

Chemical Age

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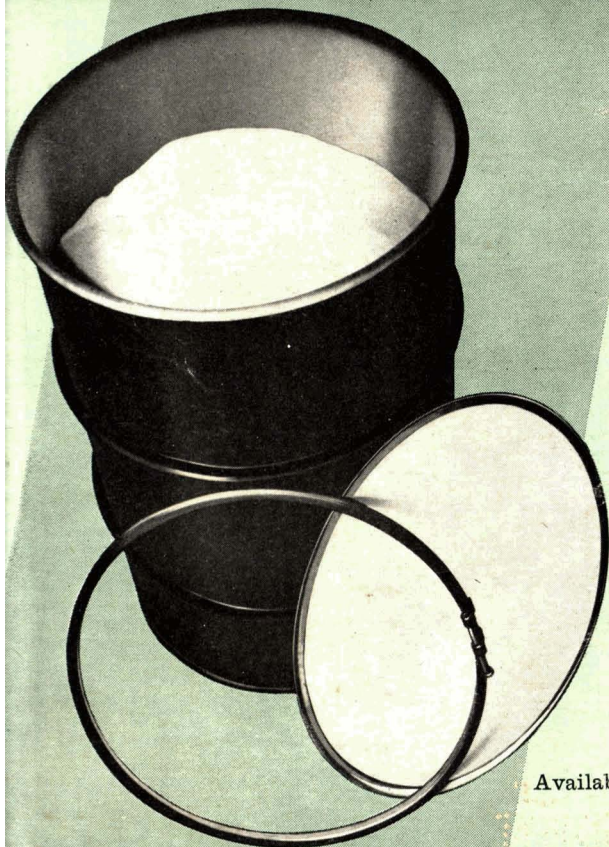
PETROCHEMICALS and POLYMERS

3 February 1962. Vol. 87. No. 2221

CHEMICAL EXPORTS
A RECORD (P. 195)
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THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

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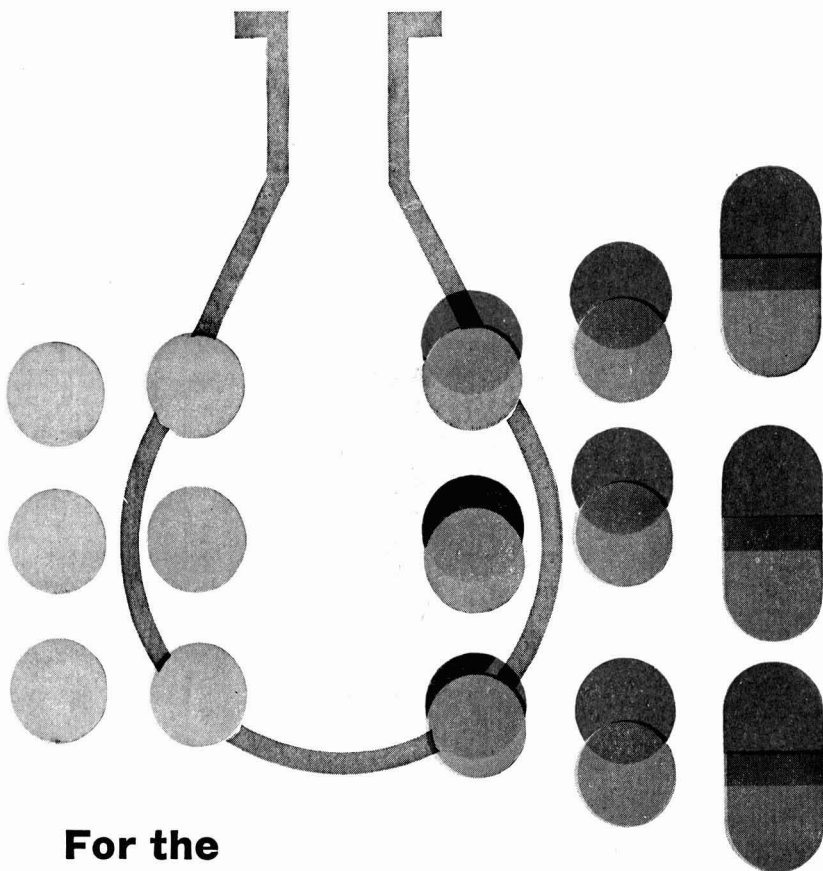
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Full details of advertisement rates will be found at the top of page 217.

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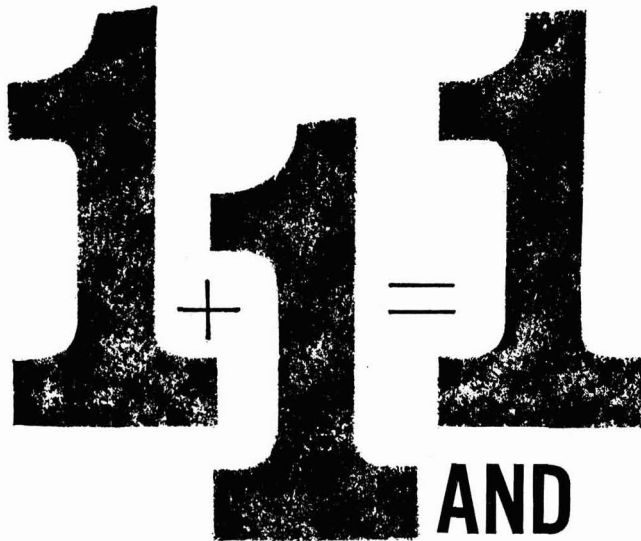
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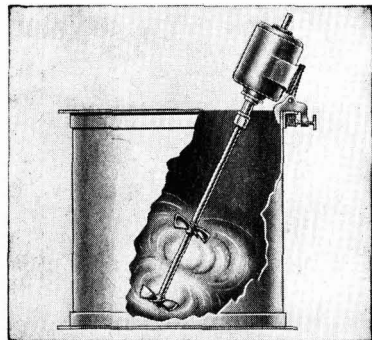
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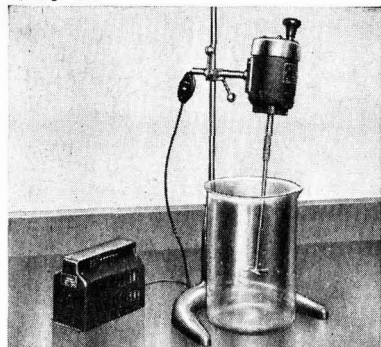
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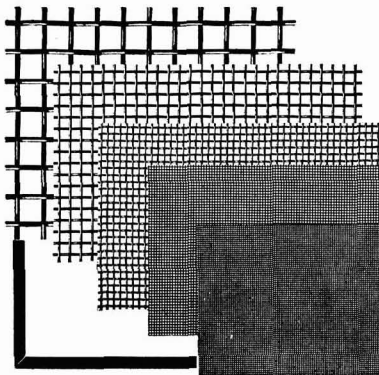


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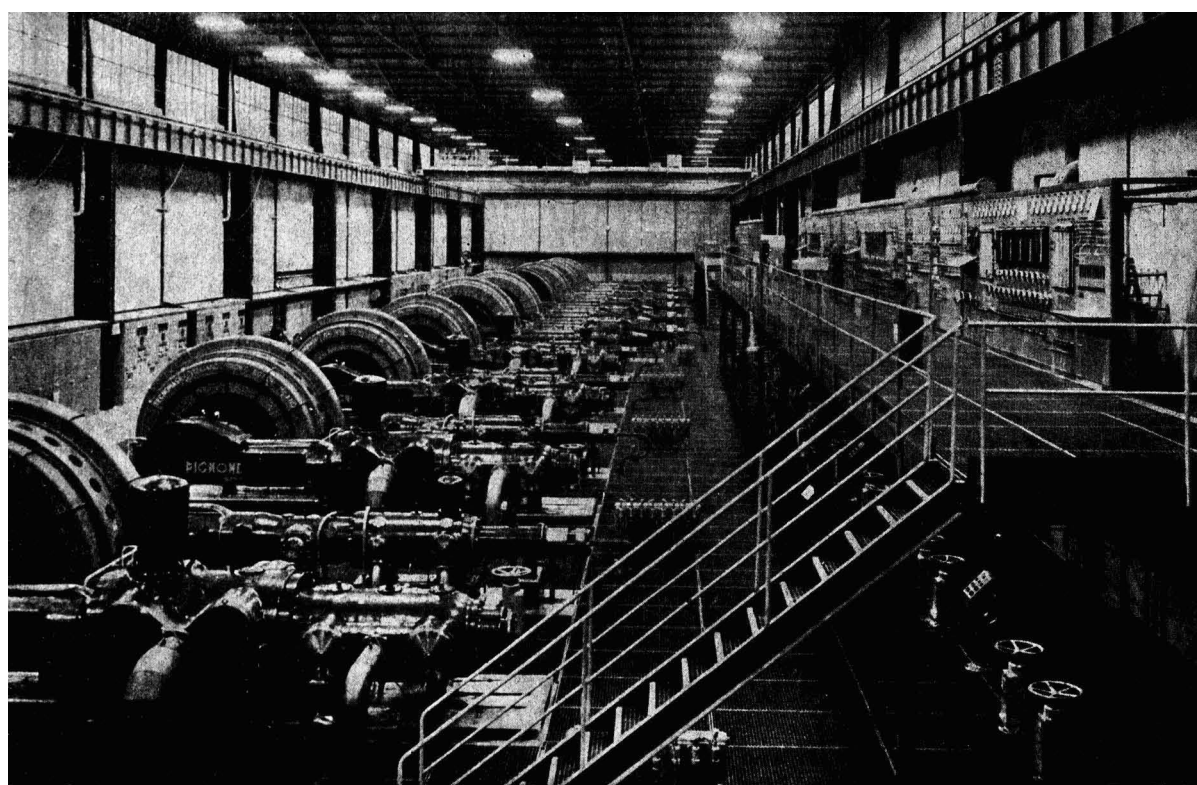
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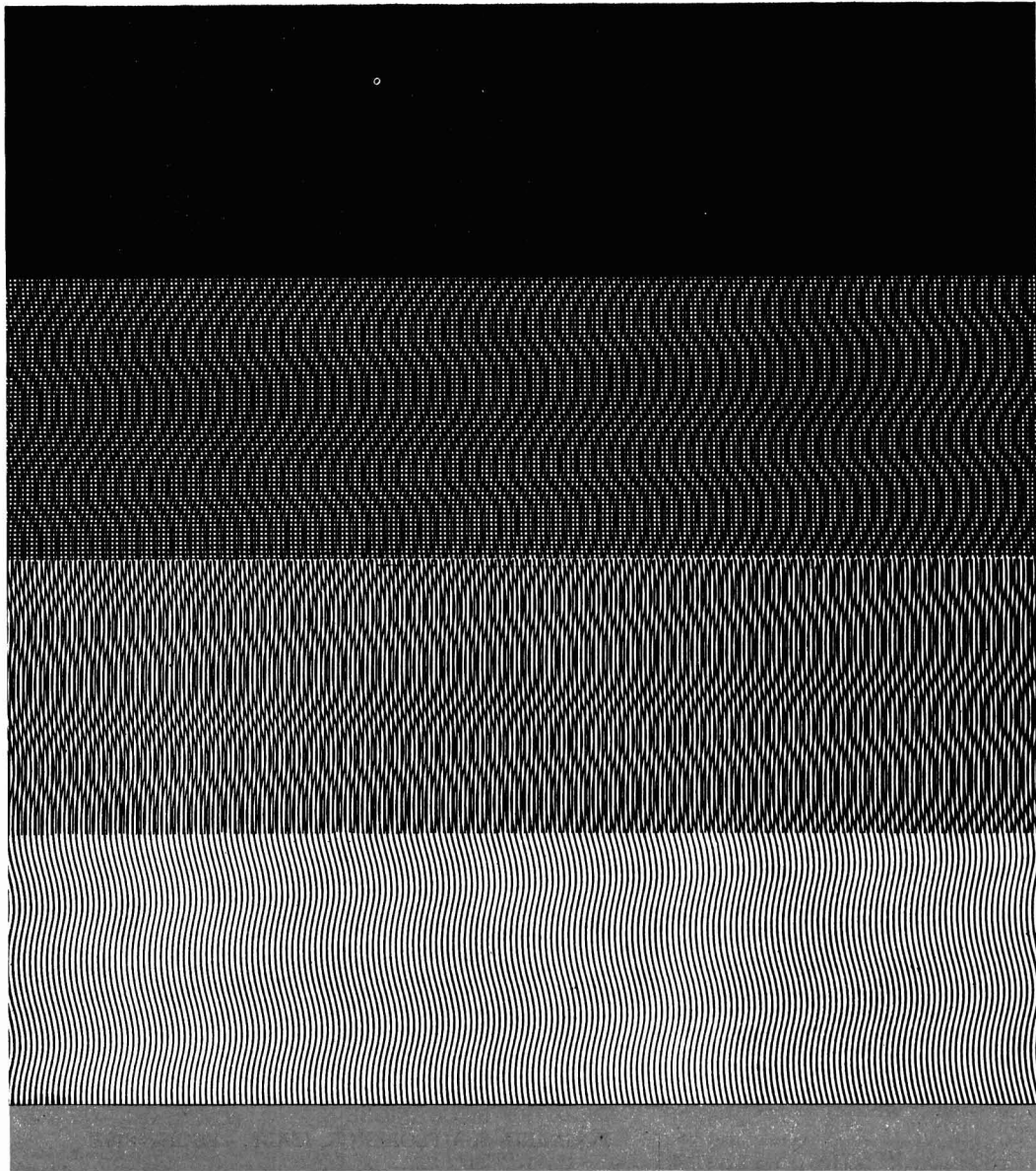
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VOL. 87

No. 2201

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Chemical Age

Incorporating

PETROCHEMICALS and POLYMERS

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RECORD YEAR FOR EXPORTS

B RITISH chemical exports last year rose 2.6% to a total value of £325 million, compared with £316.7 million in 1960 and £293.1 million in 1959. The increase in 1961 is much lower than recorded in 1960 (8%) and—1959 (12%), but it is none-the-less a remarkable achievement in a year when for many chemical products prices were vigorously cut in the face of stiffer competition in most of the world's markets.

Chemical imports last year were valued at £167.2 million, 4.9% down on 1960, thus the recent rise in imports has been reversed. The 1960 total of £175.5 million was 27% up on the 1959 total of £138.2 million, which in turn showed a rise of 15% over 1958.

Analysis of Britain's export/import trade in chemicals shows increases in shipments to the European Free Trade Area and the U.S., with reductions in sales to the European Economic Community, the Soviet bloc and the Commonwealth. Imports from E.F.T.A. and the Soviet bloc were up marginally in each case, with decreases in imports of chemicals from other areas, the fall in U.S. imports being most marked as the following table reveals:

	U.K. exports £'000	Increase or decrease %	U.K. imports £'000	Increase or decrease %
Commonwealth	132,977	-1.1	19,589	-5.1
E.F.T.A.	34,189	+8.8	18,123	+0.6
E.E.C.	54,058	-2.3	66,355	-1.5
U.S.	11,132	+5	44,160	-14.4
Soviet bloc (inc. China)	11,225	-9.6	6,394	+0.2

Totals for individual countries are given on p. 207. Analysis of export performance in individual chemicals shows some interesting results. Big increases were recorded in dyestuffs (up 11.9% to £13.2 million) and drugs (up 10% to £44.7 million), but the most spectacular rise was recorded not in chemicals but in chemical and gas plant (up 110% to £8.46 million). The latter increase is an indication of the all-out export drive on the part of the chemical plant industry and is one of the fruits of closer co-operation between this industry and chemical producers. Among other increased exports were acids, glycerine, acetone, nitric acid, dyestuff intermediates, essential oils and insecticides. Figures for plastics include:

	U.K. exports £'000	Increase or decrease %	U.K. imports £'000	Increase or decrease %
Acrylics	4,434	+5.0	1,247	-12.1
Alkyds	1,196	+6.8	520	-15.4
Cellulosics	2,183	-1.5	4,772	-4.5
Polyamides	*	*	3,316	+15.1
Polystyrene	2,808	+19.0	894	-171.0
P.v.c.	8,838	+1.9	5,539	-17.7
Polythene (sheet, rod, foil, etc.) ...	638	-12.5	*	*
Total—all plastics ...	42,433	-1.0	26,774	-10.9

* = Not shown separately in 'Trade and Navigation Accounts'

(Continued on page 199)

Shell take 20% stake in major U.K. polyether producers



Signing the agreement is N. A. Iliff, Shell Chemical's managing director. Others 1. to r.: F. A. Russell (Lankro), P. S. Linklater (general manager, Administration and Services Division, Shell Chemical), P. J. March, director and general manager, Industrial Chemicals Division, Shell Chemical, and Dr. F. H. Kroch (chairman and managing director, Lankro)

TO ensure and support the continued independent operation of Lankro Chemicals Ltd., arrangements have been made for Shell Chemical Co. Ltd. to acquire 20% of Lankro's issued share capital which consists of £400,000 in £1 shares. Lankro hope that this link will help deter any potential take-over bids.

Founded 25 years ago by Dr. F. H. Kroch, the present chairman and managing director, as producers of leather chemicals, Lankro Chemicals are still a private company. They are still an important supplier of pigments and chemicals to the leather industry, but since the war have expanded steadily into plastics and are now one of that industry's main chemical suppliers as well as being

Britain's major producer of polyethers. Other plastics interests are plasticisers and stabilisers for vinyl resins, surface active agents and intermediates for selective weedkillers.

Turnover last year totalled around £6 million, a substantial part of which represented exports. Lankro's plant at Bentcliffe Works, Eccles, Manchester, is on a site that allows room for further expansion.

For the time being, Lankro will remain a private company controlled by the Kroch family interests; Shell Chemical will not be represented on the Board. It is planned at some later date to seek a Stock Exchange quotation for the shares.

Consolidated Zinc – Rio Tinto merger will involve chemical interests

THE proposed £87.5 million merger of the Consolidated Zinc Corporation Ltd. and Rio Tinto Co. Ltd. will bring together the chemical interests of Consolidated Zinc and the pyrites operations of Rio Tinto.

Among Consolidated Zinc's subsidiaries are:

- Aluminium Sulphate Ltd.
- Basic Slag and Phosphate Companies.
- Consolidated Beryllium Ltd.
- Imperial Smelting Corporation Ltd.
- Frickers Metal and Chemical Co. Ltd.
- Imperial Smelting Processes Ltd.
- Magnesium Holdings Ltd.
- Newport (Mon.) Paints and Chemicals.
- Orr's Zinc White Ltd.
- Pure Chemicals Ltd.

Imperial Smelting are producers of sulphuric acid, hydrofluoric acid and fluorocarbons. Consolidated Zinc are also partners in British Titan Products Co. Ltd., one of Britain's two producers of titanium oxide. Consolidated Zinc are also partners in the £100 million Austra-

lian aluminium project.

Rio Tinto's subsidiaries include:
Kern Oil Co. Ltd.
Pyrites Co. Ltd.
Rio Tinto Management Services (U.K.) Ltd.

Rio Tinto have large uranium interests in Canada, where its contracts with the Government will run until 1966; they have a half-share in Thorium Ltd.

The merged company will be known as Rio Tinto-Zinc Corporation Ltd. The board will comprise the present directors of the two companies. Chairman will be Mr. A. M. Baer, chairman of Consolidated Zinc. Deputy-chairman will be Mr. Gerald Coke, chairman of Rio Tinto, and Lord Baillieu, deputy-chairman of Consolidated Zinc. Managing director will be Mr. Val. Duncan, now managing director of Rio Tinto.

The scheme is expected to lead to more stable and progressive income and will provide the strong financial base needed for further development and expansion.

Lower Shell prices for MEK and other solvents

PRICE of methyl ethyl ketone has been cut by £7 per ton by Shell Chemical Co. Ltd., with effect from 29 January. Other Shell Chemical solvent prices have been reduced from the same date as follows:

Methyl isobutyl ketone, by £10/ton.

Methyl isobutyl carbinol, by £4/ton.

Diacetone alcohol, by up to £11/ton in bulk and by up to £6/ton in drums.

IPS grades, by 2½d/gall. in bulk only.

A further move towards full standardisation of solvent price schedules will be made by supplying diacetone alcohol in free and non-returnable 45-gall. mild steel drums and by establishing a bulk/packed differential of 4½d/gall for IPS grades.

Du Pont cut prices of polyester film

LOWER PRICES for 14 types and gauges of Mylar polyester film, and the commercial introduction of four new forms of the film, have been announced by Du Pont de Nemours International S.A., 81 Route de l'Aire, Geneva. The reductions reflect savings resulting from improved manufacturing efficiency and growing production volume. They range up to 25 cents/lb. depending on type and gauge.

It is expected that the price cuts will broaden the market for Mylar.

The new products include Type T Mylar. Available in three thicknesses ranging from 0.0127 to 0.0254 mm., it is characterised by extremely high tensile strength in the longitudinal direction. The fourth new type announced, 150-gauge Type S Mylar, has superior surface characteristics and high transparency. It is mainly intended for use in stationery supplies.

Polyester film is used in electronics, metallic yarns, packaging, including vacuum packaging, while combined with polythene, it made possible the 'boil-in-the-bag' method of packaging frozen foods.

Butakon prices cut

Prices of Butakon S butadiene copolymer resins have been cut by I.C.I. and S.8551 is now priced at 33.5d/lb. and S.7001 at 30.75d/lb.

Heavy chemical workers wages deadlock ended

THE deadlock over the wage settlement for workers in the heavy chemicals industry, which has lasted for three months, was brought to an end when the Chemical and Allied Industries Joint Council met under the independent chairmanship of Prof. H. S. Kirkaldy (see CHEMICAL AGE, last week).

Employers agreed to offer an increase to their 60,000 workers on 16 March, on the understanding that if the offer were accepted it would be backdated to 1 March, a month before the end of the pay pause. The unions will not learn the amount of the offer until after 1 March.

Negotiations between the unions and I.C.I. over the wage claim of 12,000 skilled workers, which took place last week, were adjourned for a month.

Project News

Lindsey Prayon phosphoric unit will be on stream in June

THE new phosphoric acid plant of **Lindsey and Kesteven Fertilisers Ltd.**, Saxilby, Lincoln, which will enable the company to produce triple superphosphates, is being supplied by **Engineering and Industrial Corporation S.A.**, Belgium. This Prayon plant will have a capacity of 25 tons of acid a day in the first stage of development; production is due to start early in June.

It will be the first complete Prayon plant to be installed in the U.K., comprising all three sections of attacking, filtration and concentration into 48% P_2O_5 . The filtration section will be capable of producing 50 tons of acid a day. Initially the attacking and concentration sections will have capacities for 25 tons/day.

Bradley Pulverizer Co., London S.E.1, agents for Engineering and Industrial Corporation, are supplying separately the complete milling installation including a Bradley-Poitte mill with all auxiliaries and feed equipment to tie in with the phosphoric acid unit. Both plants will be designed on the most modern lines and incorporate many special features and improvements.

Meldrum and Smith, Boston, are the architects and surveyors for the storage and plant buildings which have been fabricated and erected by Craven and Nicholas, Boston. Builders' work on floors and outside roadways is being carried out by Pumfrefs of Gainsborough. **Spencers (Melksham)** have now started plant erection, assisted by Mr. Knowles, Lindsey, and Kesteven's own engineer. Spencers have also carried out alterations to the existing granulation plant to enable the company to use phosphoric acid and anhydrous ammonia in its compounds, giving better granulation and storage qualities in a wider range of high analysis fertilisers.

Tonnage oxygen projects keep B.O.C. busy

● INSTALLATION of nine large oxygen production plants, including the company's first fully automatic plant, and the bringing towards completion of 11 further plants required during 1962, gave the Engineering Division of the **British Oxygen Co. Ltd.** a busy year during the twelve months ended 30 September, 1961. This was stated by Mr. J. S. Hutchison, British Oxygen chairman, in his annual review.

He noted that British Oxygen were now supplying the steel industry with tonnage oxygen from plants having a total capacity of 1,830 tons/day, and during 1961/62 expect to bring into service further tonnage plants raising the capacity to 3,500 tons/day. These figures do not include two plants, each of 100 tons capacity, sold to the Scottish Gas

Board for the Lurgi gasification project at Westfield, Fife, nor a number of installations overseas.

Of the planned 60% increase in the calcium carbide producing capacity of B.O.C.'s Norwegian subsidiary, **Odda Smeltewerk (C.A.)**, 23 December, 1961, page 1002), Mr. Hutchison stated that this project is dependent on the successful outcome of negotiations for an extension of the power supply—B.O.C. are joint owners of the hydro-electric scheme which supplies the Odda plant.

Mr. Hutchison's comments on the company's trading position and prospects are reported on page 199.

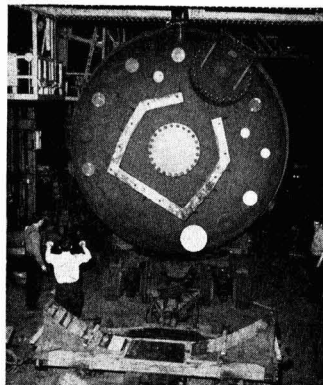
Chemstrand expansion nears completion at Coleraine

● EXPANSION of capacity at **Chemstrand's Coleraine**, N. Ireland, plant for production of Acrlan acrylic fibre from the initial 10 million lb./year is very nearly completed. The plant is partly in operation and will be fully on stream early in the spring. The further project to expand capacity from 15 million lb. to 25 million lb./year is still in the design stage; ground has yet to be broken.

Autodrome's third penicillin fermenter for Beechams

● THIRD penicillin fermentation column fabricated by **Autodrome (Engineers) Ltd.** at their Platt Street, Dukinfield, works for **Beecham Research Laboratories Ltd.** has been despatched to the new £2½ m. antibiotic plant at Worthing. It will shortly take its place with the other fermenters which are already producing the new Beecham semi-synthetic penicillins.

Approximately 40 ft. long and weighing 50 tons, this fermenter consists of an inner jacket of stainless steel-clad plate with an external jacket of mild steel specially designed to give a uniform



The fermentation column is loaded on its trailer at Platt Street works

heating surface. **Autodrome (Engineers)** were responsible for the design as well as the manufacture of the vessel which was fabricated to B.S. 1500 Class II requirements.

The mixer, designed in co-operation with **Beecham Research**, is one of the largest of its kind in the U.K., consisting of a 375 h.p. motor driving a single helical gearbox. A solid stainless steel mixer shaft extends the full length of the fermenter which is supported on six bolt-type support legs.

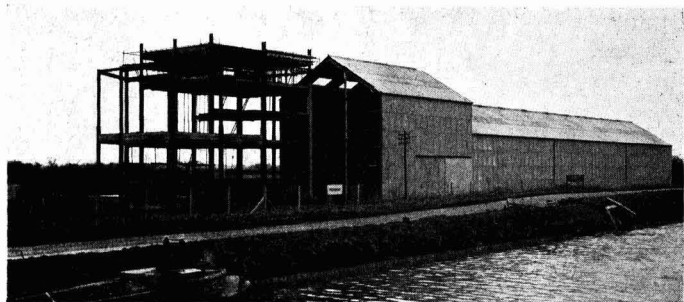
Owing to its size and weight, the mixer will be fitted at Worthing after the fermenter has been carefully positioned on prepared foundations.

Petrocarbon polystyrene plant for Japan

● AN agreement covering the production of polystyrene has been signed between **Petrocarbon Developments Ltd.**, and the Japanese company, **Denki Kagaku Kogyo K.K.** (Electrochemical Industrial Co. Ltd.) of Tokyo. A plant to be constructed will have a capacity of approximately 12,000 tons a year. Much of the engineering work will be done by the clients in Japan. About £330,000 is involved.

The plant will be based on Petrocarbon's suspension polymerisation process for which Electrochemical Industrial

(Continued on p. 200)



View of plant house, mill house and storage buildings at Lindsey and Kesteven's Saxilby site



★ **ALTHOUGH** most of the large British chemical producers are keenly interested in the Gas Council's large-scale imports of natural gas from the Sahara, it would seem that the first to make use of this feedstock might well be the Rotterdam works of I.C.I. As already reported in this journal, large deposits have been found in the Groningen area; more recently another deposit has been discovered 30 km. south at Annerveen.

Natural gas will be available to the new I.C.I. complex at Rozenburg. The company is also fortunate in the fact that there are already three major oil refineries in the Rotterdam area, those of Shell, Esso and Caltex. The company is therefore assured of adequate supplies of petrochemical raw materials at low cost from one or other of those sources.

In addition there are a number of other industrial companies in the area which can supply raw materials or buy from I.C.I.

★ **FOLLOWING** my notes last week on alleged infringements of drug patents I have been interested to see in West German newspapers reports that numerous pharmaceutical preparations are currently being produced at the Grünau chemical plant in East Berlin which are covered by patents of concern in the Western world, although no licence agreements have been drawn up in respect of such production.

The Grünau plant has just announced plans to spend DM 3,500,000 (East) on the erection of production facilities for Chloroquine, a rheumatism and malaria cure stated in Federal Germany to be direct imitation of a West German product. Complete demand of the Eastern European Communist bloc and the Soviet Union will be covered by this unit, it is believed.

★ **THE** development of a major new use for an already established product has saved many a sales manager from nagging fears of production units working well below capacity. Never was this truer than of the plastics industry today. That is why I am glad to be able to report on new markets for polythene.

According to the Tea Research Institute of Ceylon polythene bags are fast replacing traditional bamboo baskets as receptacles for young tea plants before they are planted out. Many estates have switched over to polythene film and one firm has sold in the space of a year 10,300 lb. of polythene tubular film to some 150 estates, or enough to make 2 million bags. Tea plants grown in bags

of polythene film are better developed, apparently, than those grown in bamboo baskets.

Another newly developed market for polythene has been taken advantage of by Monsanto Chemicals Ltd., who have captured a major share of the Hong Kong market for the production of artificial flowers. Hundreds of tons are shipped each year from Southampton docks to help this booming Commonwealth industry turn out flowers worth £5 million a year.

★ **A RECENT** report in this journal (16 December, p. 958) to the effect that Dr. W. A. Menne, a director of Farbwerke Hoechst, was to visit Washington on a personal mission for talks with Government officials on imports of U.S. polythene, has set the transatlantic and transcontinental 'phones buzzing in the past few weeks.

After fully investigating the report, I am pleased to tell readers that no direct talks between the German chemical industry and the U.S. Government are contemplated. This journal's report was based on an interview reported in a German journal—which incidentally was quoted in the Press of many countries. The journal concerned has now admitted in print that the interview never took place. All the conclusions that have been based on this imaginary and 'sensational' interview are therefore without foundation.

★ **INTERESTING** properties are claimed for a new type of plastics material which has been developed by Eastman Chemical Products Inc. The new materials have been given the name, polyallomers, and are described as 'stereo-regular crystalline plastics'. They have a highly crystalline structure but they differ in chemical composition from other crystalline plastics materials. Polyallomers made from propylene and ethylene, for example, will be as highly crystalline as polypropylene but will contain both propylene and ethylene.

Polyallomers can be made from mono-olefin or di-olefin hydrocarbons, acetylenic hydrocarbons and vinyl monomers. Eastman say that the compounds are quite different from blends of polymers of the monomers involved and also distinctly different from homopolymers or copolymers of these monomers produced by standard polymerisation processes.

One of the most interesting polyallomers evaluated by the Eastman laboratories has been propylene polyallomer with ethylene. Typical formula-

tions when compared with polypropylene are said to have improved impact strengths and improved resistance to low temperature brittleness. Their resistance to heat distortion is not quite so good as that of polypropylene but better than that of rubber-modified polypropylene plastics and better than that of high density polythene.

Eastman have patent applications which, it is expected, will provide extensive coverage of these materials. The patent situation in the entire field in somewhat tricky. Natta has already objected to Eastman's 'stereosymmetrical' polypropylene. Eastman's answer to Natta's charges appears on p. 204.

★ **ONE** of the pioneers in chemical market research in this country, Mr. I. D. O'Keefe, has joined Arthur D. Little Inc. and as stated in 'People in the News' is now based at that organisation's European office in Zurich. Established at Zurich just over ago with a staff of two Americans, A.D.L., now have a staff of 17, with Europeans predominating.

Arthur D. Little, who have a large research institute in Scotland, have a world reputation for their work in the U.S. on management services and laboratory research. Their European office is mainly concerned with market studies in chemicals and metals, with a smaller interest in consumer marketing—but not of the door-to-door variety—and technical-economic feasibility studies.

The staff at Zurich is multi-national and multi-lingual and a number have qualified at the Harvard Business School in addition to holding European science degrees.

★ **THE** U.S. Congress is now studying President Kennedy's proposed federal budget; the President is asking for \$925,000 million to run the Government in 1963. Several measures included in the President's legislative proposals will concern the chemical industry. Among them are plans for a new and more liberal trade policy, investment tax credit, stiffer Government control on food and drugs, new laws to combat air pollution, and federal funds for a mass immunisation programme.

The budget the President plans shows a small surplus on paper but whether or not it balances in practice depends on two things—the continued recovery from last year's recession and approval of revenue-boosting measures. One of these measures is sure to meet with criticism from the chemical industry—that is the proposed charges on the use of inland and coastal waterways. The President plans to ask Congress to impose a tax of 2 cents a gallon on all fuels used in transportation on these waterways.

Alembic

FIRST U.K. COURSE FOR CHEMICAL PLANT OPERATORS OPENS AT STRETFORD TECHNICAL COLLEGE

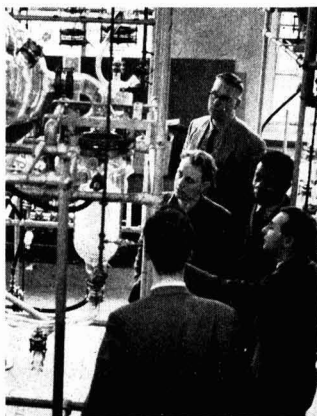
CHEMICAL plant operators will be able to take a new specially-designed course at Stretford Technical College, the first of its kind in the U.K. Aim of the course is to help companies whose operators are employed on a shift basis. Each class is repeated, so that if a student must miss a particular session he can catch up later in the week.

Most of the students are men aged between 20 to 30 with a reasonable amount of chemical industry experience. Examinations, at intermediate and final levels, are set by the City and Guilds of London Institute. A final pass gains certification as a qualified chemical plant operator.

A £6,000 laboratory, completed early this year, simulates factory conditions. The liquid side of the laboratory is equipped with glass plant made by Q.V.F. Limited, chemical engineers in glass, Stoke-on-Trent.

Installation of the plant was supervised by Mr. C. K. McEwen, chief Q.V.F. design engineer who, in collaboration with Mr. G. F. Jones, head of the Science Department at the college and Mr. M. A. Ellison-Taylor, lecturer in charge of the course, was responsible for designing the installations to meet special requirements of students.

Visibility is most essential in the



M. A. Ellison-Taylor, lecturer in charge of the course, right, is seen with operators during the course

laboratory. Lecturer and students can follow every operation clearly while operators can see exactly what happens if anything is done incorrectly.

Q.V.F. units erected at the laboratory include 100-litre and 50-litre distillation

units; a climbing film evaporator; a twin 50-litre precipitation unit; gas/liquid or vapour/liquid contactor unit; an ion-exchange column; heat-transfer apparatus and a fluid-flow demonstration unit. Total value of glass plant is close on £3,000.

Students attend the course from industrial companies and organisations in the Manchester and Salford areas. Thanks to the unique glass plant, they are able to study working techniques of chemical production.

Technical Finance Co. receives 150 inventions

In two weeks more than 150 inventions and innovations have been submitted to Technical Development Finance Ltd., the new company set up to help finance promising discoveries (see CHEMICAL AGE, 20 January, page 127). All the ideas received will be carefully screened, but only a few have passed preliminary study. The new company's capital now stands at the planned £2 million.

Bradford adhesion course

The Bradford Institute of Technology are holding a course on adhesion for graduate chemists on 23 and 24 February, 1962. Lectures will include 'Physics of adhesion', 'Chemical aspects of adhesion', 'Measurement of adhesion', 'Pressure-sensitive adhesives', 'Adhesives applied to melt and solution' and 'Natural adhesives'.

Record Chemical Exports

(Continued from page 195)

Exports of tetraethyl lead were lower by 21% at £10.48 million. Other reductions experienced included ammonia, chloride of lime, hydrosulphite, carbon blacks, ethyl alcohol, phenol, sulphonamides and acrylic acid.

Plastics materials exports as expected were down 1% by value, but imports were lower by 10.9%. Analysis of the results reveals some interesting figures with the biggest rise in exports shown in polystyrene (up 19%), with imports of this polymer down by 171%. Although exports of plastics materials were 1% down by value, the fact that by volume they were 18% higher reflects the struggle for markets.

Clearly, 1962 will call for a supreme effort if the British chemical industry is to experience a quickening of the growth of its export trade. Pressure on prices will continue, and over capacities in many areas will mean continuing stiff competition. There is no doubt, however, that the industry is well geared to face a struggle for world markets and the signs are that it will at least maintain its position in 1962 and most probably improve on it.

Low off-take for neoprene production cuts B.O.C.'s profits on acetylene

IN the first full year of operation of the carbide and acetylene factory at Londonderry, Northern Ireland, the off-take of acetylene by the principal customer (acetylene from the plant is used in Du Pont's nearby neoprene plant) was less than had been expected, and although there was steady improvement during the year, a loss was experienced instead of the profit expected from fuller working. This was stated by Mr. J. S. Hutchison, chairman of the British Oxygen Co. Ltd. (whose subsidiary Carbide Industries Ltd. operates the plant) at the company's annual general meeting. Mr. Hutchison also named the 2d/gall. tax on oil as an "unlooked-for burden" bearing directly on the Londonderry plant which is a large user of power from the adjacent oil-fired electricity station, and adding some £150,000 a year to the costs of a product intended to a substantial extent for competitive export markets.

On the brighter side, Mr. Hutchison noted that sales of Vandike vinyl acetate emulsions had improved substantially. In this most competitive business, it was necessary to develop new brands quickly and to find new outlets. Melamine sales declined a little owing to competition

from new capacity in all producing countries; this situation was expected to continue for some time.

B.O.C.'s sales of gases advanced all round during the year, with nitrogen and hydrogen making a better showing than expected, and argon and propane well ahead, helped by new arrangements for bulk supply in liquid form. The volume of liquid oxygen sold increased by 4%, although 2% of previous sales had gone over to tonnage oxygen. A change in the pattern of demand for liquid oxygen has led to the installation of several large new plants.

Of the current high rate of activity in the building of large oxygen plants (see 'Project News') Mr. Hutchison said it was probable that this activity would lessen as the first peak of expansion in U.K. oxy-steelmaking gave way to a period of consolidation. There might be a levelling off in new business of this kind over the next two or three years, while export work might call for a higher proportion of the company's attention.

British Oxygen's increased profit for the year was noted in CHEMICAL AGE, 30 December 1961, p. 1031.

New company formed to make MEKP — Project news from p.197

have been granted a non-exclusive licence.

This is the third large polystyrene project undertaken by Petrocarbon within the last two years. The others were in Rumania and Poland.

Organic peroxides to be made at Sheerness

● ORGANIC peroxides, notably methyl ethyl ketone peroxide which is used in polyester resin systems, are to be made at a new works nearing completion at Sheerness by a new company, **Perox Chemicals Co. Ltd.** A site of more than 250,000 sq. ft. has been purchased and production is due to start this month. In addition to MEK peroxide, several other organic peroxides will be produced.

Methyl ethyl ketone peroxide is a low-flash point catalyst. It is stated that the problem of spontaneous combustion,

which can develop if the catalyst is contaminated, has been overcome. The new product is said to be highly resistant to contamination. The flash point of 190°F is said to present no transport difficulties, making the product safer to handle (see also 'People in the News').

S.African coking plant contract for Woodall-Duckham

● CONTRACT worth about £4.75 million has been awarded to the **Woodall-Duckham Construction Co. Ltd.**, London, by the **South African Iron and Steel Industrial Corporation** for an extension to the coke oven plant at Varnderbijl Park. The contract covers two batteries, each of 57 W-D Becker coke ovens complete with by-product and coke handling plant, and also a comprehensive coal handling system.

B.I.P. rebuild Beetle and Melmex plants

● PLANTS of **B.I.P. Chemicals Ltd.** for the production of Beetle and Melmex moulding powders and resins are now

being rebuilt and modernised to help meet an anticipated steady growth in demand. The British Industrial Plastics Group, a subsidiary of Turner and Newall Ltd., have at the planning stage an increase in capacity for Filon polyester resin glass fibre reinforced sheets.

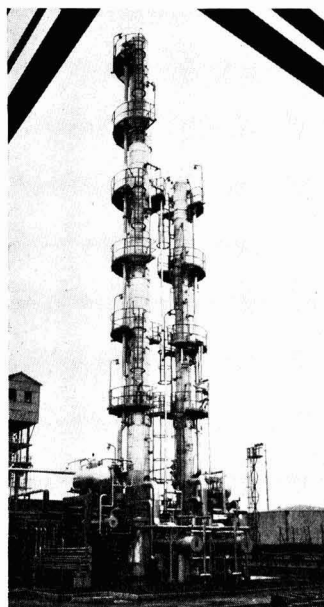
Another member of the Turner and Newall Group, the **Washington Chemical Co. Ltd.** are now well advanced with extensions to their chemical works at Washington, Co. Durham, where additions to the research block are to be completed this year.

Two contracts for W. C. Holmes and Co.

● AN order, worth more than £100,000, has been placed with the Gas Cleaning Division of **W. C. Holmes and Co. Ltd.**, Turnbridge, by **Heenan and Froude Ltd.**, Worcester, for a Holmes-Schneible multi-wash installation for cleaning waste gases from the four incinerators to be installed at the Govan refuse disposal works at Glasgow.

This division of W. C. Holmes has also received an order from Finland for a chemical plant designed to cool and to remove sulphur dioxide from flue gases from the boilers of a large ocean going oil tanker. The cooled, de-acidified gas is to be used to provide a safe 'blanket' over the oil cargo, thus eliminating the possibility of fire or explosion.

Propylene trimer unit for B.H.C. Grangemouth



Propylene trimer unit at the Grangemouth factory of British Hydrocarbon Chemicals Ltd., showing the main and secondary columns, 120 ft. and 80 ft. high respectively. Mechanical installation for the unit was recently completed by Taylor Woodrow Construction Ltd., the design and engineering being carried out by Stone and Webster Engineering Ltd. of London

Stinnes' new phthalic route allows quick change of raw materials

ACCORDING to details supplied to CHEMICAL AGE by Ruhröl Chemiewerk der Steinkohlenbergwerke Mathias Stinnes AG of Bottrop, Federal Germany, an operational division of the Steinkohlenbergwerke Mathias Stinnes AG coal-mining and carbon chemicals concern of Essen, average yields of 90% pure phthalic anhydride from naphthalene and of from 92 to 94% from *o*-xylene can be achieved by using the company's newly developed process.

Based on a special catalyst, this permits the processing to phthalic anhydride of either *o*-xylene or naphthalene, or of a mixture of both, without change of contact, switches of feed material being possible in a few hours. Maleic anhydride is produced as a by-product and processed further to pure fumaric acid; fumaric acid yield in terms of naphthalene or *o*-xylene feed is of 5 to 6% pure acid.

Actual production of maleic anhydride, also to a Ruhröl Chemiewerk process, may be carried out in the same plant as the phthalic anhydride process, only a change of catalyst being necessary, since the apparatus required for each production scheme is virtually similar. The firm considers this a great advantage in view of current over-capacity for these products on world markets.

The maleic anhydride process itself differs from former methods in that some 85% of the crude maleic anhydride is

condensed from reaction gases and processed to pure maleic anhydride by a simple distillation, only some 15% being produced in the form of aqueous maleic acid from a water-washing process. This aqueous acid solution is normally converted into fumaric acid.

The same Bottrop plant has also brought into operation a large-scale unit for the production from acenaphthene base of naphthalic anhydride. This, too, works to a process developed by the operator, the feed being oxidised catalytically in gaseous form with air instead of in liquid phase with chromic acid, as with previous processes. Yields of almost 100% and of very high purity product are reported. Quantities of 3 to 5% hemimellithic acid—hitherto never produced on a large scale—are produced as by-products of the process. Ruhröl Chemiewerk believes that this trivalent aromatic acid will be of interest to the plastics industry.

Apart from synthetic ammonia and fertilisers production, Ruhröl Chemiewerk have an output programme including capacities of 17,000 t.p.a. phthalic anhydride, 6,000 t.p.a. maleic anhydride and 2,000 t.p.a. fumaric acid, as well as naphthalic anhydride, hemimellithic acid, tetra-hydro-phthalic anhydride, hexa-hydro-phthalic anhydride, maleic acid, succinic acid, phthalimide and phthalodinitrile.

COURTAULDS REPLY TO TAKE-OVER BID

“I.C.I.’s 1961 profit will be down 25%, compared with 5% dip for Courtaulds”

A REDUCTION in profit of at least 25% during 1961, compared with a 5% lower profit for Courtaulds, was forecast by Mr. C. F. Kearton, a deputy chairman of Courtaulds Ltd. at the Press conference called by Courtaulds on Wednesday, 25 January, following publication of the company's financial statement earlier the same day (see CHEMICAL AGE last week, page 164).

This was one of many ‘broad-sides’ fired by Courtaulds at their conference, the first they have called on I.C.I.’s take-over bid, compared with the two held by I.C.I. Mr. Kearton, a Fellow of the Royal Society and a former I.C.I. research worker, joined Courtaulds in 1946. He is now in charge of marketing and is chairman of British Celanese Ltd.

Overcapacity in chemicals

Mr. Kearton declared that he could not see why I.C.I. was regarded as the growing, dynamic company; in fact Courtaulds filled that role. He also said that there had been considerable overcapacity in chemicals in the past year and that that situation affected I.C.I. He pointed out that Courtaulds had come up against overcapacity conditions five years ago and had had to struggle. The company was now out of the very difficulties which during the 1960's I.C.I. would run headlong into for the first time.

“All over the place, I.C.I. are feeling our pressure” and they were closing down several plants because they could not compete with Courtaulds. In the viscose field, Courtaulds could produce at a lower price than anyone in the world, including the Japanese.

In their statement last week, Courtaulds said that a detailed appraisal of conditions if Britain joined the Common Market suggested that the profits of £28.5 million forecast for 1964-65 were unlikely to be reduced by even 10% on that account. In contrast, the chemical industry was more vulnerable to European competition.

Courtaulds were particularly well placed to take advantage of the opportunities which would arise from closer economic integration in Europe. They had important manufacturing subsidiaries and associated companies in the main European markets. They had already set-up special marketing offices in France, Germany and Scandinavia.

British Celanese were already exporting to Europe where the development of

acetate fibres had been slower than in the U.K. and North America; increased expansion of those exports, notably Tricel, was forecast. A Courtelles works had been set up in France and the

Kearton replied “Well, in the national interest, we thought at the time that I.C.I. needed a bit of propping up”.

As the volume of I.C.I.’s sales was declining, it was difficult to see any basis for the company’s claim that profits were not going down. On one product alone, polythene, I.C.I.’s profits had dropped at the rate of £6.5 million a year during the last six months. Mr. Kearton suggested that I.C.I. was feeling pressure from Courtaulds all along the line—not only in Tricel’s competition with Terylene, but in the field of paints, with Gaymel making inroads into markets previously served by Dulux and Dulite. It was Courtaulds who were making the new chemicals.

I.C.I. had made very high profits out of nylon and Terylene in the past two or three years, but those days were coming to an end. It was to safeguard their position that I.C.I. wanted to acquire Courtaulds know-how and their products. Mr. H. R. Matthys, chairman of British Cellophane Ltd., declared that with the approaching end of nylon and Terylene patents, I.C.I. feared the competition they would have to meet from Courtelle and Tricel.

Quotes from Courtaulds

I.C.I.’s profit for 1961 will be down 25%; Courtaulds’ will be only 5% lower

Courtaulds, not I.C.I., are the dynamic, growing company

Courtaulds have overcome overcapacity problems, I.C.I. have still to meet them

Chemicals are more vulnerable to European competition

I.C.I. held a pistol at Courtaulds’ head by charging high prices for chemicals

I.C.I. profits on polythene dropped at rate of £6.5 million/year in last half of 1961

expected rapid growth in demand for the fibre in Europe would require substantial expansion of the present capacity. British Cellophane with the largest and lowest cost production operations in Europe, were also well placed to compete there.

In the long term, therefore, Courtaulds looked forward with confidence to closer economic ties with Europe.

Mr. Kearton maintained that the Rhône-Poulenc/Rhodiaceta merger had come about not because they feared competition from I.C.I., but because they were anxious about the inroads being made on their markets by Courtaulds.

Since 1 January, I.C.I. had had to reduce the prices of many chemicals and volume had gone down. If that was the way to increase profits, it was an odd way. Mr. Kearton said that the prices charged by I.C.I. in the past for supplying acrylonitrile to Courtaulds were still above those charged on the U.S. home market. In fact, I.C.I. had “held a pistol to our heads” by charging Courtaulds high prices for chemicals.

Asked why Courtaulds’ shareholders were subsidising I.C.I. in this way, Mr.

Courtelle’s success

Courtelle, said Mr. Kearton, had been much more successful than the Chemstrand product Acrilan, so far as the speed at which it had become profitable was concerned. In two years, Courtelle had reached a position which had taken Terylene 14 years to attain.

Asked what Courtelle was used for, Mr. Kearton said that it “is going to make the sheep useful for mutton and nothing else”.

Courtaulds’ Press conference was opened by Sir John Hanbury-Williams, chairman, who in view of his retirement later this year, asked Sir Alan Wilson, F.R.S., chairman-elect, and other members of the board to answer questions since they would be taking responsibility in the coming years. He declared that the board represented a young and well-balanced team and that only two of the directors were “outside directors”. He also stressed that the decisions of the board on the I.C.I. bid had all been unanimous.

Sir Alan Wilson declared that it was not true that Courtaulds’ profit forecast for 1962-63 had shown a very rapid change in thinking between December

and today. The preparation of the "routine report" referred to in the latest financial statement was started in July and completed in September and handed to I.C.I. in December, not as a considered document but solely as a general indication of profit trends. The same report forecast a profit of £22.5 million for the 12 months from 1 October this year to 30 September, 1963.

The new forecast of £23 million for the year 1 April 1962 to 31 March 1963 merely advanced the original forecast by six months. That acceleration had been made possible by the acquisition of British Enka in 1961.

Courtaulds opposed the bid because I.C.I.'s philosophy was unsuitable in selling made-made fibres. Also, the value of Courtaulds' shares was far greater than that of the I.C.I. shares, offered in exchange. Courtaulds' shareholders were being offered shares in I.C.I. which were bound to depreciate.

Referring to the question of negotiations with I.C.I., Sir Alan rejected the suggestion that discussions on the take-over had reached a very advanced stage. In September and October, the two companies were merely discussing the methods of strengthening Terylene. It was not until 15 November, that Mr. Chambers brought up the question of a take-over bid.

"Not Negotiation"

Although Courtaulds had made it clear that they did not favour a merger, Mr. Chambers had said on 15 November that he had it in mind to make such a high bid that the Courtaulds board could not resist. Courtaulds therefore thought it right to listen to proposals and they had submitted estimates to indicate profit trends. First mention of terms came on 23 November, when a two-for-three exchange was mentioned. That was far from being so high that Courtaulds could not resist. In addition it was not negotiation.

Sir Alan said that the cut in Courtaulds interim dividend had been made on social grounds and it was obviously a mistake. At the time, the company was engaged in the later stages of rationalisation. Factories were being closed and the board had been told that the workers might be alienated if the dividend was not cut. It was a political decision. It would not have been possible to have told the shareholders.

Asked why it was thought that I.C.I. shares were a depreciating currency, Mr. A. W. Knight, finance director, said that I.C.I. had not yet published their 1961 results. He had seen an economist's study which suggested that I.C.I.'s profits were going down. Their profits in the second half of 1961 would, he suggested, be no more than £25 million and for the whole year they would be down by 25%. He maintained that I.C.I.'s prices were higher than those of their European competitors and when that became apparent, the share price would fall.

Mr. Kearton stated that I.C.I. were having to cut their prices abroad—not because they wanted to, but because they were being forced to do so.

The staff of Courtaulds last week issued a statement saying that it was resolutely opposed to the I.C.I. bid. Reasons given were:

Confidence in the board's ability to direct the affairs of the company to the maximum benefit of all; they were immensely proud to work for Courtaulds with its fine traditions; they had faith

in the future of Courtaulds and in the company's potential for rapid growth; they found nothing to inspire confidence in I.C.I.'s record in fibres and textiles; a take-over would be to the detriment of the textile industry, of stockholders of Courtaulds and the employees of both companies. It would stultify initiative, invention and enterprise in research, production and marketing.

Real issue in I.C.I. bid is struggle for power—says Fisons director

THE real issue at stake in I.C.I.'s bid for control of Courtaulds has not been and probably could not be mentioned by either of the companies at all for it is "the issue of power". This was stated in a letter to *The Times* last week by Mr. Avison Wormald, managing director of Fisons Ltd., a company that has itself in recent years been involved in more than one take-over bid.

Mr. Wormald said that the board of every chemical company of importance was preoccupied with the question of size from the point of view of efficiency, but even more so from that of size as the end in itself. Almost every board feared someone else and feared to lose its independence and identity and perhaps for only a fraction of the true value of the business. And so, while perhaps realising the futility of the struggle, it sought to ward off the enemy by increasing its size only to find that a new and bigger enemy awaited it.

It might be asked, declared Mr. Wormald, "whom can I.C.I. fear?". It was

obvious that their enemies were the great oil companies. Shell, for example, could acquire I.C.I. with relative ease. The oil companies were more and more drawn towards the chemical industry by the instability of their own traditional products and by the fact that they had become the producers of the major raw material of the organic chemical industry.

Both large and small companies were involved in this struggle for survival, but asked Mr. Wormald: "Will the end of the struggle be the survival of the fittest? And will the end of the struggle be in the interests of the nation, the consumer and even the company itself?"

Mr. Wormald concluded by saying that in recent years the attitude of I.C.I. on many matters had seemed to have shown a new sense of fairness and responsibility. "Many of us hoped that I.C.I. would never embark on the present course, but by doing so they have brought into the light a problem which in the last analysis the Government must recognise and deal with".

No Whitehall intervention—M.P. criticises I.C.I. caustic soda, chlorine prices

IN the Commons debate on Tuesday, following the President of the Board of Trade's statement that the Government did not intend to refer I.C.I.'s bid for Courtaulds to the Monopolies Commission, it was alleged that I.C.I. had been charging high prices for caustic soda and chlorine.

Sir Cyril Osborne (Cons., Lough), said that I.C.I. had been charging 50% more for caustic soda in the last 10 years, while German prices had come down 10%. In the case of chlorine, they were charging 65% more than European prices. Recently Courtaulds had had the most successful of all man-made fibres, while I.C.I. were charging twice what Courtaulds were charging competitors.

Mr. F. J. Erroll, B.O.T. President, thought Sir Cyril was taking statements from details supplied to M.P.'s by Courtaulds. It was equally open to I.C.I. to give their side of the story. As for a danger for the future in such a merger, he told Sir Cyril that there might or might not be such a danger but an enquiry, even by experts could not decide authoritatively on events that had not yet taken place.

In his statement, Mr. Erroll said that

if the merger took place and operated in such way that appeared to him to be against the public interest, he would immediately make a reference to the Monopolies Commission.

The Government was satisfied that the advantages or disadvantages of a merger could only be judged by results. There were no grounds for concluding in advance that the effects of a merger would be such as to require them to intervene on grounds of injury to the national interest. In reaching that conclusion they had in mind the great and increasing competitive power of other countries in the field. There would also be competition from units in the U.K. while were subsidiaries of very large foreign companies.

Users either of primary materials or of finished products had the right to apply at any time for reductions in the level of the tariff.

Mr. Erroll pointed out that the Jenkins committee on company law was already considering certain aspects of mergers, monopolies and restrictive practices. On the wider issues, he had already put in hand a general review of policy. It would cover the growth in recent years

in the number of mergers and their implications for the future health of the economy.

Mr. Erroll would not disclose the talks he had had with the chairman of both companies. He had been asked if he had satisfied himself in talks with I.C.I.'s chairman that the company had adequate management resources "which the present record does not seem to show in public".

He told another M.P., anxious about monopoly aspects, that no one could tell what the price structure would be in the future, whether or not the merger took place. No body of experts could be expected to give reliable opinions in relation to events or technological changes that had not yet taken place.

A Conservative M.P. said that I.C.I. had failed to produce one new synthetic fibre recently and, he asked, was not a take over by "the dead hand" of I.C.I. likely to be very serious for Courtaulds' research? Mr. Erroll would not comment on the merits of the argument because it also related to the future as well as to the past. As regards any suggestion that I.C.I. was a dead hand, one had only to look at the record.

The two companies, he added, had already been involved in discussions for some sort of merging of their interests; disagreement had arisen over the terms and conditions.

One of the few sympathetic questioners, Mr. G. Nabarro (Cons., Kidder-

minster), said that undue Government interference every time there was a proposed amalgamation or lateral or vertical combination in industry designed to improve efficiency and increase competitive power would have disastrous consequences on Britain's export trade and make us in the long term far less competitive than we now were.

Mr. Erroll fully endorsed this. That was why the Government was adhering to its present policy despite the size of the proposals.

Mr. H. Gaitskell, Opposition Leader, asked if it was not difficult to break up a merger once it had taken place and that it was very much easier to prevent it taking place, should it be against the public interest. He called for a public enquiry. Mr. Erroll pointed out that no impartial enquiry could do justice to facts which were still vague, unless all members of the enquiry were clairvoyant.

Mr. Gaitskell indicated that the Opposition would put down a motion on the subject.

In a statement issued after the debate, Courtaulds said they would have been ready to assist in any enquiry set up by the Government. "Courtaulds feel a disclosure of all relevant information must be helpful and intend to see that stockholders are kept fully informed."

I.C.I. made no statement, but will issue their figures towards the end of next week. These would show that output and exports were an all-time record in 1961.

In Parliament

Minister buys drugs at half price

Savings on the cost of certain drugs of an average of 55% and, in some cases as much as 75%, have been effected by the Minister of Health by the placing of contracts with non-patentees or licensees under section 46 of the Patents Act. The first volume of the Civil Appropriation Accounts, 1960-61, published last week, contains a report from the Comptroller and Auditor General recording some prices on an average 55% lower than those tendered by patentees or licensees.

Contracts have been placed for one year from November and December 1961 and are expected to produce a saving to the National Health Service of some £500,000 a year, subject to the payment of royalties, which have still to be negotiated with the patentees.

Home Secretary's discussions on sodium chlorate

The Home Secretary has had discussions with U.K. sodium chlorate manufacturers and with some distributors and they have undertaken to warn retailers who sold material supplied by them of the desirability of discouraging the sale of the substance to young persons. A considerable quantity of the substance is, however, imported and the Home Secretary is endeavouring to get in touch with the distributors with a view to similar consultations.

This was stated in the House of Commons last week by Mr. David Renton, Minister of State, Home Office.

Amoco polybutenes are basis of Poly-Kil, new contact insecticide from F. W. Berk

POLYBUTENES produced by Amoco Chemical Corporation of Chicago, U.S., are the basis of a new 'contact' pesticide, Poly-Kil, now being formulated and distributed by F. W. Berk and Co. Ltd., London. Poly-Kil is claimed to be an effective controller of fruit-tree red spider and Bryobia mites, and several different aphid species that are often present on apples, while being non-toxic to humans and harmless to natural predators.

Launching of the new insecticide follows a comprehensive programme of experiments designed to test Indopol polybutenes on a number of crops against a wide range of pests; this work was inspired by previous trials of Indopol polybutenes as experimental acaricides and fungicides, carried out by Dr. R. W. Fisher, entomologist at the Vineland (Ontario) research station of the Canada Department of Agriculture. This Canadian work has been carried forward in the U.K. and in France; organisations which have co-operated with Amoco Chemicals and F. W. Berk in the evaluation of Poly-Kil include the U.S. Department of Agriculture and the French Department of Agriculture. Results of investigations were described by Mr. I. Greenfield, Berk's agricultural adviser, in a paper read before the British Insecticide and Fungicide Conference in November 1961.

Poly-Kil works by immobilising the pest in a globule of viscous fluid, on the 'fly paper' principle. The fluid remains tacky for about 11 days, during which period protection from further infestation is obtained, though the movements of predators are not hampered. The persistence is not such as to leave unwelcome residues at harvest.

In high volume applications Poly-Kil has proved to be compatible with most pesticides commonly in use on apples, although trouble has been experienced on occasions with n-dodecylguanidine acetate. A further programme of work on both the insecticidal and fungicidal properties of Poly-Kil is going forward.

Wills

Mr. Clarence Walker Beck, a director of Laporte Acids, Ltd., and manager of the company's Hunt Works, Castleford, who died on 5 August, aged 64 years, left £3,970 net (duty paid £190).

Prof. Henry Vincent Aird Briscoe, Emeritus Professor, Inorganic Chemistry, Imperial College, London, who died on 24 September, 1961, aged 73 years, left £21,980 gross, £18,713 net (duty paid £2,262).

Mr. William Charles Wiggins, a director of Bush, Beach and Segner Bayley Ltd., who died on 13 October, left £6,263 6s net (duty paid £185).

I.C.I. research produces new explosives products

DESCRIBED as "significant" results of I.C.I. Nobel Division research development and technical service efforts are two new products. These are Carribel, the first of a new class of explosives approved for use in coal mines, and Carrick short delay detonators.

The research work which led to the development of Carribel has been in hand for 10 years, but the product could not be used for delay blasting underground until special non-incendive detonators had been developed. This led to research on 11 Carrick non-incendive short-delay detonators. Short delay blasting techniques simplify work, improve efficiency, give better rock fragmentation and give a higher safety factor.

Carribel is a medium strength nitroglycerine-based explosive. The agent that prevents dangerous flames is said to be an "ingenious marriage" of two established principles.

Gas by-products

During the six months ended September 1961 the U.K. gas industry produced 743,900 tons of crude tar (a decrease of 0.7% compared with the corresponding period of the previous year); 11 million gall. of crude benzole (0.9% less) and 4,339,600 tons of coke (1% more).

Eastman—Natta dispute

New catalyst said to produce polypropylene with significantly different physical properties

THE battle of words between Professor G. Natta and Eastman Kodak over Eastman's so-called 'stereosymmetric' propylene polymer has been taken a stage further with Eastman's reply to the comments of Prof. Natta and Prof. I. Pasquon (see CHEMICAL AGE, 25 November 1961, p. 859).

Eastman say that Natta's contention that the stereosymmetric polymer described in Belgian Patent 577,214 is equivalent to the previously known isotactic polymers of Natta is not supported by the facts. On the contrary, say Eastman, 'stereosymmetric' propylene polymer, in view of its outstanding physical properties, represents a significant advance over the polypropylenes known prior to Eastman's discovery.

Eastman maintain that the name 'isotactic' was given to a theoretical model of a propylene polymer molecule in which all the asymmetric carbon atoms have the same steric configuration. In addition, Natta and his co-workers, using a Ziegler catalyst, synthesised a crystalline polypropylene which they also choose to call 'isotactical' even though it did not structurally conform to the theoretical model of 'isotactic' polypropylene. The important question, say Eastman, is not whether their polymer conforms to some theoretical model but whether it differs from the previously reported polypropylenes including those prepared by Natta and his associates.

Catalyst system

Eastman say that they do not claim to have introduced a new theoretical concept in stereoisomerism but, by using a newly discovered catalyst system, they claim to have produced a propylene polymer significantly different from previously known polypropylenes. Because of its unusual properties which indicate high stereoregularity of some type, the new polymer was named 'stereosymmetric'. In referring to the difference in properties, Eastman say, they are comparing 'stereosymmetric' polymer with the polymer made by Natta prior to the Eastman discovery and which he then called 'isotactic' and not with more recent polymers of different properties he may also choose to call 'isotactic'.

As Natta pointed out, say Eastman, differences in physical properties of the various polypropylenes are due to differences in the structural features of the polymers. When reliable comparisons of the physical properties dependent on crystallinity are made under conditions producing correspondingly stable states of crystallinity in the materials being compared, Eastman's stereosymmetric propylene polymer differs from pre-

viously known isotactic polypropylene in a number of properties, including melting point and tensile strength, and, therefore, must differ in structural features. Eastman claim that the data they report for stereosymmetric polypropylene are factual and based on reproducible testing procedures, and that the results have been duplicated repeatedly with large

quantities of polymer.

The assertion of Natta that the published tensile strength of Eastman's stereosymmetric polymer is not higher than that of previously described polypropylenes is erroneous, say the company. Natta has apparently confused tensile strength at yield with tensile strength at break, they claim. The tensile strength at yield values given in the Eastman patent are clearly higher than those previously reported by Natta and co-workers for isotactic polypropylene.

In conclusion, Eastman say that the various solid polymers of propylene have substantially identical chemical properties but vary considerably in physical properties. It is evident from its physical properties that Eastman's stereosymmetric propylene polymer is distinct from previously known propylene polymers.

Toyo Rayon process has fewer steps than any other commercial caprolactam route

DETAILS of the photochemical process for the production of caprolactam, which is the basis of a 30 tonne a day plant built by Toyo Rayon, have been released by the company. Known as the PNC (photo-nitrosation of cyclohexane), the method is the result of 10 years' research and development by the company. In their efforts to reduce the price of nylon-6, Toyo Rayon decided that the cost of caprolactam was worth consideration, and the PNC process was the result.

Like the Snia Viscosa process, the photochemical method involves a reaction with nitrosyl chloride, but the starting material is cyclohexane, not toluene.

The main reactions are:

- (1) Cyclohexane is nitrosated by nitrosyl chloride under the influence of light, and
- (2) subsequently isomerised to caprolactam.

With only two stages from cyclohexane, the production of caprolactam by the PNC process involves fewer steps than any other process so far commercialised.

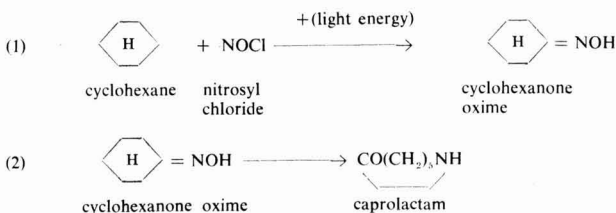
Cyclohexane required for the process is less than 0.8 lb. per lb. of caprolactam. Input of ammonia (for the production of nitrosyl chloride) and output of ammonium sulphate are less than half of those of the conventional process starting with phenol, the company claims. The PNC process is the first photochemical reaction commercialised on large scale. Light energy is supplied from a mercury lamp.

Toyo Rayon are confident that the manufacturing cost of caprolactam in Japan will be about 20 cents a lb. The number of companies from outside Japan who have so far enquired about the possibility of licensing the process has reached more than 20, including firms from the U.S. and Europe. Toyo Rayon are now prepared to consider licensing some of them.

Humglas celebrate 70th birthday

CELEBRATING their 70th anniversary this year are Humphreys and Glasgow Ltd., who started off in 1892 with the primary object of introducing the carburetted water gas process to Europe and the eastern hemisphere and who have now achieved the status of international consultants to the chemical, petroleum, fuel and power industries.

Building gas plants is still an important section of the company's activities—Humglas installations for the production of town's and industrial gas now top the 1,000 mark, while the Lurgi high-pressure gasification plant at Westfield and the successful completion of a system of underground gasification for the N.C.B. provide further testimony to the company's eminence in this field. But Humglas are also very active in the world of chemicals and petrochemicals, their recent acquisition of the rights to exploit all East German chemical processes being particularly noteworthy.



Overseas News

PRICE CUTS IN NAPHTHALENE, BENZENE, MALEIC ANHYDRIDE

PRODUCERS of coke oven naphthalene in the U.S. have cut the price by 1½ cents a lb. The price cuts were started by Koppers who decided on the move in view of the increasing petronaphthalene capacity coming on stream. Other producers followed. So far the cuts are restricted to coke oven naphthalene.

The price of benzene has also been cut by 3 cents a lb. to 28 cents. This reason for the cut was given by one producer as the below market selling that has been going on for some time.

Monsanto started a run of price cuts on maleic anhydride. They dropped the price by 3½ cents a lb. to a price ranging from 18 cents to 20½ cents depending on quantity. Monsanto's move was quickly followed by Heydon Newport. With the maleic price cuts has come a reduction in fumaric acid prices. The new price ranges from 21½ cents to 22½ cents a lb. depending on quantity. Other producers will "remain competitive."

Further details of Synres phthalic plant

The phthalic anhydride plant being built at Hook of Holland by the Dutch chemical concern NV Chemische Industrie Synres (see CHEMICAL AGE, 10 June, 1961) and which is to start production at the end of this year with an annual capacity of 5,000 tonnes, will cost some Fl.7 million. Capacity can be doubled at a later stage with "relatively low investments".

Finance for Bombrini's missile venture

ISVEMER (Institute for Economic Development of Southern Italy) have provided 500 million lire to finance construction of Bombrini Parodi Defino's new plant at Ceccano (near Frosinone, south of Rome) which will manufacture metal parts for jet engines operated on solid fuel.

New xylene process from Czechoslovakia

A double-stage continuous crystallisation process is the base of a new method for the extraction of *p*-xylene from coal tar now in semi-technical use at the Urxovy Zavody plant at Ostrava, Czechoslovakia. The first stage of the process is stated to give *p*-xylene of 90% purity, the second stage a 95% pure product. Scraper-lined pipes are incorporated in the main process.

Japanese chemical firms seek foreign loans

Two Japanese chemical concerns are reported to have applied to the country's Government to float foreign loans to finance future projects. Mitsui Chemical Industry Co. Ltd. seek to take up a loan in Switzerland of S.F.7,200,000 to

finance their planned polypropylene facilities, the loan to cover four years and have an interest rate of 5%. Idemitsu Kosan Co. Ltd. are requesting permission to take up a \$20 million Bank of America loan (five years at 5½%), partly to aid expansion of their Tokuyama petrochemical plant.

Chemical project for Nicaragua

In accordance with the Central American Treaty on Industrial Integration, Nicaragua has been authorised to set up a chemical plant to supply the four member-countries of the Economic Integration Treaty, i.e., Nicaragua, El Salvador, the Honduran Republic and Guatemala. The plant will have an annual capacity of 8,300 tons of caustic soda, 3,000 tons of DDT and 2,700 tons of chlorinated camphene.

Shawinigan plan sodium cyanide unit, olefin and oxygen contracts awarded

SHAWINIGAN CHEMICALS LTD., Montreal, expect to start construction in the Spring of a \$700,000 plant at Shawinigan, Que., to produce solid sodium cyanide. Shawinigan Chemicals—now owned 75% by Shawinigan Water and Power Co. and 25% by British American Oil Co.—are due to have the new plant in operation by the autumn of 1962.

They already produce liquid sodium cyanide and the solid product is being imported; the company hopes to capture a share of this market. The process to be used was developed by Shawinigan's research department.

At the company's Varennes, Que., site on the south shore of the St. Lawrence River some 18 miles from central Montreal, preliminary foundation is under way for the new \$20 million petrochemical plant. Feedstock (naphtha) for the new plant—expected to be on stream by mid-1963—will initially be obtained from B-A's Montreal East refinery. Contracts for the three basic process units have been awarded.

Canadian Kellogg Co. will erect the olefin (cracking) unit, Lummus Co. (Canada) Ltd. will erect the acetaldehyde unit under subcontract from the German designer Friedrich Uhde Co. A third process unit to supply oxygen and nitrogen (by air separation) will be built by

Huls to concentrate on C.M. says chairman

The quantity of products sold by Chemische Werke Hüls AG, Marl, during the 1961 financial year reached the level recorded for 1960, according to Professor Dr. Paul Baumann, chairman. Due to the steep price decreases which followed the revaluation of the Mark last March, however, actual turnover was below that for 1960. Dr. Baumann specifically mentioned "an unusual degree of price-cutting, particularly in respect of plastics and plastics bases" and of "dumping prices from the U.S., Italy and Japan caused by over-capacity in these countries."

Chemische Werke Hüls, he said, would concentrate on the Common Market area in the future. In view of the economic situation, the company would introduce special savings measures, including cutting of maintenance costs and careful study of expenditure on new plants; further, processes rendered obsolete by technical progress would be discontinued. Nevertheless, all possible funds would be put to the expansion of existing and the erection of new production facilities.

B.A.S.F. double capacity for unsaturated polyesters

Badische Anilin- und Soda-Fabrik AG have doubled their capacity for unsaturated polyester resins. This large-scale capacity increase has been undertaken primarily in view of the growing importance of the company's Palatal resins for plastics and lacquers and takes into account future market conditions.

L'Air Liquide, Montreal.

Shawinigan's new Varennes plant will produce ethylene, propylene, butylenes and butadiene. Oxygen for production of acetaldehyde by direct oxidation using a German process will come from the air separation unit.

When volume is built up sufficiently, facilities will be added to refine crude oil landed at the site or obtained by tapping the Portland-Montreal crude pipeline nearby.

New prussic acid process from Canada

Shawinigan Chemicals Ltd. are reported to have developed a new process for the production of prussic acid based on ammonia and hydrocarbon feed, the latter being of methane or propane. This is a fluid-bed process working with temperatures of from 1,400 to 1,600°C, a non-catalytic, oxygen-free reaction giving a yield of 85% plus.

Overseas news

Basic olefins to be made by Amoco in new petrochemical complex

AMOCO Chemicals are planning a petrochemical complex in which they will make only the basic olefins, ethylene and propylene, themselves. These they will sell to other producers who would put up satellite plants on the same site. The range of derivatives produced by the envisaged complex would depend on which companies decided to build plants there. They could include such products as polythene, polypropylene, ethylene oxide, and polystyrene. Amoco are at present deciding upon a site. The decision rests between one 10 miles from Joliet, Ill., and the other within the Dresden industrial area, about five miles from the Santa Fe site.

Du Pont tax relief bill passes Senate

The Du Pont tax relief bill has passed Senate and now only awaits the President's signature. The bill would permit Du Pont stockholders to pay a capital gains tax instead of ordinary income tax on Du Pont-owned General Motors stock distributed as a result of court-ordered divestiture in an anti-trust case.

Agreement on Rhodesian oil refinery

The protracted negotiations between oil interests and the Federal Government of Rhodesia and Nyasaland on the proposal to build a refinery in Southern Rhodesia are expected to end with the signing of an agreement on 14 February. The oil companies concerned are Aminoil, B.P., Caltex, Kuwait Oil, Shell, Total and Vacuum Oil. Site of the refinery is at Feruka, near Umalti, on the border with Mozambique.

Columbian Carbon to make butyl rubber

Columbian Carbon are to build a plant at Lake Charles, La., for the manufacture of butyl rubber. The ultimate capacity of the plant will be 35,000 tons a year. The raw material will be supplied by the Lake Charles refinery of the Cities Service Refining Corp. which is adjacent to the location of the new plant.

Australia raises duties on styrene and acrylic emulsions

The Australian Government has imposed higher import duties on styrene and acrylic resin emulsions. New duties have replaced both existing ordinary and temporary rates on industrial nitro-cellulose.

India bans imports of beta-naphthylamine

Imports of beta-naphthylamine have been banned by the Indian Government, the substance having been found to be

a health hazard. Licences already granted are no longer valid for imports of beta-naphthylamine in any form. In cases where firm orders have already been placed against irrevocable letters of credit, the merits will be considered by the licensing authorities concerned.

High-purity hydrogen plant for U.S. Air Force

What is stated to be the biggest-known plant for the production of extra-pure hydrogen is reported to have been opened in Florida by the U.S. Air Force. The technical-scale unit, working with a process incorporating partial oxidation of crude oil with subsequent purification, produces hydrogen with purity of from 99.9999% to 99.999999%.

Du Pont may enter bromine production field

E.I. du Pont de Nemours and Co. are considering plans to start the manufacture of bromine and have been studying possible sites in Puerto Rico. Du Pont are big users of ethylene dibromide for the production of tetraethyl lead. Currently, the Ethyl Corporation, the other major U.S. producers of TEL anti-knock compounds, are planning to reduce their TEL operations at Baton Rouge, La., following a falling off in anti-knock sales.

Montecatini make polypropylene fibre dyeable

MONTECATINI say that they can now make polypropylene fibre that is dyeable using standard dyes, equipment and processes, and with no sacrifice in properties. The fibre has been developed by Polymer S.p.A. and can be dyed to give a wide range of colours.

The new fibre is to be marketed under the trade name Meralkon and is described by Montecatini as a modified polypropylene. The process is covered by patents but Montecatini do not reveal exactly how the polymer is modified.

The new material will be made at the Ternis plant where 20 million of the 30 million capacity will be made over to it. It is expected to sell at a price that will be about 10% higher than the standard Meralkon fibre.

Solvay open Milan technical aid laboratory

Solvay and Cie have opened a new laboratory in Milan to give technical aid to customers. The laboratory constitutes an industrial trial unit which, on a reduced scale, can reproduce all the applications of plastics materials which

Lummus to build refinery in Northern Spain

The Lummus Co., U.S., have been awarded an \$18 million contract to design and build a refinery in Northern Spain. It will have a capacity of 25,000 bbl./day and is a joint venture of Compania Iberica Refinadora de Petroleos, a company formed by a Spanish banking and industrial group, and the Ohio Oil Co., in association with the Spanish Government.

Work is to begin immediately on engineering and process design and a feature of the project will be a thermal cracking unit based on designs perfected by Lummus. Completion of the project is scheduled for 1964.

Ohio Oil has also recently announced plans for participating in a 40,000 barrels a day refinery at Mannheim in West Germany.

Dow release capacities of some Spanish plants

Capacities of the plastics plants to be opened in Somorrostro, Spain, next year by Dow Unquinesa, a subsidiary of the Dow Chemicals Group, are given as 10,000 annual tonnes of high-pressure polythene, 6,000 annual tonnes of low-pressure polythene, 8,000 annual tonnes of polypropylene and 12,000 tonnes of styrene monomer.

Industrial gases project in S. Africa

African Oxygen, South Africa's largest supplier of industrial gases, have announced an expansion programme costing R200,000 (£100,000). The plans entail the building of a new plant at the Germiston works, which will include a wider range of gas welding and cutting equipment.

can normally be produced at the present time.

In the building advantage has been taken of all the possibilities offered by the use of plastics materials. In the design of the laboratory, Solvay were anxious to show the diversity of the applications of their new products.

Sweden replies to Norway's fertiliser complaints

In answer to attacks by Norwegian interests that the large new nitrogenous fertiliser projects of Svenska Salpeterverken would hit an important Norwegian export trade with Sweden (C.A., 20 January, p. 130), Swedish interests have stated that the expansion of fertiliser production would not be large enough to affect this trade. Imports from Norway are not liable to tariffs or quantitative restriction. In any case, it is pointed out, Sweden imported fertilisers worth only £4 million from Norway in 1960. It is added that the Norwegian product recently cost 40% more in Sweden than in Norway.

U.K. foreign trade in chemicals, 1961

(For commentary, see page 195)

	QUANTITY		VALUE	
	1960	1961	1960	1961
IMPORTS			£	£
INORGANIC				
Boric acid Cwt.	135,986	75,463	438,466	243,090
Arsenic trioxide Tons	9,815	8,602	300,551	257,513
Al. oxide—				
Crude	20,486	10,744	1,138,605	607,789
Ground	4,809	3,438	391,086	290,658
Silicon carbide	14,080	12,616	1,465,494	1,248,434
Borax Cwt.	574,068	448,289	1,212,009	1,119,125
Calcium carbide	2,285,607	1,519,487	3,919,601	2,704,124
Channel black	148,901	133,540	1,009,472	939,922
Other carbon blacks	187,859	158,080	833,295	793,310
Cobalt oxides	16,158	18,634	677,054	777,763
Iodine Lb.	1,347,746	1,652,612	446,629	632,825
Mercury	1,919,219	2,055,547	1,726,333	1,720,593
Sodium, calcium, potassium, lithium Cwt.	357	263	41,036	25,744
Potassium carbonate	138,964	110,773	431,979	334,386
Selenium Lb.	312,917	268,644	721,390	575,042
Silicon Tons	8,304	7,056	1,326,992	1,170,281
Sodium chlorate Cwt.	92,972	92,995	268,712	295,603
Titanium oxide	17,048	38,146	151,321	316,852
Inorganic cpds., n.e.s.	—	—	8,590,031	8,006,123
ORGANIC				
Acids, anhydrides, salts and esters Value	—	—	5,999,022	2,990,028
Glycerine Cwt.	136,699	108,285	1,048,175	640,015
Menthol Lb.	179,892	197,985	402,314	440,230
Alcohols and mixtures Value	—	—	4,514,855	3,464,297
Spirits of turpentine Gallis.	784,936	615,332	178,303	105,467
Styrene (monomeric)	2,770,262	4,017,941	1,123,800	1,448,107
Vinyl acetate (n.e.s.) Tons	7,574	6,947	851,152	753,144
Organic cpds., n.e.s. Value	—	—	28,363,652	29,870,647
Syn. dyestuffs Cwt.	50,382	53,638	4,715,833	5,082,226
Extracts—				
Dyeing	13,643	12,037	107,402	97,007
Tanning	511,610	608,781	1,453,357	1,529,262
Pigments, extenders Lb.	175,425	142,612	347,008	309,527
Other pigments, paints, etc. . . Value	—	—	1,439,202	1,640,539
Antibiotics	—	—	1,523,122	1,034,991
Other drugs, etc.	—	—	3,758,841	4,286,875
Essential oils Lb.	7,294,703	7,965,300	5,891,098	6,875,674
Perfumery, toilet goods Value	—	—	1,264,002	1,333,807
Plastics materials Cwt.	1,870,899	1,579,780	29,712,715	26,774,096
Of which, p.v.c.	714,387	579,184	6,527,576	5,539,033
Acrylics	82,013	85,539	1,398,952	1,247,004
Alkyd resins, etc.	58,174	54,506	600,149	520,014
Polyamides	84,024	98,226	2,880,246	3,115,854
Polystyrene	220,675	67,984	2,428,758	894,835
AGRICULTURAL				
Basic slag Tons	80,459	71,136	645,436	534,268
Potassium chloride Cwt.	14,239,450	13,894,613	10,528,650	10,473,245
Potassium sulphate	457,801	438,873	378,037	375,544
Other fertilisers Value	—	—	2,135,504	2,869,107
Disinfectants, insecticides, etc. Cwt.	42,651	35,287	1,373,123	905,544
Phosphates of lime Tons	1,429,515	1,355,096	8,350,407	7,999,648
MISCELLANEOUS				
Sulphur Tons	487,079	497,321	5,060,657	4,989,632
Chromium ore	293,028	256,429	3,392,213	2,931,186
Titanium ores	349,324	287,651	2,895,288	2,536,975
Gas & chem. machinery Cwt.	12,949	19,311	790,215	1,060,850

	QUANTITY		VALUE	
	1960	1961	1960	1961
EXPORTS			£	£
INORGANIC				
Acids Cwt.	327,538	354,831	1,174,536	1,281,904
Copper sulphate Tons	25,366	19,463	2,011,300	1,484,547
Sodium hydroxide Cwt.	4,550,242	4,719,603	443,906	479,363
Sodium carbonate	4,584,860	4,649,512	2,642,908	2,541,332
Aluminium oxides Tons	26,349	23,825	1,002,258	945,945
Al. sulphate	38,280	33,515	496,487	448,927
Other al. cpds.	3,874	3,007	153,199	169,785
Ammonia Cwt.	87,914	79,508	328,204	278,495
Ammonium cpds. (not fertilisers or bromide) Tons	22,379	31,007	810,591	1,054,316
Arsenical compounds (including arsenic trioxide (arsenic white), inorganic)	5,996	6,724	410,574	441,791
Bismuth compounds Lb.	444,708	478,778	345,436	371,327
Chloride of lime Cwt.	350,520	252,297	620,738	460,061
Hydrosulphite	106,536	80,114	832,786	608,334
Other bleaching materials	248,104	217,025	136,217	939,504
Calcium compounds	419,182	438,564	826,221	957,575
Carbon blacks	1,179,444	971,685	4,256,939	3,477,565
Cobalt compounds	17,863	19,171	443,906	479,363
Iron oxides	126,424	98,733	388,306	391,858
Lead compounds	76,219	77,532	366,479	347,191
Magnesium cpds., n.e.s. . . . Tons	16,864	20,796	972,298	1,094,931
Nickel salts Cwt.	103,730	87,995	968,354	870,863
Potassium cpds. (not fertilisers, bromides) . . .	86,252	82,337	708,345	677,222

(Continued in next column)

Exports (continued from previous column)

Sodium bicarbonate	859,720	744,750	801,901	653,204
Chromate, dichromate	34,472	79,495	159,017	338,249
Phosphates	328,862	325,326	1,219,014	1,207,180
Silicate	300,495	435,969	307,894	422,981
Other sodium cpds.	1,885,497	1,747,712	3,661,494	3,560,990
Tin oxide Tons	7,837	10,893	288,903	439,616
Zinc oxide	7,911	9,479	645,061	678,401
Inorganic elements & cpds., n.e.s. Value	—	—	5,488,119	5,851,474

ORGANIC

Acids, anhydrides, salts and esters Value	—	—	3,118,711	3,734,091
Glycerine Cwt.	32,785	52,036	390,655	483,762
Ethyl alcohol, etc. & mixtures Value	—	—	4,189,005	3,725,221
Acetone Cwt.	144,610	170,444	390,970	454,147
Citric acid	62,616	89,922	531,497	707,364
Gases, compressed, liq. or solid, n.e.s. Value	—	—	1,739,051	1,603,141
Phenol Cwt.	304,842	314,258	1,921,105	1,738,590
Sodium cpds.	41,288	38,590	682,244	702,783
Sulphonamides, not prepared Lb.	1,608,963	1,351,937	913,066	757,313
Dye intermediates, n.e.s. . . . Cwt.	93,286	88,964	1,469,418	1,660,516
Organic cpds., n.e.s. Value	—	—	23,053,282	24,749,442
Coal tar Tons	69,678	68,281	765,819	765,819
Cresylic acid Gall.	3,408,238	2,477,806	1,234,344	958,411
Creosote oil	18,598,120	17,996,426	1,232,104	1,281,046
Other mineral tar, etc. Value	—	—	704,601	687,979
Pigment dyestuffs Cwt.	46,035	42,044	1,927,284	1,813,626
Other syn. dyestuffs	237,237	257,859	11,827,869	13,215,030
Syn. pigments	29,600	28,808	11,994,631	1,212,624
Pigments, paints, putty, etc. . . Value	—	—	28,931,458	30,520,125
Drugs, medicines, etc.	—	—	44,364,937	48,787,038
Of which, antibiotics	—	—	8,699,995	9,648,864
Essential oils Lb.	2,512,044	3,282,401	2,399,469	3,175,530
Explosives (not nitro-cellulose) Value	—	—	9,529,957	9,735,468
Carbons Cwt.	97,936	100,520	486,903	454,790
Tetraethyl lead Gallis.	6,516,706	5,462,947	12,688,225	10,486,468

AGRICULTURAL

Nitrogenous fertilisers Tons	187,915	168,303	2,592,865	2,189,869
Other fertilisers Value	—	—	288,357	444,725
Disinfectants, cattle dips, etc. . Cwt.	138,295	148,020	923,090	1,019,213
Insecticides	257,599	264,001	3,877,464	4,213,455
Fungicides, weedkillers, etc. . .	230,395	218,858	2,886,614	2,762,873

MISCELLANEOUS

Plastics materials Cwt.	3,423,751	4,024,160	42,908,173	42,433,037
Of which, polystyrene	225,857	305,020	2,348,107	2,807,890
Polystyrene	—	—	17,717	637,994
P.v.c.	720,045	793,372	8,174,478	8,338,233
Gas & chem. machinery	149,174	240,914	3,908,052	8,460,656

TRADE WITH PRINCIPAL MARKETS

COUNTRY	EXPORTS		IMPORTS	
	(Value, £'000)		(Value, £'000)	
	1960	1961	1960	1961
E.F.T.A.				
Austria	1,436	1,778	—	—
Denmark	6,083	6,785	1,003	1,071
Sweden	10,833	11,509	3,664	3,593
Norway	3,654	5,368	404	4,024
Switzerland	4,255	5,070	7,254	8,116
Portugal	3,260	3,679	2,091	1,319
Total	31,412	34,189	18,013	18,123
E.E.C.				
Belgium	7,506	7,550	4,666	4,883
France	8,615	9,216	14,866	15,683
West Germany	13,184	11,435	28,277	26,076
Italy	10,279	10,603	6,411	5,778
Netherlands	15,758	15,254	13,134	13,935
Total	55,342	54,058	67,354	66,355
Soviet bloc				
Soviet Union	5,999	3,873	854	1,445
Hungary	726	864	—	—
Czechoslovakia	1,460	1,918	—	—
East Germany	—	—	3,013	2,782
China	2,648	1,616	619	665
Poland	1,476	2,954	1,895	1,502
Total	12,309	11,225	6,381	6,394
Commonwealth				
Ghana	6,095	6,618	—	—
Nigeria	8,208	8,523	—	—
India	14,071	13,792	1,218	1,458
Pakistan	6,662	5,427	—	—
Singapore	3,834	4,165	465	455
Malaya	4,911	4,851	337	212
Ceylon	3,878	3,716	276	141
Hong Kong	5,570	6,310	102	84
Australia	24,825	20,859	648	1,058
New Zealand	8,288	8,084	1,201	1,390
Canada	9,422	10,003	11,270	9,660
South Africa	12,954	12,490	2,547</	

● **Mr. Arthur Grounds**, consulting engineer to the Coppee Co. (Great Britain) Ltd., 140 Piccadilly, London W.1, is retiring at the end of this month. A fellow of the Institute of Fuel and a member of the Institution of Mining Engineers, Mr. Grounds was formerly chief coal preparation engineer of the National Coal Board and has been an hon. lecturer in coal preparation and mineral dressing at Leeds University. In his retirement he will live at Colwyn Bay, North Wales.

● **Mr. J. R. Roddam** has been appointed general sales manager of J. M. Steel and Co. Ltd., chemical merchants, 36-38 Kingsway, London W.C.1. Mr. Roddam, who was Scottish area manager, will be succeeded in Scotland by **Mr. R. J. Ogborn** as area manager.

● **Mr. R. G. Nichols**, who has been appointed to the central market research department of Cyanamid of Great Britain Ltd., Bush House, Aldwych, London W.C.2, will carry out market research on General Chemicals Division products.



Kenneth H. Rawsthorne, newly appointed commercial manager of **Laporte Chemicals (Australia) Pty. Ltd.**

● **Mr. R. Fields** has been appointed a lecturer in chemistry at Manchester College of Science and Technology.

● **Mr. C. C. Alderson-Smith** has joined the Resin Division of H. A. Smith Ltd., Braunston, near Rugby, as a research chemist. He is a grandson of the founder of the company.

● **Dr. Jack Lewis**, aged 33 and reader in chemistry at University College, London, has been appointed Professor of Inorganic Chemistry at Manchester University with effect from 1 October. Dr. Lewis, who held a professorship at Massachusetts Institute of Technology for six months in 1960, will succeed **Professor Fred. Fairbrother**, who is to retire. Prof. Fairbrother has been with the Manchester University Chemistry Department since 1919.

● **Mr. J. W. Cywinski**, former technical sales manager of Novadel Ltd., and **Mr. C. H. Stoor**, Novadel's former chief chemist, have formed a new company entitled Perox Chemicals Co. Ltd. As stated in 'Project News' this new company will produce organic peroxides at Sheerness.

● **Mr. H. A. Wilson** retired from the board of Witco Chemical Co. Ltd., Bush House, Aldwych, London, W.C.2 on 31

PEOPLE in the news

January to devote his time to other activities. His duties at Witco's Droitwich plant have been taken over by **Mr. H. F. Schofield**.

● **Mr. Gordon I. Jenkins** has been appointed sales manager for industrial chemicals of Du Pont de Nemours International S.A., Geneva. He joined in 1956 as a research chemist, and has been attached to the Geneva office of the European director of E.I. du Pont de Nemours and Co. Dr. Jenkins gained his Ph.D. at King's College, London.

● **Mr. C. F. Berk** has been appointed group sales director of F. W. Berk and Co. Ltd., 8 Baker Street, London W.1. He will also continue as joint managing director. His new duties will include overall responsibility for the home and export sales of all departments of F. W. Berk and Co.

● **Mr. W. Liddell**, quality manager at I.C.I.'s Terylene works, has been appointed assistant works manager (production) succeeding **Dr. W. E. Tetlow**, who is works manager-designate for Fibre Division's new Kilroot Works, Northern Ireland.

● **Dr. J. A. Berriman**, general manager of Shell Chemical Co. Ltd., Carrington, is to succeed **Mr. E. Le Q. Herbert**, managing director, of Shell Refining Co. Ltd. on Mr. Herbert's retirement on 31 May. Dr. Berriman will relinquish his post on 28 February and his successor at Carrington will be named in due course. Mr. Herbert, who is also a director of Shell Chemical Co. Ltd. and of Associated Ocel Co. Ltd., was president of the Royal Institute of Chemistry from 1959 to 1961.



J. A. Berriman



E. Le Q. Herbert

● **Mr. R. A. Lynex**, secretary of Imperial Chemical Industries Ltd., is retiring on 31 March, when he reaches normal retirement age. He will be succeeded by **Mr. A. G. Woods**, assistant secretary since 1946.

● **Mr. Terrence D. O'Keeffe** has joined the staff of the European office of Arthur D. Little, Inc., at 224 Seefeldstrasse, Zurich. This office of A.D.L. carries out market research into chemicals and metals. Mr. O'Keeffe had been a partner in George Lewi of London, a chemical consulting practice that was acquired by Roger Williams Technical and Economic



T. D. O'Keeffe

Services Inc., chemical market research specialists. Until a few months ago, Mr. O'Keeffe was European manager for this organisation (see also 'Distillates').

● **Mr. Edward Corbett** and **Mr. John Acton** have been appointed technical sales representatives for Du Pont isocyanates in the U.K. and Eire. Mr. Corbett, aged 35, was formerly production manager of a plant producing solid polyurethane elastomers. He is an Associate of the Royal Institute of Chemistry. Mr. Acton, aged 36, has for the last six



Ed Corbett



J. Acton

years been concerned with silicones, including their use with urethanes. Both men are at present under training with E.I. du Pont de Nemours at Wilmington, Dela. Du Pont Co. (United Kingdom) Ltd. are to build a plant for the manufacture of isocyanates at Maydown, N. Ireland. Until the new facility is completed in 1963, isocyanates will continue to be imported from the U.S.

● **Professor E. C. Slater**, an Australian working at Amsterdam University, has been awarded the Royal Dutch/Shell prize for 1961 by the Netherlands Society of Science for his work on the synthesis of fat from radioactive acetic acid. The prize worth £1,000 will be used to equip the university's physiological chemistry laboratory with GLC apparatus.

(Continued on page 210)

Commercial News

Benn Brothers

The directors of Benn Brothers Ltd. have declared a dividend of 3% on ordinary for the half year ended 31 December (same).

Borax (Holdings)

Trading profits of Borax (Holdings) Ltd. for the year to 30 September after depreciation, etc., of £2,295,674 (£2,041,461) totalled £4,066,116 (£4,117,840). Tax took £1,295,829 (£1,229,925) and group net profit was £2,665,686 (£2,867,236). A final dividend of 7½%, making 11½% (same), has been declared.

Bullough Securities

An improvement in profits is anticipated for the year ending 31 October, 1962, state the directors of Bullough Securities Ltd., whose subsidiaries include British Dyewood Co. Ltd. British Dyewood increased their profits during 1960-61 and overall sales were the highest for 10 years.

Burt, Boulton

Burt, Boulton and Haywood Ltd., chemical producers and timber merchants, have extended their timber interests by the acquisition of Carter, Carter and Co. (Hartlepool) Ltd., importers and merchants.

Hickson and Welch

Group profit for the year ended 30 September was £680,043 (£643,986) after depreciation of £184,367 (£137,189) and including results of Alvin Morris and Co. (Timber) acquired in April 1960. Tax took £310,469 (£305,167) and net profit was £369,574 (£338,819). Group net profit attributable to the holding company, after minority interests and pre-acquisition profits of Alvin Morris was £345,226 (£335,256). A final dividend of 11%, makes 19% (same).

I.C.I.-Robinson

Financial arrangements for the joint development of plastics films for packaging for I.C.I. and E. S. and A. Robinson (Holdings) have now been completed. I.C.I. now hold a 49% interest in Robinson Plastics Films, a subsidiary of E. S. and A. Robinson, who have taken up a 33½% interest in British Visqueen, Ltd. I.C.I.'s plastics film subsidiary.

Matthew Hall

Two new Matthew Hall companies have been set up, each with capital of £100. Matthew Hall Engineering Ltd. has been registered to carry on work of air conditioning, aircraft, chemical, electrical, sprinkler and fire protection, heating, industrial, marine, mechanical, nuclear, oil refinery, water and general engineers. Matthew Hall Mechanical

- £200,000 fall in Borax (Holdings) profit
- Hickson and Welch profit increases
- Dow report on overseas subsidiaries
- Grace to acquire 100% of Cosden

Services Ltd. has been set up with similar objects.

A.K.U.

An unchanged interim dividend of 4% (same) is announced by Algemeen Kunstzijde Unie, Arnhem.

American Enka

Net profits of American Enka in 1961 totalled \$5,832,000 (\$667,708), or \$4.46/share (\$0.51). Sales increase of this A.K.U. company increased 20% to \$114 million.

Du Pont of Canada

Mr. F. S. Capon, vice-president of Du Pont of Canada Ltd., told the Security Analysts Association of Toronto that the company earned more than \$1.5 a share on sales of about \$112 million in 1961. In 1960 Du Pont of Canada earned \$6,835,000 or 92 cents/share; sales amounted to \$99,812,672. The company in mid-December announced in connection with an increased year-end final dividend that 1961 net income was estimated at \$8,600,000 on sales of about \$109,700,000.

Dow Chemical

Dow Chemical International AG, Basle, have reported on the financial year ended 31 May last during which they bore the name of Dow Chemie AG, whose recent alteration was announced in CHEMICAL AGE (6 January).

The Dow Chemical International Ltd. S.A., Caracas, Venezuela, recorded increases over the year of 16% in sales and 10% in profits, Deutsche Dow Chemie GmbH, Frankfurt-on-Main, raised turnover by 25% due mainly to the introduction of a number of new products and Dow Quimica do Brasil S.A., Sao Paulo, raised sales and profits "considerably", while in the U.K., Thorium Ltd., Widnes (owned jointly with Rio Tinto), recorded a noteworthy profit and Dow Chemical Co. (U.K.) Ltd., of London, had a satisfactory first year of business.

The Basle holding company took over 26% of the capital of Dow Agrochemicals Ltd., King's Lynn, the remainder being held by the U.S. parent company. In South America, Dow Alcalis Ltda. was formed as a new company with a capital of 30 million cruzeiros in Sao Paulo, while the Dow Argentine subsidiary was taken over fully by the Swiss holding company and renamed Dow Quimica Argentina S.A.

Plans for the future include the taking up of polystyrene production by Dow Hellenic Chemical Industry Ltd., Lavrion,

Greece—this plant to cover Greek demand and supply Middle Eastern countries; the opening in Leghorn, Italy, of a further polystyrene plant by Dow Chimica Italiana S.p.A., of Milan, the opening next year of a petrochemical plant in Spain by Dow-Unquinesa S.A., of Bilbao (see 'Overseas News'), the erection in Holland of a Fl.40-million phenol plant by NV Staatsmijnen-Dow Fenol, of Rotterdam (a joint venture with Dutch State Mines) and the opening of further facilities in Australia by C.S.R.C.-Dow Pty., of Rhodes, Australia, a company owned in conjunction with the Australian C.S.R. Chemicals Pty. Ltd.

Fertica

To supply "the whole of Central America with fertilisers" is the aim of Fertilizantes de Centro-America S.A., a new company formed in Panama with a capital of 8,100,000 U.S. dollars. One-third of the capital is held by the International Development Co. Ltd., of Nassau, Bahamas, one-third by Esso-Standard Oil Co., and one-third divided between Salvadorian, Costa Rican and Panamanian interests. The company will have the abbreviated title of Fertica.

Gelsenkirchner Bergwerks

During 1961, Gelsenkirchner Bergwerks, West Germany, processed 4.4 million tons of crude oil, a 22% rise on the previous year. In partnership with Mobil Oil a refinery is to be built at Neustadt on the Danube, to be supplied with crude by the Lavera pipeline. Annual throughput it is said will total 2 million tons of crude; work is to start this year. A similar project based on the same pipeline will follow at Karlsruhe.

W. R. Grace

W. R. Grace now plan to acquire full ownership of the oil company, Cosden, of which they bought controlling interest two years ago. Under the proposed plan, the remaining Cosden stockholders, holding 1.4 million shares, would get an estimated \$24 to \$25 a share for their stock. The plan is subject to the reserved production payment; favourable tax rulings and approval of Grace and Cosden directors and stockholders.

Grande Paroisse

French chemical company Sociéte Chimique de la Grande Paroisse, a member of the l'Air Liquide group, announce for the financial year ended 31 August 1961, a net profit of Fr. 5,200,000 (Fr. 5,130,000). Turnover totalled

Fr. 700,180,000; fertilisers and ammonia sales totalled 66,465 tons (as N). A net dividend of 6.95 francs per Fr. 50 share (same) is recommended. The company is currently raising its capital by the issue of Fr. 5,598,800 worth of new shares to a level of Fr. 19,595,800.

Groupement de l'Industrie Chimique

The joint French chemical industry finance institute Groupement de l'Industrie Chimique de Synthèse will this month issue a new Fr. 99 million 5% loan. The Groupement, which is to raise its capital from Fr. 500,000 to Fr. 2,400,000 for this purpose, issued its first loan in December 1960. This was of Fr. 76 million, also issued at 5% interest. Then 13 companies were concerned in the loan, as compared with 20 in the new venture.

Hooker Chemical

Consolidated net sales of Hooker Chemical were the highest ever, totalling \$150,102,300 (\$149,820,600) for the year to 30 November. Consolidated net income after taxes was \$11,986,500 (\$12,688,900) or \$1.60 (\$1.70) per share.

Major projects completed include a multi-million dollar semi-commercial plant at Niagara Falls; mercury cell plant for chlorine, caustic soda, and caustic potash; and facilities to produce a new broad-range insecticide and octyl mercaptan. At Columbia, Tenn., a third phosphorus furnace has raised capacity by 50%. Additional phosphate rock reserves were acquired.

Projects still to be completed include two phenol plants using the Hooker process at South Shore, Ky., and in Argentina; caustic potash fusion equipment and a new thionyl chloride plant in Niagara Falls; a Hooker developed process for purification of hydrogen chloride for Montague, Mich.; Hooker Chemicals of North Vancouver, B.C., will expand chlorine and caustic soda facilities.

Kuhlmann

The French chemical concern Manufactures de Produits Chimiques du Nord, Etablissements Kuhlmann S.A., Paris, announce that over 1961 turnover rose by some 8% above the level for the previous year. Over 1960, the Kuhlmann group turnover, excluding inter-group sales, totalled more than Fr. 1,000 million.

Lonza

Lonza Electricitätswerke und Chemische Fabriken AG, Basle, who plan to enter petrochemicals, already have under way plans for the investment of some SF.100 million. It has now been agreed to raise capital from SF 50 million to SF 60 million by issuing 20,000 new shares. The company's name has been altered to Lonza AG.

Pechiney

Turnover of Pechiney of France in 1961 showed little improvement report the directors, who state that total turnover was Fr. 1,113.3 million (Fr. 962.35

million). Aluminium output totalled 226,891 tons (187,300 tons).

Reichhold Chemicals

Reichhold Chemicals Inc., U.S., will on 15 February pay a 2% share bonus. The usual cash dividend, normally paid at about this date, will not be presented. Share bonus and cash dividend were last paid last November.

Rhône-Poulenc

For the second half of 1961, turnover of Rhône-Poulenc, France, totalled Fr. 456,100,000 (Fr. 432,700,000).

St. Gobain

Turnover of Saint-Gobain, France, increased 5% to Fr. 590 million in the second half of 1961. Of the total turnover, Fr. 423 million came from French plants and Fr. 167 million from overseas. The group's glass producing interests reported good business, but chemical activities progressed more slowly. Capital of the company is to be raised from Fr. 521,950,000 to Fr. 626,340,000.

Scholten Foxhol

W. A. Scholten Foxhol, producers of farina and derivatives, the Netherlands, propose to pay 15% in cash on the old ordinary and preference shares and 7½% in cash on ordinary issued in April 1961, plus a 5% scrip from the share premium reserve. Dividends in 1959-60 were 10% cash and 10% scrip.

Union Carbide S. Africa

Union Carbide South Africa (Pty.) Ltd. is the name of a new company formed by Union Carbide, U.S., in Johannesburg. The company will take over from a branch office of the U.S. concern's Swiss subsidiary.

U.S. Borax

Net income after taxes of United States Borax and Chemical, U.S. subsidiary of Borax (Holdings) Ltd. for the three months to December totalled \$1,622,218 (\$1,112,874) or 35 cents/share. Net sales totalled \$16,028,280 (\$15,656,438). Conditions in foreign markets are said to be somewhat uncertain and export sales in the quarter were down on the previous year. Domestic sales of borax were substantially increased.

INCREASES IN CAPITAL

GELPKE AND BATE LTD., coal tar products, chemicals, etc., 7 Queen Street, London E.C.4. Increased by £20,000 beyond the registered capital of £15,000.

LANCASHIRE CHEMICAL WORKS LTD., 40 Brazennose Street, Manchester 2. Increased by £10,000 beyond the registered capital of £15,000.

B.A.S.F. HOLDING-AG, Zurich, the Swiss-based holding company of Badische Anilin- und Soda-Fabrik AG, Ludwigshafen-on-Rhine, are increasing capital from S.F. 2 million to S.F. 30 million. The original 2,000 shares have had their nominal value raised from S.F. 1,000 to S.F. 15,000 each, then being converted into 30,000 shares of S.F. 1,000 each.

People in the News

(Continued from p. 208)

● **Dr. J. N. Lehmann**, works manager of the I.C.I. Salt Works, Weston Point, Runcorn, has been appointed director of the recently formed Canadian Productivity Council. Canadian by extraction, he has been works manager at Weston Point since 1945. He is returning to Canada after 35 years with I.C.I. **Mr. E. Hanson-Sale**, managing director, I.C.I. Alkali Division presented Dr. Lehmann with a camera as a farewell gift.

● At a recent meeting of the Surface Coating Synthetic Resin Manufacturers' Association the following officers were elected for the ensuing year: chairman, **Mr. H. C. Worsdall** (Surface Coating Synthetics Ltd.); vice-chairman, **Mr. W. F. A. Thorpe** (Arthur Holden and Sons, Ltd.); treasurer, **Mr. H. S. Parker** (Leon Frenkel Ltd.); secretary, **Mr. E. G. Sangster**.

● **Mr. Reginald J. Parsons**, with Imperial Chemical Industries (China) Ltd. since 1928 and director of that company from 1954 until his retirement in 1961, is now in charge of new offices opened in Hong Kong by Allied Chemical International. The offices, at Union House, will serve Allied customers throughout South East Asia.

● **Mr. P. W. J. Simcox**, who has been appointed to the board of the British Xylonite Co. Ltd. as managing director of the Halex Division, also joins the board of Gelbex Ltd. **Mr. D. R. Walters**, in addition to continuing as director of British Xylonite and other companies in the group, has resumed the duties of company secretary to the British Xylonite Group. **Mr. I. F. E. Coubrough**, general sales manager, and **Mr. M. K. Merriam**, plastics production manager, have joined the board of BX Plastics Ltd.

● **Mr. K. T. Poole** has been appointed manager of the development department of Q.V.F. Ltd., Stoke-on-Trent. **Mr. L. A. R. Westwood**, formerly with the design department, has joined the development department as development chemical engineer.

● **Herr Werner Wendrich, Dipl.-Kaufmann** has been elected to the board of the West German chemical company Kali-Chemie AG, Hanover.

● **Mr. Leslie Johnson**, managing director of Detel Products Ltd., flew to Beirut on 23 January to start a month's tour in the Middle East where he will introduce Thioxochlor, Detel's chlorinated rubber industrial paint. This was developed in the Detel laboratories and is now being produced in their Ruislip factory, for home and overseas.

● **Mr. S. D. Lyon**, for more than four years engineering director at the I.C.I. Wilton Works, has now taken up his new appointment as production director of Billingham Division.

BRITISH CHEMICAL PRICES

GENERAL CHEMICALS

Acetic Acid. 10-ton quantities, 80% tech. in bulk. £72 per ton; in casks, £85 per ton; 80% pure in bulk, £78; in casks, £89; glacial, 98/100% in bulk, £88; in drums, £95.

Acetic Anhydride. Ton lots d/d, £118.

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.

Chromium Sulphate, Basic. Powder, d/d, 1 ton lots £77.

Citric Acid—Granular. In kegs, 1-4 cwt. lots, per cwt., £7 17s 9d; 5-19 cwt. lots, per cwt., £7 16s 9d; 1-ton lots, per cwt., £7 15s 9d; packed in paper bags, 1-4 cwt. lots, per cwt., £7 10s 9d; 5-19 cwt. lots, per cwt., £7 9s 9d; 1-ton lots, per cwt., £7 8s 9d.

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

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

Copper Sulphate. £79 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, £9 12s. 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 6d-1s 10d.

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

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

All prices per ton unless otherwise stated

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

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

Lactic Acid. Edible, d/d, 50% by wt., per lb., 16½d; 80% by wt., 26½d; C.P., 50% by wt., per lb., 14½d; 80% by wt., 23d; dark 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, £94 15s per ton; orange lead, £106 15s per ton; Ground in oil: red, £116 15s orange, £128 15s.

Lead, White. Bases prices: in 5-cwt. drums, per ton for 2-ton lots, Dry English £108 5s; Ground in oil, £128 10s.

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

Litharge. In 5-cwt. drum lots, £96 15s.

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

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

Magnesium Chloride. Solid (ex-wharf), £19 11s 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, 19s 6d; 5-cwt. lots, in 28-lb. parcels, 20s; 1-cwt. lots, in 28-lb. parcels, 20s 3d.

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.

Propylene Oxide. Bulk lots, d/d, £162.

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, £45.

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

Sodium Chlorate. 1-cwt. drums, c.p. station, in 5-ton lots, about £88 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 4s 6d; 1-cwt. lots, per cwt., £5 15s.

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, £30.

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: di-sodium, crystalline, £40 10s, anhydrous, £89; tri-sodium, crystalline, £39 10s, anhydrous, £87.

Sodium Silicate. (Spot prices) 75-84° Tw. Lances and Ches, 6-ton lots, d/d station in loaned drums, £13 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, £39 2s 6d; broken, £40 2s 6d. Flakes, £41 12s 6d, crystals, £30.

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, 286s; in bags, 278s per cwt.

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

Zinc Oxide. Per ton: white seal, £90; green seal, £88; red seal, £85.

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;

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, £179; 10-gal. drums, £169. 40/45-gal. drums: under 1 ton, £142; 1-5 tons, £136; 5-10 tons, £135; 10 tons and over, £134, in 400-gal. tank wagons, £131.

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

Diethyl Phthalate. In drums, 10 tons, per ton, £183; 45-gal. 1-4 drums, £189.

Dimethyl Phthalate. In drums, 10 tons, per ton, d/d, £173; 45-gal. 1-4 drums, £179.

Diethyl Phthalate. In drums, 10 tons, d/d, per ton, £222; 45-gal. 1-4 drums, £228.

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

Ethyl Acetate. 10-ton lots, d/d, £130.

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, £136 10s; 1-5 tons, £131 10s; 5-10 tons, £129 10s; 10 tons and up, £128; in 400-gal. tank wagons, £127 10s.

Methyl isoButyl Carbinol. All d/d. In 5-gal. drums, £199; in 10-gal. drums, £189; 40-45 gal. drums, less than 1 ton, £164; 1-9 tons, £161; 10 tons and over, £159; in 400-gal. tank wagons, £154.

Methyl isoButyl Ketone. All d/d. In 5-gal. drums, £199; in 10-gal. drums, £189; in 40/45-gal. drums, under 1 ton, £164; 1-5 tons, £161; 5-10 tons, £160; 10 tons and up, £159; in 400-gal. tank wagons, £156.

isoPropyl Acetate. 10 tons, d/d, 45-gal. drums £125.

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

RUBBER CHEMICALS

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

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

up to 3-tons in one delivery, 9½d per lb. Ex-store Manchester, London and Glasgow, 10½d per lb.

Carbon Tetrachloride. Ton lots, £83 15s.
Sulpha-Rubber Substitutes. White, per lb. 1s 4½d to 1s 7d; dark, d/d, per lb., 1s 0½d to 1s 4d.

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

Mineral Black. £7 10s-£10.

Sulphur Chloride. British, about £50.

Vegetable Lamp Black. 2-ton lots, £64 8s.

Vermilion. Pale or deep, 7-lb. lots, per lb., 15s 6d.

COAL TAR PRODUCTS

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

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

Cresosote. 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., 4s 11d heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 3s 10d. 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, £42; 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., 18s about.

Toluol. Pure, per gal., 4s 11d; 90's 2,000 gal. in bulk, per gal., 4s 8d.

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.

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(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., 11d.

Nitronaphthalene. Per lb., 2s 5½d.

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

p-Toluidine. In casks, per lb., 4s 9d.

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

16% Rise in world output of synthetic fibres

World output of synthetic fibres, which continues to have the fastest growth rate in the man-made fibres industry, totalled 820,000 tonnes last year, an increase of 16%. Output of man-made fibres rose 6% to 3,520,000 tonnes, states the Comité International de la Rayonne et des Fibres Synthétiques. Paris, in advance of the Second World Congress of Man-Made Fibres, London, in the first week of May.

Chemicals in Anglo-Rumanian trade agreement

CHEMICALS, textiles, complete factories, plant, machinery and other goods are included in quotas for Anglo-Rumanian trade for the year ending September 1962, on which agreement has been reached between the Board of Trade and the Rumanian authorities. The quota lists make provision for Rumanian purchases of about £5¼ million worth of U.K. goods—an increase of 23% over the previous period's quotas. Issue of U.K. import licences for Rumanian goods up to a total of about £4¼ million is also provided for.

New natural gas shipment company

A NEW company has been set up to build and operate tankers for the transport of liquefied natural gas under the title of Natural Gas Ocean Transport Co. and registered in Nassau. Names of co-operating companies (and the directors concerned are): Natural Gas Development and Transportation Co. (G. K. Burness and A. C. Geddes); Petrofina S.A. (M. Evrard); British and Commonwealth Shipping Co. (G. F. Bedford); Lithgows (A. Hunter).

First task of the new company will be to make a feasibility study of all aspects of the shipment of liquefied natural gas.

Market Reports

Copper sulphate dearer

LONDON The markets in general have been fairly active on both home and export account with contract commitments being regularly drawn against. Textile trade interest has been reported to be well maintained and there has been a steady flow of new business in other directions, but mostly for nearby delivery. The soda products are being called for in fair quantities, while formaldehyde and hydrogen peroxide continue in steady demand with quotations held. Copper sulphate is 20s dearer at £79/ton less 2% f.o.b. Liverpool.

MANCHESTER Additional business in general chemicals has been on a fair scale and mainly for spot or early delivery lots. Home trade outlets continue, for the most part, to be well covered for requirements over the coming months and are reported to be calling for reasonably good supplies in most sections, including textile chemicals, plasticisers, borax, barium compounds, the non-ferrous metal products. A fair movement on shipping account has been maintained. Makers of sodium sulphide announce higher prices for all grades.

SCOTLAND Conditions have not shown any appreciable change. The tendency is still to quietness, although there is the usual demand for the general range of heavy chemicals, and a reasonable quota against contract requirements.

TRADE NOTES

Du Pont chemicals

An 'Index of industrial chemicals' available in Europe has been published by Du Pont de Nemours International S.A., 81 Route de l'Aire, Geneva. This lists a selection of chemicals and allied products that Du Pont can supply in Europe.

Overseas agents

Price's (Bromborough) Ltd. have recently appointed African Explosives and Chemicals (East Africa) Ltd., Nairobi, to be their agents in East Africa. This arrangement, which came into effect on 1 January, will cover Kenya, Uganda, Tanganyika, Pemba and Zanzibar. The agents will handle all products manufactured by Price's, including stearines, oleines, fatty acids, fatty alcohols and fatty acid esters.

High purity metals

A newly issued series of data sheets covers the range of high purity metals produced by Johnson, Matthey and Co. Ltd., 73-83 Hatton Garden, London E.C.1. Metallic impurity contents of the elements are given in parts per million.

Chemicals by Whiffens

The 1962 catalogue of chemicals produced by Whiffen and Sons Ltd., Willow Works, Derby Road, Loughborough, Leics, is now available. The booklet lists the complete range of products which

the company now offers, and is intended primarily for use by those people interested in locating supplies of special chemicals. Overseas enquiries should be addressed to Fisons Overseas Ltd., Fison House, 95 Wigmore Street, London W.1.

Also available from Whiffens is Technical Bulletin 61/2, which describes the properties of maleic hydrazide.

Powdered epoxy foams

A new series of powdered epoxy foams which can be used at temperatures from -65 to +300°F are now available in the U.K. from Microcell Ltd., 9 Kingsway, London W.C.2, a subsidiary of BTR Industries Ltd., under their marketing agreement with Emerson and Cuming, U.S. Known as EFF-4, EFF-10, and EFF-15, each product is supplied as a one-component, finely divided powder.

B.D.H. Chemicals

The following chemicals have been added to the range of B.D.H. Laboratory Chemicals Division, Poole, Dorset: benzyl chloroformate, ϵ -(2:4-dinitrophenyl)-L-lysine hydrochloride, 2-naphthyl laurate, tetrahydro-pyran.

Laboratory heating apparatus

Electrothermal Engineering Ltd. have published the 2nd edition of their laboratory heating equipment catalogue. It includes new products such as the hot staining and hydrolysing bath, the trans-

fusion bottle heater and the modular 'flexible furnaces' for portable or permanent furnaces.

Copies are available from the company at 270 Neville Road, London E.7.

Plastics coatings

Following growing demand for their plastics coating service, Plastic Coatings Ltd., Industrial Estate, By-Pass, Guildford, have opened a new works at Winsford, Ches, which will offer the same service of dip coatings and sprayed plastics finishes in the Midlands and North as is now available in the South.

Electronic chemicals

Specialised electronic chemicals of defined purity are the subject of an illustrated technical booklet from Omni (G.B.) Ltd., 35 Dover Street, London W.1. Chemicals for semi-conductor, emission and ferrite and thermistor applications are described and data sheets are included.

Daniels (B.B.A.)

British Boiler Accessories Ltd., 62-63 Fenchurch Street, London E.C.3, have changed their name to Daniels (B.B.A.) Ltd., to associate the company more closely with the parent, T. H. and J. Daniels Ltd., Stroud, Glos. It was also felt that the name British Boiler Accessories gave an incorrect impression of the company's products which are: steam accumulators, small electric boilers, de-aerators and a wide range of heat exchangers.



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NEW PATENTS

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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 7 March

- Aryl phosphates. Coalite & Chemical Products Ltd., Bondy, H. F., and Gumb, J. 890 642
Quaternised pyridine aldoximes. National Research Development Corp. 890 783
Purification of industrial effluents. Gas Council. 890 878
Pregnadiene compounds. Syntex S.A. 890 834
Cyclopentanophenanthrene derivatives and processes for the production thereof. Syntex S.A. 890 989
Synthesis of steroids. Olin Mathieson Chemical Corp. [Addition to 839 698.] 890 907
Azetidide derivatives. Sandoz Ltd. 890 725
Cyclopentanophenanthrene derivatives and process for the production thereof. Syntex S.A. 890 835
Diphenylamines. Westminster Bank Ltd. [Addition to 808 112.] 890 732
3-Alkylmercapto-phenothiazine derivatives and their preparation. Sandoz Ltd. 890 912
Polymeric materials for high voltage insulators. Siemens-Schuckertwerke AG. 890 562
Process for the polymerisation of alpha-olefins. Montecatini. 890 913
Alkaloid. Oletta S.A. 890 614
Epoxy-resinous materials. Associated Electrical Industries Ltd. 890 745
3-Keto-4-pregnenes and method of preparation. American Cyanamid Co. 890 565
Zirconyl trichloro aluminate. Chattanooga Medicini Co. 890 579
Process for the cyclic production of hydrogen peroxide. Edogawa Kagaku Kogyo Kabushiki Kaisha. 890 615
Sulphur curing of polyetherurethane rubbers. General Tire & Rubber Co. 890 884
Triacetyl benzene. Rohm & Haas. 890 885
Fertilisers. Imperial Chemical Industries Ltd. 890 569
Esters of testosterone and 19-nortestosterone and method for the production thereof. Leo AB. 890 749
Tetracycline derivatives. Soc. d'Etudes de Recherches et d'Applications Scientifiques et Medicales. 891 004
Phthalimide derivatives and process for their manufacture. Farbwerke Hoechst AG. 890 917
Manufacture of foamed polymeric materials. Imperial Chemical Industries Ltd. [Addition to 848 671.] 891 007
Wet process for phosphoric acid manufacture. Struthers Wells Corp. 890 811
Carbamic esters. Imperial Chemical Industries Ltd. 891 009
Cyanuric acid. F.M.C. Corp. 890 814
Pregnadienes and pregnatrienes. American Cyanamid Co. 890 577
Silalkyltin compounds. Midland Silicones Ltd. 891 087
Tin organosilicon compounds. Midland Silicones Ltd. 891 088, 891 089
Process for the preparation of acrylonitrile. Knapsack-Griesheim AG. [Addition to 814 238.] 890 526
Zirconyl chloro-aluminates. Chattanooga Medicine Co. 890 578
Ring-unsaturated perycano cyclic sulphides and their production. Du Pont de Nemours & Co., E. I. 891 093
Organo-phosphorus compounds and the manufacture of cartenoid compounds therefrom. Hoffmann-La Roche & Co. AG., F. 890 758
Polyester coating compositions. Farbenfabriken Bayer AG. 890 534
Heterocyclic quaternary ammonium salts. Allen & Hanburys Ltd. 890 533
Process for the production of C₃-C₆ paraffins. California Research Corp. 891 976
4-Methyl androstane derivatives. British Drug Houses Ltd. 890 759
Process for the production of therapeutically active carbonic acid esters. Farbenfabriken Bayer AG. 890 537
Separation of iso-butene from other hydrocarbons. Distillers Co. Ltd. 890 760
Urea derivatives. Farbenfabriken Bayer AG. 890 540
Cyanine dye salts and methods for their preparation. Parke, Davis & Co. 890 763
Production of vinyl chloride. Lonza Electric & Chemical Works Ltd. 890 678
Pyridine compounds and process for their manufacture. Ciba Ltd. 890 602
Preparation of acetylenic alcohols. Air Reduction Co. Inc. 890 603
Production of alcohols and amines. Badische Anilin- & Soda-Fabrik AG. 891 067
Preparation of fluorocarbons. Dow Chemical Co. 890 605
Moulded synthetic detergent compositions. California Research Corp. [Divided out of 861 052.] 890 696
Hydrazones and salts thereof and a process for the manufacture of same. Hoffmann-La Roche & Co. AG., F. 890 829
Production of dialkyl-naphthalenes. Continental Oil Co. 890 551
Process for the preparation of beta-ether-substituted propionaldehydes. Shell Internationale Research Maatschappij N.V. 890 697
Acid hydrazides and a process for the manufacture thereof. Hoffmann-La Roche & Co. AG., F. 890 552
Process for the production of hydrazine derivatives. Farbenfabriken Bayer AG. 890 554
Production of benzene and its trisubstituted and hexa-substituted derivatives. Badische Anilin- & Soda-Fabrik AG. 890 542
Process for the separation of normal olefins from normal paraffins. Shell Internationale Research Maatschappij N.V. 890 555
Steroid derivative, its preparation and conversion into therapeutically useful compounds. Laboratoires Francais de Chimiotherapie. 890 774
Polyesters. Bergwerksgesellschaft Hibernia AG. 890 704
Process for the production of cross-linkable macromolecular compounds. Badische Anilin- & Soda-Fabrik AG. 890 776
Catalysts. Union Carbide Corporation. 890 955
Esterification of aromatic carboxylic acids. Standard Oil Co. [Divided out of 879 799.] 890 709
Cyclopentanophenanthrene derivative and process for its production. Syntex S.A. [Divided out of 890 989.] 890 990

DIARY DATES

MONDAY 5 FEBRUARY

C.S.—Cambridge: Univ. Chem. Lab., Lensfield Rd., 5 p.m. 'Experiments on a synthesis of vitamin B₁₂' by Dr. J. W. Cornforth.
S.C.I.—London: 14, Belgrave Sq., W.1, 6.30 p.m. 'Very fast chemical reactions' by Prof. G. Porter.

TUESDAY 6 FEBRUARY

C.S.—Dundee: Chem. Dept., Queen's Coll., 5 p.m. 'A few chemical problems connected with cancer chemotherapy' by Prof. F. Bergel.
C.S.—Edinburgh: Chem. Dept., Univ., 4.30 p.m. 'Nuclear magnetic resonance and the stereochemistry of organic compounds' by Dr. L. M. Jackman.
Plas. Inst.—London: Wellcome Bldg., Euston Rd., N.W.1, 6.30 p.m. 'Recent developments in the German plastics industry' by Dr.-Ing. A. Schwarz.
S.C.I.—London: 14, Belgrave Sq., S.W.1, 10.30 a.m. 'Lequines'.

WEDNESDAY 7 FEBRUARY

Inst. Chem. E.—Birmingham, 1: Midland Hotel, Stephenson Pl., 6.30 p.m. A.g.m. & 'Continuous brewing' by G. A. Dummett.
Inst. Metal Finishing—London: Brit. Inst. Management, 80, Fetter Lane, E.C.4, 6.30 p.m. 'An up-to-date review of epoxy resins' by A. L. Brockman.
Plas. Inst.—Newcastle upon Tyne, 1: Eldon Grill, Eldon Bldgs., Grey St., 7 p.m. 'Nitrile rubbers' by D. G. Turner.
S.C.I.—Dublin: Chemistry Dept., Univ. Coll., Upper Merrion St., 5.30 p.m. 'Flavour & its detection' by Prof. J. Hawthorn.
S.C.I.—Newcastle upon Tyne: Tech. Coll., Sunderland, 6.30 p.m. 'Pyroceram' by J. F. Stirling.

THURSDAY 8 FEBRUARY

C.S.—Aberystwyth: Edward Davies Chem. Labs., 5 p.m. 'Aspects of molecular behaviour' by Dr. Mansel Davies.
C.S.—Bristol: Univ. Chem. Dept., 6.30 p.m. 'Some aspects of structure and reactivity in ionic solutions' by Prof. K. W. Sykes.
C.S.—Edinburgh: Meriot-Watt Coll., 7.30 p.m. 'Isotactic polymerisations' by Prof. G. M. Burnett.
C.S.—Manchester: Large Chem. Lect. Theatre, Univ., 4 p.m. 'Some aspects of stereospecific polymers' by Prof. C. E. H. Bawn.
R.I.C.—Leeds: Univ. House, 7.30 p.m. 'Cosmetics' by H. W. Hibbott.
R.S.A.—London: John Adam St., Adelphi, W.C.2, 5.15 p.m. 'Recent developments in the protein of foodstuffs from insect pests' by G. V. B. Merford.
S.A.C.—London: Wellcome Bldg., Euston Rd., N.W.1, 3 p.m. 'New analytical reagents in colorimetric analysis'.

FRIDAY 9 FEBRUARY

C.S.—Cambridge: Univ. Chem. Lab., Lensfield Rd., 8.30 p.m. 'Non-stoichiometric compounds' by Dr. J. S. Anderson.
C.S.—St Andrews: Chem. Dept., St. Salvators Coll., 5.15 p.m. 'The relationship between physical chemistry and physics' by Prof. T. L. Cottrell.

Lecture course on organo-metallic and related compounds

Some of the more recent aspects of the chemistry of organo-metallic and organo-metalloid compounds will be covered in the spring lecture course organised by the Birmingham and Midlands Section of the Royal Institute of Chemistry. It is to be held on Saturdays, 3, 10, 17 and 24 March, from 9.30 a.m. to 12.30 p.m., at the College of Advanced Technology, Gosta Green, Birmingham.

Further details may be obtained from Mr. F. J. Armon, 48 Codsall Road, Tettenhall, Wolverhampton, Staffs.

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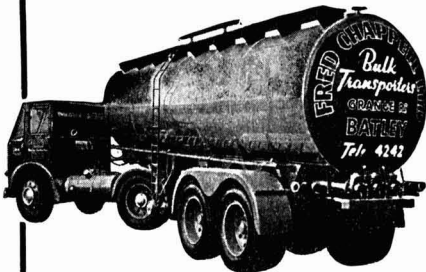
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(PAB) and esters	Ethyl malonate	Phenylacetic acid
p-Aminosalicylic acid	Ethylene oxide	Procaine
(PAS)	Formaldehyde	Parathion
Acetyl salicylic acid	Fluoroacetamide	Phenyl mercury acetate
Acetophenone	Fluoroacetic acid	Phenol phthalein
Acetamide	Glycerol	Phloroglucinol
Amethocaine	Glyceryl stearates	Quinine, cinchonine, etc.
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Chlorobenzene	Lignocaine	Sulphadiazine
Caffeine (and theobromine)	Levulanic acid	Sulphamezathine
Cetyl chloride	Metol	Sulphapyrazine
Cyanuric chloride	Methionine	Salicylic acid
Cyanoacetic acid, ethyl cyanoacetate	Methanol	Salicylamide, Salicyl diethylamide
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D.D.T.	Maleic hydrazide (MH)	Thiolactic acid
Dodecyl benzene	Nitrofurans	Tocopherol
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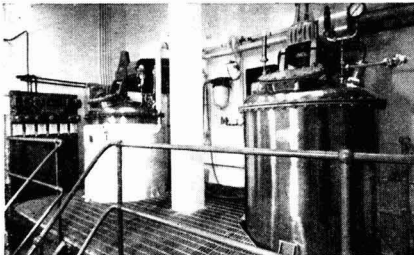
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