Chemical Age

incorporating
PETROCHEMICALS and POLYMERS

7 April 1962. Vol. 87. No. 2230

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

INDEX TO ADVERTISERS

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

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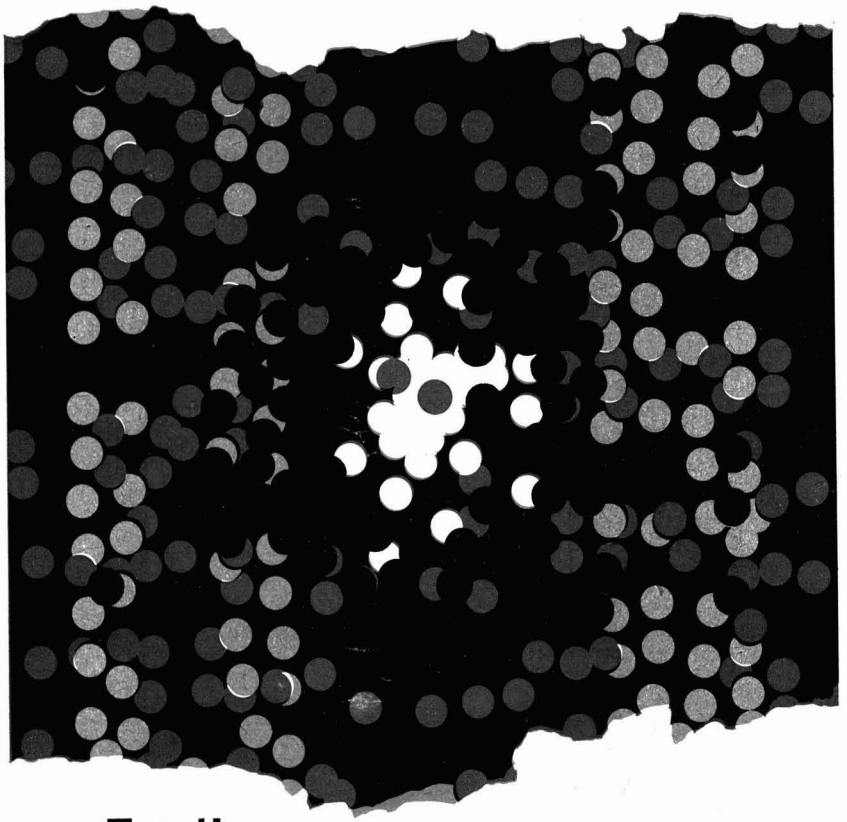

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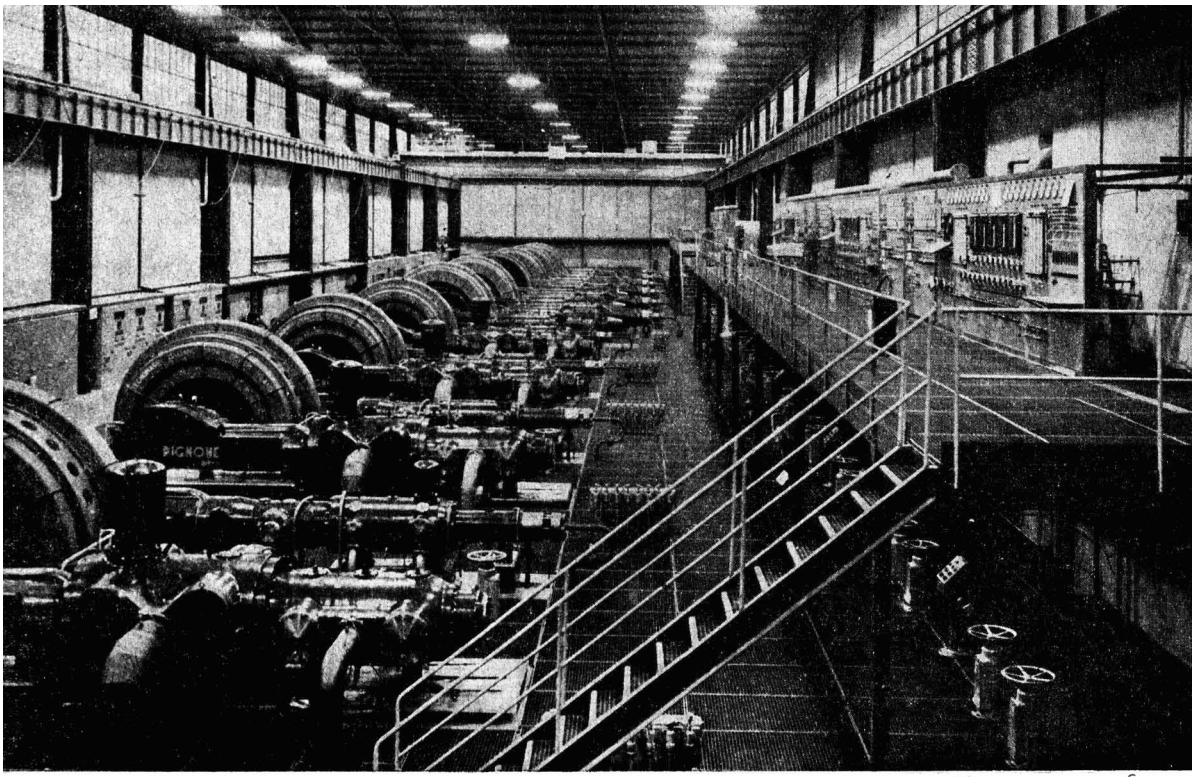

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- Nuclear power plant units
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VOL. 87 No. 2230
APRIL 7 1962

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TRANSPORT AND THE C.M.

FACED with the prospect of joining the highly competitive Common Market with the dice loaded against them so far as transport and raw materials are concerned, British chemical manufacturers are determined, as well as they are able, to put their houses in order. This much was clear from the third packaging conference of the Association of British Chemical Manufacturers, held at Harrogate last week on the theme of packaging costs and the challenge of European trade.

This conference made a two-pronged attack on the problem—the long-term, concerned more with devising efficient and low-cost methods of bulk movement of products, and the short-term aimed at ensuring that immediate problems involved in the trend towards bulk transport are handled as efficiently as possible.

The biggest obstacles to exporting to the Common Market will undoubtedly be the North Sea and the English Channel—this is why chemical executives are thinking in terms of the large-scale bulk movement of products. There are several ways of doing this and each is likely to be adopted, despite foot dragging in some quarters. Some are spectacular and will be costly in terms of capital investment, but are none-the-less essential if British companies are to compete on anything approaching level terms.

The Channel tunnel, now firmly backed by the British Transport Commission and widely supported by industry, particularly chemical manufacturers, would provide a speedy and efficient route to Continental markets. This is a costly project and to keep costs down (in any event it will be cheaper to use the tunnel than a ferry) it is vital that new types of bulk containers are developed and it was shown at the Harrogate conference that British Railways are keen to see new, more specialised types of wagons. Already their pressurised twin-silo trucks are in use and carrying loads of 20 tons. So far as freight is concerned, the railways are currently a wasted national asset. Their reorganisation must be effected as quickly as possible if chemical producers are to be persuaded to make full use of fast freight services. On the other hand, it is clear that too many rail wagons spend too long in industrial sidings. If costs are to be cut, then manufacturers must improve this turn-round time.

Another vital cross-Channel link are under-water pipelines. It could be done during the war, but how much more efficiently could it be done today with the vastly improved techniques of laying pipelines. Such a network is most important if British industry is to get access to cheap and abundant supplies of natural gas; in the long-term under-water pipes will have an important part to play in the export trade.

Many products of the chemical industry will always have to reach consuming industry in drum or sack quantities, but the accent in future is likely to be on the provision of bulk transport to a point close to the consumer, where final packaging can be carried out in strategically-located depots.

It is obvious that the challenge of free trade can only be met by the fullest co-operation of all concerned—chemical manufacturers, package

(*Continued on page 558*)

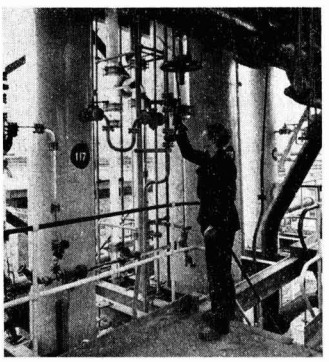
A. & W. chairman's statement

Albright's capital spending hit record £8 m. in 1961

ALTHOUGH the economic picture in 1962 for industry in general is uncertain, it does not seem that the Group's profit for 1962 will differ significantly from that for 1961, says Sir Sydney Barratt, chairman of Albright and Wilson Ltd., in his annual statement. All companies within the Group, at home and overseas, have again forecast increased sales. It is anticipated that, in spite of some further cost increases, the benefit from higher sales and a lessening of the burden from plant commissioning will offset the lower margins experienced in the second half of 1961. Apart from the general squeeze on profit margins, profits during the second half of 1961 had been affected by charges associated with the initial operations of some major plants.

Capital expenditure by the Group in 1961 was the highest ever at £8 million —more than double the £3.6 million spent in 1960 (£3.9 million including W. J. Bush and Co., recently merged with Albright). Sir Sydney revealed that about two-fifths of this total was spent overseas, mainly in Canada, where the Port Maitland plant was completed during the year. In the U.K. the largest project was the construction of major additions to plants at Whitehaven, on which work was well advanced by the end of the year. Capital expenditure in 1962 was not expected to be as great as in 1961 but was again likely to exceed that for 1960. At the end of 1961, the amount unspent on authorised projects was a little over £3½ million.

Apart from an increase of nearly 70% in the production capacity for low-cost sulphuric acid made from anhydrite, with cement as co-product (see 'Project News' this week) capacity for making sodium tripolyphosphate by a new process, the economics of which are "very favourable," has been raised to a level where the company is able to export considerable quantities as well as to cater for any increase in home demand. In addition, production of sulphamic acid has started and the manufacture of liquid detergent raw materials has been expanded.



Operator checking valves on the new methyl chloride plant which came into operation last year at the Barry works of Midland Silicones Ltd.

Midland Silicones once more increased total sales and profits, despite continuing strong competition. Several new units were completed in 1961 or are currently under construction, a methyl chloride plant and an additional direct-process silicon reactor now being on stream.

Group profits were reported in C.A., 10 March, p. 409.

Dow plan major new petrochemical complex in Netherlands

A MAJOR chemical complex, initial products of which will be plastics, industrial chemicals and intermediates, is to be built in the Netherlands by Dow International. A 200-acre site has been purchased at Terneuzen, Zeeland, and construction is expected to begin later this year. Manufacture of the first products will start in 1964. No details are given of the type of products to be made, the cost of the project, or of the construction plans.

According to the company's president, Mr. C. B. Branch, major factors affecting the decision to locate the complex at Terneuzen were the industrial climate in the Netherlands, availablity of labour, ease of access by sea, rail and inland waterways and the nearness of the site to the European market.

This new Dutch project is the latest of several recent Dow plant investments in Europe.

In the U.K., the activities of the Dow Chemical Co.'s subsidiaries continue to expand, with Dow Agrochemicals producing a variety of agricultural chemicals at Kings Lynn while Dow Chemical Company (U.K.) Ltd. has continued to expand the range and volume of chemical and plastics products sold in the U.K., other Dow operations here including packaging film and textile products.

N.T.G.B. form chemical marketing company

IN order to develop great efficiency in the marketing of their tar and chemical products, the North Thames Gas Board have formed a new subsidiary marketing company, the London Tar and Chemical Co. Ltd. (see also 'Trade Notes,' p. 584), which came into operation on 1 April.

Previously, the marketing of such products has been the responsibility of the Tar and Chemicals Products Sales Office, but it is expected that the new arrangement will give a greater flexibility. In addition to effecting certain economies, it will enable the Gas Board to develop wider markets, both in the U.K. and in the export field, for their present and future products.

Mr. L. W. Blundell, F.R.I.C., controller of by-products, has moved with his staff to offices in Mark Lane where the new company's headquarters are situated.

I.C.I. Metals Division becomes operating company

THE former Metals Division of Imperial Chemical Industries Ltd. has from 1 April become a new operating company —Imperial Metal Industries (Kynoch) Ltd. Headquarters remain at Kynoch Works, Witton, Birmingham 6, but the organisation becomes a wholly-owned subsidiary of I.C.I. administered by a new holding company, Imperial Metal Industries Ltd.

I.M.I. (Kynoch) will operate three manufacturing units—Kynoch Works and Elliott Works, Birmingham, and Waunarlwydd Works, Swansea—making non-ferrous metals and sporting ammunition. Other I.C.I. subsidiary companies in the I.M.I. group include Marston Excelsior Ltd., Wolverhampton and Leeds; Amal Ltd., Birmingham; Lightning Fasteners Ltd., Birmingham; and Steatite and Porcelain Products Ltd., Stourport-on-Severn.

New research block for Laporte Acids

THE laboratories of Laporte Acids Ltd. at Hunslet and Castleford, Yorks, have been combined in a new £80,000 research block at Castleford. This provides a well equipped research centre for the company's works at Hunslet, Castleford, Sheffield and Rotherham.

The new block covers 11,000 sq. ft. and, in addition to laboratories, includes offices, stores and a reference library. A main feature is the experimental plant laboratory, which has an overhead gantry and adequate room for pieces of pilot scale equipment. In the research and analytical laboratories more than three-quarters of the equipment is new.

N.B.A. annual meeting

Annual general meeting of the National Benzole and Allied Products Association is to be held on 18 April at Granville House, 132-135 Sloane Street, London S.W.1.

Project News

INDIAN FERTILISER FACTORY CONTRACT FOR POWER-GAS

MAJOR extensions to an Indian fertiliser factory—that of Fertilisers and Chemicals Travancore at Alwaye, Kerala—are the subject of contracts worth £1-£1.5 million that have been awarded to the **Power-Gas Corporation,** Stockton-on-Tees. Power-Gas have built a number of installations at the Indian factory since operations began in 1947.

The new contracts include the supply of plant for producing ammonia synthesis gas from oil by partial oxidation; an ammonia synthesis plant—said to be the first in India of British design—with a capacity of 150 tons/day; and an ammonium sulphate plant, which will use as its raw material gypsum produced as a by-product from phosphoric acid manufacture carried on at Alwaye.

The sulphate plant extensions will raise the factory's output of ammonium sulphate from 220 tons/day to 660 tons/day.

Solway's new sulphuric acid plant completed

● THE new anhydrite/sulphuric acid plant of **Solway Chemicals Ltd.** at Whitehaven has recently been completed and will be officially opened by Lord Fleck, president of the Society of Chemical Industry, on 23 May. Mr. Frank Schon, chairman of Marchon Products Ltd. (with whom Solway are associated) and of Solway, states that the new capacity represents an increase of about 70% in the company's production of low-cost sulphuric acid. Nearly all the additional tonnage will be absorbed in the manufacture of detergent phosphate.

The new plant was built by the company's own labour under the supervision of Marchon's engineering department. Marchon and Solway are members of the Albright and Wilson Group.

Leiner gelatine know-how for Mexico

● KNOW-HOW for the production of gelatine from hides and skins will be supplied to **La Viga Industria Nacional Quimico,** of Mexico City, by **P. Leiner and Sons Ltd.,** Treforest, Glamorgan, under an agreement signed between the two companies. In addition, the contract includes for the regular sale to La Viga of ossein manufactured in Treforest, and shipments have already begun. La Viga are one of Mexico's leading chemical concerns manufacturing hydrochloric acid, sulphuric acid and other heavy chemicals.

The new agreement means a further expansion in Latin America for Leiner—world's largest producers of ossein gelatine—who last November arranged to supply Stauffer Argentina S.A.I.C. of Buenos Aires with the know-how for ossein gelatine production and receive a royalty on every ton of gelatine manufactured.

Geigy companies expand in U.K.

● THE parent company in Basle, J. R. Geigy, AG, report several expansion projects for their U.K. subsidiaries. These cover important but unspecified extensions to **Ashburton Chemical Works Ltd.,** Manchester, pigment capacity expansions for **James Anderson and Co. (Colours) Ltd.,** Paisley; and completion of preparatory work on a new pharmaceutical plant now under construction for **Geigy Pharmaceutical Ltd.,** Manchester.

In addition Geigy (Holdings) Ltd., and the Geigy Co. Ltd. are currently undertaking a move of their sales and administration headquarters and laboratories dealing with problems of utilisation to a new site in the south of Manchester.

British glass plant makes Mexico's national drink

● A GLASS distillation column, used in preparation of tequila, Mexico's national drink made from the tequila plant, has been ordered from **Q.V.F. Ltd.,** Stoke-on-Trent, through their Mexican agents, Bezaury SA. The Q.V.F. plant is required by one of the largest manufacturers of tequila in Mexico. Another tequila company is erecting, at Guadalajara, an exhibition warehouse equipped with Q.V.F. glass pipeline.

Another order for Q.V.F., worth over £2,000, comes from the Hyberabad Council of Scientific and Industrial Research. The order covers general purpose reactor and distillation plant and a 3-in. scrubber column for their research laboratory.

U.S. firm plan £16 m. plant to exploit Yorkshire potash deposits

THE Armour Agricultural Chemical Co., Georgia U.S., are reported to be contemplating a £16 million plant to process 4,000 ft. underground potash deposits in the North Yorkshire Moors National Park, near Whitby, and a decision is expected this month.

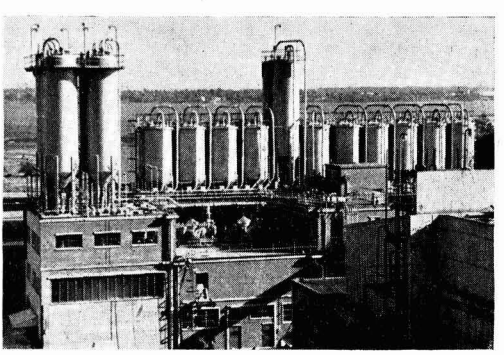
The company, which has been prospecting in the area, would use, it is understood, a new form of the 'mining by brining' technique whereby water is forced into the deposits, dissolving the salt and other materials, and is returned to the surface and processed to eliminate unwanted ingredients, leaving the potash. If successful they could probably extract up to 100 million tons potassium chloride.

Armour would take up the project where I.C.I. stopped in 1955 after seven years' work costing £400,000. I.C.I. then said the problems involved could be solved only by an organisation familiar with special deep-mining techniques. Fisons, associated with the exploration, sank four experimental bore holes before they, too, retired from the scene.

The deposits were detected back in 1938, when the D'Arcy Exploration Co., the B.P. subsidiary, found in the course of oil prospecting near Whitby potash brine and sylvinite (sodium chloride/potassium chloride mixture). A post-war I.C.I. survey showed two beds of sylvinite, containing between 20/40% potash, at depths between 3,500/4,500 ft.

Present Armour plans envisage the main part of their plant at Stainsacre, just outside the national park. Talks are in progress between local body officials and Armour.

New units for Monsanto's Fawley plant



This section of the Fawley factory of Monsanto Chemicals Ltd. shows (at left) the recently installed storage hoppers in connection with the polythene expansion programme. Production is being increased from 17,000 to 25,000 tons/year

World-wide purchasing set-up speeds Lummus procurement for Indian rubber project

SUCCESSFUL use has been made by the Lummus Co. Ltd., London, of a new system of procurement in connection with the contract for the engineering, procurement and construction of the new synthetic rubber plant for Synthetics and Chemicals Ltd. at Bareilly, India. The new system involved the organisation of a special world-wide materials purchasing operation through Lummus offices in Europe, North America and Commonwealth territories.

The Bareilly project (see CHEMICAL AGE, 16 July, 1960, page 97) posed special materials purchasing problems and to buy the best materials at the cheapest price, with delivery to fit the schedule, buying on a world-wide basis was demanded, but the massive scale of the purchasing operation called for special arrangements. So, instead of simply inviting bids to be submitted to Lummus, London, an integrated system of procurement was created by which all Lummus offices throughout the world issued invitations to tender in their own territories. Bids received in response could thus be vetted by expert Lummus purchasing departments 'on the spot', were then tabulated and passed to London, where it was now possible to make an authoritatively informed but quicker comparison of tabulations of these bids. Selection made, London prepared technical orders which were returned to the overseas purchasing departments, from whose tabulations bids had been chosen. Negotiation and issue of orders was then completed locally.

The need for stringent observance of Indian Government import regulations and shipping documents mean that vendors had to be schooled to do their paperwork with precision, the availability of local Lummus men being an advantage here. The average time taken over 20 requisitions, selected at random, to get a bid tabulation from any purchasing centre to London was 6½ weeks.

Ultimately, some 40% of materials were purchased through the London office, the balance being through the offices in Bombay, Newark (U.S.), The Hague and Paris.

The erected cost of the Bareilly plant will be over £10.5 million and initial output will be 20,000 expandable to 30,000 t.p.a. of SBR.

Carbon dioxide gives faster, more efficient separations in gas chromatography

WORK carried out at the U.S. National Heart Institute, Maryland, indicates that the use of carbon dioxide as a carrier gas in gas chromatography results in faster, more efficient separations, which, when a hydrogen flame ionisation detector is used, are obtained with no additional expense and no loss of sensitivity (*Nature*, 1962, **193**, 4815).

The carrier gas in gas chromatography is usually considered to play little part in the analytical process, and its choice is usually determined primarily by the method of detection. That the carrier gas may not, and need not, be entirely inert was demonstrated in two separate series of experiments. In one, carbon dioxide was substituted for helium in a gas-solid chromatographic system. In the other it was substituted for argon in a gas-liquid system.

In analysis of mixtures of oxygen and nitrogen using molecular sieve columns, carbon dioxide carrier gas was shown to compromise the ability of the system to resolve oxygen from nitrogen. The effect produced by the presence of carbon dioxide was similar to that produced by water vapour in these columns.

In the analysis where argon was replaced by carbon dioxide, the retention volume of each of the substances analysed was reduced. This effect varied in magnitude from column to column, but was observed in all columns tested, the amount varying from 3 to 35%.

Another effect of the use of carbon dioxide carrier gas was modest increase in the symmetry of the peaks of free fatty acids and sterols which have somewhat asymmetric peaks when argon is used as a carrier gas. This effect was also observed with each of the columns tested. The addition of water vapour to the carbon dioxide by bubbling the gas through water at room temperature prior to its entry into the column caused the peaks to become less symmetrical, while drying it by bubbling the gas through concentrated sulphuric acid caused them to become even more symmetrical.

Lecture course on polymers

A short course on inorganic and semi-inorganic polymers is being held at the Bradford Institute of Technology on 25 and 26 May.

Explosion and fire at I.C.I. Billingham works

AN explosion occurred early on 31 March at the I.C.I. works, Billingham-on-Tees, Co. Durham. No one was hurt. Units from six fire brigades in North Yorkshire and South Durham went to the factory—Cassell works of I.C.I.'s General Chemicals Division. The explosion occurred in the hydro-cyanic plant and was followed by fire. An I.C.I. spokesman said the flames were quickly under control. Damage was mostly to the pipe structure above the plant and not in the plant itself. "We do not regard the damage as serious and it will not substantially affect output," he said. Routine emergency precautions were taken and some gases were burnt off to obviate leakage danger.

I.S.R. to produce new Dunlop synthetic rubber

THE new synthetic rubber for tyres, Hi-Mu, recently developed by Dunlop, is to be produced by International Synthetic Rubber Co. at their Hythe works as one of the Intol range of rubbers. The new product will be marketed by I.S.R. under the name Intol M400.

The new rubber is stated to have considerable advantages for tyre manufacture owing to its high coefficient of friction and other properties.

50% Success in information scientists' first exams.

The first examinations for Part I of the Institute of Information Scientists certificate, held in conjunction with the courses being given at the Northampton College of Advanced Technology, were held in December. There were eight entrants, four of whom passed. Part I examinations will be held again in June. Part II will be held next December.

Transport and the C.M.

(*Continued from page 555*)

producers, transport authorities and governments. Not the least important is the need for better communications between the various departments involved in the movement of goods within individual companies. Packaging, transport, warehousing, safety and sales departments will have to work closer together if maximum economies are to be effected.

One of the essential exercises in co-operation will be that of agreeing throughout Europe standard procedures for transport, packaging and labelling. As things stand, British recommendations for labelling and standards of packaging are second to none in Europe; it would be unfortunate if international standards were set without due regard to British needs and conditions.

I.C.I. synthesis gas process may be licensed to U.S. contractors

ALTHOUGH licences to contractors for the I.C.I. synthesis gas process have been restricted to the Power-Gas Corporation and Humphreys and Glasgow, as stated in CHEMICAL AGE last week (p. 516), consideration is being given to extending licences to selected U.S. contractors. Overseas enquiries have already been received from the U.S., France, India, Japan, Germany and the Scandinavian countries.

A number of Gas Boards in the U.K. are definitely interested in the process since it can also be used to produce domestic gas from a variety of feedstocks.

Membership of aerosol association to be discussed

IN addition to the seven founder members, 18 other companies have since been accepted as members of the British Aerosol Manufacturers' Association. This is revealed by the Association's first annual report published recently.

The difficulty of deciding the scope of the Association has been settled by limiting the membership to manufacturers of pressure packed products and makers of aerosol components and raw materials. This limitation of membership to actual manufacturers was thought to be in the best interests of the industry, although whether membership should be extended to include equipment and machinery manufacturers will be the subject of discussion at the annual general meeting.

Big rise in chemical plant deliveries

Deliveries of chemical plant in 1961 were valued at £68.6 million, compared with £44.4 million in 1960 and £37.3 million in 1959. The high results of the first three quarters of 1961 were well maintained in the last quarter, when the provisional figure was £20.8 million (compared with £16.8 million in the third quarter, and £13.9 million in the last quarter of 1960).

Copper sulphate export slump cuts staff

Because large stocks of copper sulphate have remained unsold to overseas buyers, 70 male and a number of female employees of Thomas Bolton and Co. Ltd. at Widnes have been given notice to leave. A spokesman for the firm said that copper sulphates were a seasonal export product and if a large order was forthcoming, the notices would be rescinded.

Gelatine anti-dumping application extended to S. Africa

Application for an anti-dumping duty on gelatine and glue imported from Austria, the Netherlands, Czechoslovakia and Poland, announced by the Board of Trade on 9 March, has now been extended to cover imports from South Africa.

B.O.C. OFFER TRANSPORTABLE 25-TON-A-DAY OXYGEN PLANT

A FULLY automatic and transportable oxygen plant has been designed by the British Oxygen Co. to meet the needs of consumers who require 50 tons or less of oxygen a day and who are too far from a production centre to make a pipeline connection economical. The plant which produces 25 tons of oxygen a day at 200 p.s.i.g., and is now in satisfactory operation at B.O.C.'s Brinsworth works near Sheffield, is the first of its type to be built in the U.K., although 'on site' plants of this type have been operating in the U.S. for a number of years.

The unit requires no operator; any irregularities in running are monitored by telephone to a central office which can be remotely situated.

Operating pressure of the air separation unit is less than 70 p.s.i.g. The cold requirements are covered by importing liquid oxygen amounting to about 6% of the oxygen produced. Chemicals are eliminated by using reversing exchangers for the purification of air. An adsorber located on the downstream side of the reversing exchanger removes acetylene and other hydrocarbons, but as a further safeguard a second adsorber is provided in the liquid oxygen stream.

The air separation unit is constructed of aluminium and is designed as a package which is transported in one piece and erected in the open. A vacuum insulated tank holds an oxygen supply equivalent to one month's operation of the plant. The oxygen leaving the air separation unit is compressed by a non-lubricated base load compressor designed for the average demand rate and for a line pressure of 200 p.s.i.g. which is automatically maintained. When a reduction in demand causes this pressure to rise, a small non-lubricated booster compressor starts automatically and stores the excess oxygen in a receiver.

Should the line pressure then still rise, the output of the air compressor is automatically reduced in steps, rising again in steps to full load when the customer's demand is restored. If the demand exceeds the basic production rate, oxygen is automatically discharged from the gas storage receiver into the line.

If the receiver is empty and the demand exceeds the basic production rate, liquid oxygen from the tank is automatically withdrawn and pumped through a vaporiser as a standby maintaining the line pressure.

Absolute continuity of supply is safeguarded even during the infrequent thawing periods of the air separation unit, by the use of the liquid tank-pump-vaporiser system.

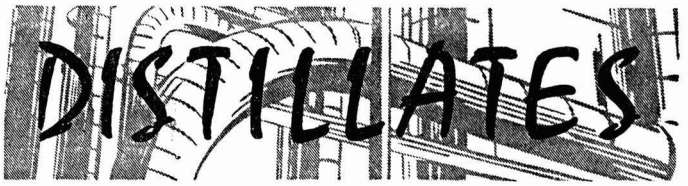
The plant at B.O.C.'s works near Sheffield is supplying oxygen by pipeline to the Steel Peech and Tozer branch of United Steel Companies Ltd. Later this year the plant will be replaced by a larger 100-ton-a-day tonnage oxygen plant of conventional design and the automatic plant will be available for installation elsewhere.

Time was on Courtaulds' side in I.C.I. merger battle says 'Observer' article

IN the third and final instalment of his account of the take-over struggle between I.C.I. and Courtaulds, in last weeks' *Observer*, Mr. Roy Jenkins, M.P., describes the battle proper in which the two companies, all amicable discussion abandoned, engaged in move and counter-move to win Courtaulds' shareholders over. He tells how Courtaulds formed a 'battle group' of four younger directors—led by Mr. Frank Kearton—whose successful tactics in playing for time contributed greatly to I.C.I.'s defeat, for "if Chambers had been able to press his bid home in the first fortnight of January, nothing could have stood in his way". The favourable impression of Courtaulds produced by the Press conference following the company's statement of improved future prospects "undoubtedly improved the position of Courtaulds".

Mr. Jenkins shows how Mr. Chambers took a great gamble in declaring the offer unconditional, thus leaving himself entirely at the mercy of Courtaulds' shareholders . . . "there were a few shrewd observers who thought this a major error of judgment". However, summing up the final result of the conflict, Mr. Jenkins concedes that "Chambers had bad luck. He could hardly have foreseen the emergence of an unexpected pattern of power relationships within the Courtaulds board. Once the unexpected had happened, however, he showed an excessive rigidity of approach and an unwise deployment of one bid after another."

In spite of his criticism of the I.C.I. tactics, Mr. Jenkins is not unmindful of the "almost farcical" aspects of Courtaulds 'victory' which gave them, as their largest single shareholder, a company whose business philosophy they had castigated as being quite different from their own, and, says Mr. Jenkins, the Courtaulds directors "with a full sense of the appropriate, decided to celebrate it with a special church service of thanksgiving for their delivery from their biggest shareholder."



ARE the railways moribund? According to Mr. G. W. Hemy, Joseph Crosfield's sales director, there's not much hope for them. He told the A.B.C.M. packaging conference last week that to transport silicates for more than 100 miles from Crosfield's Warrington Works meant doubling the cost of transport. It paid the company to set up production in London, even if only one-third of the capacity was fully utilised.

Strong words, but Mr. W. H. Vine, who shortly leaves the railways to join a firm with chemical interests, hinted (more by implication than by what he said) that if industrialists continued to keep rail wagons for two or three days before loading or unloading them, they might find themselves faced with demurrage charges. Apparently German companies face stiff fees if they keep wagons more than a few hours.

Chemical firms were also taken to task by another railwayman—this time one who forsook the chemical industry seven months ago for the British Transport Commission. Mr. L. H. Williams thought firms paid far too much for speed in delivery. He argued that if a ton of chemical was worth £80, and accepting that the interest per day on that £80 was 3d., then if to save a day in transit a firm paid more than an extra 3d., its cost of transport could be cut.

Whatever one's view on the railways—and Dr. Beeching has had a goodly share of grumbles—it is clearly impossible to present the country with an efficient, profit-making, reorganised freight system in a matter of months. My feeling is that once British Railways are reorganised, chemical firms will send much more of their output—in bulk—by rail.

WHAT I liked about this A.B.C.M. packaging conference was the hard-hitting, realistic attitude adopted by the three chemical directors in their papers—Rounsefell of Laporte, Hemy of Crosfield and Hutton-Wilson of Associated Chemicals. There were no illusions here about the likely impact of the Common Market—it is clearly a healthy sign when industrialists realise that the "milk and honey" of the "promised land" will only go to the efficient.

To my mind most of the proposals for the development of transport in bulk were sound, under-water pipelines, Channel tunnel and all. These things will be vital if the competitive advantages—now firmly held by Continental companies—are to come our way.

Mr. Hemy made some pretty reactionary proposals—amphibious wagons, inflatable balloons, de-aeration and final packaging at depots close to the user. The one I liked best was his suggestion of a pipeline system similar to the telephone network with the ability to hire so many minutes or hours of the network between one place and another. This is not as far-fetched as it sounds, but one questioner raised the biggest laugh of the conference when he asked "What happens if you dial the wrong number?"

IT'S called a velocimeter and is essentially a 5-in.-long stainless steel tube equipped with a signal-generating crystal on one end and a receiving crystal on the other. The velocity of a sound pulse transmitted through a liquid sample contained in the tube is determined by recording the time the pulse traverses the known distance between the crystals. Since the velocity of sound in a liquid depends upon the impurities present, the velocimeter can be used to detect many types of impurities. For example, salt can be detected in water to an accuracy of one part in 100,000 by weight when the salt is in solution.

This device, developed by the U.S. Naval Ordnance Laboratory, White Oak, Maryland—primarily to determine the velocity of sound in sea water—seems likely to find application in quality control in the chemical, petroleum and other industries.

DETAILS of a new impregnating process reach me from Witco Chemical Co. Ltd., Bush House, London W.C.2, indicating that this technique is assured of much wider markets than its original use of impregnating jute felt for use as a resilient carpet underlay. The process is described in Patent 856,389 and the present impregnants are based on products from Witco and Sto-Chem Ltd., their associates. These include aqueous-based compounds of natural and synthetic rubber, polyvinyl acetate, polyacrylates and copolymers.

The 'W' process as it is called applies impregnant, as froth or foam, to one surface of a fibrous sheet and then, by suction, the impregnant is drawn into, or even right through, the material. It can be applied to a plain web of fibre or to knitted or woven fabrics and is used on felts, carpets, papers, air filters, and non-wovens. One promising use is that of forming a polyurethane foam within a fibrous web, using a retarding agent so that foaming takes place within the web.

There are no drying costs since the normal water-diluted form of impregnant is not involved. Depth penetration can be controlled and materials can be treated on both sides or on only one side.

Because the process has far wider applications than those depending on Witco and Sto-Chem products it is to be made available to industry on a licensing basis, particularly for use with such impregnants as detergents, proofing agents, urethane foams, etc. Witco are so confident in the process that they are convinced it will lead to extension of their activities throughout the world.

I HAVE referred before to the ultra-conservative approach of the building industry to the use of plastics and I was glad to see that Mr. H. H. Woolveridge, a director of the Distillers Company and chairman of the D.C.L. Plastics Group, recently urged Britain to amend its regulations governing the use of materials for pipes.

Speaking as president of the British Plastics Federation, at the B.P.F. annual meeting, Mr. Woolveridge stressed that many countries were a long way ahead of Britain in the use of plastics pipes.

Now that there is wide acceptance of man-made materials of construction, he believes that the time has come for specifications to be reviewed and regulations governing the use of materials for pipes to be amended. In many cases those specifications and regulations were drawn up long before the new materials were available.

That is a commonsense view and it is encouraging to note that some of the traditional pipe companies, such as Allied Ironfounders, have recently decided to promote the wider use of plastics in their products.

THE scientific manpower problem in the U.K. is not as bad as some statisticians make it appear and some reassuring comments on the progress that has been made in the effective use of scientists in industry and in Government employment come from Sir Owen Wansbrough-Jones, who, as a former Chief Scientist to the Ministry of Supply and now a director of Albright and Wilson and of British Oxygen, is in a good position to see both sides of the fence.

Sir Owen was addressing the Institute of Personnel Management at Eastbourne and said that the real difficulty of communication between the Minister, civil servant or industrialist and the scientist qualified to help him had largely been resolved, while in industry prejudices that had prevented scientists from reaching top executive positions had been overcome. For the correct use of scientific manpower, staleness should be avoided by change and there should be a close association of industrial research scientists with accountants, economists, etc.

Alembic

A.B.C.M. PACKAGING CONFERENCE

L. to r., M. J. C. Hutton-Wilson, A.B.C.M. vice-chairman, and chairman of Associated Chemical Companies Ltd., L. H. Williams of the British Transport Commission (the chief guest), G. H. Edwards, conference chairman and packaging adviser to Unilever Ltd., V. Gordon-Saker, managing director, Reads Ltd., S. W. Farrington, marketing manager of Shell Chemical's Plastics and Rubber Division, H. A. Smith, packaging manager of A. Boake Roberts and Co. Ltd., and D. G. Warren Warner, packaging buyer, Shell Chemical

Chemical industry looks to bulk transport to cut costs

ACCENT at the third packaging conference to be organised by the Association of British Chemical Manufacturers and held at Harrogate last week was on the need to develop more efficient low-cost methods of packaging and transporting chemicals. This it was felt will involve a trend towards bulk movement, the development of new specially-designed vehicles, the construction of a Channel tunnel and the use of pipelines.

The conference, held under the title 'Packaging costs—the challenge of European trade to British chemical industry', was attended by some 150 representatives of A.B.C.M. member-firms and the packaging and transport industries. Mr. G. H. Edwards, packaging adviser to Unilever Ltd., was conference chairman.

There were five papers—summarised below; three by directors of chemical companies, all of whom were concerned that the British chemical industry should enter the Common Market on as competitive a basis as possible so far as transport and packaging were concerned, and by representatives of British Railways and the Port of London Authority. In addition, the chief guest at the conference dinner, Mr. L. H. Williams, a member of the British Transport Commission, spoke of British Railways' plans for freight transport reorganisation, the Commission's strong support for a Channel tunnel, and a new rail route from the North and the Midlands to Dover, avoiding London (see page 566).

Each of the first four papers was followed by discussion groups. After the first paper, that of Mr. E. O. Rounsefell, delegates split into three groups under Mr. A. F. Much, I.C.I.'s packaging adviser, Mr. G. F. Angus, operations manager of the Distillers Chemical Division, and Mr. A. Roche, manager of Monsanto's packaging group. Other discussion groups were held as follows: sacks (C. Swinbank, I.C.I.); drums (L. W. Stubbs, Albright and Wilson); intermediate bulk containers (J. G. Boyne, I.C.I.); developments in plastics containers (C. D. Callieu, chairman of conference organising committee); and packaging for fine chemicals (E. Richardson, Boots Pure Drug).

At the end of the conference a resolution was adopted to the effect that the conference believed that the Common Market involved an extension of the home market and that as such one of the major problems confronting British industry would be the need to compete on equal terms in ensuring delivery of products in all parts of the world, promptly, safely and at minimum cost. Accordingly, it is recommended that urgent action should be taken by A.B.C.M., preferably in co-operation with other industries, to investigate this.

Need for international standards of chemical packaging and labelling

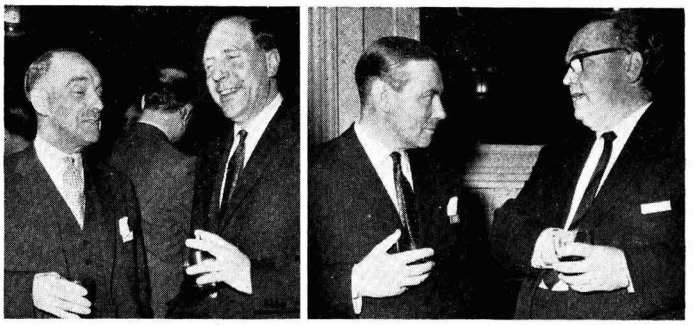
BRITISH packaging and transport authorities were urged by Mr. E. O. Rounsefell, commercial director of Laporte Chemicals Ltd., to act vigorously to ensure that Continental packaging standards were raised to the U.K. level.

In his paper on 'Packaging problems in the export of chemicals', Mr. Rounsefell spoke of the impact of Britain joining the Common Market. Continental exporters of certain hazardous chemicals appeared to have used packages which by British standards were unsatisfactory and unsafe.

The U.K. chemical industry had collaborated fully, frankly and responsibly with the Ministry of Transport and Civil Aviation in advising packages that were safe for the carriage of dangerous goods and explosives in ships.

Britain's export position would deteriorate seriously if care were not taken to tailor the package closely to minimum safety needs. Clearly, most chemicals could be packed in 'Rolls-Royce' packages which would largely guarantee safe transport. Such methods, however, might price the goods out of a competitive market.

In view of competition with Continental chemical firms, it was important that any regulations formulated should not be so onerous to U.K. companies as to render them uncompetitive in the Common Market. That did not mean



L. to r., E. Brockley, packaging adviser to the I.C.I. General Chemicals Division, D. F. Wall, director of Reed Medway Sacks Ltd., D. Miles Carter, director, Rosedale Associated Manufacturers Ltd., and A. P. Holden, field sales manager, Pressoturn Ltd.

that he thought that British standards should be lowered, but that Continental standards should be increased.

Similar considerations applied to the question of labelling. Tremendous progress had been made under the A.B.C.M. Marking of Containers Committee in developing adequate labels to cover hazards. But proposals for internationally acceptable labels had led to such a proliferation that there was much work ahead in order to reach appropriate compromises to avoid the great multiplicity of warnings and directions that were now current.

The A.B.C.M. recommendations were so precise that Mr. Rounsefell cherished the hope that they would become the European standard. He asked if A.B.C.M. could collaborate with the German, French and Italian association to consolidate the position for the future. This was an urgent problem.

The A.B.C.M. packaging committee was now exploring with P.A.T.R.A. the possibility and probable cost of 'full-blooded research' into the devising of performance standards. At present the industry had no such standards, but the U.K. industry might find that international standards were being set without due regard for British needs and conditions.

It was clear that performance tests of the future must be based on providing reasonable strength in packages, while port authorities and shipping companies must not expect chemical firms to price themselves out of world markets by being compelled to use over-costly packages. There was room for better training of dock labour in handling chemical cargoes, while equally it might pay many A.B.C.M. members to employ qualified packaging men.

The Transport Bill might involve a profound change in internal transport systems. There was a strong case to review goods reception and despatch points in works, and far from scrapping any works rail sidings, these might well be better adapted to a new state of affairs in the railway world.

In Germany there was a move back to rail transport, despite the excellent motorway network. Of that country's 625 million ton miles in 1960, 55.4% was carried by rail, 27.4% by barge, 15.2% by long-distance road transport and 2% by oil pipeline. For the U.K. it had been broadly estimated that of 45.5 million ton miles in 1960, 41% was carried by rail and 59% by road. Enforced parity in Germany of all conveyance rates at distances over 50 km. between rail and road traffic had an enormous effect.

Some efforts should be made to co-ordinate the four A.B.C.M. committees dealing with traffic, marking of containers, packaging and works safety. All were involved in meeting the challenges of the Common Market.

Looking to the future, Mr. Rounsefell spoke of the advantages of a cross-Channel tunnel or bridge linking England with France. Those interested in the movement of liquids might speculate on the feasibility of under-Channel pipelines. The liberal-minded packaging expert would not condemn the consideration of a technique which might in certain circumstances dispense with quite a lot of packages.

Mr. Rounsefell also referred to the trend back to the use of loose bulk cargoes, when the cost of the package was saved. Demountable tanks were finding increasing use and it was often worth considering whether a customer could dispense with static bulk storage by using suppliers' demountable tanks instead. He spoke of his company's success in shipping HTP as a deck cargo in demountable tanks fabricated from 99.5% aluminium.

Turning to new types of packages, Mr. Rounsefell awaited with interest the developments that would follow heat-resistant polypropylene and such of its 'alloys' with other plastics that improved flexibility and reduced brittleness without producing low temperature softening points.

As stated last week (page 523), Mr. Rounsefell estimated that the cost of packages—but not the operations of packaging—to the chemical industry was of the order of £50 million to £70 million a year.

Dice are loaded against U.K. chemicals; State co-operation needed

DOUBTS whether the Government had been active enough in promoting and encouraging the exploration for natural resources in the U.K., particularly oil and natural gas, were expressed by Mr. M. J. C. Hutton-Wilson, A.B.C.M. vice-chairman and chairman of Associated Chemical Companies Ltd., in his paper 'Challenge of European trade to the British chemical industry'.

The industry faced the prospect of joining the Common Market—it would be unrealistic to "go it alone by choice"—with the dice loaded against it. There were few indigenous raw materials and power costs were high in comparison with some of the most important foreign competitors.

There was no room for complacency for between 1938 and 1959 the U.K. total percentage of world export trade in chemicals had declined progressively from 19.3% to 15%.

The combined turnover in chemicals of the European Economic Community (E.E.C.) and the European Free Trade Association (E.F.T.A.) in 1960 totalled £6,730 million. Germany accounted for 45% of the mutual trade in chemicals in the E.E.C. and for 35% of the mutual trade in chemicals in the Organisation for European Economic Co-operation (O.E.E.C.); the U.K. share of the latter was only 13.5%. That meant that while U.K. exports to O.E.E.C. were about £100 million, the total European trade was slightly over £750 million/year.

Britain's slice of the European cake was small—and it was a very large cake. The opportunity was all the greater and

G. O. Thacker, works manager, F. W. Berk and Co. Ltd., left, with W. E. Smith of Manchester Oil Refinery's distribution department (centre) and J. W. Noble, buyer for Reckitt and Sons Ltd.

the success of the chemical industry would depend on our power to compete. The naked truth was that the industry would fail unless it could ensure that its costs were at least no higher than those of its competitors. The future would be determined if the industry was unable to regulate its economics. In this respect, new thinking was vital and, above all, a new spirit and attitude of mind towards the problems of the future by Government, management, employees, trade unions and all concerned in the well-being of national and economic prosperity.

Mr. Hutton-Wilson added: Let there be no illusions, the next two decades are not likely to appeal to the inefficient or highly protected and sheltered industries.

If British chemical manufacturers were to hold their own and improve their position, they must re-examine their selling methods in a big way. The practice of using agents in Europe was not enough. The time of moribund agencies and exports through correspondence was over. The closest relationship between seller and customer must be built up in each individual country.

The predicament now facing the U.K. industry was to establish a European selling organisation without inflating costs unduly. There might be scope for smaller companies to consider the possibility of collective effort.

Free flow of chemicals

The core of the industry's problems lay in costs of production for the success of sales efforts would depend on a free flow of chemicals from producers' factories with quality control and cost of production at least the equal of their competitors. The closest co-ordination, team-work and understanding was essential between those engaged on production, packaging, transport and sales, in addition to a most searching examination of methods.

While it was important to examine the breakdown and make-up of costs that were within the industry's control, it was important that other factors that influenced competitive power should also be considered. The British chemical industry could be seriously impaired by Government policies.

A number of problems were currently causing concern and if allowed to prevail might have far-reaching effects on the industry's competitive power. The most important of those were:

(1) The ineffectiveness and delay in implementing anti-dumping legislation.
(2) Taxation and costs of fuel and power.
(3) Export subsidies and other aids to competitors by foreign governments.
(4) The unequal burden of tax and legislation on costs in the U.K.

If the domestic structure of the chemical industry was allowed to crumble through the dumping of foreign chemicals, the constant and increasing demands for research and capital spending on which it depended might not be forthcoming. To avoid irreparable damage to the prospects of the industry, it would be more than ever essential to have full backing and co-operation from the Government to penalise and discourage uneconomic trading practices and devices. A new attitude of mind was as necessary in Whitehall as elsewhere.

A close liaison and understanding between the Government and the chemical industry could not be overemphasised, and a much closer liaison between technical experts and the Government was desirable in the conduct of G.A.T.T. and other negotiations that might impinge on and affect the prosperity of the British chemical industry.

With the dismantling of tariffs, Britain was bound to learn that the main consideration for industry was to produce goods rather than jobs and that that in the long run was the best way of securing full employment.

Mr. Hutton-Wilson also spoke of the need for economies and discipline in the nationalised industries if inflation was to be stemmed, and referred to the damage done by strikes. He wondered whether the National Economic Development Council was in itself sufficient and if the embers of Victorianism lingering in the structure and practice of trade unionism could not be extinguished and replaced by a more up-to-date and progressive outlook. With effective negotiating machinery in existence, unofficial strike action was merely another form of anarchy.

He asked "Is a national charter to uphold authority and responsibility really out of the question? Will we always have to subject ourselves to wage claims that do not take the form of periodic contracts?"

Packaging and transport still in "dust-cart era" says Crosfield director

SO far as transport and packaging were concerned, the British chemical industry was still in the dust-cart era, with the main aim being to move goods safely and cheaply as tonnage, rather than the preservation of their condition.

This was stated by Mr. G. W. Hemy, sales director of Joseph Crosfield and Sons Ltd., in his paper 'Some reactionary commercial principles'. Mr. Hemy described other anomalies as being (1) raw materials suffered less deterioration in transit than finished products; and (2) product appearance had become more important and as a result packaging tended to be a compromise between conflicting needs.

He stressed that chemical manufacturers were in business to make a profit out of chemicals. Profits could only be made in the long run if people were given a service or a commodity which they wanted at a price or under conditions which they could not better elsewhere. He questioned the validity of economic thinking which dictated that the larger the scale of production, the cheaper it would be. It might be true on an ex-works basis, but customers were not interested in such quotations, only in what the products would cost delivered on their own doorstep.

Transport was no longer in free supply; management skills were more freely available; markets everywhere were bigger; chemical engineers could now design plants that required fewer skilled manhours per ton, and, on the other hand, the appearance of finished products had become more important. Immediate delivery was now of much greater account, as was technical service. To his mind developments in transport had been much greater in the movement and containing of bulk loads than in the transport of finished products.

Despite the value of a pleasant package that was easy to open and use, if products did not get to the point of sale safely and intact, they would have no customers.

Mr. Hemy suggested the following priorities in package design: it must be intact on arrival; it should be the most economical form of transport, that is square rather than round or amorphous; it should be cheap; it should have qualities pleasing to the customer.

He did not blame package manufacturers for any shortcomings. The real trouble lay with chemical producers, who seemed to feel they had done their

L. to r., L. H. Williams, a member of the British Transport Commission, with G. F. Angus, operations manager of D.C.L. Chemicals Division and D. J. Winser, sales office manager, Fullers' Earth Union

duty provided they spewed out so many tons of chemicals. Shareholders were not so much worried about how many tons had been produced, but whether the dividend was satisfactory.

The English Channel and the North Sea would prove the biggest single obstacles in exporting chemicals to the Common Market—bigger obstacles for most products than duties had ever been. Those transport barriers would become bigger despite progress that might be made in packaging and transport.

What then could chemical manufacturers do? Mr. Hemy said that many excellent ideas had been put at the conference, but he felt that many of them did not go far enough. He wanted to encourage firms to be as dissatisfied as he was in the hope that invention would result. He then put forward a number of revolutionary ideas.

Firstly, he believed that consumer packaging must be done as near to the consumer as possible. That might mean a temporary package for moving products in bulk to small depots for final packaging. In the long run, chemical firms could not expect packaging to perform the dual role of protecting goods during transit and giving satisfaction to the consumer on arrival.

Transit packing must be cut to a minimum or even eliminated and pipelines would obviously become important. Mr. Hemy suggested a pipeline network similar to the telephone system with the ability to time so many minutes or hours of the network between one place and another. Such a system would gradually extend to solids, particularly those that could be fluidised.

Bulk containers will become more important

Demountable tanks—and all other types of bulk container—must become more important. On the other hand, de-aeration offered appreciable economies in transport. He was also sure that dunnage would disappear, possibly to be replaced by an inflatable balloon.

"You will take a case, line its sides with a plastics mattress, put in your goods, put the lid on, then blow up the mattress so that the case is absolutely tight." At this point, perhaps the case could be dispensed with for packages did not have to have a fixed geometrical shape. Mr. Hemy suggested it would be more convenient if the shape could be changed to suit the space in the vehicle.

If buffeting of rail wagons could be eliminated, it should be possible to make the sides of those wagons of lightweight materials. Why not also have amphibious wagons? If they were lighter and had enough buoyant dunnage, there seemed to be no reason why, on reaching the end of the railway line, they could not be just pushed into the water, coupled up and then towed or push-towed by tug. The same could be done with lorry loads.

Chemical producers were in business to upgrade their incoming raw materials, to make them more valuable. By tradition, that process took place in one spot and packaging and transport were applied only on completion of the product. That might not always be the right policy and chemical firms should consider what they did really well and then concentrate on doing it.

He estimated that by volume, a third of Britain's chemical exports consisted of air and water. Another substantial portion by value of chemical exports was represented by the unskilled or semi-skilled labour in packing up that air and water to make sure that it left the country.

"What we really make our profit from, what is really worth transporting, is a much smaller proportion of the total we send forth than we would ever care to admit."

P.L.A. executive on port handling problems

PROBLEMS of handling chemical exports and imports were outlined by Mr. E. S. Tooth, docks superintendent of the Port of London Authority. He spoke of the difficulties of adopting mechanical methods in certain cases, although when this was possible there were at least six benefits.

These were: quicker turnround of road and rail vehicles; doubling of shed capacity; need for 60% less labour; cutting arduous work; reduction in damage and pilferage; 20-30% increase in the speed of loading a ship.

Ship design was a big factor in deciding whether fork lift trucks and pallets could be used.

He stressed the value of chemical firms visiting port installations to see at first hand the problems involved.

B.R. look for expanding business in bulk chemicals

BRITISH RAILWAYS took it for granted that the chemical industry would steadily develop and were ready to co-operate in studying methods of carrying a greater production of existing products or of new products to be developed.

It was the aim to help increase exports, particularly if Britain joined the Common Market, declared Mr. W. H. Vine, commercial officer of the B.R. North Eastern Region, York. (Mr. Vine is shortly leaving the railways to take up an appointment with the Hargreave Group of chemical and fertiliser companies.)

C.M. membership would see an upsurge of movement to the Continent vastly beyond anything that had resulted from the European Free Trade Association. The trend towards bulk transport of chemicals would continue, and Mr. Vine stressed the great value to companies of a private siding link with the railway, particularly when looking ahead to wagon movements to the Continent, whether by train ferry or channel tunnel.

The collapsible tank was not likely in its present form to resolve the intermediate stage between drums and fuel tank wagons. The demountable tank, however, was returning to favour, while the railways and tank builders were striving for a standard design for standard rail vehicles that would cut costs and give greater flexibility. Drums of nylon with expendable liners were now being considered. Here he stressed that cylindrical containers wasted transport capacity; rectangular tanks, such as Tote bins, were more economical in loading space.

The conveyance aim must be towards a common standard for international rail movement and that was fairly easy with non-dangerous chemicals. The U.K. was exempt from the standard technical conditions for packing, but the U.I.C. (International Union of Railways) stipulated that B.R. conditions must at least be as rigorous as its own standards.

Mr. Vine said that fragmented regulations for packaging and labelling chemicals were most unsatisfactory in world-wide trade. The Treaty of Rome specified the adoption by 1969 of standard common rules for both packaging and labelling.

Pointing out that the railways were still the mainstay of the chemical industry's transport needs, he detailed some of the modernisation steps now in hand. There is to be "an adequate but limited" number of large central mechanised goods depots; use of private sidings will be encouraged; more rolling stock will be fully braked; track is being improved; the railways are increasing their packaging advisory service.

The new road-railer project is still in the experimental stage and involves the use of articulated covered trailers of 1,400 cu. ft. capacity with both road and rail wheels. Technical trials will be completed this year, when their economic worth should be established. If the scheme was proved worthy of commercial development, the possibilities for various types of wagons and tankers were endless.

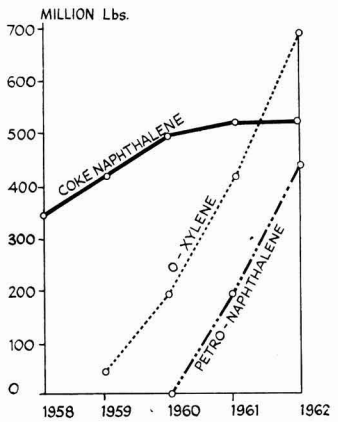
Mr. Vine took industry to task because he claimed that too many firms kept wagons for days waiting to be loaded or unloaded. The free periods allowed were too liberal and too often the maximum was taken as the normal. Road vehicles, on the other hand, were turned round in hours, not days.

He added that the German rail wagon fleet had been reduced to about 279,000, a half the size of that of B.R. German wagons had to be turned round in a matter of a few hours—that led to generally lower costs all round. If the period permitted was exceeded, then demurrage was payable, the charge being doubled if demand for wagons was particularly high.

U.S. NAPHTHALENE OVER-CAPACITY AHEAD WHILE EUROPE STILL SHORT

NEARLY 100% of the world's production of naphthalene is used in the manufacture of phthalic anhydride, a vital raw material in the dyestuff, plasticiser and alkyd resin industries. As shown in the graph, nearly half the phthalic anhydride is produced in the U.S., where the current capacity is over '0 million lb. Capacity for the U.K. is ı timated to be in excess of 200 million lb., and the production figure for 1961 is expected to be about 150 million lb.

There is currently an acute world shortage of naphthalene, brought about partly by the demand for phthalic anhydride having doubled in the last five years, and partly by the recent slow-down in the U.S. steel industry of which naphthalene has been an important by-product. With a 1962 demand for naphthalene for the phthalic anhydride industry



U.S. capacities of coke-naphthalene o-xylene and petro-naphthalene

likely to top 700 million lb., the U.S. has turned to Europe for a supply of naphthalene, and in an attempt to capture this market, new naphthalene plants are springing up all over the world. Japan has recently been studying the manufacture of naphthalene from coal tar, and it is reported that Mike Gosei have a new plant currently under construction. In India a naphthalene plant has been commissioned to work in conjunction with the Durgarpar Steelworks. In the U.K. the National Coal Board has placed orders for two naphthalene plants, one in South Wales and the other in the East Midlands. The former will be capable of refining all the naphthalene recovered to phthalic grade material, and will be designed to produce a mixed feed equivalent to 27.5 tons/day of naphthalene.

In spite of the increasing supply of naphthalene in the U.K., production in Europe is far short of making up the U.S.'s deficit for phthalic anhydride. There is little evidence that the U.K. is turning to petroleum as a source of naphthalene, and statistics show that the manufacture of naphthalene from petroleum in the past has been negligible.

Production capacity of U.K. plants for coke-naphthalene is 170,000 tons per annum and even in 1960 not much more than 50,000 tons was produced. U.K. figures for production of naphthalenes from coal tar since 1950 are given in '000 tons.

Year	'000 tons
1950	39.9
1951	42.4
1952	44.0
1953	35.1
1954	39.9
1955	40.0
1956	42.1
1957	49.0
1958	55.2
1959	62.3
1960	67.0

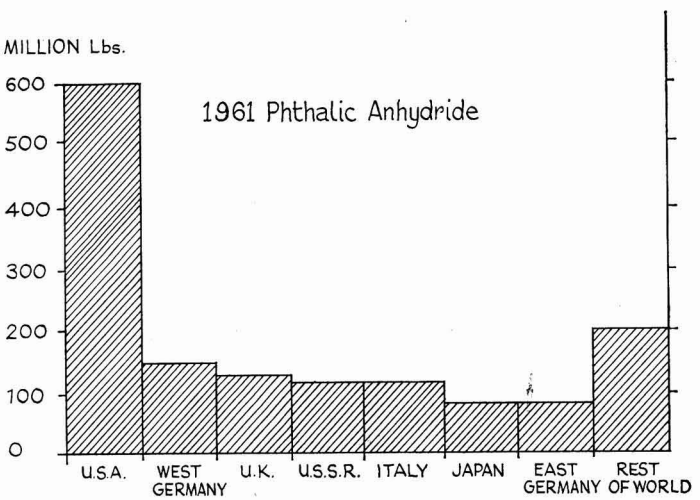
Since 1950, growth of coal tar chemicals in the U.K. as a whole has been dynamic, and the total has increased from 175,000 tons in 1949 to an estimated 540,000 tons in 1962. Compared with the other coal tar aromatics, and taking into account the increased demand, the growth of the naphthalene industry has been very slow.

Meanwhile, having been unable to buy or produce sufficient coal tar naphthalene for her needs, the U.S. is concentrating on *o*-xylene and petro-naphthalene as raw materials for phthalic anhydride. Both Standard Oil of California and Amoco are using *o*-xylene to make phthalic anhydride and combined capacity is 33 million tons per annum. Allied Chemical may use *o*-xylene at their proposed 25 million lb./year plant near Los Angeles. The only outlet for *o*-xylene in the U.S. is phthalic anhydride and production has trebled this year. Exports of *o*-xylene from the U.S. have not yet risen. Since the shortage of coal tar naphthalene, petroleum producers have drastically increased their capacities for producing naphthalene.

Petroleum naphthalene was produced commercially in the U.S. only at the beginning of 1961, and by 1962, total U.S. capacity for petro-naphthalene production will have risen to no less than 450 million lb., only 200 million lb. less than current coke-naphthalene production. There are thus now three raw materials competing for the phthalic anhydride market in the U.S. and their productions are shown by the graph.

West Germany, the world's second largest producer of phthalic anhydride with a current production of nearly 200 million lb./year, has also been faced with a shortage of naphthalene, caused by a decline of nearly 10% in coal tar production in 1959. At the same time production of phthalic anhydride increased by 21%. Italy, also faced with a shortage of naphthalene, has turned to *o*-xylene for manufacture of phthalic anhydride. Other European countries are thought to be considering basing their manufacture of phthalic anhydride on *o*-xylene, and the new Hook of Holland venture of Synres/Allied Chemical, to supply Synres plants in Holland, France

WORLD PRODUCTION OF PHTHALIC ANHYDRIDE 1961



and Spain, will be able to use either naphthalene or *o*-xylene.

Britain's first phthalic plant to be based on *o*-xylene is nearing completion for Grange Chemicals at the Hull site of Distillers, while B.P.-California have recently completed the first U.K. petroleum-based aromatics plant at the Isle of Grain.

Total U.S. capacities for petro-naphthalene, coke-naphthalene and *o*-xylene will be approaching 2,000 million lb., only about half of which will be required for home consumption in the manufacture of phthalic anhydride. About 80% of the future production of *o*-xylene is aimed at European and Japanese markets, and the prices of these three competitive raw materials will become an all important factor, as the supply overtakes the demand. This state of affairs may not come about for a few years, since new uses for phthalic anhydride are constantly being discovered. Currently the most rapidly increasing outlet is in the field of polyesters.

The U.S. can import naphthalene more cheaply than she can make it but in the last year the pattern has changed—there is a shortage of raw material for phthalic anhydride in Europe and in 1962 the U.S. will over-produce. It seems likely that if this trend continues, and home producers are unable to meet the demands of the phthalic anhydride industry, the U.K. may have to turn to the U.S. for supplies of naphthalene in the future.

B.T.C. supports channel tunnel, but there will be rules for dangerous chemicals

AFTER disclosing that British Railways strongly favoured a channel tunnel in preference to a bridge, Mr. L. H. Williams, a member of the British Transport Commission and a former director of Shell Chemical Co., said at the A.B.C.M. Packaging Conference dinner that regulations would be imposed by British and French Ministries for the carriage of dangerous goods. As yet, there had been no discussions on the form those regulations were likely to take. However, there would still be ferry services, although probably not on the short cross-channel routes, to cater for outsize or dangerous loads.

Chief guest at the dinner, Mr. Williams was replying to the toast of the guests, proposed by Mr. G. H. Edwards, conference chairman and packaging adviser to Unilever Ltd. He outlined the railways reorganisation scheme and spoke at length in favour of a channel tunnel, saying that the necessary finance, £130 million, as opposed to £260 million for a bridge, had already been assured from private sources. Construction would take five years and he was convinced that such a link with the Continent was vital if Britain was not to be left behind in the race to establish itself in the highly competitive Common Market.

British Railways would like to see still closer co-operation with the chemical industry, through its own established central packaging organisation, particularly in the exploitation of new materials and new techniques. Recent trends in packaging design had helped British Railways cope with movement in bulk of unit packs and had cut handling and costs, particularly when allied with palletisation.

There was much scope for more co-operation in the design of vehicles of various kinds. The railways were keen to design vehicles to suit the traffic, particularly for bulk movement, and he hoped the chemical industry would make growing use of the new pressurised vehicles. The latest, the Prestwin, fitted for air-pressure discharge, carried bulk powders in twin silos, holding up to 20 tons which could be discharged at more than 1 ton per minute. These vehicles and the expanding fleet of containers greatly cut packaging costs of many customers and in some instances no packaging was required at all.

Mr. Williams stressed that industry sometimes paid too much for speed in delivery. For most commodities the elapsed time in transit was not so vital as was made out. What was vital was the consistency of time, the regularity of flow. The amount one could afford to pay for speed was directly related to the interest of the time saving. The interest on a ton of a chemical worth £80 was about 3d per day. If to save a day in transit the chemical producer paid more than an extra 3d/ton, then the cost of his transport was reducible.

Mr. C. D. Callieu, chairman of the conference organising committee and with Shell Chemical Co. from 1946 until his recent departure from the chemical industry to devote his time to agriculture, was presented with a silver tankard by Mr. Edwards. Mr. Callieu thought it important that the chemical industry should improve its communications between departments related to packaging, transport and warehousing to get maximum co-operation. He said that if the transport people did their work properly it should be possible to reduce the cost of packaging by 25%, and since the A.B.C.M. Packaging Committee estimated the total cost of packaging at between £75 million and £100 million a year, it was obvious that considerable savings could be made.

For report on Packaging Conference see p. 561.

Fourth gas chromatography symposium

The fourth International Symposium on Gas Chromatography will be held at Hamburg State University on 12-16 June 1961.

More high purity inorganics from Colletts

A DEVELOPMENT programme, in inorganic chemicals, involving a considerable widening of their range of high-purity inorganics in the near future, is planned by J. M. Collett and Co. Ltd., Bristol Road, Gloucester.

Colletts, who have made two new senior appointments (see 'People in the News') are at present one of the leading U.K. producers of high-purity bulk inorganic chemicals, including sodium sulphite, potassium salts, sodium salts, ammonium salts, sulphur dioxide derivatives, etc.

Greater emphasis on the needs of the pharmaceutical and fine chemical industries has led to even more specialisation in the preparation of bulk chemicals to exacting standards of purity. This is the field in which Colletts are to increase their activities. In addition to its fine chemicals, the company produces a range of preservatives and adjuncts for the foodstuffs trade, including malt extract. Following acquisition by Associated British Maltsters Ltd., Colletts' range of products for the foodstuffs industry has been widened and their sales force and product development activities are being extended.

I.C.I. offer new catalyst for H_2SO_4

A NEW catalyst for sulphuric acid manufacture, designated 33-2, has been developed by I.C.I. and has been released for the general market after extensive proving runs in I.C.I.'s own acid plants. Production of 33-2, which is a potassium moderated vanadium catalyst supported on a silica base, is at I.C.I.'s catalyst factory at Clitheroe.

Catalyst 33-2 is claimed to have a 'striking' temperature of 370-390°C and to show superior activity at all temperatures between 370°C and 500°C, but particularly at temperatures below 450°C. It is stated that this activity in the lower temperature range allows a very high level of conversion and that increases of up to 20% in sulphuric acid production have resulted in plants with spare blower capacity. I.C.I. say that the increased production can be achieved without any increase in the escape of SO_2 to atmosphere.

I.C.I.'s own experience indicates that the active life of the catalyst should be 8-10 years.

B.o.T. Minister visits Miles' Bridgend factory

A visit to Miles Laboratories Ltd., Bridgend, was paid by Sir Keith Joseph, Minister of State, Board of Trade, in the course of a recent South Wales tour. Mr. J. A. Brindle, newly-appointed director of production and development (Bridgend), told him an estimated over 100 million tablets of Alka Seltzer would be exported this year, a 36% increase on the 1961 figure. The company has set up a Common Market organisation in Switzerland which purchases products from Bridgend for sale to the Six.

Overseas News

NEWCOMERS TO JAPAN PHENOL FIELD TO USE U.S. PROCESSES

BIG step-up of synthetic phenol production in Japan—already loaded with excess capacity—is foreshadowed by the projects of four newcomers to the field, all planning to use American processes and offering a challenge to the established phenol industry in which the Mitsui Group dominates.

First of the newcomers is Mitsubishi Chemical Industries, who have plans to set up a 9,000 t.p.a. plant at their Kurosaki factory, using the improved Raschig process under licence from Hooker Chemical Corporation, U.S. Completion of the project is expected by the end of 1963, the cost being estimated at 1,264 million yen. Capacity will be increased to some 10,000 tons in 1965 and 15,000 tons in 1966.

Their associates, Mitsubishi Petrochemical, are to set up a 1,500 t.p.a. plant, to cost 1,100 million yen, with completion scheduled for September 1963. This plant is to use the benzene direct oxidation process of Scientific Design Co., U.S. S.D. techniques will also be used in a third plant, of 10,000 t.p.a. capacity, that Nippon Shokubai Kagaku Kogyo plan to build at their Himeji factory by 1964.

American techniques and know-how, this time from Dow Chemical Co., are also to be used in a 12,000 t.p.a. project of Asahi Chemical Industry, the plant to be operated by a joint subsidiary, Asahi-Dow.

Present Japanese production capacity for phenol, including additional plants to be completed later this year, is 106,200 t.p.a., made up of Mitsui Chemical Industry's 42,000 tons, Honshu Chemical's 15,600 tons, Taoko Dyestuffs' 6,000 tons and Ube Industries' 3,000 tons—all using the benze sulphation process—together with Mitsui Petrochemical's 39,600 tons by the cumene process. Demand is officially estimated as only 95,700 tons by 1965.

Degussa acquire Sohio acrolein process

The Sohio process for the production of acrolein from propylene has been licensed to Degussa of Frankfurt. The company has an existing plant for acrolein, using formaldehyde and acetaldehyde.

Nitrogen take-over in France

An extraordinary general meeting of the L'Air Liquide concern, of France, has given permission for the taking over of 110,418 50-franc shares formerly held by the Saint-Gobain concern in the Société Chimique de la Grande Paroisse, a leading French nitrogenous products manufacturer. The Grande Paroisse firm thus becomes a 100% subsidiary of L'Air Liquide.

Saint-Gobain will receive, in return for the take-over and that of holdings in the nitrogen companies Union Chimique et Minière pour la Fabrication des Engrais Azotés and L'Ammoniaque de Liévin, some 48,961 new L'Air Liquide shares of nominally 35 francs value each.

Wacker licences for U.S.

Cary Chemical Inc., of Delaware, U.S., are reported to have bought from Wacker-Chemie GmbH, of Munich, West Germany licences for the use of Wacker patents, processes and equipment for the production of suspensions from vinyl acetate and copolymers, both existing and yet to be invented. Parts of the existing Cary plant at Flemington, New Jersey, and the new facilities at Burlington, New Jersey, will work to the Wacker processes.

Italian to build plants for Brazil?

Discussions are in hand between E.N.I. and Petrobras, the Italian and Brazilian State-controlled oil companies, regarding construction of oil refineries at Porto Alegre and Belo Horizonte as well as a number of petrochemical plants. Other items covered by these negotiations are prospecting, drilling, construction of pipelines and staff training.

A long-term credit scheme is being worked out to provide for purchases in Italy of equipment and machinery.

Expansion at Reichhold's Brazilian plant

Resana S.A. Industrias Quimicas, the Brazilian associates of Reichhold Chemicals Inc., have recently completed plant for the production of sebacic acid and capryl alcohol from castor oil. The new plant is completely integrated and designed for the production of 60 tons of sebacic acid a month. One of the site landmarks is a 33 ft. prilling tower into the top of which molten sebacic acid is sprayed against a counter-current stream of air. The acid is cooled and falls in the form of hollow spherical particles.

Phenolic resins and vinyl plasticisers have also been added to Resana's product range. Future expansion will include facilities for the manufacture of raw materials for the production of R.C.I. resins and chemicals.

U.S. companies seek participation in Israel State chemical complex

TWO unspecified U.S. chemical firms have approached the Israel Government-owned Negev Phosphate Co. with a view to participation in the chemical combine at Oron.

The combine, which will supply Far Eastern markets through the Red Sea port of Eilat, is to include a phosphate defluorination plant with an output of 40,000 tons a year. The investment involved in this plant will be in the region of £500,000, 40% of which will be provided by foreign investors.

A second plant will produce 100,000 tons of triple superphosphate a year, all for export. Again 40% of the £4 million investment will be met by foreign currency.

A third unit envisaged is for the manufacture of 60,000 tons a year of soda ash using calcined lime from the Oron mines and salt from the Dead Sea Works. About half the output would be required locally, the rest would be for export.

Texas/New Jersey pipeline meets opposition

The proposed 1,600 mile pipeline from Texas to New Jersey is meeting with stiff opposition from the shipping lines—not surprisingly, since, when completed, it is likely to replace as many as 50 tankers.

The pipeline will cost $360 million to build, and is claimed to be the largest pipeline in the world for petroleum products. It will carry 600,000 barrels a day to Eastern and Southern markets which are now mainly supplied by tanker.

Construction is expected to start next June and should be completed by the end of 1963. The project is being financed by most of the major U.S. oil companies—with refineries in the Gulf Coast area—Gulf, Texaco, Socony Mobil, Sinclair, Phillips, Standard Oil of Indiana Pure Oil and Cities Services. The only major companies not participating are Humble Oil, Standard Oil of California and Shell Oil, but these all have large holdings in the Plantation line which runs from Baton Rouge, La., to Greensboro, N. Carolina.

U.S. price cuts in phenol and hydrogen cyanide

Dow Chemical have reduced the price of phenol from 14 cents to 13.6/lb. in tank car quantities. Monsanto and other phenol producers are to meet Dow's cuts.

Price reduction for hydrogen cyanide have also been announced. Du Pont have cut the price of tank load quantities by 1 cent/lb. to 12 cents/lb. Du Pont say that the new price reflects cost economies resulting from increased volume.

Overseas news

Pfizer plan expansion of sorbitol output in face of over-capacity

AN expansion of sorbitol capacity to be aimed at the merchant market will be effected by Pfizer, U.S. Until now Pfizer's sorbitol capacity has been captive for the production of ascorbic acid and other pharmaceuticals. The plant is due on stream either in December or January. The only other merchant suppliers of sorbitol are Atlas Chemical Industries and Merck, the other producers being Hoffman-La Roche, whose output is entirely captive.

The decision of Pfizer to expand their sorbitol capacity in the face of an already over-supplied market has caused much comment in the U.S., particularly as Baird Chemical last year indicated that they were proposing to build a 20 million a year plant at Peoria, Ill. Sorbitol output in 1961 was estimated at 60 to 70 million lb., about 40% of which went to the non-captive market. New and expanded plants will put the capacity in the region of 133 million lb.

Pfizer are not impressed by arguments against expanding capacity. They say that it costs very little to expand their existing sorbitol plant and their salesmen are already calling on drug, food and cosmetic firms. The company feel they have little to lose from their expansion.

Main outlet for sorbitol is ascorbic acid, which takes about 28% of all output and is an entirely captive market. It is thought that sorbitol-based polyether, for rigid urethane foams could provide the fast growing outlet which is required, but this has been predicted for several years now without materialising.

Petrochemical complex for Karachi

Approval for the building of a big new petrochemical plant at Karachi, using a loan from an unnamed German source, has been granted by the Indian Government. The project is in the private sector of Indian industry. It is planned to build plants for the production of polyacrylonitrile, p.v.c. and acetylene at a total cost of Rs. 1,919 million.

Du Pont to produce new synthetic rubber

A plant to produce a new type of synthetic rubber—a polymer of ethylene and propylene chemically modified to allow sulphur vulcanisation—is to be built by E.I. du Pont de Nemours and Co. at Beaumont, Texas. The plant, scheduled for completion in 1963, has been designed to allow for ready expansion from the initial capacity of 30 million lb./year.

The new material, called Nordel hydrocarbon rubber, is now being tested in outdoor products such as electric cables, automobile window seals and garden hose, where its resistance to weathering, sunlight and ozone shows promise in solving problems of checking and cracking. Nordel is claimed to resist high temperatures, chemicals and abrasion, to retain flexibility at low temperatures, and to have constant dynamic properties over a wide temperature range. In addition, it is readily coloured and resists fading and discoloration.

The sulphur-vulcanisation property was achieved by incorporating a third ingredient in the polymer to add sites for reaction with sulphur.

Du Pont's new polythene delivery system

A new bulk system for transporting polythene, developed by E. I. du Pont de Nemours, involves the use of wood trucks with a capacity of 35,000 lb. of resin. This scheme will lead to a savings of some ½ cent/lb. which will be given to customers in the form of an allowance to make possible early amortisation of special handling equipment to ensure full benefit from the new system.

Allied Chemical licenses Japanese firms

Allied Chemical has signed agreements with Nippon Kayaku and Sumitomo Chemical covering Allied's patented naphth-quinone-activated process for the manufacture of benzidine from methanol, caustic soda and nitrobenzene. Approval is being sought from the Japanese government.

£A60 m. Australian oil merger proposal

The biggest merger in Australian company history, involving assets valued at about £A60 million, is proposed by H. C. Sleigh and Bitumen and Oil Refineries (Australia). It would bring together one of Australia's largest petroleum distributors and the only Australian-owned refining company.

Both companies have interests in oil prospecting in Queensland—Sleigh through a 10% interest in the Associated Oil group and Boral through a 20% interest in Oil Development. The two companies have a common link through interests held in both by California Texas Oil Corporation of New York.

Sleigh and Caltex are also associated together with Ampol in building Australia's first major lubricating oil refinery at Kurnell on Botany Bay.

Chemical expansion in Bulgaria

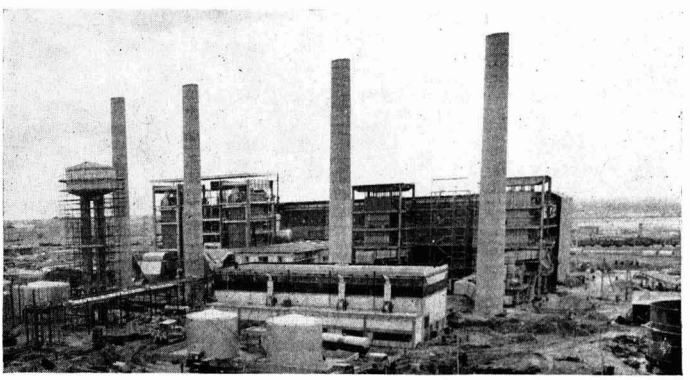
Plans are under way to expand the chemical industry of Bulgaria. A refinery, which is being built at Burgas and is due to go on stream in 1963, will produce raw materials for a plastics industry. The production of ethylene, polythene and liquified gas is planned for 1964 and a production capacity of 30,000 tonnes of synthetic rubber is scheduled to be on stream by 1965.

Output of chemicals in 1960 were 247,760 tonnes nitrogenous fertiliser; 122,650 tonnes sulphuric acid; 17,780 tonnes caustic soda.

U.S. 1961 phenol exports down

U.S. exports of phenol were down in 1961 at 41,245,595 lb. (compared with 48,405,831 lb. in 1960) and did not show an increase as suggested in CHEMICAL AGE in 24 March issue. The figures given previously were for cresol and cresylic acid.

New Montecatini plant nears completion



One of the plants nearing completion at Montecatini's Brindisi complex

Commercial News

- **Further increase in exports for Anchor**
- **Glaxo results show sales up, profits down**
- **Italian Edison increase share value**
- **Major part of Grace income from chemicals**

Anchor

A further significant increase in exports over the year ended 20 November 1961 was referred to in the annual statement of the chairman of Anchor Chemical Co. Ltd., Mr. F. Savage, in conjunction with the maintenance of overall turnover at more than £7 million. The reduced profit (consolidated trading profit was £197,016 against £236,088 for the previous year) was attributed partly to a lower level of trading in some traditional lines, partly to high promotional expenses connected with the company's entry into the plastics industry, and partly to increased international competition.

Anchor are associated with the Marbon Chemical Division of Borg Warner in the project to produce Cycolac brand ABS resins at Grangemouth (see C.A., 31 March, p. 517).

Berk

Subject to audit, consolidated profits of F. W. Berk and Co. Ltd., after all charges but before tax, fell to £617,261 for 1961 (£684,787). The 1961 figure includes the full years's profit of St. Albans Sand and Gravel Co. Ltd. Final dividend is 5½d/share, making a total of 8¼d/share (same).

Bulk Liquid

A satisfactory offer having been received from Mounton Holdings (a subsidiary of United Transport Co.) for the capital of Bulk Liquid Transport, the Bradford Dyers' Association and Cawoods Holdings have accepted and disposed of their interests in Bulk Liquid.

Cory

Net profit of Horace Cory and Co. for 1961 was £26,647 (£25,190) and a dividend of 33⅓ (50)% was declared.

Glaxo

An 8% increase in total sales value, and an even greater increase by volume, but a 7% decrease in trading profits, is recorded by the Glaxo Group Ltd. for the six months ending 31 December 1961, compared with the same period of 1960. An interim dividend of 7½% is declared.

Trading profit was £3.07 million (£3.29 million), net profit coming to £1.54 million (£1.72 million), if the results of Evans Medical Ltd., which was not actually acquired until after 1 January 1961, are included in the latter-half 1960 figures for comparison.

Macarthys Pharmaceuticals

Directors of Macarthys Pharmaceuticals Ltd. have declared an interim dividend of 7½% less tax on the 1.2 million ordinary shares of 4s each in respect of the year ending 30 April 1962.

Hickson & Welch

An agreement for the purchase of the balance of the shares in Hickson's Timber Impregnation Co. (S.A.) Ltd. was recently concluded in South Africa by Mr. Bernard Hickson, chairman of Hickson and Welch (Holdings) Ltd. Hitherto 49% of the shares in the South African company have been held by Hickson's Chemical Co. (Pty.) Ltd., in South Africa.

ISMA

The International Superphosphate Manufacturers' Association Ltd. has recently been registered as a company limited by guarantee without share capital. Objects are to acquire all or part of the property, assets, liabilities and engagements of the unincorporated association of same name. Subscribers of the new company are: Lawes Chemical Co. Ltd.; African Explosives and Chemical Industries Ltd. (an I.C.I. subsidiary); A/S Dansk Svovlsyre-og Superphospat-Fabrik, Copenhagen; S/A Cros, Barcelona; Et. Kuhlmann, Paris; Companhia Uniano Fabril, Lisbon; and Albatross Superfosfaatfabrieken NV, Utrecht, Netherlands. Management is vested in a council the first members of which are elected by the subscribers.

Simon Engineering

The Directors of Simon Engineering Ltd. recommend a final dividend of 17½% less tax making 27½% less tax for the year ended 31 December 1961 (same). Preliminary figures show a group trading profit for the year of £3,340,846 (£3,428,699) which after depreciation and taxation, including taxation adjustment in respect of prior years, makes £1,251,093 (£1,339,387).

Bayer

Farbenfabriken Bayer AG, the West German chemical concern, has declared an unchanged dividend of 18% for 1961, on a capital of DM735 m.

Borax (Holdings)

Lord Clitheroe, chairman of Borax (Holdings) said at last week's annual meeting that cash had been received from the U.S. for the liquidation of Consolidated Borax Inc., which had extinguished the company's overdraft. Business in the U.S. was still "pretty good," but in the U.K. and Europe, he added, it was not quite so good as last year.

CIBA AG

The Basle, Switzerland, chemical concern, CIBA AG, whose proposed increase of capital from 100 million francs to 120 million francs was reported in CHEMICAL AGE of 7 March, announces a recommended 1961 dividend of 90 francs/share (same) after net profit of 29 million (28 million) francs. Apart from dividend payments, it is recommended that 7 million francs should be allocated to the CIBA welfare foundation and 2 million to the company's fund for chemical and technical research. Consolidated CIBA group sales to customers last year totalled some 1,269 (1,130) million francs.

Tofte Cellulosefabrik

Net profit of A/S Toft Cellulosefabrik, Norwegian producers of sulphite cellulose and sulphite alcohol, for 1961 was Kr.602,000 (£30,100) compared with Kr.999,000. Sales totalled Kr.52 million (Kr.59 million). Dividend is fixed at 8% (9%).

Soc. Edison

Società Edison, Italy, are maintaining their 1961 dividend at Lire 135/share. It is proposed to increase the nominal value of the shares from Lire 2,000 to 2,300 through utilisation of reserves.

L' Industrie de Synthese

Groupement de l'Industrie de Synthèse, Paris, acting for 20 large chemical companies, have announced the floating of a loan of NF 99 m. to be issued in debentures of NF 200. They will carry an annual interest rate of 5% and will be redeemable within 15 years.

Subscription will be made at NF 198.50 and reimbursement at NF 220. The money will be used for a modernisation programme.

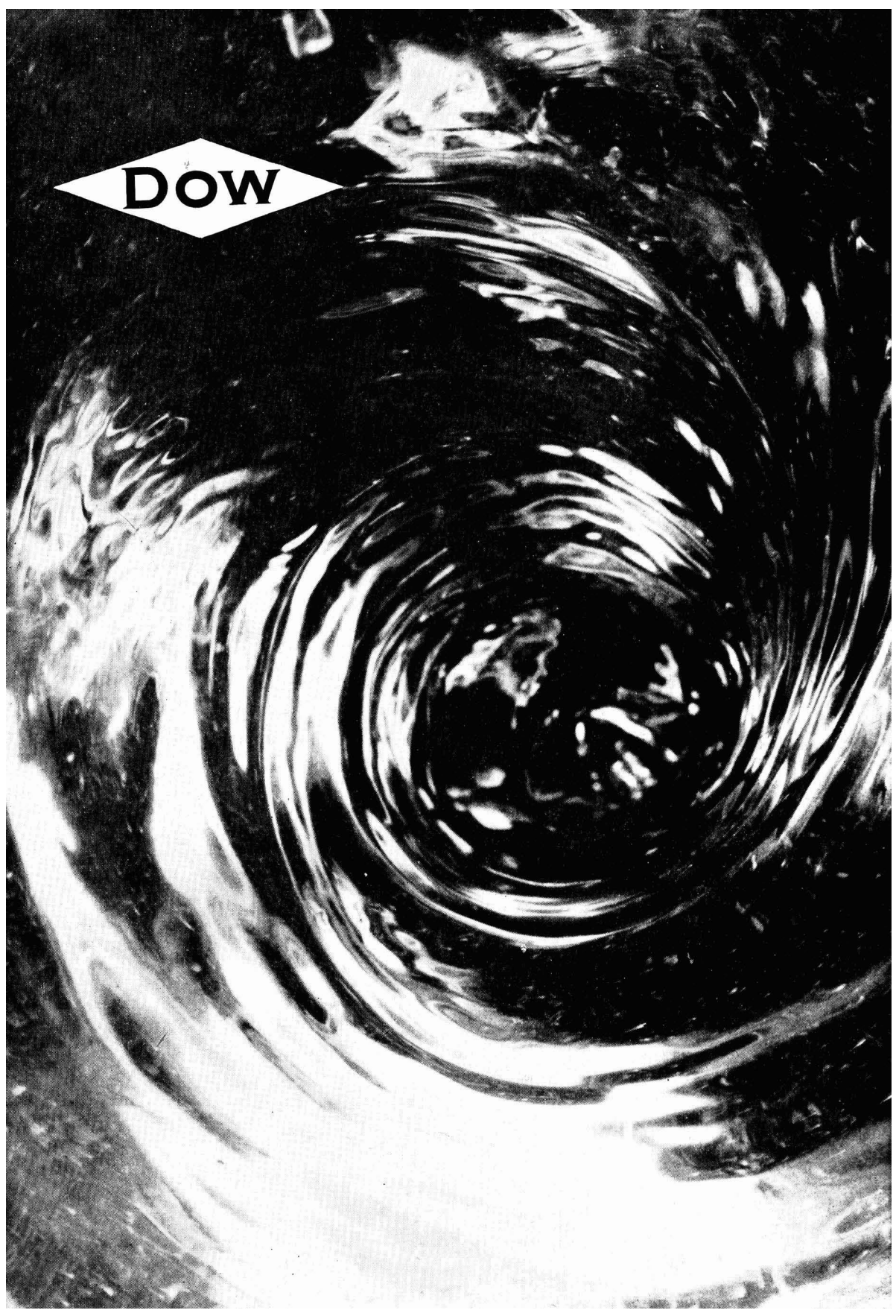
W. R. Grace

Major part of the increase of earnings of W. R. Grace and Co. (see 'Commercial News,' last week) during 1961 was once again contributed by the chemical division. Chemical earnings have practically doubled in the last five years and in 1961, they represented 68.4% of the company's total.

Both sales and profits in the chemical divisions were a record in 1961. Sales of $252,446,000 were 10% above the previous year. Including the petrochemical sales of the Cosden Petroleum Corp. and of the chemical units of the South American Group, total sales of chemicals were close to $270 million. Earnings rose 7% in the year. Consumption of fertilisers and fertiliser materials remained at high levels in 1961.

The 50% expansion of high density polythene facilities at Baton Rouge

(*Continued on page 572*)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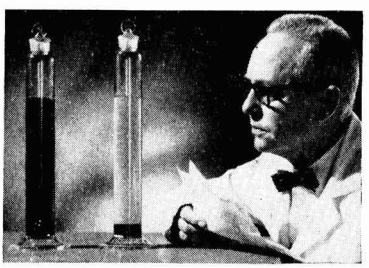

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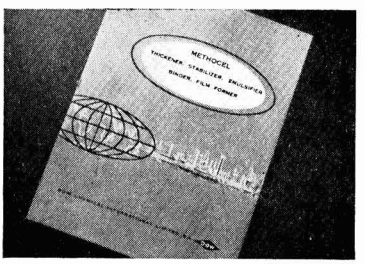

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DOW

Capital Increase for Montecatini

Pechiney profits up by NF10 m.

came on stream in November of 1961 and the company expects to be operating near full capacity in this material in 1962. Competitive pressure causing price reductions resulted in Polymer Chemicals Division operating at a small loss for the full year. However, with the new capacity, operations are expected to be profitable during 1962.

Sales of the overseas Chemical Division continued to grow in 1961 and for the first time exceeded $30 million.

Bunawerke Huls

The West German synthetic rubber concern Bunawerke Hüls GmbH, of Marl—owned 50% by Chemische Werke Hüls AG and 50% by a consortium formed by B.A.S.F., Farbenfabriken Bayer and Farbwerke Hoechst, sold more than 13% more synthetic rubber over 1961 than in the previous years. Owing to price development however profits did not reach expectations, while exports fell off from the 1960 level owing to large capacity expansion outside Federal Germany.

Linde's Eismaschinen

Over last year the Wiesbaden, West Germany, chemical and refrigeration plant manufacturer Gesellschaft für Linde's Eismaschinen AG increased its turnover by 12% over the 1960 level to DM534 million, while both production worth and order volume overtopped the 1960 level. Some DM82 million (DM62 million) was invested over the year, it is stated.

Montecatini

Montecatini, Milan, whose 1961 net profit was 14,950 million lire, or £8.5 million, as compared with only 13,120 million lire, or £7.5 million, have recommended an unchanged dividend of 115 lire/share, plus a one-for-five share bonus. The Montecatini capital will thus increase from 150,000 million to 180,000 million lire. After the payment of the bonus the capital will be increased by a further 45,000 million lire by a claim issue at a 1 : 4 ratio, price of the new units to be 1,065 lire per 1,000-lire unit. This increase up to 225.000 million lire capital is not expected to take place before August of this year. At the same time, Montecatini plan the issue, probably on 30 June next, of a 5½% bond loan of some 50,000 million lire.

Sales in 1961 totalled 194,072,509,536 lire or £110.9 million (167,094,710,186 lire, or £95.4 million).

Plans are now complete for new facilities in Sardinia for the production of 100,000 tonnes of aluminium a year and for the construction of glass works in Trieste.

The plants which Montecatini operate at Agrigento, Campofranco, Priolo, Crotone, Bussi, Orbetello, Terni, Apuana, Ferrara, Cengio, Cesano - Maderno, Novara, Settimo Torinese, Spinetta Marengo, Codogno, Castellanza, Rho, Linate, and Porto Marghera, are all undergoing expansion.

Pechiney Profits Up

Péchiney, the French aluminium and electro-metallurgical concern, are to pay an unchanged gross dividend for 1961 of NF4.75/share. Profits increased by NF10 million to NF43,933,365 in 1961.

The company is to call a meeting on 26 May to secure approval for a number of absorptions of companies, and regrouping of activities.

Sandoz AG

Net profit of Sandoz AG, Basle, totalled S.Fr21.9 million in 1961 (S.Fr18.9 million). Gross dividend on increased capital is S.Fr100/share (same).

Synres

NV Chemische Industrie Synres, Hook of Holland, announced for 1961 a net profit of some Fl.620,068 (Fl.276,348). A dividend of 8% is proposed this year in addition to 4% for shares created in 1961 for participation in Allied Chemical of the U.S. Synres state that erection has started on their new 5,000 t.p.a. phthalic anhydride plant, while the plant in France has recently had a capacity expansion.

The Spanish subsidiary, which is paying a 12½% (9%) dividend after "satisfactory results", has acquired a colophonium plant near Valladolid; this is to be revamped for the modern distillation of colophonium to serve other Synres plants. The Mexican plant which produces Synres products under licences and in which Synres is now to participate with a 50% holding, has changed its name to Industrias Quimicas Synres S.A.

INCREASES IN CAPITAL

EUROCHEMIC, the European company for nuclear fuel processing, are to increase their capital from an equivalent of $21,500,000 to $30,700,000.

TENNANTS (LANCASHIRE) LTD., chemical manufacturers, etc., Hazelbottom Road, Cheetham, Manchester 8. Increased by £100,000 beyond the registered capital of £150,000.

NEW COMPANIES

TONRA LTD. Cap. £5,000. To acquire Thew Arnott & Co. Ltd., chemical merchants, manufacturing chemists, etc. Directors: C. E. Thew and Margaret Thew, R. J. Thew and Eileen O. Thew. Reg. office: Flodden Works, London Road, Wallington, Surrey.

UNIT PACKING CO. LTD. Cap. £100. Packers and suppliers of aerosols and pressure packaging, etc. Directors: D. S. Ball (managing director) and Pauline M. Ball. Reg. office: 35 Ealing Road, Wembley, Middx.

Market Reports

GOOD HOME INTAKE AGAINST CONTRACTS

LONDON Buying on home account and the volume of enquiry for shipment has continued on a fair scale, with a good intake against contracts. However, the markets show no outstanding feature and prices generally remain steady at recent levels.

The bases price for dry white lead has been raised by 30s/ton and for red lead by 45s/ton. Litharge is also raised by 45s/ton. These new rates come into operation on 3 April.

Demand for fertilisers has been good and the supply position is reported to be comfortable. The creosote oils, carbolic acid and the cresylic acids are in steady request in a quiet coal tar products market.

SCOTLAND The level of trading was well maintained and towards the end of the week the position was rather more active. Demands were again varied with emphasis on quick delivery, most orders being for immediate requirements. Quantity off-takes against contracts remained fairly steady.

There was little variation in prices which for the most part remained firm. The agricultural chemicals market was fairly active in regard to both enquiries and demands.

Third U.S. polio vaccine licence for Pfizer

A LICENCE to produce type 3 Sabin oral polio vaccine has been granted to Pfizer Ltd., Sandwich, Kent, by the U.S. Public Health Service. This follows last year's granting of licences to Pfizer to produce types 1 and 2 oral polio vaccine for the U.S. body.

Pfizer's polio vaccine unit at Sandwich is now the only one in the world holding licences to manufacture Sabin oral polio vaccine under M.R.C. (U.K.) and also N.I.H. (U.S.) regulations. During the last 12 months Pfizer have supplied considerable quantities of the new vaccine to many parts of the world. Apart from the emergency despatch of nearly half a million doses of type 2 vaccine to Hull last October, vaccine produced by Pfizer has also been supplied to the U.S., Japan, Mexico, Malta, Austria and West Germany as well as to the Ministry of Health in the U.K.

I.C.I. Synthetic Fibre Exhibition in Norway

The first public exhibition of I.C.I.'s latest synthetic fibre, Ulstron polypropylene, was scheduled at three centres in Norway from 26 March to 5 April. The exhibition at Bergen, Aalesund and Stamsund, tells fishing gear manufacturers and fishermen the story of this new fibre, which it is claimed, is the lightest fibre yet known, has good resistance to abrasion, is rot-proof, and loses no strength on wetting.

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PEOPLE in the news

● **Dr. H. Schwarzenbach,** of Thalwil, Switzerland, and **Karl A. Sutter,** president of Geigy Chemical Co., U.S., have joined the board of administration of the Swiss chemical company J.R. Geigy AG, Basle.

● **Mr. D. M. Taylor** has been appointed business development manager in London with Parsons Powergas, a joint venture of the Ralph M. Parsons Co., Los Angeles, and the Power-Gas Corporation Ltd. of London and Stockton-on-Tees.

● **Sir Alexander Todd, F.R.S.,** aged 54, Professor of Organic Chemistry at Cambridge University since 1944 and chairman of the Advisory Council on Scientific Policy since 1952, has been created a life peer. Awarded the Davy Medal in 1949 and the Royal Medal of the Royal Society in 1955, Sir Alexander gained the Nobel prize for chemistry in 1957.

● **Dr. A. C. Copisarow** has been appointed chief technical officer of the National Economic Development Council. He is at present a director in the Department of Scientific and Industrial Research which has agreed to his immediate secondment, though he will continue for the time being in his current post as director of the Forest Products Research Laboratory on a part-time basis.

● **Mr. H. D. Newlyn,** general manager, operations, of Petrofina (Gt. Britain), has been appointed to the board.

● **Mr. G. H. Price** has been appointed export sales manager of Q.V.F. Ltd., Stoke-on-Trent.

● **Sir Cyril Hawker** has been appointed a non-executive director of Head Wrightson and Co. Ltd. Sir Cyril, who was an executive director of the Bank of England, has spent the last four years visiting all sections of British industry explaining Bank of England policy and learning some of the problems facing industry today.

● **Mr. B. J. F. Dewson** and **Mr. F. R. Lidster** have joined J. M. Collett and Co. Ltd., chemical manufacturers, Bristol Road, Gloucester, following a reorganisation. Mr. Dewson has joined as assistant managing director and Mr. Lidster as production manager. Previously Mr. Dewson was sales manager of Colletts and left to become technical sales manager of Turner Brothers Asbestos Co., of Rochdale. Mr. Lidster was previously employed in the production side of Peter Spence and Co., of Widnes, and then worked on operational research with Littlewoods. (See also p. 566).

● **Dr. M. Josephs, A.R.I.C.,** has joined Unilever-Emery N.V. as sales manager. Until 1 April he was market research and product development manager of Price's (Bromborough) Ltd. Dr. Joseph's successor at Price's is **Mr. L. F. Byrne, F.R.I.C.,** who has worked for some years in the fatty acids industry.

● Bakelite Ltd. have announced the retirement of **Mr. G. Dring, F.R.I.C.** Mr. Dring joined Damard Lacquer Co., the predecessor of Bakelite Ltd., as a research chemist in 1921 and was a member of the board from 1942 to 1958. Mr. Dring is a vice-president of the Royal Institute of Chemistry and of the Plastics Institute, chairman of the Plastics and Polymer Division of the International Union of Pure and Applied Chemistry, and a former vice-president of the Society of Chemical Industry.

● **Mr. John C. Garrels,** managing director, took over on 2 April the responsibilities of chief executive of Monsanto Chemicals Ltd. from **Sir Miles Thomas,** who reached the age of 65 during March. Sir Miles will continue as chairman of the board. Mr. Garrels, who became managing director in October, 1961, joined the company in January that year after 19 years with the parent company, Monsanto Chemical Co. A graduate chemical engineer, he is also a member of the American I.C.E. and of the S.C.I. **Mr. D. R. Mackie,** who was managing director before him, retired last week from the board on which he had remained a member.

J. C. Garrels

● **Dr. E. D. Barlow** has been appointed deputy chairman of Cambridge Instrument Co.

● **Mr. F. Keighley** has been elected a director of the A.P.V Co. with effect from 1 April.

● **Mr. W. J. McHugh** has been appointed a full time director of Glaxo Laboratories (Ireland) Ltd. as from 2 April. He will succeed **Mr. Donald MacKenzie** as managing director on 1 October. Mr. MacKenzie retires from that position at the end of September but will remain on the board.

● **Mr. J. D. Wilson** has been appointed a director of Recontainers Ltd., Green Lane, Hounslow, Middx, one of the JEL Group, who claim to be the largest U.K. jerrican reconditioners.

Fisons' executive structure reorganised

IMPORTANT changes in the executive structure of the Fisons Group are signified by the new board appointments of Fisons Ltd.—announced as CHEMICAL AGE went to press last week and briefly reported in that issue—which have now been followed by announcement of new appointments and changes to the composition of the board of Fisons Overseas Ltd.

With the abolition of the office of group managing director (it will be recalled that Fisons' managing director, Mr. A. Wormald, resigned recently) the main burden of executive responsibility rests with **Sir John Carmichael** and **Mr. J. W. Napier,** who have been appointed executive vice-chairmen. At the same time the board has been strengthened by the addition of **Mr. Arnold Robinson** and **Dr. E. Parry Jones.**

In addition to these changes, **Mr. C. E. Horton,** who joined the board in 1956 as research director, has retired from executive duties with effect from 31 March and has relinquished the office of vice-chairman on reaching normal retirement date, but remains on the board as non-executive director.

The resignation of **Sir Thomas Bland,** forecast by Sir Clavering Fison in his annual report last November, took effect from 29 March, Sir Thomas' resignation being necessitated by new responsibilities as recently appointed deputy chairman of Barclays Bank.

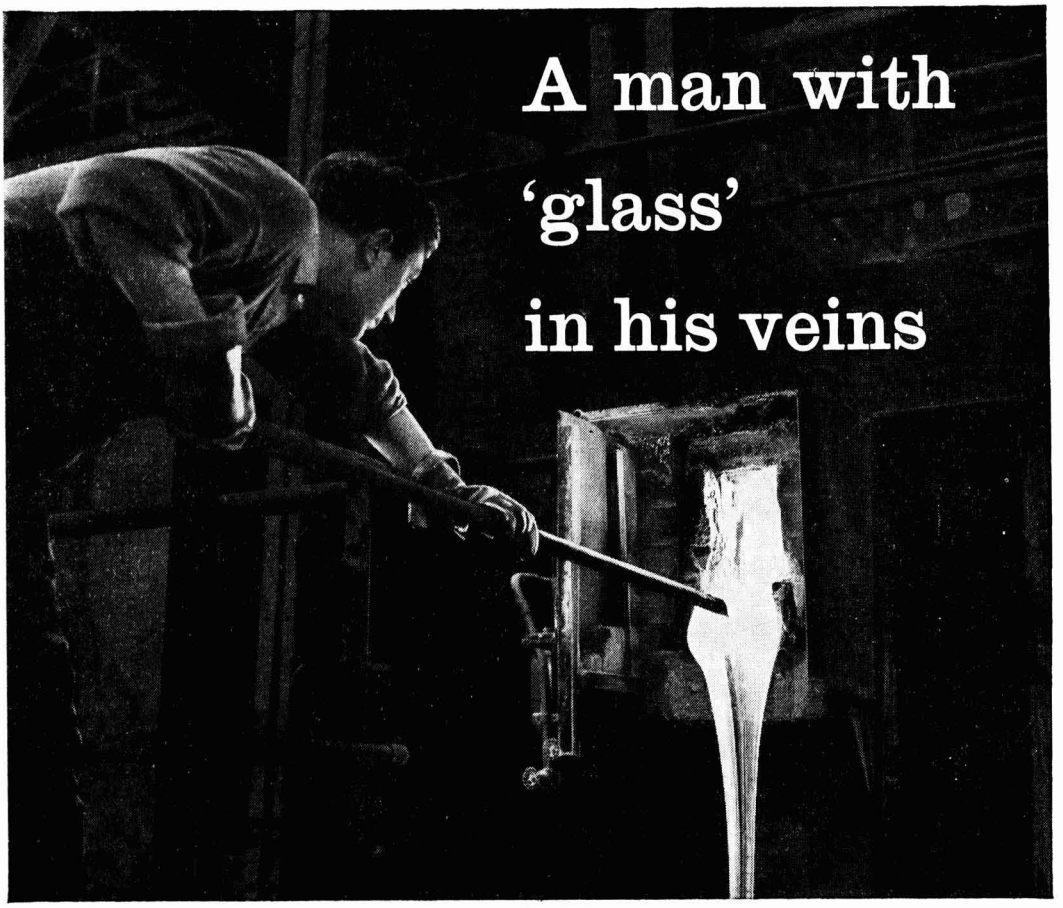
A. Robinson

E. Parry Jones

The changes in the board of Fisons Overseas Ltd. are as follows:

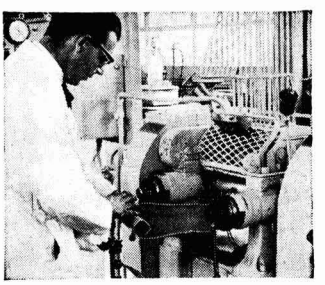
Mr. H. J. Kahn has been appointed senior managing director, responsible with managing directors Mr. Wilfred Abel Smith and Mr. Claude Merrick—to the chairman, Mr. G. V. K. Burton, for the operation of the company. **Mr. J. T. Creighton** has been appointed a director. The board also includes Sir John Carmichael, Mr. J. T. Creighton, Dr. E. Parry Jones, Dr. H. Redwood and Mr. A. Robinson.

Mr. Robinson has resigned as executive deputy chairman of Fisons Overseas Ltd. on taking up his new appointment as managing director of Fisons Fertilisers Ltd.



Alfred Walkett is one of several men in charge of the glass furnaces at Crosfields . . . furnaces that, every week, working day and night, fuse together over a thousand tons of sand and soda ash into a high-grade glass. Alfred's skill lies in keeping the quality of this glass consistent—for this is the basic material from which specialists like Arthur Lennox (right) help to evolve new fillers for rubbers, binding agents for TV tube coatings, catalysts for Britain's petrol. . . .

Impressive though the list is, Crosfields are never content. In their new £750,000 Technical Centre research continues unceasingly to find new ways of using silicates . . . to promote new production economies in a wide range of industries. Maybe yours?



Crosfield brands include: Pyramid silicate adhesive. Solgon and Trimetso industrial alkaline detergents. Sorbsil desiccant. Nicat non-pyrophoric catalyst. Gasil micronised silica gels. Microcal calcium silicate. Alusil aluminium silicate. Neosyl precipitated silica.

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Bookshelf

'Unsurpassed' book covers all aspects of chromatography

CHROMATOGRAPHY. Edited by *Erich Heftmaun*. Reinhold, London, 1961. Pp. xxv + 753. £7.

The title of this book might well have been 'Handbook of chromatography', so extensive is its coverage of a rapidly expanding subject. Contributions from 34 international authorities range over the complete spectrum of chromatography-adsorption, partition, ion exchange, electrochromatography, column, slab, paper and gas. The first 13 chapters are devoted to theoretical aspects of chromatography and individual techniques of the various branches. The second half of the book (14 chapters) deals with particular applications.

A slight criticism one finds in reading this book is that should the reader be interested in a particular branch of the subject, say gas chromatography, then it is disconcerting to find that one has to thumb through large areas of the text in order to find all the material given on this particular topic. However, it is to be realised that in compiling a large review book of this nature uniformity of arrangement in certain directions must be sacrificed.

The editor is to be congratulated in bringing together contributions from such a diversity of sources in an interesting and pleasing manner. As a source of reference covering the whole field of chromatography this volume is unsurpassed and is recommended to all teachers and advanced students of chromatography.

Heterocyclics

THE CHEMISTRY OF HETEROCYCLIC COMPOUNDS. By *G. M. Badger*. Academic Press Inc., New York and London, 1961. Pp. ix + 498. £4 6s.

Not too many student texts on heterocyclic chemistry have followed Morton, and Professor Badger's book will arouse much interest. At a preliminary inspection it makes an excellent impression. The size is about right, and much work has obviously been put into it. A most attractive feature of the book is that after a section dealing with the systematic or basic chemistry of a particular ring system are sections, comprising often a considerable proportion of the text, on natural products containing the ring. Here a nice judgement has been exercised in the selection of topics, so that the result should be readable and stimulating as well as informative. Too much has, however, been attempted, for the biological significance of most of the compounds is discussed: something has to be left out, and unfortunately it is the chemistry which has been omitted. It will not take an extremely perceptive student to realise that the structures of theophylline and theobromine do not necessarily follow from their behaviour on oxidation, though Professor Badger tells him they do. Even from the systematic chemistry of fundamental ring systems there are some startling omissions.

The authors preface states that the book is directed towards senior undergraduates, and post-graduate student. While many of the latter undoubtedly will find much of value in it, it is not very suitable as the first introduction to heterocyclic chemistry for the former.

U.V. engineering

ULTRA-VIOLET AND INFRA-RED ENGINEERING. By *W. Summer*. Pitman, London, 1962. Pp. xx + 300. 42s.

The practical applications of ultra-violet and infra-red radiation in modern industry are many and varied. This being so there is a growing realisation that a new field of 'paraphotic' or ultra-violet and infra-red engineering is beginning to emerge. This new domain is, of course, related to certain aspects of lighting and chemical engineering.

The author has attempted, and to a large extent succeeded, to bring together the bare essentials necessary for an appreciation of the role of the paraphotic engineer. To this end he includes chapters on the generation and detection of ultra-violet and infra-red radiation followed by a section (60 pages) on the various types of equipment. The main part of the book deals with some 36 different engineering applications.

The book concludes with a useful chapter on health hazards and a valuable bibliography of 282 references.

Fluorochemistry

CHEMISTRY OF ORGANIC FLUORINE COMPOUNDS. By *M. Hudlicky*. Pergamon Press, Oxford, 1961. Pp. 536. 60s.

Since the appearance of the Czech edition some three years ago, this book has been revised and translated into English by the author. The English edition also owes something to Professor A. L. Henne in whose laboratory Hudlicky spent a year as UNESCO Fellow.

The author states in his preface that his account of the field is frankly subjective, based on his own efforts to become acquainted with the preparation and properties of organic fluorine compounds. The emphasis is thus on the practical aspects of the subject and theoretical considerations are included only where necessary for the understanding of the laboratory procedures. In view of the extent of the literature, references are selective but sufficient to give a representative survey and an entry to any particular topic. Within these limits the book will be found to give a well-written introduction to practical fluorine chemistry, of considerable value to the beginner.

Printed in Poland, the work is excellent value at 60s.

Nuclear science

ANNUAL REVIEW OF NUCLEAR SCIENCE, VOL. 2. Edited by *E. Segre*. Annual Reviews Inc., California, 1961. Pp. vii + 513. $7.5.

Following the scheme of previous volumes, this one contains reviews of recent work that is mainly in the field of nuclear physics. However, there is a certain amount of information of interest to chemists. This includes a section on the industrial uses of isotopes which takes in biochemical studies of farm animals, the estimation of lean meat, some applications of tritium and carbon-14, measurement of flow, mixing and thickness, food preservation and isotopic power sources. On the academic side, isotope effects in chemical reactions are reviewed, with particular reference to deuterim and carbon-14, and there is a section in a chapter on neutron diffraction that deals with crystallography and chemical bonding.

Pharmaceutics

BENTLEY'S TEXTBOOK OF PHARMACEUTICS, 7TH EDITION. By *H. S. Davis*. Bailliere, Tindall and Cox Ltd., 1961. Pp. 1102. 52s 6d.

In this edition it has been decided not to confine the text as closely to the contents of the current British Pharmacopœia as was done in earlier editions and this has increased the scope of the book. It is divided into seven parts: Pharmacopœias and formularies, Physicochemical principles, Pharmaceutical operations, Dispensing, Pharmaceutical microbiology, Pharmaceutical preparations and Radioactivity and radioisotopes. Each part is divided into chapters, each of which carries some references to original publications. The preceding short introduction gives a list of sources of general and research information, and the appendix on posology tabulates the doses of potent drugs.

Throughout the writing and diagrams are clear, and this is a readable book. It could be a valuable reference book and many of its chapters would be valuable to laboratory technicians both during and after their training, but it also carries out its main objective of providing a single volume which covers most of the requirements of intending pharmacists. At 52s 6d it is very good value.

NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 5s including postage; annual subscription £12 10s.

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.

AMENDED SPECIFICATIONS

Open to public inspection 2 May

Synthesis of diamines. National Distillers & Chemical Corporation. **821 984**

Separating hydrocarbons. Bataafsche Petroleum Maatschappij NV De. **848 190**

Steroids. Upjohn Co. **851 679**

Phenthiazine derivatives and processes for their preparation. Soc. Des. Usines Chimiques Rhone-Poulenc. **853 803**

ACCEPTANCES

Open to public inspection 2 May

Catalytic reduction of aromatic *dinitro* compounds. General Anilne & Film Corporation. **895 197**

Stabilised macromolecular polyformaldehyde and process. Badische Anilin-& Soda-Fabrik AG. **895 115**

Production of branched and/or cross-linked copolymers from olefinically unsaturated monomers. Badische Anilin-& Soda-Fabrik AG. **895 621**

Process for the dehydrogenation of hydrocarbons. Shell Internationale Research Maatschappij NV. **895 500**

Method of manufacturing cumene hydroperoxide. Soc. Italiana Resine. **895 622**

Latex master batching of silica with vinyl pyridine rubbers. United States Rubber Co. **895 571**

Process for producing and stabilising formaldehyde polymers from trioxane. Montecatini. **895 378**

Nitric acid esters. Apothekernes Laboratorium For Specialpraeparater AS. **895 200**

Process for obtaining high polymers of formaldehyde by topochemical reaction on polyoxymethylenes. Montecatini. **895 379**

Purification of alumina. Pechiney. [Divided out of 895 446.] **895 447**

Polymeric material by emulsion polymerisation and apparatus therefor. Phillips Petroleum Co. **729 499**

Open to public inspection 9 May

Process for treating carbon black by oxidation. Deutsche Gold-und Silber Scheideanstalt vorm. Roessler. **895 990**

Perfluoroalkyl-substituted aliphatic acids and derivatives thereof. Minnesota Mining & Manufacturing Co. **896 015**

Process for the manufacture of phosphoric acid. Compagnie de Saint-Gobain. **896 016**

Cyclopentanophenanthrene derivatives and process for the production thereof. Syntex S.A. **895 842**

Calcium silicate pesticidal carrier. Rohm & Haas Co. **895 992**

Manufacture of foamed polyurethane materials. Imperial Chemical Industries Ltd. **895 966**

Vinylation of mercaptans. Rohm & Haas Co. **895 993**

Process for the manufacture of carbonyl compounds. Consortium für Elektrochemische Industrie GmbH. **895 843**

Steroid compounds and their preparation. Merck & Co. **896 103**

Process of producing pyrazolone derivatives. Sandoz Ltd. **895 994**

Manufacture of solid stable diazonium compounds. Farbwerke Hoechst AG. **896 111**

Broad spectrum antibiotic flavofungin and process for the production thereof. Hajusagi Gyogyszergyar. **895 864**

Production of cyclic phosphonitrilic fluorides. Albright & Wilson (Mfg.) Ltd. **895 969**

Disazodyestuffs insoluble in water and process for their manufacture. Farbwerke Hoechst AG. [Addition to 860 995.] **896 112**

Low temperature polyether-urethane compositions. General Tire & Rubber Co. **896 198**

Plastics. Baxenden Chemical Co. Ltd. **896 128**

Cyclopentanophenanthrene derivatives. Syntex SA. **896 027**

Manufacture of polymeric materials. Imperial Chemical Industries Ltd. **895 967**

Alkylation of aromatic compounds. Imperial Chemical Industries Ltd. **895 968**

Process for improving the adhesive properties of polyolefins. Farbwerke Hoechst AG. **895 972**

Process for the manufacture of compounds containing carboxylic amide groups from carbamic and carbonic acids esters. Ciba Ltd. **895 895**

Purification of liquid hydrocarbons. Bataafse Petroleum Maatschappij NV. **896 020**

Process for the catalytic countercurrent exchange of deuterium between hydrogen and water. Bayerl, V. **896 021**

Preparation of glycolonitrile. Dow Chemical Co. **895 681**

Acid addition salts of thiaxanthene derivatives and the manufacture thereof. Kefalas AS. **896 036**

Acid addition salts of thiaxanthene derivatives. Kefalas AS. **896 037**

Ethylenically unsaturated glycols. British Celanese Ltd. **895 975**

Method of producing tetracycline. Spofa, Sdruzeni Podniku Pro Zdravotnickou Vyrobu. **895 688**

Process for the production of pigment preparations. Sandoz Ltd. **895 751**

Preparation of sodium carbonate. Struthers Wells Corporation. **895 690**

Process for the manufacture of vinyl chloride polymerisation products. Wacker-Chemie GmbH. **895 978**

Method of generating hydrogen by the interaction of water and lithium hydride and the like. Eastwood Plastics Ltd. **896 038**

Manufacturing of hydrazine. National Research Development Corporation. **896 113**

Block polymers and process for production thereof. Phillips Petroleum Co. **895 980**

Derivatives of amino acids. Nippon Shinyaku Co. Ltd. **895 693**

Method of producing derivatives of the 1,1-dimethyloctahydronaphthalene series. Dragoco Spezialfabrik Konz. Riech-und Aromastoffe *Gerberding & Co. GmbH.* **896 039**

Process for the manufacture of thiophenedisulphochlorides. Farbwerke Hoechst AG. **896040**

Process for the manufacture of thiophene-monosulphochlorides. Farbwerke Hoechst AG. **895 701**

Thiocyanate solutions. Courtaulds Ltd. **895 756**

Method of manufacturing synthetic fibres of polyvinyl alcohol. Kurashiki Rayon Kabushiki Kaisha. **896 134**

Thermoplastic resins. Monsanto Chemicals Ltd. **895 811**

Water-soluble phthalocyanine dyestuffs and process for their manufacture. Ciba Ltd. **896 042**

Therapeutically active derivatives of cyclohexa-*dienol-4-one-1*, and process for preparing same. Laboratoires Om SA. **895 709**

Boron-containing polyesters. Imperial Chemical Industries Ltd. **895 917**

Production of *β*-picoline Distillers Co. Ltd. **896 049, 896 050, 896 051**

Production of condensation polymers. Imperial Chemical Industries Ltd. **896 218**

Therapeutic compositions containing 1,2,4-benzothiadiazines. Bristol-Myers Co. **896 136**

4-chloro-3-sulphamyl benzoic acid and alkali metal salts thereof and process for their preparation. British Drug Houses. **896 137**

Malluscicides. Farbenfabriken Bayer AG. **895 952**

Stereo-isomers and the racemate of butane-1,2,3,4 - tetrol - 1,4-di - (methanesulhonate). Abildgaard, K. [trading as Lovens Kemiske Ved A. Kongsted]. **896 052**

Separation of silica from zirconium or from zirconium and hafnium. Pittsburgh Plate Glass Co. and Columbia-National Coporation. **896 053**

Process for the manufacture of 2:5-disubstituted oxdiazoles. Ciba Ltd. **896 219**

Water-soluble high molecular weight polymers and process for their production. Dow Chemical Co. **895 918**

Phosphorus-containing derivatives of benzyl-mercaptan. Farbenfabriken Bayer AG. **896 224**

Process and apparatus for the treatment of aqueous cyanide solutions. Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler. [Divided out of 895 740.] **895 741**

Apparatus for continuously detoxicating waste liquors containing soluble cyanides or free hydrocyanic acid. Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler. [Divided out of 895 740.] **895 742**

Derivatives of thiamine and their production. Sankyo Kabushiki Kaisha. **896 089**

Process for stripping hydrocyanic acid and hydrogen sulphide from waste waters containing same. Gewerkschaft Auguste Victoria. **896 226**

Insecticidal composition. American Cyanamid Co. **896 058**

Anion-exchange resins. Permutit Co. Ltd. **896 007**

Steroids and the manufacture thereof. Upjohn Co. **896 206**

Method for the preparation of thioborate esters. United States Borax & Chemical Corporation. **896 196**

DIARY DATES

MONDAY 9 APRIL

I.R.I.—Manchester 2: Engineers' Club, Albert Sq., 6.45 p.m. A.g.m. & social evening.

S.A.C.—Birmingham 15: Univ. Feigl Anniversary Symposium.

S.C.I.—London: Imperial Col. & Tech., Phy. Bld., *Prince Consort* Rd., S.W.7. VI Congress of the I.S.F.

S. Instr. Tech.—Manchester 1: 36 George St., 6.45 p.m. 'Instrument installation practice' by J. J. Matthews.

TUESDAY 10 APRIL

I.Chem.E.—Leeds: The Houldsworth School of Applied Science, 6.30 p.m. Inaugural meeting.

Plas. Inst.—London: Inst. Elec. Eng., Savoy Pl., W.C.2, 4 p.m. 'Plastics in packaging' by G. R. Eyssen, C. A. Brighton, J. F. E. Adams & K. G. Gerber.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 4.30 p.m. 'Re-use of water in industry'.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6 p.m. 'Industrial applications of explosives' by Dr. R. Westwater.

S.C.I., C.S., R.I.C., INST.Pet.—Manchester: *Col. Sc. & Tech.*, 10 *a.m. Symposium* 'Newer physical methods of structural investigation'.

WEDNESDAY 11 APRIL

I.Chem.E.—Birmingham 15: Dept. Chem. E., Univ., Edgbaston. 'Symposium on high temperature'.

R.I.C.—Luton: Col. Further Education, Park St., 7.30 p.m. 'The chemical control of plant growth' by Prof. R. L. Wain.

Plas. Inst.—Cardiff: Angel Hotel, 6.30 p.m. A.g.m. 7 p.m. 'The peroxide cross linking of polyethylene' by Dr. B. B. S. T. Boonstra.

Plas. Inst.—Southampton: Visit to Solent Flour Mills.

S.C.I.—Birmingham: Col. Adv. Tech., Gosta Green, 6 p.m. Annual Business, 6.30 p.m. Films.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6 p.m. 'Development in building materials—prospect for *future' by Dr. F. M. Lea.*

S.C.I.—Newcastle upon Tyne: Chem. Dept., King's Col., 6.30 p.m. A.g.m.

S. Dyers & Colourists—Manchester 1: 36 George St., 7 p.m. A.g.m. & Film show.

THURSDAY 12 APRIL

Inst. Plant Engineers—Newcastle upon Tyne: Roadway Hs., Oxford St., 7 p.m. 'Patents—their legal aspects' by R. T. Swarbrick.

Pharm. S.—Manchester 1: 36 George St., 7.45 p.m. A.g.m.

Plas. Inst.—Birmingham: Col. Adv. Tech., 6.30 p.m. 'From polymers to plastics' by Sir Owen Wansborough-Jones.

S. Instr. Tech.—Liverpool: Merseyside and North Wales Electricity Board Industrial Centre, Paradise St., 7 p.m. 'The importance of instrumentation in fuel efficiency' by H. B. Weston.

FRIDAY 13 APRIL

C.S.—St. Andrews: Chem. Dept., St. Salvators Col., 5.15 p.m. 'Chemotherapy and the organic chemist' by Dr. F. L. Rose.

BRITISH CHEMICAL PRICES

GENERAL CHEMICALS

Acetic Acid. 10-ton quantities, 80% tech. in bulk £73 per ton; in casks, £86 per ton; 80% pure in bulk, £79; in casks, £90; glacial, 98/100% in bulk, £88; in drums, £95.

Acetic Anhydride. In bulk, £108; drums, £115; carboys, £130; demijohns, £130.

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, £36.

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., £45; crystal £49; powder, £50; extra fine powder, £51; BP, gran, £54 10s; crystal, £58; powder, £59; extra fine powder, £60. £1 cheaper in 5-ply paper bags.

Boric Acid. Ton lots, in hessian sacks, c.p. Comm., gran., £75; crystal, £85; powder, £82 10s extra fine powder, £84 10s; BP gran., £88 10s; crystal, £97; powder, £94 10s; extra fine powder, £96 10s. £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 2¾d.

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., 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 5s 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), £20 6s 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 5-cwt. lots, in 28-lb. parcels, 19s 6d; 1-cwt. lots, in 28-lb. parcels, 19s 9d.

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

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

Nitric Acid. 80° Tw., £35 2s.

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

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

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

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

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

Potassium Dichromate. Gran., 1-ton lots, £131 16s. 8d. d/d.

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 11¾d; 5-cwt. lots, per lb., 1s 11¼d; 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.

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. Lancs 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, £119; in 10-gal. drums, £109; in 40-45 gal. drums, under 1 ton, £84; 1-5 tons, £79;

5-10 tons, £77; 10 tons and up, £75; in 500-gal. tank wagons, £74. In bulk minimum 2,500 gal. £70 per ton.

Butyl Acetate BSS. 10-ton lots, £155.

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

***sec*-Butyl Alcohol.** All d/d. In 5-gal. drums, £153; in 10-gal. drums, £148 in 40-45 gal. drums. under 1 ton, £123; 1-5 tons, £118; 5-10 tons, £116; 10 tons and up, £114; in 400-gal. tank wagons, £108.

***tert*-Butyl Alcohol.** 5-gal. drums, £197; 40/45-gal. drums: 1 ton, £175 10s; 1-5 tons, £162; 5-10 tons, £160; 10 tons and up, £158.

Diacetone Alcohol. Small lots: 5-gal. drums, £178; 10-gal. drums, £168. 40/45-gal. drums: under 1 ton, £148; 1-5 tons, £143; 5-10 tons, £141; 10 tons and over, £139, in 400-gal. tank wagons, £133.

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.

Dioctyl Phthalate. In drums, 10 tons, d/d, per ton, £208; 45-gal. 1-4 drums, £214.

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 0¾d. 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, £141; 1-5 tons, £136; 5-10 tons, £134; 10 tons and up, £132; in 400-gal. tank wagons, £126.

Methyl *iso*Butyl Carbinol. All d/d. In 5-gal. drums, £194; in 10-gal. drums, £184; 40-45 gal. drums, less than 1 ton, £164; 1-9 tons, £159; 10 tons and over, £155; in 400-gal. tank wagons, £149.

Methyl *iso*Butyl Ketone. All d/d. In 5-gal. drums, £194; in 10-gal. drums, £184; in 40/45-gal. drums, under 1 ton, £164; 1-9 tons, £159; 5-10 tons, £160; 10 tons and up £155; in 400-gal. tank wagons, £149.

***so*Propyl Acetate.** 10 tons, d/d, 45-gal. drums £125.

***iso*Propyl 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, 6¾d per lb.; min. 1-ton lots and up to 3-tons, one delivery 7d per lb.; ex-store, Manchester, London and Glasgow, 7¾d per lb. HAF: ex-store, Swansea; Min. 3-ton lots, one delivery, 7¾d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 8d per lb. Ex-store Manchester, London and Glasgow, 8¾d per lb ISAF: Ex-store Swansea, min. 3-ton lots in one delivery, 9¼d per lb., min. 1-ton lots and up to 3-tons in one delivery, 9¾d per lb. Ex-store Manchester, London and Glasgow, 10¼d per lb.

Carbon Tetrachloride. Ton lots, £83 15s.

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

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

Mineral Black. £7 10s-£10.

Sulphur Chloride. British, about £50.

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

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

COAL TAR PRODUCTS

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

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

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

Naphtha. Solvent, 90/160°, per gal., 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.

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

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.

INTERMEDIATES AND DYES
(Prices Normal)

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

***o*-Cresol** 30/31°C. D/d, per lb., 1s.

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

Dichloraniline. Per lb., 4s 6d.

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

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

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

Nitrobenzene. Spot, 90 gal. drums (drums extra), 1-ton lots, d/d, per lb., 11d.

Nitronaphthalene. Per lb., 2s 5½d.

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

***p*-Toluidine.** In drums, per lb., 3s 6d.

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

Miles laboratories' research symposia

An official research symposium to be held at the administrative and research headquarters of Miles Laboratories Ltd., at Stoke Court, Stoke Poges, early in May, will be linked with similar symposia in the U.S. and Mexico. These meetings will mark completion of the group's first phase in a major expansion of research facilities. The U.K. company has appointed Brewster Owen and Co. Ltd. as its public relations consultants.

More approved agricultural chemicals

ADDITIONAL products that have been approved under the Agricultural Chemicals Approval Scheme since the 1962 edition of the approved list was published are:

INSECTICIDES: Oxydemeton-methyl, an organo-phosphorus compound related to demeton-methyl, for the control of aphids and red spider mites, *liquid formulations*, Metasystox R (Baywood Chemicals Ltd.); malathion, *dusts*, Malathexo Dust (Pan Britannica Industries Ltd.).

HERBICIDES: Atrazine, a residual triazine herbicide for the control of annual weeds in maize, *wettable powders*, Guesaprim (Fisons Pest Control Ltd.); Dalapon with 2,2,3-trichloropropionic acid, a mixture of translocated propionic acid derivatives for the control of emergent water weeds, *sodium salt formulations*, Dalacide (Borax Consolidated Ltd.); Dichlorprop, *liquid formulations*, Juvare Dichlorprop WS (Chisholm, Fox and Garner Ltd.); Dinoseb (DNBP), *ammonium salt formulations*, Asplin's DNBP 13 selective weedkiller (Asplin Chemicals Ltd.); *Diquat salts*, dipyridyl formulations specifically for weed control in certain farm and market garden crops before emergence, *liquid formulations*, Preeglone (Plant Protection Ltd.); MCPA, *potassium and sodium salt formulations*, Southern's MCPA 40 and MCPA 64 (Thos. Southern and Sons, Salford); Mecoprop, *potassium and sodium salt formulations*, Southern's CMPP 51 (Thos. Southern).

SEED DRESSINGS: Organo-mercury dry seed dressings, Leytosan (F. W. Berk and Co. Ltd.); organo-mercury with gamma-BHC dry seed dressings, Leytosan combined seed dressings (F. W. Berk and Co. Ltd.).

Plant for lubrication of large components

FOLLOWING research and trials lasting more than three years, a new department for applying bonded coatings of molybdenum disulphide to machine components of all sizes has begun operating at the Brighouse, Yorks, works of John W. Miller and Son Ltd.

The plant is claimed to be the first in the U.K. capable of bonding a dry coating of molybdenum disulphide lubricant to parts weighing up to 10 cwt.

The process overcomes lubrication problems which may arise under many operating conditions. Among work now being dry bonded with Black-Moly molybdenum disulphide at Millers' works are parts of pumps used for silicone liquids, oven conveyor chains, gearwheels and valves.

'The Engineer Buyers Guide'

A wealth of information, including a section on chemical plant, is contained in the 1962 edition of 'The Engineer Buyers Guide' recently published by Morgan Bros. (Publishers) Ltd., 28 Essex Street, Strand, London W.C.2, price 10s net.

TRADE NOTES

Shell isoprene price cuts

Shell Chemical Co. Ltd. have reduced the price of Cariflex isoprene rubber, grade IR 305, by 2d/lb. The new ex-store price will be 22.5d/lb. (22.75d/lb. del.). At the same time they have cut the oil-extended version of their isoprene rubber IR 500 by 1½d/lb to 20.0d/lb. ex-store (20.25d/lb. del.).

Southern Analytical Ltd.

A wide range of equipment of interest to the analytical and control chemist will be demonstrated by Southern Analytical Ltd. at the Hotel Russell, Russell Street, London W.C.1, from 28 May to 1 June.

New Judex Pack

A 'rectangular' (straight-sided) bottle has been introduced by the General Chemical Co. Ltd., Judex Works, Sudbury, Wembley, Middx, for packaging their laboratory chemicals. As well as saving shelf space and transit costs, the new design prevents rolling, facilitates handling and obviates rotation of labels.

Elga photo competition results

The results of the second annual photographic competition organised by Elga Products Ltd. have been announced: 1. Miss M. Rees, Cardiff; 2. Miss J. Holmes, St. Helens; 3. K. Worthy, Rhuddlan; 4. D. C. Robins, Cardiff; 5. J. Sweeney, Ulverston, and merit awards went to D. J. Harley, Royal West Sussex Hospital; W. J. Henderson, Cardiff; I. M. White, Perth; Miss J. Saunders, Cambridge; T. Fullwood, Liverpol College of Technology; Miss K. Worley, Clatterbridge Hospital; and W. W. Bell, Thornhill.

Changes of Address

From 1 April, the business of the North Thames Gas Board, Tar and Chemicals Products Sales Office, 7 Queen Street, London E.C.4, will be carried out by the London Tar and Chemical Co. Ltd., Corn Exchange Building, 52/57 Mark Lane, London E.C.3. Tel.: Royal 8066.

Transparent Paper Ltd. (including Clearpack Division) announces that as from 30 April their sales office at Halifax House, Strand, London W.C.2, will operate from Bury House, 126/128 Cromwell Road, London S.W.7 (telephone: Fremantle 8121).

Retexturing reproofing aid

Addition of a complete retexturing reproofing aid, Aridex, to their range of dry cleaning products is announced by Laporte Chemicals Ltd., 1-5 New Bond Street, London W.1. A combined wax/organic titanate, Aridex P is for use in perchlorethylene and trichlorethylene, and a second form WS is for use in white spirits.

Cruickshank's acquire new engineering works

NEW premises have now been acquired by Cruickshank's, a division of Forestal Industries (U.K.) Ltd., at Hainge Road, Tividale, Tipton, Staffs, to meet the demand for automatic electroplating plants. The premises, eight miles from Birmingham, consist of extensive workshops and two storey office blocks.

The new works which are going into production immediately, will, in conjunction with the company's existing engineering facilities at William Street, West Bromwich, treble the capacity of Cruickshank's engineering division.

Cruickshank's plastics division has also been rehoused in the new Hainge Road premises from its original site at Legge Lane, Birmingham, 1.

'British Instruments Directory' revised edition

Described as the most comprehensive directory yet of British scientific instruments, the third and expanded illustrated edition of 'The British Instruments Directory, 1962' was published last week by United Science Press Ltd., London, price 63s, on behalf of the Scientific Instrument Manufacturers' Association of Great Britain, Sima House, 20 Queen Anne Street, London W.1. An innovation is a Russian glossary of scientific terms, as well as those in French, German and Spanish. Total number of pages has increased from 635 to 700.

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This issue will give our readers the opportunity to read about the exhibits and enable them to plan their visits in advance so that no items of special interest are missed. The inclusion of a guide to the Exhibition which shows the location of each stand will make this an issue of outstanding importance.

REPORTS ISSUE JUNE 30

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