more impressive because they had been achieved at a time of increasing competition in world markets and rising costs at home.

Ilford

Ilford Ltd. have declared an interim dividend of 5% (same) for the year ending 31 October. Although turnover has been maintained, costs have continued to rise and profit margins to shrink.

Distillers

Trading results of the Distillers Company Ltd. for the year ended 31 March were a record, with total turnover at £263 million, an increase of 13%. Potable interests accounted for all the increased profit, up 5.4% to £32,079,568, and their proportion of the total is at present 82% (80%) with the Industrial Group accounting for the balance of 18%. As stated last week, a final dividend of 8½%, making an equivalent of 13½% (12½%) has been announced.

The board has reviewed the prospects for the current year and having regard to the further increase in profits tax levied in the Finance Act, intends to

- Courtaulds Profits Lower Than 1960
- D.C.L. Turnover Increases By 13%
- Sales and Profits Lower, Say S.A.I.
- Montecatini Shares Quoted in London

declare an interim in December at the same rate as last year, 6%, but on the higher capital created by the capitalisation of reserves and the current rights issue. (See also p. 160.)

Mobil Holdings

Offers made on behalf of Mobil Holdings Ltd. for the whole of the issued ordinary and preference capital of O, and M. Kleemann Ltd., have been accepted by holders of more than 95% of ordinary and 96% of preference stock. Both offers are now unconditional.

Monsanto Chemical

Monsanto Chemical Co., U.S., state that net sales for the six months ended 30 June totalled \$465,676,000 (\$460,677,000) with earnings of \$1.27 a share (\$1.41). The slight fall in net income in spite of higher sales is due to lower selling prices.

Murex

Group profit of Murex Ltd. for the year to 30 April before tax and depreciation totalled £1,661,000 (£1,643,000); net profit was £691,000 (£707,000). A final dividend of 8%, making 13% (against an equivalent of 12.86%) is proposed. Capital spending at Rainham and Waltham Cross totalled £550,000, higher than in previous years.

Philblack

The directors of Philblack have recommended a final dividend of 9% with a bonus of 5% for the year ended 31 March.

S.A.I.

A decline in sales from £19.3 million to £17.8 million for the eight months to 31 May has been recorded by Scottish Agricultural Industries Ltd., with pre-tax profits down from £1.4 million to £1,204,000. Sales of basic slag, particularly in England, were hit by adverse weather conditions. Consumption of fertilisers generally did not quite maintain the exceptional level reached in previous season. The interim dividend for the year to 30 September is 4% (same).

American Cyanamid

Second quarter sales of American Cyanamid were \$152.7 m. (\$145.4 m.), with net profit at 54 cents/share (56 cents). Respective figures for first half 1961 are \$300.9 million (\$305.1 million), or \$1.11 (\$1.34).

Citabul Ltd.

With an authorised capital of Rs.50 million and a paid-up capital of Rs.10 million, the chemical-pharmaceutical

company Citabul Ltd. has been formed in Bombay. Some 65% of the company's capital is owned by the Indian chemical company Atul Products Ltd., and the remaining 35% by Ciba AG, Basle. Citabul will produce goods based on carbamide resins and intermediates for sulphur drugs.

B. F. Goodrich

Net income of B. F. Goodrich, U.S., for the June quarter of 1961 was \$9,309,375 (\$9,098,550), or \$1.02 (\$1.01) a common share.

Du Pont

E.I. Du Pont de Nemours and Co., recorded for the first half of 1961 a net profit per share of \$4 (\$4.32). Of this profit some \$2.73 (\$3.05) came from Du Pont's own operations and \$1.27 (same) from General Motors. Sales for the 1961 six-month period were of \$1,076 million (\$1,097 million). The figures for the second quarter of this year, compared with those for the corresponding 1960 period, were net profit per share of \$2.15 (\$2.22), of which \$1.52 (\$1.59) from Du Pont operations, and sales of \$563 million (\$562.1 million).

Fluor Corporation

Fluor Corporation, U.S., announce for the first half of the financial year 1960/61 a profit of \$979,321. This compares with a figure for the corresponding period of the 1959/60 financial period representing a net loss of \$393,650.

Kohlensaure-Werke

NV Maatschappij tot Exploitatie van Rheinische Kohlensäure-Werke, Amsterdam, have recommended a 1960 dividend of 9% (8%).

Montecatini

Montecatini, whose shares are to be dealt in on the London Stock Exchange, are to spend about 130,000 million lire (£75 million) on capital commitments in 1961-62. About 43,000 million lire were spent in 1960 on the construction of new plants and on extensions and improvements to existing plants and facilities. The 1961-62 figure includes about 90,000 million lire for new petrochemical facilities at Brindisi and about 40,000 million lire for expansion of production or improvements in plants for chemicals, primary aluminium and mineral units.

Montecatini now have in Italy 37 plants producing chemicals and phosphate fertilisers, eight plants producing chemicals and nitrogen fertilisers, seven producing plastics, four producing man-made fibres, three dyestuffs plants, two

(Continued on page 170)

Company Report**THE DISTILLERS COMPANY LIMITED****Chairman's Statement**

In view of the current Rights Issue, the Board of The Distillers Company Limited has deemed it desirable to publish the Chairman's Statement in advance of the publication of the Accounts. The Accounts are now being printed and will be posted to shareholders on 23rd August.

**GENERAL OBSERVATIONS
ON TRADING**

The trading results for the year were again a new record in earnings, which when considered in relation to the exceptional profit last year, and taking into account the rather unsettled conditions in industry generally, can justifiably be regarded as very satisfactory.

The total value of the Group's turnover was £263 million, which was an increase of 13% over the previous year.

The profit for the year to 31st March 1961 was £32,079,568 compared with £30,419,758 last year. Income from trade investments was practically the same at £2,378,592 and interest on Loan Stocks was some £60,000 lower at £590,432.

The profits attributable to outside shareholders in subsidiary companies were £377,122 against £533,715 last year, and the profit of the Group before taxation was thus £33,490,606 compared with £31,610,124.

With the increase in profits tax to 12½% taxation required £16,266,382 against £14,743,700 and therefore the Net Profit after tax was not much higher than last year at £17,224,224 (£16,866,424).

Your Board recommend that a final dividend be paid on the Ordinary capital at the rate of 8½%, which, with the interim dividend at 6% paid prior to the two issues of capital mentioned later, is equivalent to 13½% for the year on the capital as augmented by the capitalisation of reserves. For the purpose of comparison, the rate last year corresponding to 13½% this year would be 12½% on the capital as increased by the scrip issue.

At 31st March 1960, the issued Ordinary capital of the Company was 157,516,931 shares of 10s. each. By the capitalisation of reserves, the capital was increased by 31,503,386 shares and, in connection with the offer to the ordinary stockholders of The British Xylonite Company Ltd., 7,443,437 Ordinary shares had been issued at 31st March 1961, making the total Ordinary capital at that date 196,463,754 shares of 10s. each fully paid.

Before dealing with the year's operations in detail, I would refer to the increase from 1st July in the retail prices

of Group standard brands of Scotch Whisky and Gin in the home market of 1s 6d per bottle to 39s for Scotch Whisky and 37s 3d for Gin.

SCOTCH WHISKY

Distilling operations by our Malt and Grain Distilleries have been maintained at a high level of output and efficiency throughout the season.

Additional Scotch Whisky bonded warehouses are now being constructed at Menstrie, Clackmannanshire, to accommodate our increasing stocks.

The total sales of the industry during the year under review have shown a substantial increase in both home and export markets.

I am glad to say that our brands have shared in these increased sales, and they enjoy a very satisfactory proportion of the home market. Having regard to the growth in population and the higher standard of living in recent years, there should be opportunities for still further expansion.

So far as exports are concerned, the U.S.A. continues to be the largest single market, although competition has become more intense.

In Canada the present state of the economy has militated against any substantial increase in sales.

Last year I referred to the substantial increase in our sales to Australia as a result of the removal of import restrictions, and I am glad to say that our position in that market has been fully maintained.

In New Zealand, too, we are in a strong position, but unfortunately, after a period of progressive relaxation of controls, the New Zealand Government has again found it necessary to take steps to reduce the volume of imports.

Perhaps one of the most significant and encouraging features in the last few years has been the very substantial increase in the Industry's sales to Europe generally.

In surveying the export position generally the outlook is reasonably promising, but we are, as always, affected by local import restrictions.

GIN

I am glad to report that home sales of our brands—in particular Gordon's and Booth's—continue to increase and, during the year under review, reached a record level.

Once again, our total export shipments showed a substantial increase. As a Group we are the largest exporters of Gin in the United Kingdom.

With regard to overseas, the sales of

our brands of Gin produced in the United States again showed a marked increase.

VODKA. The potential market for Vodka in the U.K. has been under consideration for some time. It is now proposed to produce a brand for the home market under the trade name 'Cossack.'

INDUSTRIAL GROUP

There was a satisfactory increase in volume of turnover of the Group, particularly in chemicals and plastics, but in the latter part of the year this was largely offset by lower selling prices which led to reduced profit margins.

CHEMICAL DIVISION. New plants were commissioned at Hull and Carshalton which have increased both the range and volume of our production of intermediates and speciality chemicals, for which there is a steadily growing demand.

The erection of the large acetic acid plant to which I referred last year, is proceeding well. The continuous phthalate plasticiser plant has proved entirely satisfactory but, unfortunately, had to be operated below capacity for much of the year owing to the world shortage of phthalic anhydride. Our associate company, Grange Chemicals Limited, has recently announced its intention to construct a plant with a capacity of 15,000 tons per annum for the manufacture of phthalic anhydride. This plant will be sited adjacent to our Hull Chemical factory which will operate it on behalf of Grange Chemicals. The plant will be the first in this country to use orthoxylylene, a product of the petroleum industry, as raw material.

Our calcium carbide factory at Kenfig worked to capacity and all production was sold.

Carbon dioxide capacity was substantially increased and sales reached a new record level.

BRITISH HYDROCARBON CHEMICALS LTD. This Company, in which we have a 50% interest, and its subsidiaries, Forth Chemicals Limited and Grange Chemicals Limited, have all had satisfactory trading results during the year under review. British Hydrocarbon Chemicals has recently brought into operation a new plant to produce ethylene dichloride, which material will be used by our Plastics Division in an improved method for the manufacture of polyvinyl chloride. Two other units will be commissioned shortly, the first for manufacturing methanol and the second for increasing our production of butadiene.

Last October, plans were announced in the Press covering the establishment

Company Report—cont'd

of a new petroleum chemical centre at Baglan Bay, South Wales, and work is now proceeding.

PLASTICS DIVISION. The increased capacity for Geon p.v.c. authorised last year is nearing completion, and in view of the prospective growth in demand, consideration is now being given to a further extension.

Sales of Styron polystyrene, produced by Distrene Limited were good and our plant is operating at full capacity.

British Resin Products have also had increased sales, and polyester resins in particular have been well received for reinforced plastics applications. New water soluble resins developed in our Research Laboratories at Barry, have created widespread interest, not only among paint manufacturers, but in a number of industries using paint. Good progress continues to be made in the sale of Rigidex, the low-pressure polyethylene produced by British Hydrocarbon Chemicals Limited.

The amalgamation of the operations of the British Xylonite Company Limited with our present activities in the chemical and plastics fields should produce economies and also benefit both companies in the pooling of research and engineering facilities.

BIOCHEMICALS DIVISION. This Division had a more successful year in spite of further deterioration in export prices of basic antibiotics.

Sales of our unique sedative 'Distaval' have expanded considerably both at home and overseas. A number of new products incorporating this substance are being established.

There is constant need to develop new products in the highly competitive conditions which exist in the pharmaceutical industry. To this end, a new Pharmacological Laboratory has been established at Speke.

TECHNICAL DEVELOPMENT

Our Research and Engineering staffs, who play an important part in our diverse operations, have again been fully extended during the year.

In view of the increasing technical complexity of our activities, additional laboratory and library facilities are being installed at the central Research Department, Epsom. The total budget for research for the year under review was nearly £2.5 million.

PERSONNEL

We have had a successful year under increasingly competitive conditions, and the achievement of this success has been greatly assisted by the loyalty and keenness of all our employees, both at home and overseas. On behalf of the Board, I should like to record our grateful thanks to them for their untiring efforts in the service of the Company.

People in the News

(Continued from page 167)

of Humphreys and Glasgow's construction department. He was formerly a senior sales engineer in charge of overseas gas plant and all Australian contracts.

● **Dr. Carlisle M. Thacker**, 77 N. Forge Mountain Drive, Valley Forge, Penn., has resigned his position as technical director of Taylor Fibre Co., Norristown, Penn., to devote full time to the development of processes for manufacturing carbon disulphide from fuel oils and to engage in consultation on technical and economic matters relating to chemicals and petrochemicals. In addition to his carbon disulphide processes, he will specialise in bringing to foreign concerns U.S. techniques and processes and to adapting foreign methods to the needs of U.S. companies.

● Due to pressure of other business commitments, **Sir Peter Roberts, Bart, M.P.**, has resigned from the board of Staveley Industries Ltd.

● **Mr. F. W. Stokes**, who has been appointed managing director of Powell Duffryn Carbon Products Ltd., joined the company as works manager in 1950 and was appointed to the board in 1959, becoming general manager last year.

● **Dr. Ermbrecht Rindtorff** has been appointed chairman of Scholven-Chemie AG, Gelsenkirchen. He succeeds **Dr. Hans-Werner von Dewall**, who becomes vice-chairman. Appointed director to replace **Herr Hans Birnbaum** is **Herr Gerhard Breme**, while **Dr. Karl Schmitt** has been appointed to the board.

● **Dr. Karl Müller-Gliemann** and **Dr. Volker Faltings** have been appointed directors of the West German coal chemical society, Fachverband Kohlechemie e.V., Essen.

● **Mr. C. M. Spielman**, after 38 years with Whessoe Ltd., including 19 years as managing director and six as chairman, has been appointed the company's first president. He is succeeded as chairman by **Mr. John H. Lord**.

● **Mr. D. Kleeman** has joined the board of Mobil Holdings. **Mr. J. Kleeman**, **Mr. H. Hock**, **Mr. F. Hock** and **Sir Bernard Waley-Cohen** have resigned from the O. and M. Kleemann board, to which **Mr. R. B. Madden** and **Mr. P. B. Unwin** of Mobil have been appointed.

● **Sir Miles Thomas**, chairman of Monsanto Chemicals Ltd., has been appointed a director of the Dowty Group Ltd.

Commercial News

(Continued from page 168)

pharmaceutical plants, three coke ovens, etc. In 1960 the group produced about 47% of Italy's total production of agricultural chemicals, 10% of industrial chemicals, 54% of man-made fibres, 48% of dyestuffs; and 44% of plastics materials.

Pfizer

The U.S. company, Charles Pfizer and Co. hope to acquire the New England Lime Co., including their subsidiary Nelco Metals, for about 300,000 Pfizer's share. New England Lime operate a quarry and plant at Adams, Mass. Nelco produce high purity calcium and magnesium as well as limestone products. The acquisition still has to be approved by New England Lime shareholders.

St. Gobain-Holland

Netherlands subsidiary of Saint Gobain, N.V. Nieuwe Nederlandsche Maatschappij tot het Vervaardigen van Spiegelglas, Glazen Voorwerpen en Chemische Producten, report a 9.1% rise in superphosphate sales for 1960. Gross profits totalled Fl.3.3 million (Fl.3.6 million); a dividend of 9% (5%) is proposed.

Scholven-Chemie

Scholven-Chemie AG, Gelsenkirchen, reported a record turnover of DM516,400,000 (DM462,800,000) for the 1960 financial year. This permitted the payment to the 100% parent company—

the nationalised coal-mining concern Bergwerksgesellschaft Hibernia AG, Herne—of some DM12,100,000 (DM8,850,000), a sum representing a dividend of 12% (10%).

Ugine

Net profit of Ugine, France, for 1960 totalled NF28 million. Turnover rose to NF943 million, net sales of NF831.7 million being 31.5% up on the 1959 figure.

INCREASES OF CAPITAL

COLUMBIAN INTERNATIONAL (GREAT BRITAIN) LTD., manufacturers of carbon black, etc., 116 Cannon Street, London E.C.4. Increased by £30,000 beyond the registered capital of £20,000.

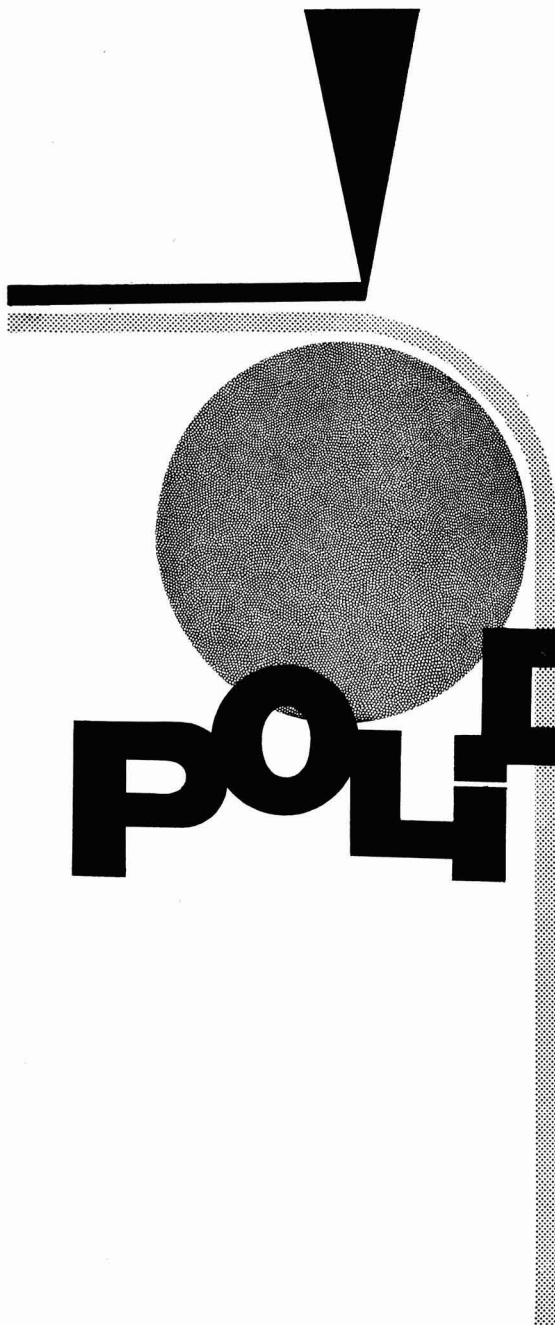
COWAN BROTHERS (STRATFORD) LTD., manufacturers of and dealers in chemicals, etc., 78 Hatton Garden, London E.C.1. Increased by £58,000 beyond the registered capital of £12,000.

L. A. MITCHELL LTD., consulting and chemical engineers, etc., 37 Peter Street, Manchester 2. Increased by £85,000 beyond the registered capital of £25,000.

POTASH AND CHEMICALS LTD., 62 Pall Mall, London S.W.1. Increased by £4,900 beyond the registered capital of £100.

STERLING DRUG INTERNATIONAL LTD., 12 Whitehall, London S.W.1. Increased by £299,500, beyond the registered capital of £500.

TURCO CHEMICAL PRODUCTS LTD., manufacturers of and dealers in chemicals, etc., 38 King William Street, London E.C.4. Increased by £20,000 beyond the registered capital of £10,000.



POLYPENE

vinylidene
chloride
copolymer
emulsions for

PAPER COATING

- ★ unsurpassed moisture vapour resistance
- ★ grease and solvent resistance
- ★ gas and odour barrier
- ★ heat sealability



Further information available from:

SCOTT BADER CO LTD

Polymer Division

Wollaston, Wellingborough, Northamptonshire

Telephone: Wollaston 262

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, £37 10s. 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.

Chromum Sulphate, Basic. Powder, d/d, per lb., 8½d; per ton, £77.

Citric Acid—Granular. In kegs, 1-4 cwt. lots, per cwt., £9 6s; 5-19 cwt. lots, per cwt., £9 2s; 1-ton lots, per cwt., £9 1s; packed in paper bags, 1-4 cwt. lots, per cwt., £8 19s; 5-19 cwt. lots, per cwt., £8 15s; 1-ton lots, per cwt., £8 14s.

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

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

Copper Sulphate. £78 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, £11 2s. 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., 26d; 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, £99 5s per ton; orange lead, £111 5s per ton; Ground in oil: red, £121 5s, orange, £133 5s.

Lead, White, Bases prices: in 5-cwt. drums, per ton for 2-ton lots, Dry English £112 5s; Ground in oil, £132 10s.

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

Litharge. In 5-cwt. drum lots, £101 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), £79 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., 1-ton lots, £131 16s. 8d.

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., 2s 0½d; 3-cwt. lots, per lb., 1s 11½d; 5-cwt. lots, per lb., 1s 11½d; 1-ton lots, per lb., 1s 11d; 5-ton lots, per lb., 1s 10½d. Tech., 1-ton lots in 1-cwt. drums, per cwt., £10 3s; 5-cwt. in 1-cwt. drums, per cwt., £10 5s; 1-cwt. lots, £10 14s.

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 1-ton lots, £109 13s. 4d., anhydrous, 1-ton lots, £126. All lots delivered d/d.

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, 70%, per ton, £150, 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. Lincs 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.

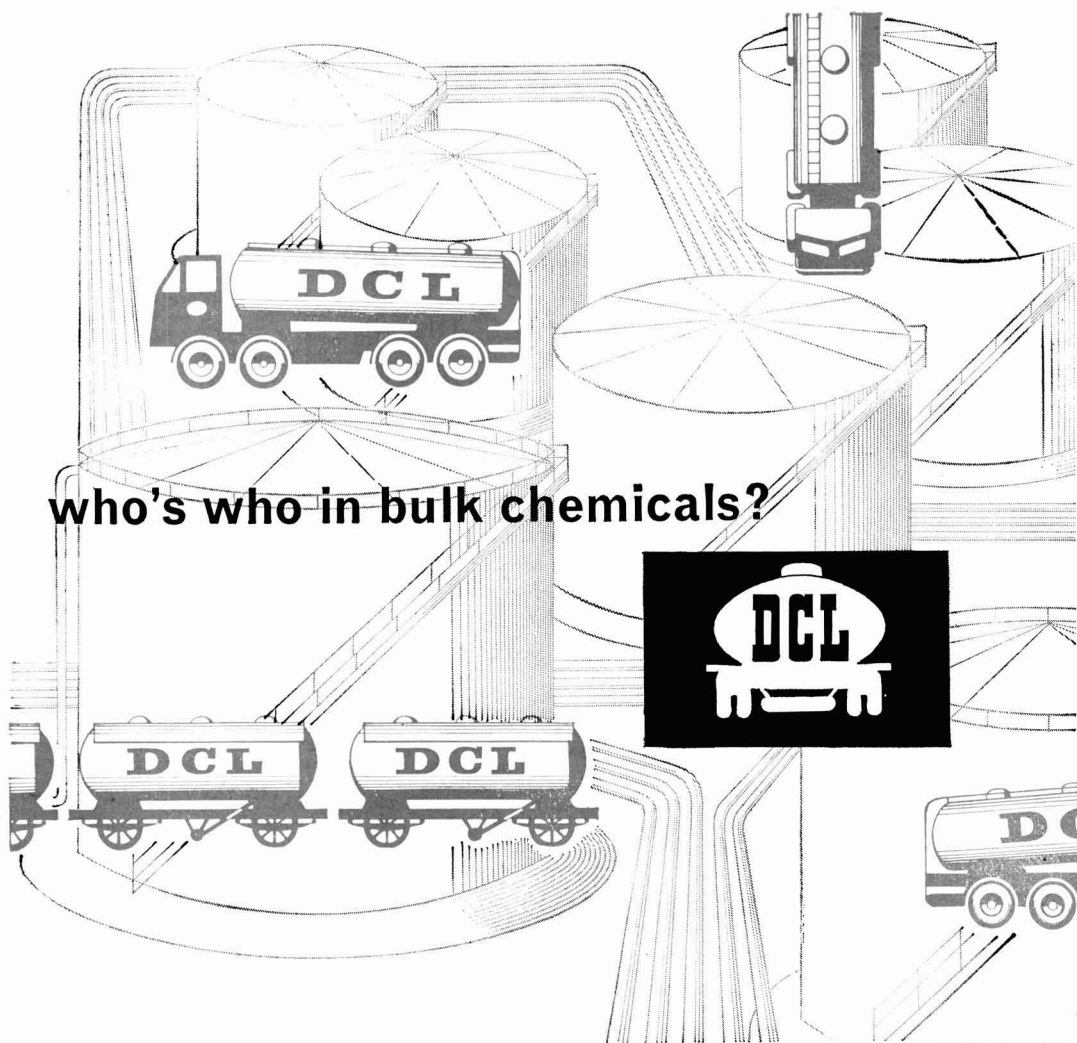
Tartaric Acid—Powder and Granular. Per cwt.: 10 cwt. or more, in kegs, 294s; in bags, 286s per cwt.

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

Zinc Oxide. Per ton: white seal, £97 10s, green seal, £95 10s.; red seal, £92 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;



who's who in bulk chemicals?



DCL is one of the largest producers of organic chemicals used by more than twenty major sections of industry. The annual production of Bisol solvents, intermediates and plasticisers is over 200,000 tons a year and continues to grow as new plant and new processes come into operation. A closely integrated supply and service organisation operating a fleet of DCL road tankers from a nation-wide network of supply depots, provides a delivery service which is as fast as it is dependable.

Bisol Bulk chemicals include:—

- ACETIC ACID
- ACETONE
- ACETATE ESTERS
- BUTANOL
- DIACETONE ALCOHOL
- M.E.K.
- PHTHALATES



THE DISTILLERS COMPANY LIMITED · CHEMICAL DIVISION

Bisol Sales Office, Devonshire House, Piccadilly, London, W.1

Telephone: MAYfair 8867

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, £46.

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 0½d-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.

soPropyl 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 and up to 3-tons 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. Is 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., 1d.

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 heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 4s. 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 4d-5s 6d.

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

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

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

Pipeline Exhibition

The 2nd International Pipes, Pipeline, Pumps and Valves Exhibition and Convention will be held in April, 1963, at Earls Court, London. More than 100 companies have already booked stand space. Rapid expansion in this field—last year more than 30,000 miles of new gas and oil pipelines were constructed throughout the world bringing the total up to nearly 1 million miles—is reflected in the interest already being shown in the exhibition, state the organisers, Scientific Surveys Ltd., 97 Old Brompton Road, London S.W.7.

New Technical Co-operation Department

THIS week the Department of Technical Co-operation, the new Government department that will co-ordinate U.K. technical assistance to overseas countries, came into operation. Mr. Dennis Vosper is the Minister in charge and will be known as the Secretary for Technical Co-operation. The permanent head of the department, the director-general, is Sir Andrew Cohen. Headquarters are at Carlton House Terrace, London S.W.1 (Whitehall 4368).

Currently the new department is taking over the work on technical assistance that is carried out by the Foreign Office, the Commonwealth Relations Office, the Colonial Office and the Ministry of Labour, with the present staffs engaged on that work. The aim is to enable the U.K. to meet more effectively requests for technical assistance received from the Governments of developing countries inside and outside the Commonwealth.

Choice and Use of Multiwall Paper Sacks

A BOOKLET on multiwall paper sacks, containing some notes prepared and published by the Packaging Committee of the Association of British Chemical Manufacturers, has recently been published.

The information in the booklet is intended for guidance in the choice and use of paper sacks. Attention has been drawn to the variable components which go towards the make-up of this type of package, since users will find that by selecting the correct components, it is possible in many cases to obtain improved performance or economy.

Although prepared primarily for the information of members of the Association, copies are available to non-members from the A.B.C.M. offices, 86 Strand, London W.C.2, at 1s. cash with order.

New Malathion Products from Cyanamid

Two new Malathion insecticide formulations for use in grain storage have been introduced by Cyanamid of Great Britain Ltd., Bush House, London W.C.2. They are Cyanamid malathion wettable powder (a 25% formulation), and Cyanamid malathion grain protectant (a 2% malathion dust).

Since Cyanamid first discovered malathion in 1949, this safe organophosphorous insecticide has been widely used all over the world. The chief entomologist, Infestation Control Division, M.A.F.F., has stated that the number of outbreaks of the saw-toothed grain beetle infestation has been increasing in recent years, and has stressed that malathion is the most suitable insecticide to use to deal with this pest.

Glaxo Cut Penicillin Prices

From 31 July, Glaxo Laboratories Ltd. are cutting prices on all Crystapen V oral penicillin preparations and single and combined diphtheria, whooping cough and tetanus vaccines.

Serving the World's Industries

**specialists
in
the
production**

Fluorine Compounds

Hydrofluoric Acids

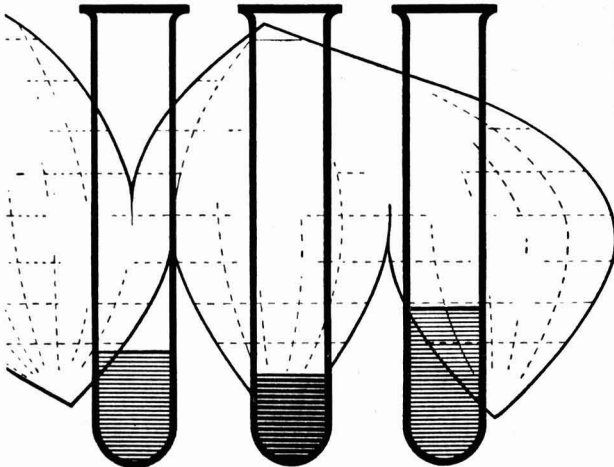
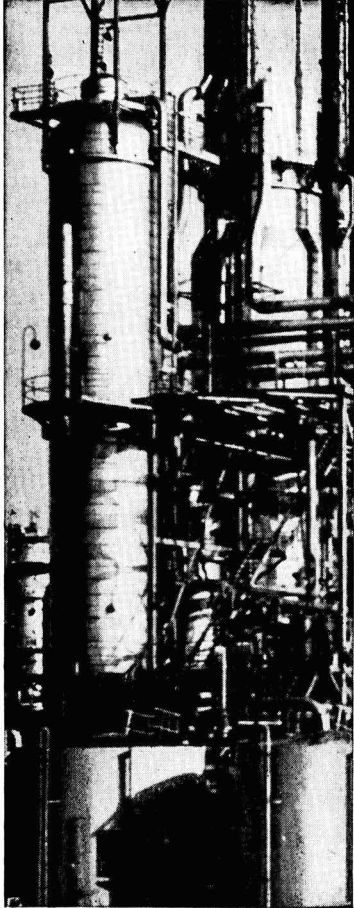
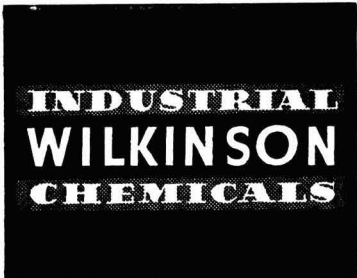
Analytical Reagent Acids

SHEFFIELD

& SON LTD.,

WILKINSON

JAMES



A MEMBER OF
THE LAPORTE GROUP
OF COMPANIES

JAMES WILKINSON & SON LTD.
TINSLEY PARK ROAD, SHEFFIELD 9
Tel: 41208 Grams: Chemicals, Sheffield 9

LONDON AGENTS & DISTRIBUTORS
JOSEPH WEIL & SON LTD., FRIARS HOUSE,
39-41 New Broad Street, London, E.C.2

MIDLANDS AREA OFFICE,
153 Parker Drive, Leicester.
Telephone: Leicester: 63861



TRADE NOTES

Cariflex Rubber Price Cut

Price of Cariflex isoprene rubber, marketed in the U.K. by the Shell Chemical Co. Ltd., has been cut by 3½d/lb. to 2s 2.5d/lb.

Epikote Curing Agent

Shell Chemical have announced the addition of Epikure TET to their range of Epikote resin cold curing agents. Epikure TET is recommended where there is a need to cast slightly larger masses than is possible with Epikure RTU and T, but where there is still need to effect a cure at room temperature. It is also useful for laminating applications.

Expandable Polystyrene

Processing of the Montopore range of expandable polystyrenes is discussed in technical service publication No. P26/1 published by Monsanto Chemicals Ltd., 10-18 Victoria Street, London S.W.1. The booklet describes the present grades available, the various processes in operation, the type and design of the equipment used, production planning and the methods of finishing the final products.

Sykes Depot at Sandbach

A new depot at Sandbach has been established by Henry Sykes Ltd., for the sales, hire and servicing of their range of pumps, winches and pile driving equipment. In particular, the new depot will cater for the demand for Univac

pumps in the Bolton, Manchester, Leeds, Derby, Stoke, Birmingham, Shrewsbury and Liverpool areas. Address of the depot is Henry Sykes Ltd., Cheshire Depot, Studd Green Works, Elworth, Sandbach, Cheshire (Sandbach 986).

Robac Rubber Accelerator

A data sheet on Robac Z.P.D. Extra is available from Robinson Bros. Ltd., Ryders Green, West Bromwich. Robac Z.P.D. Extra is a non-staining ultra rubber accelerator which gives a high moduli in natural rubber. Although this property is lost in SBR, the compound is a useful booster for thiazoles. It is especially suited to rubber-cork mixtures, erasers and translucent SBR shoe soling. The accelerator is a powder but is also available as a 50% oil dispersed paste.

Molten Sulphur

Copies of a new booklet, 'Molten Sulphur' are available from F. W. Berk and Co. Ltd., Berk House, 8 Baker Street, London W.1. Advice on handling and storage of molten sulphur are given, together with safety precautions which need to be taken.

Cuprinol Price Changes

Cuprinol Ltd. have increased retail prices in the wood preservative grades by 6d. per gall. and by 3d. on ½ gall. and below. Trade prices have been raised by 6d per gall. on the 5 gall. container sizes and 3d per gall on the 40 gall.

drums. The increases in the woodworm killer grades, standard and special duty, are the same as for the wood preservatives in the 5 gall. containers and 40 gall. drums. The prices for Heavy Duty Brown, Cuprinol for brickwork, Cuprinol silicone wax polish, Bilgex and fungicidal paints, remain unchanged.

These changes are a result of the recent Budget increases in taxation on solvent and fuel oils.

Pipe Line Strainers

Charles Winn and Co. Ltd., Birmingham, state that owing to demand for strainers with very fine screens, their No. 1895 range of pipe line strainers will now be stocked in sizes ½ in., ¾ in. and 1 in., with Monel metal screens of 80 by 80 mesh. For strength, these will be encased in copper screens with 1/32 in. diameter holes.

K.D. Chemicals

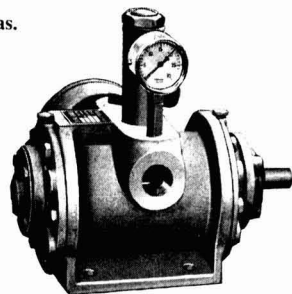
K.D. Chemicals Ltd., 49 Parkwood Road, Boscombe, Bournemouth, have changed their name to South Western Chemicals Ltd.

Colorimetric Analysis

A new model of the B.D.H. Lovibond Nessleriser, for which discs are available to provide permanent Lovibond glass colour standards for some 30 analytical procedures, is now available. There are also 17 discs for pH determinations. The discs normally contain nine standards each. The new Nessleriser is illustrated, and prices for the apparatus, discs and accessories given, in a leaflet by B.D.H. Laboratory Chemicals Division, Poole.

These two types of Reavell compressors will meet any need for oil free air or gas.

The new Reavell "R.N." type rotary compressor or exhauster is based upon the well-known "N.R.D." type machine, but in the new model, carbon blades and sealed grease packed bearings replace the conventional fabric blades and normal bearings. As compressors, these machines will deliver completely oil free air at pressure up to 15 lbs. per square inch, or as exhausters they will work continuously at any vacuum up to 20 ins. Hg. For certain applications the "R.N." series can be supplied with two inlet connections enabling a single machine to perform the duties of a compressor and of an exhauster at the same time.



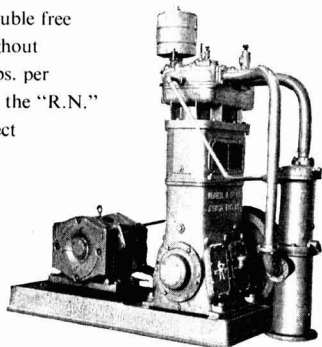
Compressed air—COMPLETELY OIL FREE

Reavell oil free reciprocating compressors have given many years of trouble free service in various factories, power stations and other establishments throughout the world. Water lubricated machines are made for pressures up to 3,500 lbs. per square inch, and carbon ring machines up to 600 lbs. per square inch. Like the "R.N." rotary machines, the reciprocating oil free compressors are suitable for direct coupling to, or Vee belt driving from electric motors, internal combustion engines or other types of prime movers.

We shall be pleased to advise you upon the application of these machines to your particular problem.

Reavell

REAVELL & CO. LTD.,
RANELAGH WORKS, IPSWICH, SUFFOLK.
Telephone: IPSWICH 56124



MAKERS OF COMPRESSORS AND EXHAUSTERS FOR ALL INDUSTRIES

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 30 August

Pharmaceutical compositions containing D-3,5-diiodothyronine. Glaxo Laboratories Ltd. [Divided out of 873 206.] **876 320**

Rubber compositions based on co-polymers of butadiene and acrylonitrile. Precision Rubbers Ltd. **876 395**

Modified furfural-aldehyde resins. Farbwerke Hoechst AG. **876 087**

Benzothiazole-monazo-aniline dyestuffs suitable for colouring textile materials. [Addition to 744 877.] **876 090**

Disazo-dyestuffs containing triazine residues and processes for their manufacture and application. Ciba Ltd. **876 092**

Polymerisation process. Ethyl Corporation. **876 093**

Manufacture of 3,11,17-substituted steroids. Ciba Ltd. **876 055**

Hemioxalonic dyes, processes for preparing them and photographic emulsions containing them. Kodak Ltd. **876 022**

Process for the polymerisation of olefins. Ruhrchemie AG. **876 023**

Process for the manufacture of aldehydes and ketones. Consortium Für Elektrochemische Industrie GmbH. **876 024**

Metalliferous dyestuffs of the benzene mono- and disazo-resorcinol series, and process for their manufacture. Farbwerke Hoechst AG. **875 990**

Vaccines and a process for their manufacture. Drescher, J. **876 027**

Mould-growth resisting compositions. Mosinee Paper Mills Co. **876 069**

Manufacture of cellular polyurethane products. Imperial Chemical Industries Ltd. **876 058**

Coating compositions for fibrous materials. Nopco Chemical Co. **876 226**

Process for the manufacture of carbonyl compounds. Consortium Für Elektrochemische Industrie GmbH. **876 025**

Carboxylic acid esters and process for their manufacture. Ciba Ltd. **876 059**

Production of polyamides. Monsanto Chemical Co. [Addition to 872 328.] **875 994**

Method for controlling polymerisation reactions and apparatus therefor. Phillips Petroleum Co. **876 409**

Basic heterocyclic azo dyestuffs. Farbenfabriken Bayer AG. **875 995**

Process for the recovery of sulphur and ammonia from liquids. Simon-Carves Ltd. **876 442**

Resin composition. Imperial Chemical Industries Ltd. **876 034**

Antibiotic, grisonomycin, and process for its manufacture. Ciba Ltd. **876 096**

Stabilised hydrocarbon polymers. Monsanto Chemical Co. **876 443**

Thermoplastic materials. Imperial Chemical Industries Ltd. **876 035**

Production of polymeric material from monomeric epoxy compounds. Petrochemicals Ltd. [Addition to 799 955.] **876 062**

Production of alkyl esters. Monsanto Chemical Co. **875 999**

Process for the manufacture of 1,3-diolefins. Knapsack-Griesheim AG. **876 445**

Stabilised polymethacrolein compositions. Du Pont de Nemours & Co., E. I. **876 036**

Disazo dyestuffs insoluble in water and process for their manufacture. Farbwerke Hoechst AG. **876 000**

Dye-receptive graft copolymers, method for preparing same and shaped articles fabricated therefrom. Dow Chemical Co. **876 001**

Phosphate coating. Imperial Chemical Industries Ltd. **876 250**

Process for the pyrolysis of hydrocarbons. Soc. Belge de L'Azote et des Produits Chimiques du Marly. **876 264**

Exothermic compositions. Foundry Services International Ltd. **876 353**

Polyethylene asphalt moulding compositions and products. Richardson Co. **876 121**

Mono sulphone dicarboxylic acids their esters and their preparation. Union Carbide Corporation. **876 044**

Production of hydrogen peroxide. Food Machinery & Chemical Corporation. **876 459**

Production of unsaturated aliphatic nitriles. Distillers Co. Ltd. **876 446**

Resins. White Laboratories, Inc. **876 317**

Sulphurisation process. Esso Research & Engineering Co. **876 447**

Process for the production of 2-halogenocycloheptene-(1) carboxylic acids-(1). Badische Anilin- & Soda-Fabrik AG. **876 121**

Process for the preparation of branched-chain aliphatic carboxylic acids or their derivatives. Henkel & Cie GmbH. **876 450**

Process for the production of cross-linked plastics of high molecular weight. Farbenfabriken Bayer AG. **876 451**

Glucose ureide esters and detergent compositions containing same. Grace & Co., W. R. **876 122**

Process for the production of hydrazine hydrate. Farbenfabriken Bayer AG. **876 038**

Organosilicon rubber. Midland Silicones Ltd. **876 041**

Process for the production of foam materials containing urethane groups. Farbenfabriken Bayer AG. **876 434**

Coagulation of latices of natural and synthetic rubbers. Farbenfabriken Bayer AG. **876 283**

Polytetrafluoroethylene bearing and process for the production thereof. Du Pont de Nemours & Co., E. I. **876 435**

Vinyl alkali metal compounds. Ethyl Corporation. **876 008**

Steroids and the manufacture thereof. Upjohn Co. **876 009**

Preparation 1,12-dodecanedioic acid. Esso Research & Engineering Co. **876 335**

Process for stabilising polyolefins. Farbenfabriken Bayer AG. **875 970**

Modification of the preparation of glycidyl esters. Shell International Research Maatschappij N. V. **876 125**

Cross-linked polyethylene composition. Anaconda Wire & Cable Co. **876 011**

Substituted tricyclodecanes. Union Carbide Corporation. **876 013**

Steroids and the manufacture thereof. Upjohn Co. **876 192**

Treatment of aqueous liquid solutions of chelate-forming metal ions with chelate exchange resins. Dow Chemical Co. [Addition to 862 636.] **876 014**

Rubber and plastic formulations and process. Union Carbide Corporation. **876 074**

Production of isotactic polystyrene. Grace & Co., W. R. **875 976**

Co-polymerisation processes. Rhone-Poulenc. **876 129**

Polymerisation of ethylene with monovalent titanium halide. Esso Research & Engineering Co. **876 078**

Halogen-substituted amidoximes and manufacturing process. Wassermann S.P.A., A. **876 079**

Ethylene polymers. Du Pont de Nemours & Co., E. I. **875 983**

Process for the production of N₁-substituted N-aryl ureas. Shell Internationale Research Maatschappij N.V. **875 984**

Esters of 19-nor-testosterone. Organon Laboratories Ltd. **975 986**

Market Reports

LOWER PRICES FOR CITRIC, TARTARIC ACID

LONDON The volume of home trade in general chemicals remains steady but there has been a seasonal contraction in contract deliveries to users. Most of the routine soda products are in steady call, and there has been a fair inquiry for such items as borax, boric acid and hydrogen peroxide. Lower prices are ruling for citric acid and tartaric acid. Sulphate of copper is currently quoted at £78/ton less 2% f.o.b. Liverpool, while zinc oxide prices are 50s/ton lower, White Seal being quoted at £97 10s, Green Seal £95 10s and Red Seal £92 10s/ton for 1 ton lots.

Quiet trading conditions have again been reported for the fertiliser materials and there has been rather less activity in the coal tar products market.

MANCHESTER A number of chemical consuming works in the textile and other industries has been closed down this week for holidays and this continues to have a quietening effect on the movement of supplies against contracts and also on the volume of new business. In the circumstances traders mostly report reasonably satisfactory conditions, with a quietly steady demand for the potash and soda compounds and most other bread-and-butter lines. With an odd exception quotations are well maintained. Fair activity is reported in the market for the tar products, but most

descriptions of fertilisers remain seasonally quiet.

SCOTLAND Due to the Glasgow Fair holidays, market conditions generally have been much quieter. Against this, however, from those areas not yet affected by the holiday period, demands have been reasonably brisk, with a good steady volume of business to report. There has been little change in prices. The past week has shown a welcomed improvement in regard to the export market, not only in enquiries received but also in resultant business.

World Oil Statistics

A brochure which tabulates, with supporting diagrams, the 1960 and previous statistics of world oil reserves, production, consumption, supply and demand, refining, tanker shipping and energy, has been produced by B.P. Entitled 'Statistical Review of the World Oil Industry 1960', all oil statistics in this new edition are presented in both tons and barrels. There is also an historical section which gives brief details of the main sectors of the industry over the past 10 years. A limited number of copies of this brochure is available on application to British Petroleum Co. Ltd., Britannic House, Finsbury Circus, London E.C.2.

CLASSIFIED ADVERTISEMENTS

CLASSIFIED RATES: All sections 5d. per word. Minimum 8/- . Three or more insertions 4d. per word. Box Number 2/- extra.

SEMI-DISPLAY: 30/- per inch. Three or more insertions 25/- per inch.

OVERSEAS APPOINTMENTS

NEW ZEALAND AGRICULTURE DEPARTMENT

Applications are invited for the undermentioned vacancies:—

Vacancy 2211: CHEMISTS AND BACTERIOLOGISTS:
AGRICULTURE DEPARTMENT: NEW ZEALAND.

Salary: Up to £1,400 a year according to qualifications and experience. Ample opportunity for early advancement to senior positions for suitable men with initiative and ability.

Qualifications desired: A degree in chemistry and bacteriology.

Duties: Investigation, analysis and research into dairy products, raw materials and allied by-products. Previous experience not essential.

Passages: Steamer fares of up to £172 each for the appointee and his wife, and *pro rata* for dependent children will be paid.

Incidental Expenses: Up to £35 for a single person and £100 for a married man can be claimed to cover the cost of taking personal effects to New Zealand.

Application forms and further details are available from the High Commissioner for New Zealand, 415 Strand, London, W.C.2, with whom applications will close on 15 September, 1961.

Please quote reference B13/2/A when enquiring.

PATENTS & TRADE MARKS

The Proprietors of British Patent No. 796,005 for "PROCESS FOR THE PREPARATION OF DECACYCLENENE", desire to enter into negotiations with a firm or firms for the sale of the patent or for the grant of licences thereunder. Further particulars may be obtained from MARKS & CLERK, 57 & 58, Lincoln's Inn Fields, London, W.C.2.

PLANT AND MACHINERY FOR SALE

Baker-Perkins Class BB "Double Nabens" Bladed Steam Jacketed Mixers. Four—size 12 and Three—size 11, of 20 and 8 gallons respectively.

Oil Jacketed Double Trough Mixer 48 in. by 36 in. by 29 in. deep. Paddle Blades. Bottom Outlets.

Barron 'U' Sifter Mixer 96 in. by 33 in. by 33 in. with 10 H.P. A.C. Motor.

Gardner 'U' Sifter-Mixers 66 in. by 24 in. by 24 in. with 5 H.P. A.C. Motors. Four available, of modern streamlined design.

Horizontal 'U' Trough Mixers 48 in. by 18 in. by 22 in. Three—Tilting type, Paddle Blades. Glanded.

Over-Arm Twin-Blade, Tilting, 30 gallon Mixers with 3 H.P. Geared Motors. Five available.

Lying at our No. 2 Depot, Willow Tree Works, Swallowfield, Berkshire.

Apply: Winkworth Machinery Limited, 65 High Street, Staines, Middlesex. Telephone 55951.

BOX NUMBERS: Reply c/o "Chemical Age"

PLANT AND MACHINERY FOR SALE: continued

Phone 55298 Staines

STAINLESS STEEL PLANT

S.S. Tanks 500, 400 and 220 galls. Cyl. Conical Bottoms.

S.S. Mixing Tank—300 galls. A.C.

S.S. Jac. Pasteurisers/Mixers 50, 100 and 150 galls.

S.S. Rect. Tanks 850 and 450 galls.

S.S. Spherical Still 6 ft. 6 in. diam.

S.S. Duplex 'Z' Mixer (Vacuum) 3 ft. by 3 ft. by 3 ft. deep.

S.S. Worm Conveyor—Trough 10 ft. by 5 in. by 5 in.

S.S. Homogeniser $\frac{1}{2}$ H.P. 1,000 p.s.i. 25 g.p.h.

S.S. 'Hurrell' Homogeniser 5 H.P. 400/3/50.

Glass Lined Tanks 1,300, 2,000, 3,000, 3,250 and 3,600 galls.

(2) Jacketed Glass Lined Tanks 2,000 galls. each.

Mixers, Hydros, Condensers, Stills, Retorts, Reactors, etc.

Send for Lists.

HARRY H. GARDAM & CO. LTD.,
100 CHURCH STREET, STAINES.

SITUATIONS VACANT

CHEMIST/ENGINEER

Soft Drinks

Well-known Company which has licensing arrangements with independent companies throughout U.K. and Eire for production and distribution of internationally-known soft drinks require man to advise these bottlers and ensure production in accordance with laid down high quality standards.

In addition to necessary engineering background for machinery, plant layout, etc., he must have knowledge of chemistry sufficient to handle problems on ingredients, water treatment, etc., and be able to discuss and advise on all aspects of production with bottlers at management level.

Age 35-45 years with necessary qualifications and training in industry.

Salary according to experience and qualifications would be in range £1,750-£2,000 p.a. Pension and Life Insurance scheme, etc.

Write giving full details to Box No. 3758, Chemical Age.

WORK WANTED & OFFERED

CRUSHING, GRINDING, MIXING and DRYING for the trade
THE CRACK PULVERISING MILLS LTD.

Plantation House,
Mincing Lane,
London, E.C.2.

PULVERISING of every description of chemical and other materials. Collections, storage, deliveries. **THOMAS HILL JONES, LIMITED, INVICTA WORKS, BOW COMMON LANE, LONDON, E.3. (TELEPHONE: EAST 3285.)**

• Bouverie House • Fleet Street EC4.

Chemical Age Enquiry Service

For fuller details of equipment, apparatus, chemicals etc., in the advertisement or editorial pages of Chemical Age, fill in the coupons below, ONE PER ENQUIRY, and return to us.

<p><i>Please send further details about</i></p> <p>.....</p> <p>.....</p> <p><i>mentioned on page</i> <i>of this issue.</i></p> <p><i>Name</i> <i>Position</i></p> <p><i>Firm</i></p> <p><i>Address</i></p> <p>.....</p> <p>Chemical Age Enquiry Service.</p>
<p><i>Please send further details about</i></p> <p>.....</p> <p>.....</p> <p><i>mentioned on page</i> <i>of this issue.</i></p> <p><i>Name</i> <i>Position</i></p> <p><i>Firm</i></p> <p><i>Address</i></p> <p>.....</p> <p>Chemical Age Enquiry Service.</p>
<p><i>Please send further details about</i></p> <p>.....</p> <p>.....</p> <p><i>mentioned on page</i> <i>of this issue.</i></p> <p><i>Name</i> <i>Position</i></p> <p><i>Firm</i></p> <p><i>Address</i></p> <p>.....</p> <p>Chemical Age Enquiry Service.</p>

★ *Detach this page complete then fold as marked overleaf to use the post-paid reply folder*

Chemical Age

ENQUIRY SERVICE



☛ *This is a special service for readers of*

CHEMICAL AGE

☛ *It is designed to give fuller information on equipment, apparatus, chemicals etc., mentioned in this issue—whether in the editorial text or in an advertisement*

☛ *Cut out the whole of this page, fold as instructed with post-paid address on the outside*



Chemical Age

154 Fleet Street, London, E.C.4

Tel.: Fleet Street 3212

2nd FOLD

Postage
will be
paid by
the
Licensee

No Postage
Stamp
necessary if
posted in
Great Britain
or
Northern Ireland

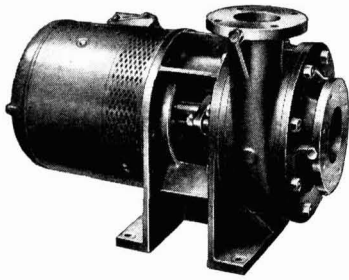
BUSINESS REPLY FOLDER
Licence No. 2501

CHEMICAL AGE
154-160 FLEET STREET
LONDON, E.C.4

1st FOLD

3rd FOLD

CUT ALONG THIS DOTTED LINE



**The proof of the Pump
is in its performance**

- - - which is why engineers
once having installed Safrans
continue to install



Technical literature with performance figures upon application.



SAUNDERS VALVE COMPANY LIMITED
Safran Pump Division
DRAYTON STREET, WOLVERHAMPTON PHONE 25531

CROMIL & PIERCY LTD.



GRAPHITE
IN ALL FORMS

MILBURN HOUSE
"E" FLOOR
NEWCASTLE-ON-TYNE
Tel: 2-7761



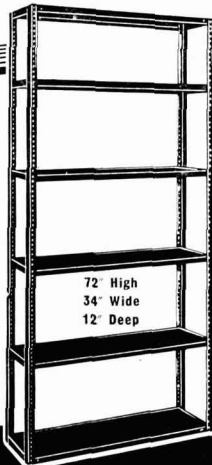
**Heavy Gauge Steel
SHELVING**

£3.15.0

DELIVERED FREE!

- Brand new—Manufactured in our own works.
- Shelves adjustable every inch.
- Heavy gauge shelves will carry 400 lb. each.
- Stove enamelled dark green.
- 6 shelves per bay—Extra shelves 8/- each.
- Quantity discounts.

Other sizes available. Also available in white at £5 per bay



72" High
34" Wide
12" Deep

**THE ONLY HEAVY
GAUGE SHELVING AT THIS PRICE**
N.C.BROWN LTD

C.A. DEPT.
HEYWOOD, LANCS. Tel: 69018 (6 lines)

ALDRED
for
CHARCOAL

BARBECUE
COOKER
HORTICULTURAL
INDUSTRIAL
MEDICINAL
AND
SPECIAL PURPOSE
CHARCOALS

CASE HARDENING COMPOUNDS

Enquiries to

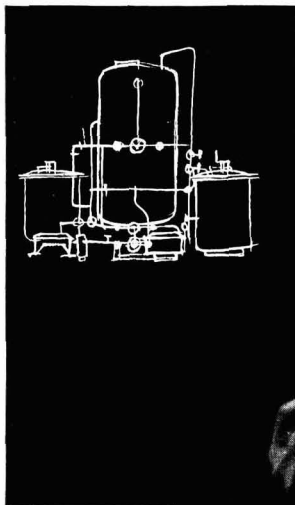
SHIRLEY ALDRED & CO. LTD.
WORKSOP, NOTTS.

PHONE : WORKSOP 2192



Sir, why not ask NECKAR
about de-ionisation?

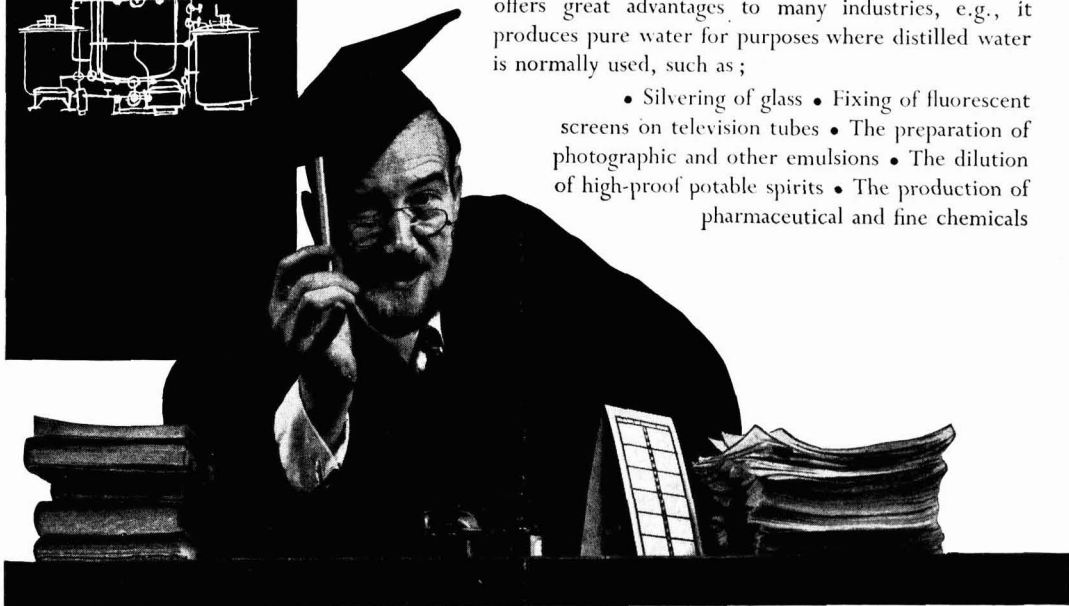
De-ionisation!



I Did ask NECKAR

... and, briefly, it is a process of Ion Exchange that offers great advantages to many industries, e.g., it produces pure water for purposes where distilled water is normally used, such as;

- Silvering of glass
- Fixing of fluorescent screens on television tubes
- The preparation of photographic and other emulsions
- The dilution of high-proof potable spirits
- The production of pharmaceutical and fine chemicals



NECKAR

NECKAR WATER SOFTENER COMPANY LTD.
ARTILLERY HOUSE, ARTILLERY ROW, LONDON, S.W.1
Telephone: ABBey 6552. Telegrams: NECKARIST, SOWEST, LONDON