Chemical Age

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17 March 1962. Vol. 87. No. 2227

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*

(*Continued on page 422*)

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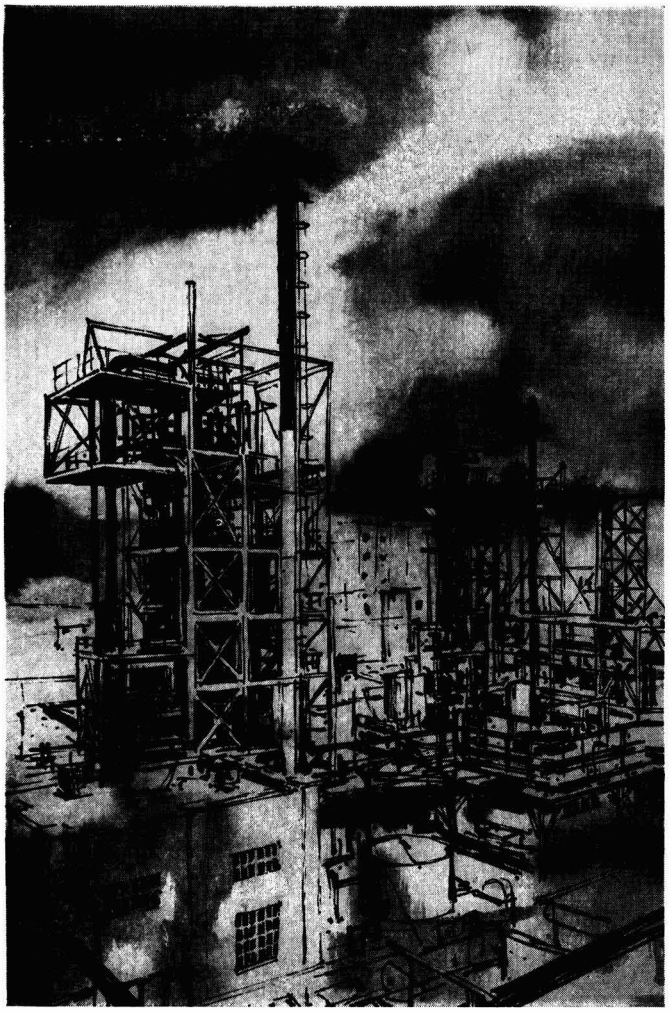

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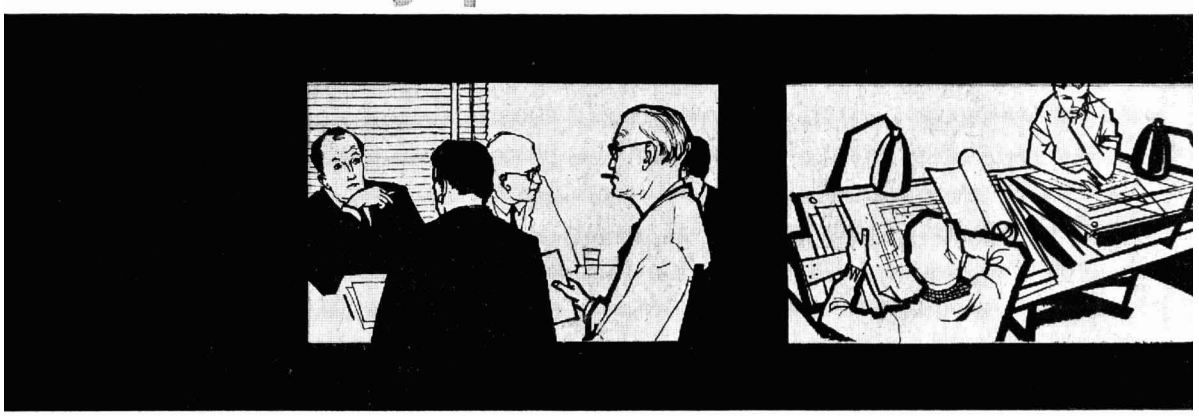

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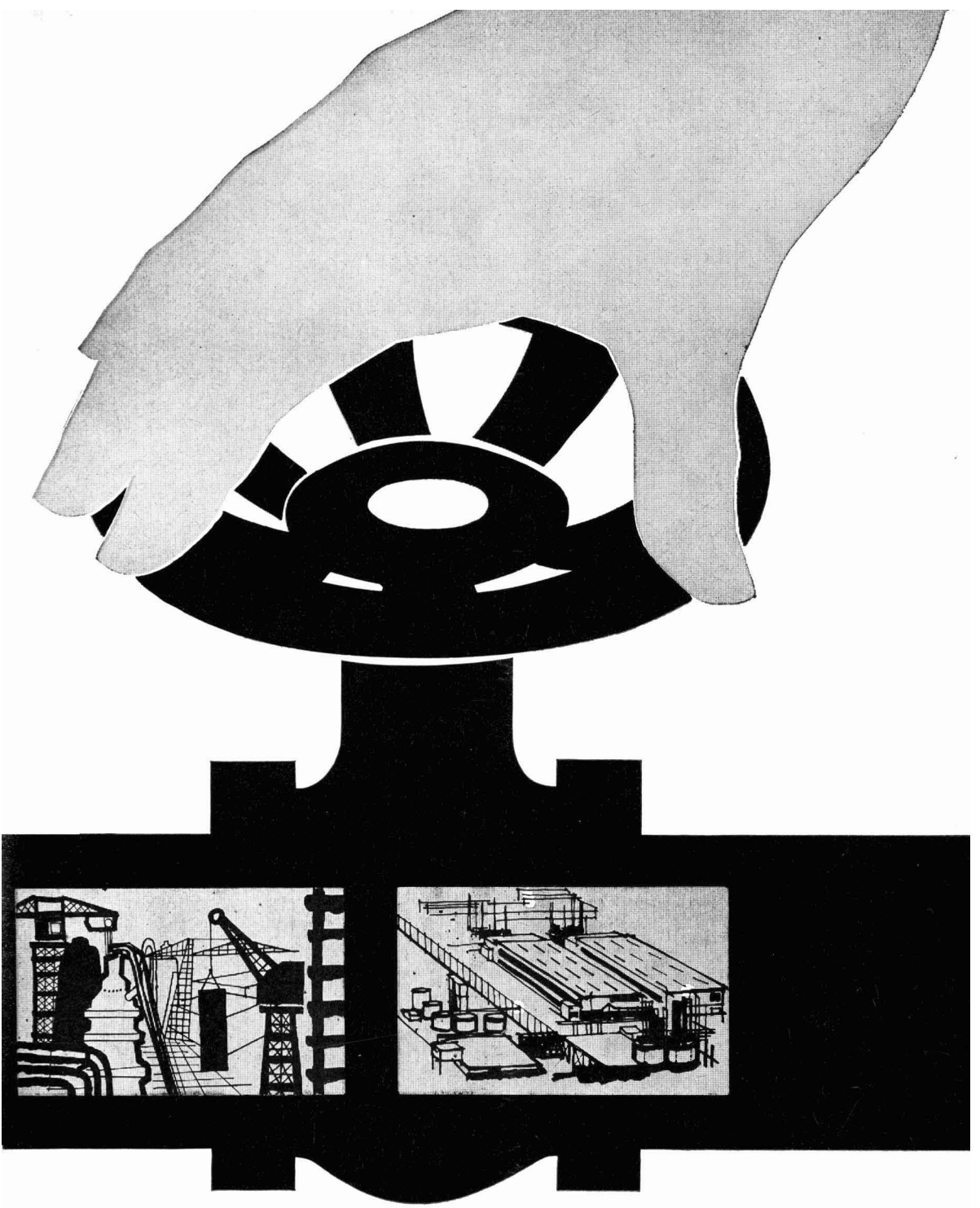

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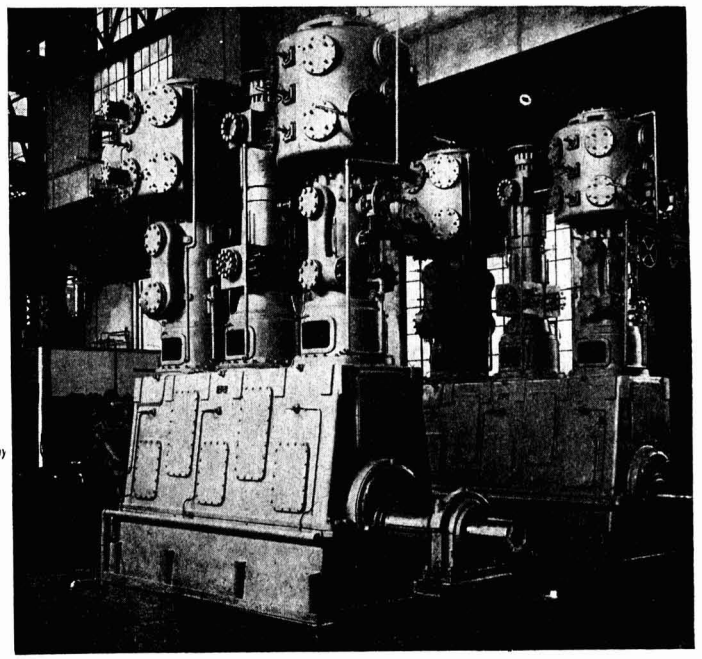

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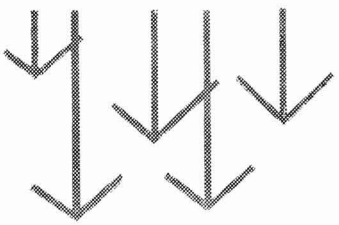

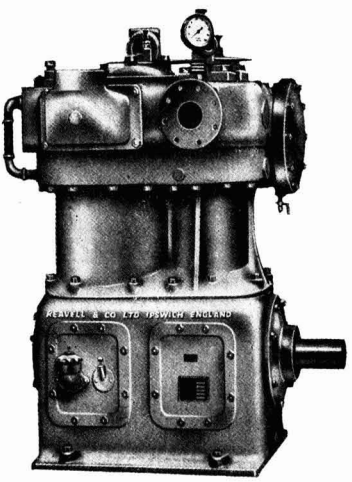

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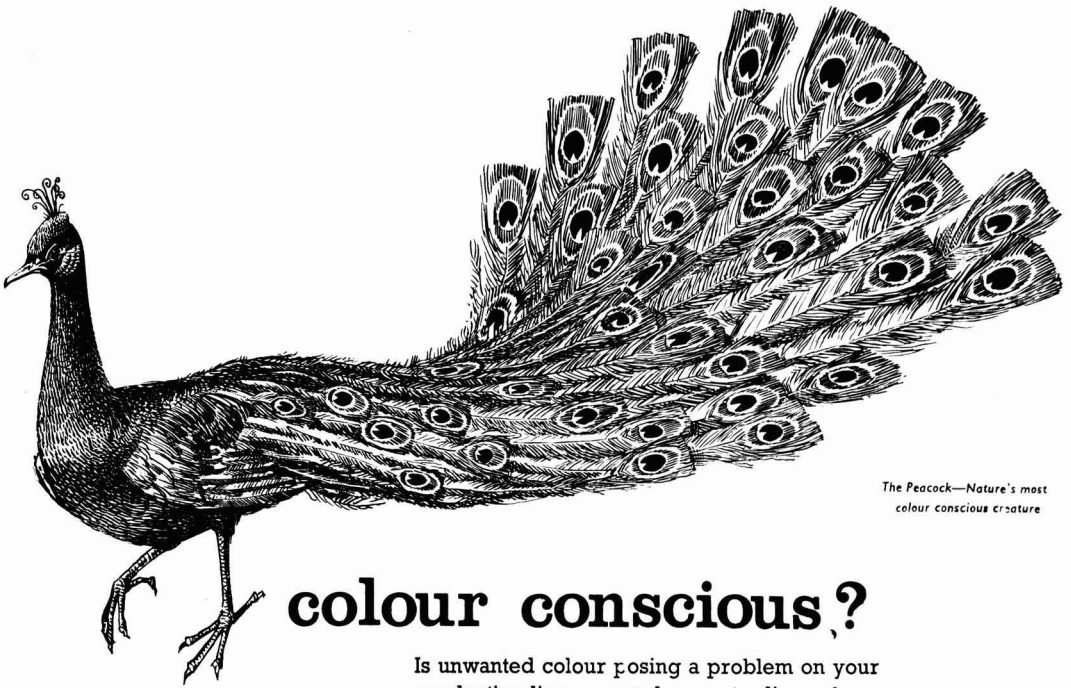

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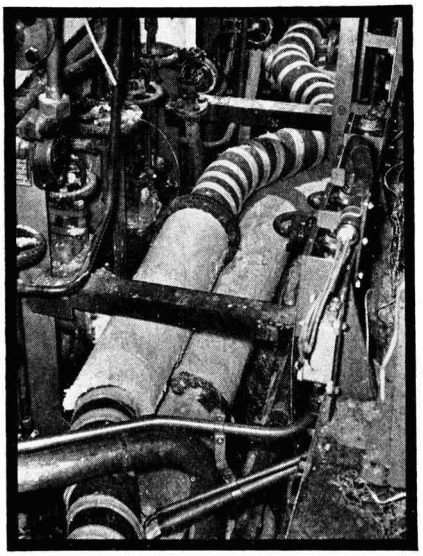

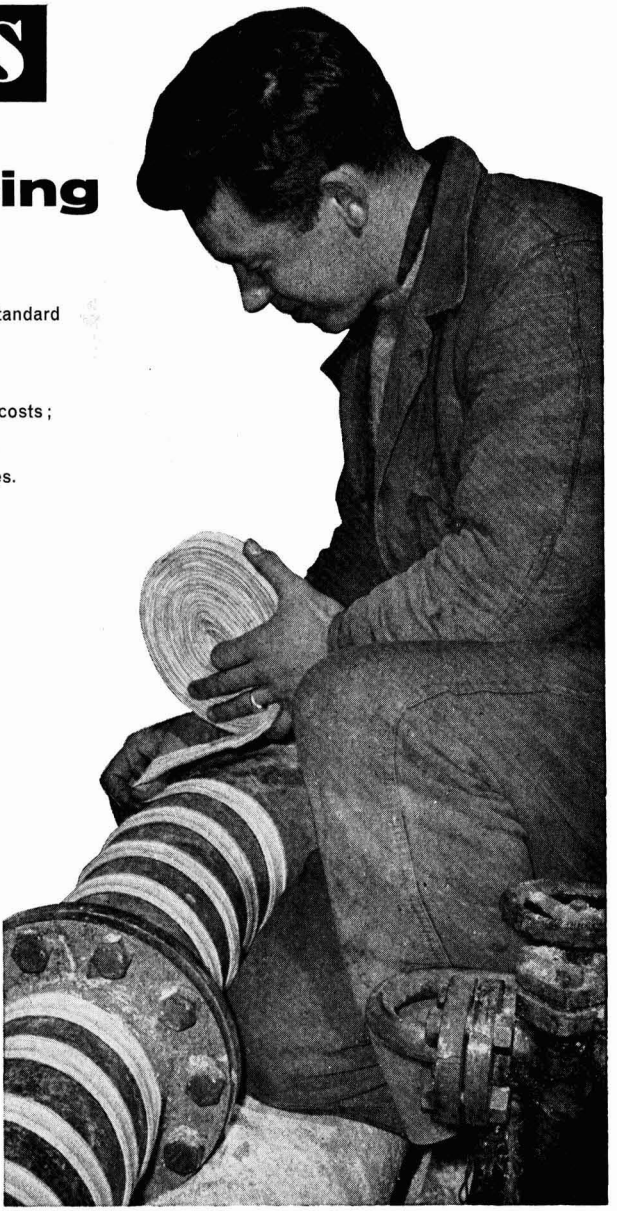

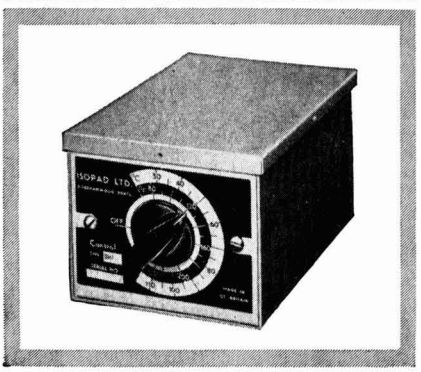

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OUTLOOK FOR ATOMIC POWER

THIS year will be a momentous one for Britain's nuclear power industry for it will see completion of commissioning of two of the seven 'magnox' stations now under construction—those at Bradwell and Berkeley.

Also this year, the next two generations of reactors will start operating at high power. These are the advanced gas cooled system (A.G.R.) at Windscale and the fast breeder reactor system at Dounreay, thereby demonstrating the potential merits of the two systems.

In addition, 1962 will see the close down of coal-fired boilers to supply process steam at Windscale and a switch to steam from Calder reactors. This move will save more than £100,000 a year, rising later to £250,000 as new plants come into operation at Windscale.

Sir Roger Makins, chairman of the U.K. Atomic Energy Authority, who spoke on 'Nuclear energy in 1962' at the annual meeting of the North Western branch of the Institution of Chemical Engineers last week, was clearly optimistic of the future of nuclear energy in the U.K.

Largely as a result of changes in the national economy, the cost of power from the first nuclear stations will be substantially higher than the "about 0.6d/unit" suggested in the 1955 White Paper. The latest station (Sizewell) is expected to produce power at 0.65d/unit and later stations should show costs very close to those originally forecast.

At the same time as long-term interest rates were rising to hit the cost of nuclear power stations, technical advances in the use of coal and oil have led to reductions in capital costs and higher efficiencies beyond those that were anticipated for conventional power stations.

These trends have, of course, led to recent criticisms of Britain's nuclear power programme. Now, however, Sir Roger sees no reason to doubt the forecast so often made that for new stations at base load, the cost of nuclear power in the U.K. will be competitive with conventional power by 1970. One of the encouraging factors is the belief that the civil stations may operate at an 85% load factor (compared with 75% for Calder); this with a 30-year life (as against the conservative 20 year period chosen for amortisation) would cut the cost of nuclear power by some 20%.

Sir Roger described how years of patient research and unspectacular progress were beginning to bear fruit. Already the weight of evidence is that the fuel elements in the large stations will perform satisfactorily up to the specified burn-up of 3,000 MWD/T; they might well exceed that limit. Improvements in design and manufacture, plus more economic station layout, have led to marked cuts in capital costs.

For the same output, the A.G.R. is a smaller plant than the magnox due to higher efficiency and much increased fuel rating; this leads to a cut of 20% in the capital cost per kW. Fuel element burn-up is expected to be four times longer than for magnox fuel. The A.G.R. system when developed should in fact produce electricity on base load at a lower cost than the cheapest contemporary conventional system.

The third generation of reactors—the fast breeders—are potentially low capital and fuel cost systems and a vigorous programme of development is in hand aimed at enabling large power stations to be built in the 1970s. Target date for the start of construction of a prototype for large civil stations is 1963/64.

NITROGEN SALES ORGANISATION MAY BE SET UP IN W. EUROPE

Move to reduce costs and selling prices

A JOINT sales organisation, to be centred in Switzerland, is contemplated by leading European producers of nitrogen, according to reports from the Continent. It is proposed that the joint sales organisation should be called Nitrex SA and it will probably start operation this summer.

Members of the proposed organisation are reported to include the Austrian State nitrogen concern Österreichische Stickstoffwerke AG, Linz, and other important nitrogen producers in the current Common Market area and in Norway. Negotiations are reported to be also under way with producers in the U.K. and Portugal. However, I.C.I., main U.K. producers of nitrogen, deny all knowledge of Nitrex.

Main task of Nitrex, it appears, would be the rationalisation and 'systemisation' of sales of nitrogen in such a way as to reduce overheads and keep down prices of nitrogen fertilisers. Further steps would probably be the pooling of nitrogen business of participating firms. The Nitrex organisation would apparently be responsible for certain financing schemes.

Not a 'cartel'

It is not a 'cartel' in the pre-war German meaning of that word; it is in fact extremely unlikely a true cartel would be contemplated either by the producers or by the C.M. authorities.

The proposed new venture is of special interest in view of the call for a central European nitrogen selling organisation by Aikman (London) Ltd. in their annual report on the nitrogen industry (C.A., 3 March, page 362). Aikman maintain that the present method of selling nitrogen in Europe is out of date and that there should either be a central selling organisation for all European producers or that a free market should be established with daily quotations of f.o.b. prices without regard to destination, Aikman say, the present system of competitive selling through established agents in countries of destination can only lead to a 'Dutch auction' with continuous price reductions.

The mention of the U.K. in connection with the proposed formation of Nitrex AS is also of interest in view of the recent allegations by Mr. Avison Wormald, made in a letter to *The Times* shortly before his resignation as managing director of Fisons, of I.C.I.'s connection with the formation of a European nitrogen cartel. It will be recalled that Mr. Wormald's allegations were promptly and energetically refuted by Mr. S. P. Chambers, I.C.I. chairman, a protest at the same time being made to Fisons, who dissociated themselves from Mr. Wormald's contentions.

No evidence of the formation of a cartel has, in fact, yet come to light, although there have been a number of agreements between various European concerns which link their nitrogen interests in various ways. Thus, in West Germany, there is an association of ammonia producers called Deutsche Ammoniak-Vereinigung; this has 'rationalisation' as its aim. Various links between Belgium and French firms have also been reported recently, the latest being a co-operation agreement for the production of certain fertilisers between Ets. Kuhlmann, of Paris—the biggest French producers of ammonium sulphate—and Société Belge de l'Azote et des Produits Chimiques (S.B.A.).

New company to handle BP chemical interests

HEAD office administration of the British Petroleum Group's interests in the manufacture of petroleum chemicals, hitherto carried out on a departmental basis, will be the main function of a new company, BP Chemical Co. Ltd., which has been formed with a capital of £100,000.

Registered office of the new company is at Britannia House, London E.C.2. Directors have not yet been appointed.

Lower chemical tariffs negotiated under new U.K.–U.S. bilateral trade agreement

A BILATERAL tariff agreement has been concluded between Britain and the U.S. in which, in general the U.S. undertake to reduce by 20% their duties on products in which the U.K. trade in 1959 was about £73 million, and the U.K. for its part will make concessions mostly in the form of reductions of 20%, on duties on products of which imports from the U.S. were valued in 1959 at about £71 million.

The G.A.T.T. Tariff Conference, which began in September, 1960, has been devoted to negotiations about the modification or withdrawal of existing tariff commitments, particularly commitments related to the duties of the E.E.C. countries. Since the summer of 1961, the conference has been concerned mainly with the negotiation of some new tariff concessions, known as the "Dillon round".

The President of the Board of Trade, Mr. F. J. Erroll, described the conclusion of the agreement as a major step towards the substantial reduction in tariff barriers on a reciprocal basis which was the objective in entering into the negotiations.

Apart from the bilateral agreement between the two countries, the U.K. will benefit from the concessions which the U.S. are undertaking to make to other countries, particularly in the Common Market, and which will be extended to U.K. goods under the most-favoured-nation principle. The U.K. trade with the U.S. in 1959 in the products affected was worth over £100 million.

The U.K. reductions, although they will not be made effective before the end of June, are expected to be in force by the end of 1962. In general the U.S. intend to implement their concessions in two equal stages, the first in the summer of this year and the second in the summer of 1963.

Examples of the new U.K. tariff rates to the U.S. are as follows:

	%
Halogens	25
Buta-1, 2-diene and buta-1,3-diene	20
Methanol	27½
Sulphonamides	25
Antibiotics	25
Fertilisers	25
Condensation, polycondensation and polyaddition products	25
Melamine-formaldehyde	25
Synthetic rubber including latex	8

U.S. concessions to the U.K. include few chemicals but the U.S. agreement with the E.E.C., by which the U.K. benefit indirectly, include a number of important chemicals, some examples of which are given. The rates of duty shown in column A represent the first stage, and column B the final stage which will be implemented a year later.

	A	B
Ethyl alcohol	4.3 c/lb.	3.8 c/lb.
Syn. resins (excl. phenolic)	3 c/lb. and 22½% ad val.	2.75 c/lb. and 20% ad val.
Carbon tetrachloride	0.75 c/lb.	0.65 c/lb.
Phthalic anhydride	2.7 c/lb. and 15½% ad val.	2.8 c/lb. and 14% ad val.
Phenolic resins	3.1 c/lb. and 20% ad val.	2.8 c/lb. and 18% ad val.
Naphthalene	Free	Free

According to Dr. J. N. Behrman, Assistant Secretary of Commerce for International Affairs, the U.S. is facing a situation in which its competitive advantages over barriers into the E.E.C. may be lost. He maintains that the expansion of exports is the only way to rectify the balance of payments deficit. The Administration wants special authority to eliminate tariffs completely on a range of commodities in which the U.S. have a competitive advantage and in which the E.E.C. countries have an important economic interest. Release of the so-called 'zero list' confirms that chemicals might be prime targets in tariff negotiations.

The G.A.T.T. conference has not yet been concluded and the agreements now announced represent an instalment of the results.

Project News

I.C.I.'s Severnside EO and glycol plant nears commissioning stage

PREPARATIONS are being made for the start-up of the new ethylene oxide and glycol plant of **I.C.I. Heavy Organic Chemicals Division** at Severnside, which will be the first section of the Severnside complex to come into production. Preparatory work includes testing of the pipework and valves.

The new plant replaces an existing plant at Wilton which has been in production since 1951 and which will be modified to produce other new products. The new glycol plant is basically similar to the older Wilton plant but the oxide plant is entirely new to I.C.I., use being made of a process developed by the Scientific Design Co., U.S., which involves the direct oxidation of ethylene with air.

Most of the ethylene oxide produced will be converted to ethylene glycol by reaction with hot water under pressure —I.C.I. use glycol in the manufacture of Terylene and of explosives, among other things, while ethylene oxide goes into a number of products at Wilton and Huddersfield works, including Lissapol synthetic detergent. The new plant will greatly increase H.O.C. Division's production of ethylene glycol and demand ensures a ready market for the plant's entire 1962 output.

The nucleus of the new works, known as the Ableton Works, has been formed by some 22 staff—all with experience in heavy chemicals—who have been transferred from the Tees-side area.

Courtaulds still expect Russian Tricel plant contract

● THE three-man team from **Courtaulds**, which has been negotiating the establishment of a £7 million Tricel plant in Russia, has returned to London. Courtaulds are still optimistic about being awarded the contract. The team have returned to work out minor changes in the design of the plant, and expect to return to Moscow in two or three weeks to sign the contract.

The successful completion of these negotiations would bring the total of business done by Courtaulds in Russia and East Europe in the past four years to £30 million.

Steetley confirm magnesia project for Sardinia

● PARTICIPATION of the **Steetley Co. Ltd.** in the building of a plant to produce magnesia from sea water in Sardinia will make only small demand on the company's funds, the chairman, Mr. N. M. Peech, said in his annual statement. This is because finance will be provided to a considerable extent by loans from sources in the area.

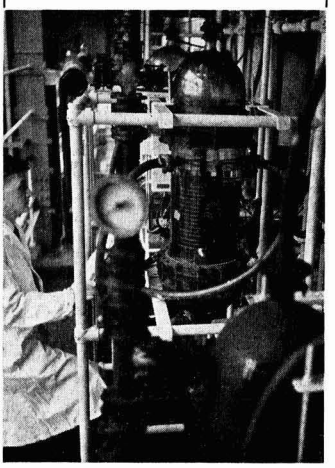
As reported in C.A., 21 October 1961, p. 623, the plant will be built at S. Antioco, near Cagliari, as a joint venture between Steetley and Italian and German companies. A further report (4 November 1961, p. 721) revealed that the plant would cost Lire 7,000 million, 4,000 million of this to be supplied by Credito Industriale Sardo.

Steetley's statement showed the Group surplus, before taxation, as £2.8 million (£3.1 million), net profit being £1.34 million (£1.47 million), final dividend of 11% making a total of 16% (same).

British electro-plating plant for Hungary

● To an order by Nikex, the official Hungarian buying agency, **Electro-Chemical Engineering Co. Ltd.**—a member of the EFCO group of companies—have supplied an EFCO Udylite fully automatic plating machine from their factory in Sheerwater, Woking, Surrey. It is fully automatic, covering the operations of precleaning, copper plating, bright nickel plating and chromium plating bicycle parts for a large Hungarian cycle factory. The order was secured against strong competition from Continental firms.

GLASS EQUIPMENT FOR LANKRO CHEMICALS WORKS



Glass plant, made by Q.V.F. Ltd., of Stoke-on-Trent, is used extensively at the Eccles (Lancashire) works where Lankro Chemicals Ltd. manufacture chemicals for the vinyl resin, polyurethane, surface active, agricultural and leather fields. Photo shows a Q.V.F. 12-in. adiabatic hydrochloric acid absorption column, part of Lankro's dalapon plant

I.C.I. work on new calcium chloride process

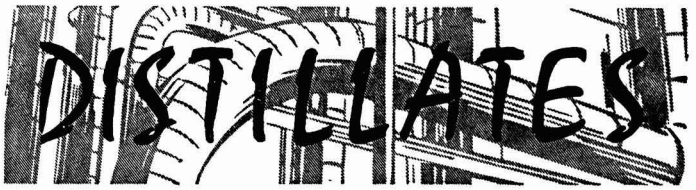
RESEARCH department of I.C.I. Alkali Division is currently investigating new ways of making calcium chloride against the time, some years hence, when an extension to the calcium chloride plant will be required at Fleetwood.

Other development work, it is stated in the division's magazine, might involve finding a suitable method of obtaining more of a particular grade of product from the same plant. At the sesquicarbonate plant, for instance, the research department has been able to achieve a "very considerable increase" in the output of product from one of the evaporation units by arranging for them to be fed with a liquor of a slightly different composition. This work was the result of considering the background physical chemistry of the process.

This constant search for ways of increasing the output of existing plants can, it is stated, sometimes lead to the postponement of the need for new plant, thereby giving a great saving in capital cost as well as achieving an increase in the efficiency of the existing plant.

DU PONT (U.K.) SUPERVISORS TRAIN IN U.S.

Four men from the U.K. who will have top supervisory posts in the new isocyanates plant to be built by the Du Pont Co. (U.K.) Ltd. at Maydown, N. Ireland, are training at one of Du Pont's U.S. plants. Seen here with a Du Pont supervisor (centre) are, l. to r.: G. I. Evans (to be a senior supervisor), T. Coulson (senior supervisor), W. F. H. Bowles (chief supervisor), S. A. Mossman (area maintenance engineer)



THE one problem still to be solved following I.C.I.'s unsuccessful bid for Courtaulds is the future of the U.K. man-made fibres industry. The need to strengthen this was the subject of discussions between the two companies before I.C.I. decided that the only satisfactory solution was to gain complete control of Courtaulds.

I.C.I.'s statement at their general meeting on Friday is expected to give some indication of what the company now has in mind. Sooner or later hatchets will have to be buried and a new start made.

In the meantime, unlike many of the politicos and economists who have put their distaste of the whole proceedings on record, I think the bid has done much good. Although I.C.I. had other things in mind, Courtaulds' stockholders should be grateful that a truer value has been put on their shares and that their company is now committed to dividend and profit forecasts which, if fulfilled, will put an even higher price on their holdings.

The bid has also proved that size in itself is not enough to win a take-over bid (perhaps Fisons and a few others can breathe a little easier now); it has shown that companies cannot afford to ignore their own stockholders or public opinion; it has forced into the open much valuable and previously unpublished information; and not the least important, it has made for better public understanding of the mechanics of take-over bids and the workings of City institutions.

FURTHER figures have now been received which throw more light on the trend towards increased use of man-made fibres to which I drew attention in 3 March issue. The Paris-based Comité de la Rayonne et des Fibres Synthétiques has announced that world output of chemical fibres (i.e., all man-made fibres) last year reached some 3,530,000 tonnes. This is over 6% more than the 3,300,000 tonnes recorded as 1960 world production. Within this overall total, synthetic fibres made up some 820,000 tonnes in 1961, or 16% more than for the previous year. Breaking down this latter dynamically-growing group further was a statement made in Frankfürt-on-Main, West Germany, at the recent International Fair there by Herr H. W. Ohliger, a director of the Frankfürt chemical company Farbwerke Hoechst AG. While output of polyamide and acrylic fibres increased by between 10 and 15%, he said, production increase of polyester fibres was much sharper. They now have second place in the synthetic fibre framework behind polyamide, he continued. The U.S. remained main single polyester fibre producer with some 50,000 tonnes last year, with Japan, the U.K. and Federal Germany runners-up: Japanese output shot up by over 50% over the year to some 37,000 tonnes.

THE view that the chemical industry should publish more of its vital statistics has received powerful support in recent weeks. First were the telling arguments of Sir Miles Thomas, Monsanto's chairman, writing in *The Financial Times*, followed on Monday this week by Mr. S. P. Chambers, at lunch of the Market Research Society.

Coming straight from I.C.I.'s board meeting at which defeat was conceded in the bid for Courtaulds, Mr. Chambers spoke about the need for sound forecasting in such products as soda ash, caustic soda and chlorine, which have uses in so many different industries. He declared: "We have statistics of demand going back three-quarters of a century" and added that for such products, the improvement of national economic statistics both in the U.K. and overseas "is of the greatest help."

While in full agreement with the sentiments expressed by two of the industry's leaders on the subject, I cannot help feeling that it will be some time before their views percolate down through their organisations. The statistics on the chlor-alkalis, well known as they may be on Millbank and at Winnington, are unlikely, for instance, to be released for publication in the foreseeable future. They have been among I.C.I.'s most closely guarded secrets for some time.

OBVIOUSLY there will never be complete freedom on the publication of the industry's statistics, some of which can quite legitimately be regarded as confidential. I am convinced, however, that no more than 10% of the information now 'classified' is justifiably termed as 'confidential' in that publication is likely to harm the company.

Certainly, the newly-formed National Economic Development Council, which has been given such an enthusiastic welcome by industry, will be unable to carry out its work unless chemical manufacturers are willing to part with some of their more treasured secrets. In any event, the I.C.I.-Courtaulds battle showed that only good can come when companies are honest and share their innermost secrets.

But because some of the recent pronouncements on the subject are so at variance with established company practice, it would be a good idea if the chemical industry were to hold a meeting on the subject of information services. This could help companies adopt a more uniform and liberal attitude towards publication and perhaps lay down some general guide lines for the policy makers.

SUGGESTIONS made by Mr. F. Ellis, the City editor of the *Daily Express* last week that I.C.I. had slowed up work on the development of their 300-acre site at Rotterdam, have stung the company into replying that work is in fact up to schedule. Ellis had said that a turning windmill represented most of the activity on the site, plus a brace of bulldozers levelling and loading sand.

I.C.I. state that the area is being raised by 15 ft. to bring it well above high tide level. More than 1 million tons of sand have been dredged from the river and spread over 45 acres to accommodate the first plants.

Building of these units—for methyl methacrylate, Perspex acrylic sheet and Diakon acrylic moulding powder—is scheduled to start in June this year with the first plants in production, as planned by the end of 1963. In view of I.C.I.'s bid to capture a much greater slice of Europe's chemical business, I expect that company to erect many more plants on the Continent in the next few years.

SEPIOLITE, better known to pipe smokers and Sherlock Holmes devotees as Meerschaum, is finding new uses in modern industry, particularly in chemicals, drugs, food, ceramics, enamel, paper, oil and wine. These new uses depend more on the physical than the chemical properties of the mineral, which is an inert hydrated magnesium silicate.

F. W. Berk and Co. who are now processing and have available a pure grade of sepiolite clay from Vallecas in Spain, describe it rather succinctly as "a felt-like mass of microscopic hollow needle-like crystals, randomly intermeshed and showing almost complete absence of cleavage planes."

THE French Government's swift action in imposing a stiff anti-dumping duty on polythene and then removing it on assurances that Spencer Chemical, the named offenders, had given assurances that their prices would remain "normal", is likely to be followed by anti-dumping duties on other specified chemicals. Currently, French chemical producers are complaining about the dumping of organic solvents.

Similarly, Belgian chemical producers report that prices came under severe pressure in 1961. This is partly attributed to dumping by U.S. producers and more is likely to be heard on this score.

Alembic

I.C.I. may make policy statement on man-made fibres industry at shareholders meeting

A FULL statement on I.C.I. policy following their failure to gain control of Courtaulds Ltd. may be made at the meeting of stockholders at Central Hall, London, on Friday this week. This meeting has been called to approve the increase of capital necessary to make the offer unconditional. The offer, which was accepted by 37.4% of Courtaulds, is still subject to the granting of a quotation for the I.C.I. loan stock to be offered in exchange.

The statement is expected to give some indication of whether I.C.I. will be content with their present large holding in Courtaulds; whether they will seek any representation on the Courtaulds board, and their proposals, if any, for continuing the original talks on strengthening the U.K. man-made fibre industry. It was these talks which led I.C.I. to the belief that the interests of the U.K. fibre and textile industries would best be served by complete integration.

Views on integration

Indication that Mr. S. P. Chambers still holds strong views on the need for full integration of the U.K. man-made fibres industry was given in a speech he made on Monday this week at the annual lunch of the Market Research Society. He declared "I can see very great advantages of having a comprehensive range of man-made fibres in one control and of having vertical integration of all the processes, including spinning."

I.C.I.'s bid for control of Courtaulds was made public on 18 December (CHEMICAL AGE, 23 December, page 995) and throughout has been opposed by the Courtaulds board.

The offer, which closed on Thursday 8 March when acceptances stood at 36.7%, was extended until Monday this week, when late acceptances brought the figure up to 37.4%. This gives I.C.I. a total stake of some £29.6 million in Courtaulds. In addition 45.3% of holders of the 5% preference stock and 60.4% of holders of the 6% preference accepted. As these were below the 90% stipulated in the offers, I.C.I have let them lapse.

Newspaper estimates that the cost to Courtaulds of warding off I.C.I. was some £250,000 were acknowledged on Monday by Mr. Frank Kearton, a director, as being "not a bad guess". The cost to I.C.I. has been put at about half of this figure. Advertising was by far the largest single item in the Courtaulds' bill and some £130,000 was appropriated for this purpose.

City feeling is that I.C.I. with their big minority holding in Courtaulds would be entitled to representation on the Courtaulds' board. Mr. Kearton is reported as having said "They have no legal right to appoint directors".

It appears to be taken for granted, notwithstanding the pending retirement of Sir John Hanbury-Williams, chairman of Courtaulds, that the board is likely to be reshuffled.

In view of feelings in some political quarters, it is felt that I.C.I. may one day be faced with the prospect of divesting their shareholding in Courtaulds, in much the same way that Du Pont have been ordered to dispose of their shares in General Motors. This is the subject of a Bill which Sir James Pitman (Con., Bath) sought to introduce in the House of Commons on Tuesday (see below).

Both the I.C.I. meeting on Friday and that of Courtaulds, to be held at the Connaught Rooms on Thursday this week to approve their own loan stock issue and capital dividend, will it is thought prove lively.

Monopolies Divestment Bill could hit I.C.I.'s holding in Courtaulds

THE Monopolies Divestment Bill had its first reading on Tuesday. Sir James Pitman its sponsor, said that when a monopoly was found to be harmful to the public interest, the Bill would give the President of the Board of Trade discretionary powers to require divestment. Three types of situation are covered by the Bill:

(1) A 90 to 100% holding as originally envisaged by I.C.I.

(2) A 51% holding that gave control of management and policy, but not full integration.

(3) A holding of around 37% which would only give a controlling interest if the other 63% was widely scattered.

It was clear that a 37% holding did give effective control to the board of I.C.I. The Courtaulds' directors would have to look over their shoulders all the time at the 37% solid holding, which was one single vote, said Sir James.

Either a company could be required by the President to sell its shares in the open market, or it could be required to distribute them *pro rata* to all existing shareholders of the taking-over company which was under divestment direction.

The essence of the 37 per cent control was that it was a block vote cast solid; if an undertaking was given that such votes would not be exercised, absolute nonsense would be made of the Companies Act and the control of shareholders over their board of directors.

Another record sales year for Du Pont

FOR the third consecutive year sales of E.I. du Pont de Nemours and Co. reached a new record level, this year's total of $2,191 million being 2% above the $2,143 million for 1960. The increase in sales was general throughout the company's product lines, the annual report states. The physical volume of sales was 4% greater than in 1960.

Du Pont's foreign business in 1961, including that of non-consolidated foreign affiliates, amounted to $368 million—slightly more than in 1960. About 29% was in Europe, 30% in Canada, 27% in Latin America. Exports from the U.S. were $192 million, a decrease of 12% from 1960 due primarily to loss of some textile fibre export trade obtained in 1960 because of the temporary shortage abroad. Sales from plants of subsidiary and affiliated companies abroad increased 26% and net earnings improved substantially because of profitable operation of new plants in the U.K. and Mexico, as well as an overall improvement in other operations, particularly in Belgium, Canada and Argentina.

During 1961 Du Pont spent $205 million for new plants, modernisation and expansion schemes and laboratory facilities, compared with $214 million in 1960. Products for which sizable expenditures were made included Dacron polyester fibre, Lycra spandex yarn, nylon, Orlon acrylic staple, Althon polythene resins, Elvax vinyl resin, Mylar polyester film, Tedlar polivinyl fluoride film, methanol, TML antiknock compound, Dycril photopolymer printing plates, Hylene organic isocyanates, and sulphuric acid. It is expected that construction expenditures in 1962 will total about $222 million.

Reviewing technological activities, the Du Pont president, Mr. Crawford H. Greenewalt, gave a number of examples of research accomplishments now in the early stages of commercialisation. These included new organic compositions which withstand temperatures hitherto believed to be tolerable only to metals and other inorganics; for example, a tough, transparent film which remains intact at the temperature at which aluminium melts. Other developments include an unusually durable synthetics rubber which can be processed and fabricated by standard techniques of the rubber industry, and textile materials which enable paper companies to make soft, drapeable fabrics on their paper machines, as well as unique textile materials made by a 'sunbonded' technique which avoids the conventional weaving process.

West German chemicals in 1961

TURNOVER ROSE 3.6%, OR HALF THE RATE OF GERMAN INDUSTRY

ACCORDING to the Federal German Association of Chemical Manufacturers in Frankfurt, the 1961 turnover of the Federal German chemical industry was, at some DM 24,000 million, higher by only some 3.6% than in 1960. This follows an increase in turnover of as much as 12.1% for 1960 over the previous year.

Overall rate of turnover increase in Federal German industry as a whole was also considerably higher than the 1961 chemical industry rate alone, being 7.7% up over the year.

The fall-off in turnover rise is shown to be due mainly to sluggish prices by the fact that actual quantitative production of the national chemical industry was 7.4% higher than that for 1960, while overall industrial production rose only by 5.9% over the period. Chemical industry prices are only 4% above those for 1950, while prices for industry as a whole are as much as 28% higher.

Plastics industry

In the West German plastics field, the production increase was one of 9.6% over 1960; this compares with the jump of 24% for 1960 over 1959. Nevertheless, the Federal Republic was last year able to consolidate its position as second largest world producer of plastics (behind the U.S.), and for the first time broke the million-tonne boundary with a 1961 output of 1,076,000 tonnes. Turnover of West German plastics rose by only some 5% over 1961 to a level of DM2,110 million.

The falling prices of the year are attributed to the very sharp international competition; the association names specially low-price offers from Italy and Japan and the "alarming" dumping offers of certain U.S. firms as having had a bad effect on world price levels.

The production of polymers rose by some 12% to 546,500 tonnes, although the increase of turnover in this branch was of no more than 2%. Particularly polythene, p.v.c. and polystyrene—which together account for well over two-thirds of all polymer output in West Germany—were hit by large price drops. Production of condensation plastics was of 420,000 tonnes, or 9.5% above that for 1960. Here, phenol and urea products were subject to heavy prices pressure, while such dearer products of the condensation group as polyamide, polyester and polyurethane developed better.

Both production and turnover of cellulose derivatives rose at about the same rate as in 1960; actual output was up by something under 1% to 109,500 tonnes.

The future for West German plastics is regarded with "mild optimism", the growth of production capacities elsewhere in the world and the resultant growth of international competition and need for rationalisation on the part of German producers being set against the growing field of applications for plastics.

Over 1961 Federal Germany exported some DM898 million worth of plastics, or some 7.3% more than for 1960. Exports for 1960 have themselves been 19% above those for the previous year. Over three-quarters of the West German plastics exports went last year to Europe, a larger share than recorded for 1960. Some 30.5% (1960: 27.5%) of all exports went to fellow-members of the Common Market group, while the E.F.T.A. share fell from 36.8% to 34.7% of the whole.

The drop in this latter share is due almost entirely to lower U.K. purchases, accounting for only 6.4% (1960: 8.3%) of the whole; Switzerland and Austria are now before the U.K. on the list of E.F.T.A. customers. Main single customer country remained Holland. Sales to the Cominform bloc rose from 4.3% to 4.7% of the whole, those of the U.S. sinking from 2.8% to 2.6%, while sales to South America rose from 5% to 6.2% of the whole.

Imports of plastics into Federal Germany were last year worth some DM266 million, or some 3% less than for 1960; over the two preceding years there had been an import increase of 20% annually. The share of European producers in the total rose from 57% to 60% over the year, this including shares of the whole of some 37.4% (1960: 34.6%) of fellow Common Market countries, while that of the E.F.T.A. bloc fell slightly to 21.6%, this again due mainly to less trade with the U.K. The U.S. remained by far the largest single supplier country, accounting for 37% of all imports, although in value the U.S. plastics exports to West Germany were not up to the 1960 level.

S.C.I. to cross Atlantic for 1963 annual meeting; group travel scheme proposed

FOLLOWING the installation of Dr. Monroe Edward Spaght as president of the Society of Chemical Industry at the annual meeting in Newcastle upon Tyne in July, the next annual meeting will be held in the U.S.

This is the second time in recent years that the S.C.I. has crossed the Atlantic for its annual meeting. The last occasion was in 1958 when the a.g.m. was held at Montreal. In that year, an extraordinary general meeting was held at Exeter for the benefit of members who could not make the long journey to Canada.

The 1963 meeting will be held from 22 September to 28 September. The annual meeting and presidential address will be held in New York on 23 September, followed on 24 September by papers presentation of the Society's Medal, the medallist's address and the annual dinner. On 25 September members will travel to Houston, Tex. for local visits and a dinner for overseas and local members. On 27 September further works visits will be made. Members leave for New Orleans on that day, returning to New York on 28 September.

Cost per person, including travel within the U.S., hotels and meals, annual dinner, receptions and luncheons, has been estimated at £150. To help cut the cost of travel to the U.S., it has been suggested that some form of group travel arrangements should be made.

Members who think they may attend are asked to notify Col. F. J. Griffin, general secretary at 14 Belgrave Square, London S.W.1, as soon as possible to enable some estimate to be made of the number likely to be present.

Styrene dumping probe extended to Canada

THE application for the imposition of an anti-dumping duty on styrene monomer imported from Germany and the U.S. (CHEMICAL AGE, 3 March, p. 354) has been extended to cover imports from Canada. It is unusual for a Commonwealth country to be involved in anti-dumping investigations. Any question of dumping by a Commonwealth country is more likely to be dealt with by private negotiations.

It is reported that current price of styrene in the U.K. is £84 a ton and that it is being imported from North American ports at round about £75 f.o.b., when the North American domestic price is quoted at £89 a ton.

Big price cuts by D.C.L. Chemical Division

PRICE reductions have been made by the Distillers Company Ltd. Chemical Division, covering all despatches made on or after 12 March, are as follows:

Higher phthalates: Bisoflex 791, 81, 88 and 91, reduced by £14/ton.

Sebacates: dioctyl sebacate and di-iso-octyl sebacate reduced by £12/ton.

Adipates: Bisoflex 79 Adipate, 81 Adipate and 108 Adipate reduced by £12/ton.

Maleates: Bisomer DAM, DIOM and DOM reduced by £18/ton; Bisomer DNM by £19/ton; and Bisomer DBM by £4/ton.

Bisoflex ODN is also reduced by £15/ton.

I.C.I. plan big drive on Europe, may set up many more plants on Continent by end of the 1960's

NEW business in the Common Market countries will by 1970 have a value of no less than £4,000 million, while a further £750 million worth of new business can be looked for in the rest of Continental Europe. Those estimates, based on a conservative view of the future rate of growth of chemical business in Europe, are given by Mr. B. R. Goodfellow, of I.C.I.'s European Council, writing in the March issue of the *I.C.I. Magazine*.

To supply the new market in chemicals in Europe, new chemical plants as big as the whole of I.C.I. in Britain today would have to be built every year.

That new business was in addition to the £4,200 million worth of chemicals used in Common Market countries in 1960. The 1960 figure included many products not made by I.C.I., such as soaps and toileteries, but I.C.I. exports to the area included products such as metals and fibres, which were not strictly in the chemical field.

Share is too small

Making adjustments for those special factors and including freight, duty and other charges, I.C.I. chemical sales in the Common Market represented only about 0.5% of C.M. business in chemicals. Since I.C.I. were the biggest and most widely diversified chemical producers in Europe, that small share was not as good as it should be.

If I.C.I. did no more than hold their present share of the European market, exports to Europe would be almost doubled within a decade. "But," adds Mr. Goodfellow, "we are aiming to do much better."

The company already had the foundation of a selling organisation on which it could build. It was hoped that before 1970 new discoveries would have been made in I.C.I. laboratories, enabling the company to sell new products in Europe. As licences to European manufacturers expired, I.C.I. hoped to renew exports of the products concerned. Even 1% of the chemical business in West Europe would be worth £100 million in 1970.

To achieve their high ambitions, the directors recognised that I.C.I. must be prepared to produce on the Continent on a much bigger scale than they had done already those products which could not be supplied more cheaply from U.K. plants. Among the reasons might be cheaper raw materials, such as natural gas, or closer proximity to markets, or better facilities for distribution.

Mr. Goodfellow used graphs to show how chemical trade between the six member countries of the European Economic Community had doubled between 1952 and 1956 and doubled again between 1956 and 1960.

I.C.I. exports to the C.M. had grown from £3.6 million, or 7.4% of the total, in 1950, to £13 9 million, or 14.4% of the total in 1960. I.C.I.'s exports to Europe as a whole rose from £10.9 million, or 22.5% of the total, in 1950, to £34.7 million, or 35.9% of the whole, in 1960.

For some years, Europe had been by far I.C.I.'s most rapidly growing market and a further rise of 12½% was expected for 1961. Mr. Goodfellow declared that the company must not be deceived by those substantial and steadily improving figures into complacency.

B.B.H. to sell tar interests to S.W.G.B.

THE second company to sell tar distilling activities to the South Western Gas Board is Burt Boulton and Haywood Ltd., London. The board is to acquire for £212,500 the 50% B.B.H. holding in Plymouth Tar Distilleries Ltd., which comprises 125,000 ordinary shares. The S.W.G.B. already holds the remaining 50%.

The sum of £117,500 has been paid in cash and the balance (which will carry interest) will be paid at a later date.

B.B.H. also hold an interest in South Eastern Tar Distillers Ltd. and South Western Tar Distilleries Ltd.

Earlier this year (C.A., 20 January, p. 136), Wm. Butler and Co. (Bristol) Ltd. announced an agreement under which the S.W.G.B. would purchase Butler's 75% holding in Bristol and West Tar Distilleries Ltd. The board already hold a 25% interest in Bristol and West.

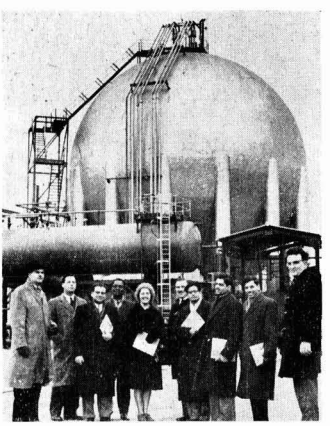
Manchester I.Chem.E. annual dinner

CHIEF guest at the annual dinner of the North Western Branch, Institution of Chemical Engineers, held at the Midland Hotel, Manchester, on 9 March, was Sir Roger Makins, chairman of the U.K. Atomic Energy Authority. Professor Frank Morton, Professor of Chemical Engineering, Manchester, presided.

Other guests were Mr. E. S. Sellers, vice-president, I.Chem.E.; Professor M. W. Thring, Professor of Fuel Technology and Chemical Engineering, Sheffield; Dr. E. H. T. Hoblyn, director, British Chemical Plant Manufacturers' Association; Dr. J. B. Brennan, I.Chem.E., general secretary; Dr. J. Avery, chairman, I.C.I. Dyestuffs Division; Dr. F. H. Kroch, chairman, Lankro Chemicals Ltd.; Mr. G. S. Pound, director, Coalite and Chemical Products Ltd.

At the annual meeting of the branch, Sir Roger presented a paper on 'Nuclear Energy in 1962' (see p. 435). Mr. A. D. Wilson, chairman of Joseph Crosfield and Sons was elected chairman (see p. 448).

Overseas students visit Fisons nitrogen works



Thirty overseas students undertaking further education in the U.K. recently toured the Stanford-le-Hope fertiliser nitrogen works of Fisons Ltd., on a visit organised by the British Council. Some of them are seen here in front of the 2,000-ton capacity ammonia sphere which dominates the 25-acre works

Quotas for U.K.-Soviet trade in chemicals

CHEMICAL goods, including dyestuffs and polythene, to a value of £750,000 (f.o.b.) are allowed for import into the Soviet Union from the U.K. in quotas fixed under the Anglo-Soviet trade agreement for 1962. Other U.K. goods listed for import into the Soviet Union include man-made fibre and yarns (£500,000).

Soviet consumer goods for import into the U.K. include medicines, drugs and pharmaceuticals (including raw materials) to a value of £180,000 c.i.f.

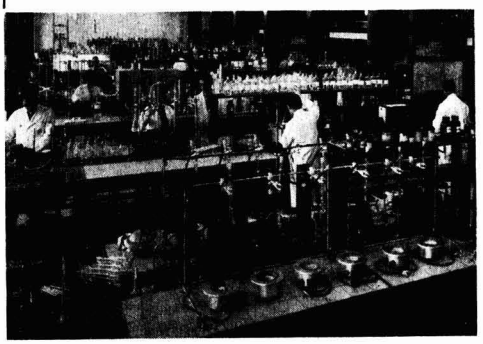
The quotas, which cover consumer and capital goods as well as certain industrial materials, have been agreed between the Board of Trade and the Soviet Trade Delegation in London.

The Anglo-Soviet Trade Agreement provides for an annual fixing of quotas for two-way trade in goods where open general licence arrangements are not in force; however, over 90% of Anglo-Soviet trade takes place outside these quotas.

Obituary

Dr. Hermann Hauser-Gut, director of head of the dyestuffs production department of CIBA AG, has died, aged 58.

I.C.I. open new heavy organic research labs. at Billingham



Main analytical laboratory, comprising five laboratory units

NEW laboratories have recently been completed for the main body of the research department of I.C.I. Heavy Organic Chemicals Division. The need for new laboratories, both to improve the Division's research organisation and to accommodate new staff, became obvious in 1959.

The research laboratories are concentrated in a new four-storey laboratory building. The basis of the design is a laboratory unit manned by six assistants working under two technical officers. The unit is 33 ft. × 22 ft., a much larger and deeper unit than has previously been used. It can be halved or increased in width by altering partitions. The analytical laboratory, for example, is one large room formed by five units.

Service mains and feeders are brought in attached to the laboratory ceiling instead of by the more conventional method of concealing them in ceiling or floor ducts.

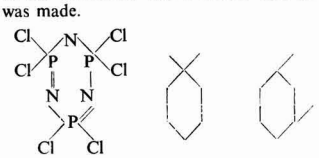
The building was constructed quickly by using prefabrication for almost all component parts. From the start on the site to completion for occupation the building programme took almost exactly a year.

Structure of polymers of nitrogen and phosphorus discussed at R.I.C. lecture

POLYMERS of nitrogen and phosphorus was the subject of a lecture given recently to a joint meeting of the London Section of the Royal Institute of Chemistry and Slough College Scientific Society by Dr. R. A. Shaw of Birkbeck College, London.

After a preliminary consideration of the nature of organic and inorganic compounds, Dr. Shaw devoted his lecture to the phosphazenes. The synthesis of these compounds both by an ammonolytic method and from azides was discussed.

The structure of the trimer (a), a six-member planar ring system, with equidistant P-N bonds, was discussed, and the possibility of position, geometric and optical isomers considered. A comparison of the benzenoid and s-triazine systems was made.



(a) (b) (c)

It was shown that two reaction schemes were possible: the so-called 'geminal' scheme, e.g. (b) where the two chlorine atoms on the same phosphorus atom were replaced before the next phosphorus atom was attacked; and the 'non-geminal' scheme, e.g. (c) where substitution of one chlorine atom on a given phosphorus atom directed the next reagent molecule to another phosphorus atom.

For dimethylamine and other aliphatic amines 'non-geminal' substitution was predominant, whereas Friedel-Craft phenylation gives 'geminal' substitution. Fluorination with KSO_2F follows predominantly the 'geminal' scheme, but with minor incursions of the 'non-geminal' scheme.

Decrease in chemicals production index

Provisional index of production for the chemicals and allied industries in December was 119, compared with 129 in November and 118 in December 1960. The index is based on a 1958 average of 100. November index for general chemicals was 129, the same as in October and 11 points up on October 1960. November 1961 index for coke ovens, oil refineries, etc., was 125, compared with 119 in October and 118 in November 1960.

New company to manage Dutch natural gas

IT IS reported that production and sales of Dutch natural gas, including the large reserves discovered in 1960 and estimated at 5,000,000 million cu. ft., are to be placed in the hands of a new company. The company will be a joint subsidiary of the three parent companies, Royal Dutch/Shell, Standard Oil of New Jersey and the Dutch State Mines. The State Gas Board, which at present acts as a distributor for the natural gas, is likely to be merged with the new company.

Most of the gas will go into the national grid for domestic and industrial purposes, but it is also likely that some will be used as a raw material for production of chemicals.

In Parliament

Research into toxic chemicals

Asked what arrangements were being made by the Research Councils to implement the recommendations of the Research Study Group on toxic chemicals in agriculture, Mr. Dezil Freeth, Parliamentary Secretary for Science, explained that various parts of the research were the responsibility of different departments but, since certain of the problems were the concern of two or more Research Councils, the Agricultural Research Council was setting up a committee, under the chairmanship of Professor A. C. Frazer, to keep all relevant research under review and to report on progress at suitable intervals.

Capital spending at highest ever level

FIXED capital spending in the U.K. chemicals and allied industries continued in 1961 at its highest-ever levels. The total for the third quarter, £52.1 million, was £8.3 million up on the same period of 1960 and was £5.3 million higher than in the previous best third-quarter period, that of 1958.

The total for the first nine months of 1961 was £147.3 million, compared with £112.9 million in the same period of 1960 and £143.4 million in 1958, a year when capital spending in the industry was at a record level.

Big explosives order for I.C.I. Nobel

An order for 500 tons of explosives and related accessories for use on the construction of three tunnels in connection with the El Cadillal dam has been placed with I.C.I. Nobel Division by Richard Costain Ltd.

Will

Mr. Arthur Joseph Somers, a former director of Borax (Holdings) Ltd., who died on 28 August, left £57,997 net (duty paid £21,360). He left £100 each to the Royal Institute of Chemistry and the Pharmaceutical Society for their Benevolent Fund.

ANTI-CORROSION IN THE 1960's

New developments in materials for the protection of chemical plant and equipment

By

C. Wilson, B.Sc.,

Chairman,

Association of Corrosion Engineers

MOST of the materials used in today's anti-corrosion schemes were discovered or developed in the 1950's; in fact, the development of the anti-corrosion industry is associated, to a great extent, with the rapid expansion of the plastics and petrochemical industries. Both these industries have room for even greater expansion and, consequently, it can be anticipated that the 1960's will see a great fillip given to the protection of plant and structures against corrosion. The direction in which this expansion will take place will be governed by the drastic change in the approach to corrosion science that has been evident in the last two or three years and by the new thinking that has resulted.

Anti-corrosion measures may be divided into two specific fields: prevention and cure. To date most applications have been curative, but there is a growing tendency towards prevention. This latter field is, of course, the one where there is room for the greatest expansion. These two fields may in turn be subdivided into long and short term applications. For example a buried pipeline needs to be protected against corrosion on a long term basis whereas much chemical plant will be obsolete in a comparatively short period.

Four branches

Thus the corrosion technologist is faced with four distinct branches of protection—long and short term prevention and long and short term cure. The corroding electrolyte and the size and nature of the structure are of little interest at this stage as it is possible to generalise within the limits of the four divisions.

Long term prevention. There are three main fields of long term prevention: continuous replacement of paint and coatings, cathodic protection, and the use of non-corroding materials. The first is really an extension of short term prevention and need not be considered at this stage.

The 1950's have seen the establishment of cathodic protection as a powerful anti-corrosion weapon for buried pipelines and shipping and associated marine structures. In addition, with the development of anode materials of small bulk for high current output, there has been a steady break-through in the use of cathodic protection for the inner surfaces of plant carrying corrosive liquids. In particular the protection of water cooled heat exchangers has met with a good deal of success.

Further developments of cathodic protection would seem to be in the directions of new anode materials and new engineering techniques to expand the field of the science. In the 1950's a number of new anode materials were introduced, all basically metallic, but there are a number of interesting reports of metallic oxides being used as anodes. These reports suggest that there might well be a revolution in this direction. If this is so then there should be an automatic expansion of cathodic protection engineering, particularly for heat exchangers in refineries and similar chemical plants.

It is in the field of non-corroding materials that the greatest advances are anticipated. Already successful purification and working techniques of titanium have produced a non-ferrous metal of great chemical resistance and corrosion engineers are awaiting with great interest the researches on beryllium and tantalum. Non-ferrous metals are, however, overshadowed by plastics. Certain plastics have proved themselves of outstanding value as materials of construction (unplasticised p.v.c., high grade polythene, etc.) but to date most of these applications have only been short term. However the development of the newer acrylic and butylic materials suggests that there might well be long term opportunities here. In particular the rapid development and bulk manufacture of polypropylene offers the greatest hope, subject, of course, to chemical stability problems being overcome.

Despite the great potentialities of non-ferrous metals and plastics the greatest hope in this field would seem to be in the use of reinforced resins. This has already been proved in the shipbuilding industry by the rapid expansion of the use of polyester impregnated glass fibre hulls. Already a large amount of chemical plant is being made of similar materials and there are reports from the U.S. of glass fibre impregnated with epoxies being very successful in this work. In fact, all reports suggest that by the end of the 1960's the building of completely non-metallic plants will be commonplace. Already such plants exist.

Stort term prevention. Many structures have a limited life which is generally determined by economic considerations. The use of mild steel as the construction material in such cases is often to be preferred and consequently most of the short term prevention techniques are aimed at protecting steels. This will normally involve covering the steel with either a sacrificial or an insulating coating, e.g. painting it.

Choice of protection

The choice of the paint or other coating has a great effect on the life of the protection system, but just as important is the surface preparation before the coating is applied. Since the basic idea behind any painting programme is to insulate the metal from the corroding electrolyte and the production of a 100% coating is a virtual impossibility it is extremely difficult to forecast the life span for any coating with any degree of certainty. Over the last few years there has been the development of sacrificial coatings to overcome this difficulty. These coatings are normally zinc or aluminium rich materials that sacrifice slowly to protect the underlying steel. When used as primers under insulating coatings they give an excellent answer to short term prevention requirements and there will obviously be a great development of this work in the future, particularly on ships' hulls, structural steelwork, condenser water boxes etc.

Despite the excellence of the sacrificial/insulating coating system it still has the same drawback as other systems, the need for surface preparation. It can be shown that in any efficient painting system the cost of surface preparation is between 40 and 50% of the overall cost and it is fast being realised that the only way to reduce costs is to reduce the costs of surface preparation. (One promising achievement in this direction will be covered below.) It is already becoming obvious that one of the greatest revolutions in the anti-corrosion field in the 1960's will be in surface preparation. As far as the chemical industry is concerned one of the available techniques is chemical descaling which could well be the most economical for coating steel at the manufacturing stage. However, more research on suitable materials is needed.

Long term cure. It is this field in which the greatest advance is needed. In many instances of corrosion of existing plant it is impossible to replace the corroded parts without involving high costs. (It must be realised that there are many hidden costs in replacement other than just the material of replacement and the labour costs involved. Often the plant shut down time is very costly.) Thus the only weapons left for the corrosion engineer are patching allied to cathodic protection (for buried and submerged structures) and efficient repetitive coating programmes.

Until quite recently it seemed that there was no solution to this problem, but new thought along the lines of making the patch itself of a material that has not only mechanical strength but also corrosion resistance has opened up great possibilities. The original work in this direction was carried out in the U.S., but some excellent results have already been obtained in this country.

Impregnated resins

The system is based on use of resins impregnated with glass fibres and by using such materials as polyesters and epoxies it is possible to produce patches with the same tensile strength as steel. This is by no means a new technique, but the development of the system whereby the *whole* surface is coated *in situ* with a coating of glass fibres impregnated with resins would seem to be one of the great anti-corrosion techniques of the future. At the present stage in this work there are, as is to be expected, a number of drawbacks. The system is expensive owing to the need to use a resin that has natural high adhesion to steel but recent research suggests that newer resins with high adhesion and low costs will soon be available. The coating also requires a high degree of surface preparation (grit blasting) but, as has been mentioned above, this work should be reduced in cost during the 1960's. These new coatings have already been used with success on pumps passing corrosive chemicals, storage tanks carrying crude oils (as linings), floors and walls of chemical factories and similar applications.

Another established form of long term coating is hot metal spraying and its extension, vitreous and plasma spraying. These coatings can be applied with comparative ease on existing structures but, again, the big drawback is surface preparation. Grit blasting is required and this is often impossible due to the dust problems involved.

Short term cure. It is obvious that the majority of short term cure systems will be painting or coatings programmes. However, a short term system must of necessity be inexpensive and any efficient coating system has the additional cost of surface preparation. In view of this much research has been going on to develop coatings that do not need surface preparation. Unfortunately there is more than one type of surface contaminant that destroys adhesion and any coating must be capable of withstanding all existing on the surface. This means that in many cases the coating developed will be specific for a particular problem. However, the two main contaminants to overcome are mill scale and rust (simple iron oxide). In curative work it is normal for the mill scale to vanish with weathering so that by the time the corrosion engineer is called in the mill scale is no longer a problem. Thus the new coatings must overcome rust only and work has been aimed to develop paints that need iron oxide to set up the adhesion. The technique of application would be to brush away loose rust and then apply the coating.

Although this specification would seem virtually impossible a degree of success has already been obtained with two completely different types of paint. The first is the silicate range of paints, in particular the zinc rich silicates. The second type of paint is based on the use of powdered lead, a very recent development. These powdered lead based paints can be carried in many materials, so giving a great potential range. Both of these paint systems have a good resistance to chemical attack and would seem to be the answer to structural steelwork subject to attack from chemical fumes in such places as plating shops and acid factories. A further advantage would seem to be in their resistance to sea air.

New tool for chemical processing

A CONTINUING satisfaction for those engaged in scientific studies is that research in one field so often supplies answers to problems in quite a different field. A recent example: research related to rockets and missiles has resulted in a technique that may become a valuable tool in the chemical processing and petroleum industries.

Workers of the Stanford Research Institute, were studying the mechanics of ablation (e.g., a nose cone on re-entry). They needed a method for identifying and measuring the decomposition products formed by the ablating layer during the process. The technique they developed filled their needs and may fill many more.

Many measuring techniques require sampling or some other method that itself alters the reaction taking place. The technique of the S.R.I. scientists, however, permits measuring *in situ*. By the method, a hydrocarbon vapour is heated extremely rapidly to temperatures up to about 3,000°C and held there for a period of milliseconds. The average molecular weight of the decomposition products is measured almost instantaneously before and after cooling. This information, along with the chemical composition of the cooled products, can be used to evaluate the mechanics of the chemical reaction involved.

Experiments were made exposing methane to temperatures of approximately 1,500°C for several milliseconds. Preliminary results indicate that 60% of the methane was decomposed to acetylene and carbon rather than the products that would be expected for equilibrium at this temperature—carbon and hydrogen.

In addition to its use in studying complex reactions, the device constructed for the technique might be modified into a chemical reactor for production of desired end-products formed under high temperatures and short, controlled exposure times. A rapid quench would freeze the reactions short of the final, equilibrium product. Such a device, suitably modified, could also be used for measuring viscosity of gases at high temperatures.

An interesting possibility is that the technique might have potential application in the high-temperature cracking of petroleum. Yield might be improved, or new types of products might be derived.

Gelatin and glue subject of anti-dumping application

THE Board of Trade are considering an application for the imposition of an anti-dumping duty on gelatin and glue (excluding edible and photographic gelatin) imported from Austria, Netherlands, Czechoslovakia and Poland. The application may be extended to cover imports from other countries.

Chemical plant on show in U.K. fair in Rumania

Chemical plant and equipment is to be shown in the first British Equipment Exhibition in Rumania, to be held in Bucharest, from 14 to 26 October. Thirty-five leading British industrial firms have already indicated their intention to exhibit. The exhibition is being staged within Rumania's plan for economic growth during 1960/65, in which emphasis is being placed on chemicals.

Memorial to J. Kenyon at Battersea College

To commemorate the long association of the late Dr. J. Kenyon, F.R.S., with the Chemistry Department of Battersea College of Technology, it has been decided to name the organic chemistry research laboratories the Joseph Kenyon Research Laboratories and to erect a memorial plaque. Anyone wishing to be associated with this memorial is invited to send a contribution towards its cost to the joint organisers Dr. Henry Phillips O.B.E., and Dr. J. E. Salmon, c/o the Chemistry Department. Cheques, etc., should be made payable to 'Battersea College of Technology, Dr. Kenyon Memorial Fund'.

Any money received in excess of that required for the plaque will be treated as a memorial fund, to be used for purposes to be decided by the principal and governors in consultation with Mrs. Kenyon and the Chemistry Department.

Overseas News

PIERREFITTE INCREASE NITROGEN PRODUCTION FACILITIES

A CAPITAL increase from F40,572,000 to F54,096,000 (see CHEMICAL AGE, 24 February 1962, p. 331) by Société Générale d'Engrais et Produits Chimiques de Pierrefitte will be used by the company to finance expansions in the fertiliser and ammonia fields.

Pierrefitte produce ammonia at their Soulom factory. The hydrogen is obtained from Lacq gas, and the ammonia produced is used for the manufacture of nitric acid, calcium nitrate and urea. The capacity of the plant has been extended several times. By 1961 it was 240 tons/day and is expected to have reached 360 tons/day by 1963. Last year, total production was 77,000 tons.

Production of phosphorus and phosphoric acid by the electrothermal process was carried out at full capacity. To meet demand, the company were obliged to start production through the wet process.

Pierrefitte have an interest in the Lacq combine—20% in Aquitaine Chimie and 40% in Azolacq. During 1961, Azolacq used 43,500 tons of ammonia for the production of nitrogen products. This quantity is expected to increase to 80,000 tons.

It is to meet the continually increasing demand for nitrogen fertilisers both at home and overseas that both the Lacq interests and the Soulom factory are being expanded. Production will also be extended through the establishment of a compound fertiliser department.

During 1961, Pierrefitte took over control of Société Sheby and their subsidiary 'Silo', who are engaged in the production of alkyd and polyester resins.

Esso buy LPG rights in Sweden

Svenska Esso have purchased from Skifferoljebolaget that company's sales and distribution facilities for LPG. Acquisition price was nearly £2 million. Esso plan to market LPG from their Stennungsund cracker which comes on stream in mid-1963 in south-west Sweden.

Skifferoljebolaget, a state concern, now in the process of dissolution following heavy losses, held some 40% of the Swedish market. To maintain their share of the market while existing facilities are being run down, Esso will import LPG.

Swiss chemical projects in India

Sandoz (India) Ltd., Indian subsidiary of Sandoz AG, Switzerland, are currently constructing a plant to produce 540 tonnes/year of dyestuffs. Some 58 different dyestuffs are to be produced at the new works, 47 of these having never before been manufactured in India. The production will be sold on the home market and for export to other Asian countries.

At the same time it is announced that the Ciba AG, also of Basle, Switzerland, will next year open a research institute in India through their local subsidiary, this to cost nearly £2 million and to have an all-Indian staff of some 170.

Gulf award contract for olefin plant

Gulf Oil have awarded a contract to Stone and Webster for the construction of an olefin plant at Cedar Bayou where the company has recently bought 1,000 acres of land. The plant will have a capacity of more than 400 million lb. a year, which will more than double Gulf's present ethylene capacity.

Gulf hope to utilise the site for an extensive petrochemical complex with additional facilities including a propylene plant to be constructed in the near future.

Du Pont raise polythene prices for Far East

Du Pont have raised the price of their polythene resins for export to Far Eastern areas by 15 to 20%. The price increase varies with the type of resin and the market area (Hong Kong, Pakistan, the Philippines, Singapore, Taiwan, Thailand and South Vietnam are affected). Other polythene manufacturers in the U.S. are expected to remain competitive.

Polymer Corp.-A.K.U. link on nylon fibres

Algemene Kunstzijde Unie (A.K.U.) and Polymer Corporation are to co-operate in the field of nylon fibres in other countries, where the patents of both companies may be used under licence for the production of semi-fabricated products.

Austria rejects refinery plans of consortium

O.M.V., the Austrian State oil corporation, have rejected the proposal of the consortium (Royal Dutch/Shell, B.P., Mobiloil, and Esso) to build a new refinery at Linz ('Overseas News,' 27 January, p. 176). This refinery was to have been operated jointly by the oil companies and O.M.V.

O.M.V. are to go ahead with plans to expand capacity at their Schwechat refinery from 1.8 million tonnes/year to 3.6 million tonnes.

Tenders for Vietnamese chemical combine cover ammonia, urea, acid, etc.

A PLANT for production of synthesis gases from anthracite, an air liquefying unit and production facilities for synthetic ammonia, sulphuric acid, urea, sulphonated compounds and calcium carbide are included in the large-scale chemical combine of An Hoa, South Vietnam now open to tender. The plant will cost a total of some U.S.$25 million, this total including certain power facilities. France is to supply Fr.70 million as a 15-year loan as part of the total, while a further part is expected to be taken from the DM50 million credit granted by the Federal German Government.

Construction of the combine, which is near the Nong Son coalfields of South Vietnam, will start at the beginning of next year and is expected to be completed some time in 1964. Initial production capacities are said to include 42,000 tonnes of urea, 48,000 tonnes of ammonium sulphate and 8,000 tonnes of calcium carbide.

New State chemical concerns in Egypt

Following a Government order, the Egyptian companies Soc. Ama des Industries Chimiques et Médicaments and Laboratories d'Héliopolis have fused into a new company named Soc. d'Ein Chams pour les Médicaments et Industries Chimiques. A similar fusion into the new concern, Soc. Al Kahira de Médicaments et Industries Chimiques, has been ordered for the Doche, Alpha and Cipharm concerns, while the Nassar Laboratories have been formed into the new company Soc. d'Alexandrie pour les Médicaments et les Industries Chimiques. The merger that had been planned for the Chemical Industries Development concern and the Al Ahram Pharmaceutical and Chemical Co. will not now take place.

El Paso aid for Algerian butadiene plant

A new joint company, Soc. des Monomeres de Synthese (S.O.M.O.S.) has been set up by El Paso Natural Gas, Soc. National des Petroles d'Aquitaine and S.N. Repal. The initial capital of NF.2.5 million will be half owned by U.S. company and half by the French companies The new plant will produce butadiene for the production of synthetic rubber using as feedstock natural gas from the Hassi r'Mel gas field that is operated by S.N. Repal and Cie. Francaise de Petroles.

French import quotas

The French Government has opened global quotas for a list of goods that are still subject to quantitative import restrictions in the convertibility zone. The list includes oilseed and edible oils, linseed and oil, castor oil, raw materials for chemicals.

Overseas news

Stepan shift phthalic anhydride site from Puerto Rico to Illinois

CHANGE of plans for their proposed $7 million phthalic anhydride plant has been announced by Stepan Chemical. The 44 million lb./year plant, which was to be built in Puerto Rico, is now to be built in Millsdale, Illinois, near Joliet. Production is still scheduled to begin this year.

The decision to re-locate the plant has been taken because of recent reductions in phthalic prices and more substantial orders from the U.S. Midwest. Other contributory factors are possible, higher freight rates from Puerto Rico and the trend from flake to molten phthalic. Molten phthalic, according to Stepan, could not be economically shipped from Puerto Rico.

Stepan are currently negotiating with Commonwealth Oil for relief from their contract to buy naphthalene for their phthalic anhydride plant. Last autumn, Commonwealth said that they planned to build a $6.5 million petrochemical plant in Puerto Rico to produce aromatics, and it was shortly after this that Stepan announced their plans to build a phthalic plant nearby. Commonwealth's plant is still in the planning stage, but with the loss of the Stepan contract it is not certain whether present construction plans will be proceeded with.

"However," said Commonwealth's president, "the manufacture of petrochemicals is a natural extension of our oil refining business and we are actively exploring several potential ventures in this area."

Faserwerke Huls to make new polyester fibre

Faserwerke Hüls GmbH, Marl, are to start production of a polyester fibre hitherto unknown in Europe and bearing the name Vestan. The fibre is said to be usable in virtually all branches of the textile industry. Faserwerke Hüls are a joint subsidiary of Chemische Werke Hüls AG and Eastman Kodak, of Rochester, New York. The recently-formed company started operation with the sale of the Eastman Kodak fibre Kodel, the latest Chemische Werke Hüls annual report foreseeing a start of plant construction as soon as the potential sales of a fibre were assured; this has apparently now been determined.

R.C.I. formaldehyde process for Norwegian company

Reichhold Chemicals, Inc., New York, have signed a licence agreement with Glidol og Snoland Kjemiske Fabrikker A/S, Oslo, to supply engineering and know-how for the production of formaldehyde using the R.C.I. partial oxidation technique. The agreement has been approved by the Banque Norvege.

One of the first products to be produced by Glidol and Snoland using this formaldehyde will be urea formaldehyde resins.

German-built benzole refinery for Austria

A catalytic benzole refining plant—the first of its kind in Austria—is to be opened next year by Vereinigte Oesterreichische Eisen-und Stahlwerke AG, of Linz. The plant, ordered from Heinrich Koppers GmbH, of West Germany, will have a capacity of some 30,600 tonnes/year.

Caltex plan Cape Town oil refinery

Caltex are planning a refinery in South Africa at a cost of around £11 million. Sited near Cape Town, work on it will begin before the end of this year, with production scheduled to start in 1965. Capacity will be about 1 million gall./day.

South Africa's two other oil refineries based on imported crude are those at Durban, where the Stanvac refinery (50,000 bbl/day is already in operation. The Shell refinery (70,000 b.p.s.d.) is now under construction by Foster Wheeler. The fourth refinery, in South Africa, that of Sasol in the Transvaal uses the Fischer-Tropsch synthesis to produce petrol and other products from coal.

MSG plant to be switched to fermentation process

International Minerals and Chemical are to convert their monosodium glutamate plant at Jose, Calif. to a fermentation process, at the same time increasing the plant capacity from 12.5 to 15 million lb. The fermentation process which has been operated on a pilot plant scale for a year, replaces an extraction process using beet sugar extract. The changeover should be complete by September.

Austrian firm shelves acrylic fibre project

AUSTRIA'S main chemical producers, Oesterreichische Stickstoffwerke AG, Linz, are to postpone indefinitely a project for the production of acrylic fibres in co-operation with Zellwolle Lenzing AG, also of Austria. The project foresaw the expenditure of some 200 million Schilling (some £2,660,000) on a plant able to produce some 3,300 tonnes of fibre annually.

The decision follows a comprehensive market study, which cast doubts on the economy of operating such a unit in view of present world capacity and price conditions. Nevertheless, Zellwolle Lenzing concern, who were to have processed the raw material supplied by Stickstoffwerke, are reported to be planning to go ahead with the fibre project, except that this will be without the participation of the State-owned Stickstoffwerke and that the capacities foreseen will be considerably smaller than was originally planned, being based on a pilot plant only.

Should this Lenzing scheme succeed as far as both home and export sales are concerned, it is possible that Stickstoffwerke would after all participate.

Hercules plan 70% expansion for polypropylene fibres

A major expansion of their polypropylene fibre plant at Covington, Virginia, is planned by Hercules Powder Co. in a programme to increase fibre production by about 70%. The 11 million lb./year plant was brought into commercial production a year ago. Construction of the expanded facility is getting under way immediately and completion is scheduled for late this year. The new plant will be adjacent to the biaxially oriented polypropylene film plant to be completed early in 1963 (see C.A., 17 February, p. 285).

Hercules, the world's largest producer of polypropylene fibre, started commercial production in February 1961; the company reports that the past six months have seen increased use of the fibre in carpeting, industrial clothing, filters, rope and cordage (including fish nets) etc.

Fibre Industries to expand polyester fibre plant

The third stage of the four stage expansion programme of Fibre Industries Inc. will bring the capacity of their Fontrel polyester fibre plant to the planned 40 million lb. a year. This stage will include new facilities for staple and for polymer production.

Unlimited Dutch quotas for some plastics materials

The Netherlands Government has reduced the import duty to 4% on the following goods, which have been added to the list of quota-free goods when imported from non-E.E.C. countries: polyoxymethylene resins in liquid or paste form; polysulphohaloethylenes in liquid or paste; copolymers of vinyl chloride and of vinylidene chloride, made up from at least 80% of vinylidene chloride in liquid or paste.

Chemicals in East Europe

RUMANIA PLANS BIG CAPACITY INCREASES FOR CHEMICALS

IN connection with the claim that Rumania's chemical production will by 1965 increase by 330% compared with 1959 and by 3,000% compared with 1938, capacity figures under the planned expansion programme have been released.

Soda output will be increased to an annual capacity of 200,000 tonnes of calcined and 60,000 tonnes of caustic soda at the Ocna Mures plant. The new soda works at Govora will produce some 90,000 t.p.a. of calcined soda and 40,000 t.p.a. of caustic soda, while the Borzesti Chemical Combine, which has recently started output of 30,000 tonnes of caustic soda annually will double this capacity by next year. Total national production, which in 1959 amounted to only 106,155 tonnes of calcined soda and 64,391 tonnes of caustic soda, will by 1965 stand at at least 320,000 tonnes and 180,000 tonnes, respectively, it is stated.

This year will see the start at Borzesti of Rumanian synthetic rubber production, an annual capacity of 50,000 tonnes having been forecast for the target year 1965.

Refinery expansion

Following the recent run-on at the Ploiesti oil refinery of the 1 million tonnes/year catalytic reforming and aromatic extraction unit, plants working to the most modern catalytic reforming, hydrocracking, hydrofining and similar processes will be opened over the coming years at the Brazi, Borzesti and Teleajen refineries. Petrochemical capacities currently under construction will produce for export, quantities of high-purity products including phenol, acetone, acetic acid, acetic anhydride, higher alcohols, softening agents, detergents, solvents, intermediates, etc. Rumania is to become "one of Europe's leading phenol producers and exporters", it is stated.

In the plastics sector, Rumania is in the future to take up production of polythene, polystyrene and polyurethane, while total output of plastics and synthetic resins is to be raised from no more than 6,565 tonnes in 1959 to 95,000 tonnes in 1965.

The synthetic fibre field is to undergo a similarly dynamic expansion, production to be of 13,000 tonnes annually by 1965, as against only 317 tonnes in 1959, the year in which production in this field began in Rumania, with the opening of the first facilities at Savinesti. On the same site a new plant for the production of Rolan acrylic fibre, with a capacity of 5,000 t.p.a. is being erected; during this year a daily capacity of 15 tonnes will be reached, as compared with the 1 t.p.d. of an initial pilot plant unit. Raw material for Rolan fibre is high purity methane gas. Output of Relon polyamide and Terel polyester fibre are also to be increased.

Cellulosic fibres and yarn production are to be expanded from 2,704 tonnes in 1959 to 34,000 tonnes in 1965, with the building up of production at the Braila plant, the planned coniferous-wood-based unit at Suceava, the recently opened plant at Constanta and further new production facilities.

In the field of agricultural chemicals, big increases in the production of fertilisers are planned, with nitrogenous products to overtake phosphatic.

Constant expansion is taking place in the pharmaceutical industry. A new production plant for chloramphenicol, nitrofusane and hydraside is being built at Cluj, while the Iasi (Jassy) antibiotics plant, already with a production programme of over 15 different antibiotics, is currently being expanded to produce more antibiotics and new fungicides and pharmaceutical preparations.

Rumania is planning the industrial production of calcium gluconate, vitamin B_{12}, vitamin C, citronic acid, gibberellines and other preparations. Studies are being carried out into the supply of saponine-content plants as a basis for the synthesis of steroid hormones.

	1959 *Tonnes*	1965 *Tonnes*
Syn. rubber	—	50,000
Plastics & resins	6,565	95,000
Syn. fibres	317	13,000
Acrylic	317	5,000
Cellulosic fibres	2,704	34,000
Sulphuric acid	199,399	734,000
Carbide	49,106	125,000
Fertilisers		
Tonnes P_2O_5	43,608	220,000
Tonnes N	8,469	280,000
Pesticides		
Active ingredient	8,787	26,000
Of which:		
Insecticides	2,200	10,000
Fungicides	6,550	15,000
Herbicides	37	1,000

Increases in Soviet production of fibres, fertilisers and sulphuric acid

THE Soviet chemical industry in 1961 produced some 14% more than in 1960, it is announced by the Central Bureau of Statistics of the Soviet Union in Moscow, as compared with an overall gross production increase for Soviet industry of some 9.2%.

Within the chemical industry output of synthetic resins and plastics rose by the greatest degree, being some 22% up. Over the same period manufacture of synthetic fertilisers went up by 10% from 13,900,000 tonnes to 15,300,000 tonnes, that of chemical fibres by the same percentage from 211,200 tonnes to 250,000 tonnes and that of sulphuric acid by 6% from 5,400,000 tonnes to 5,700,000 tonnes. Over 1961 Russian investments in the chemical industry were higher by 13% than those recorded for 1960.

Yugoslavia: Exports of the Yugoslav chemical industry are expected over the current year to be 28% higher than those recorded for 1961. These were, in their turn, up by 8% on those for the previous year.

Poland: Over last year the Polish chemical industry beat its annual production target by some 2%. During 1962 production is to be brought up to a level 14% above that recorded for 1961, actual production value to be higher by some 5,500 million zloty than for last year. A sum of 2,600 million zloty, compared with only 1,600 million zloty in 1961, will be available for investment in chemical synthesis plants, almost 700 million zloty of the 1962 total to go to the building up of ammonia and acetylene capacities at the Tarnów combine. This year will also see the modernisation of the Chorzów nitrogen plant, the continuation of building of a carbon electrode unit at Biegowice, the opening of new ammonia facilities at Oswiecim and the start of construction of major chemical combines at Blechhammer, Heydebreck and Pulawy.

POLISH PRODUCTION TARGETS, 1962

	Tonnes
Phenol	27,000
Synthesis ammonia	410,000
Sulphur	202,900
Sulphuric acid	879,000
Calcined soda (98%)	545,000
Caustic soda (96%)	194,000
Calcium Carbide (75%)	375,000
Fertilisers :	
Nitrogenous	301,300
Phosphatic	259,000
Calcium	525,000
Synthetic rubber	32,200
Dyestuffs, syn. org.	11,300
Synthetic fibres	84,800
Plastics materials	76,500
Cellulose	318,000

Some 58,800 tonnes of plant will be manufactured in 1962 for the chemical, rubber and sugar industries.

Bulgaria: Over last year Bulgaria exported chemicals including 45,157 tonnes of calcined soda, 9,329 tonnes of caustic soda and 11,451 tonnes of calcium carbide.

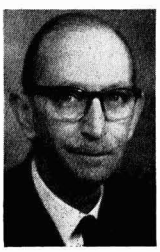
Liquid al. sulphate for pumping station

Aluminium sulphate is now being delivered to the Widnes Corporation's West Bank pumping station from the Alumina Co. Ltd. in solid form, the first delivery in this form having been taken last week. The liquid form proves easier to handle than the slab form previously delivered for purification of river water.

PEOPLE in the news

● **Dr. Monroe Edward Spaght,** who is to be elected president of the Society of Chemical Industry at the annual meeting to be held in Newcastle upon Tyne in July, is president of Shell Oil Co., of the U.S. Born in California, he graduated in chemistry later becoming technical vice-president of Shell Development (Research) in 1949 and vice-president in 1953. During the war he managed Shell's technical activities on the west coast of the U.S.

● **Mr. C. E. H. Verity,** managing director of Foster Wheeler Ltd. for some years, has been appointed chairman of the company. **Mr. Charles E. McCulloch** has been appointed managing director and chief executive officer and will also be responsible for co-ordinating the operations of the associated companies in France and Italy. These appointments follow the retirement of **Mr. John M. Wallace** from the chairmanship.



C. E. H. Verity

A. D. Wilson

● **Mr. A. D. Wilson,** chairman of Joseph Crosfield and Sons Ltd., Warrington, since 1 July 1960, was last week elected chairman of the North Western Branch, Institution of Chemical Engineers, in succession to the late Dr. J. S. Hunter. Mr. Wilson joined Unilever at Port Sunlight in 1934, later becoming a production manager on margarine at Purfleet and then at Bromborough. In 1946 he was named general works manager of Van den Berghs and Jurgens, joining the board of that company in 1951. From 1955 to 1957 he was a technical member of the U.K. Margarine Executive and for the three years before joining Crosfields he was attached to Unilever's Technical and Organisation Divisions.

Other officers elected at the annual meeting last week were: vice-chairman, **Professor F. Morton,** professor of Chemical Engineering, Manchester; hon. secretary, **A. V. Bailey,** Hardman and Holden Ltd.; hon. treasurer, **R. J. Kingsley,** Lankro Chemicals Ltd.; committee, **J. F. C. Gartshore,** I.C.I.; **K. M. Hill,** Atomic Energy Authority; **M. Ruhemann,** Petrocarbon Developments Ltd.; **F. P. Stainthorp,** Manchester College of Science and Technology.

● 'On site' responsibility for the construction of new plant for Glaxo Laboratories (Pakistan) Ltd. at Lahore is being undertaken by **Mr. D. W. Murray.**

● **Mr. R. E. Hodrien, A.R.I.C.,** has taken up the appointment of regional technical information officer for SCATIS (South Coast Area Technical Information Service). He was formerly technical information officer with the British Launderers' Research Association at Hendon.

● **Dr. K. H. Jack,** research manager, and **Mr. A. Wright,** works manager of the Thermal Syndicate Ltd., Wallsend, Northumberland, are to be appointed to the board on 1 April.

● **Mr. C. Whalley,** chief analyst, Laporte Chemicals Ltd., Luton, was re-elected chairman of the Microchemistry Group, Society for Analytical Chemistry, at the annual meeting held recently in London. Other officers elected were: Vice-chairman, **Miss M. Corner** (National Chemical Laboratory); hon. secretary, **Mr. D. W. Wilson,** Sir John Cass College, Jewry Street, London E.C.3; and hon. treasurer, **Mr. G. Ingram** (Courtaulds Ltd.).

● **Major General C. Lloyd,** director, has been appointed to the newly created post of director-general of the City and Guilds of London Institute, a constituent college of Imperial College. This is part of a major reorganisation which will provide for the great expansion of technical education and allow the institute to extend its service to industry and the technical colleges.

Dr. Arndt J. Weicksel of American Cyanamid (left) with John L. Fletcher, manager of the General Chemicals Division, Cyanamid of Great Britain Ltd. Dr. Weicksel, products supervisor for plastics additives, is an authority on u.v. absorbers for plastics materials, the U.S. market for which totalled 1 million lb. in 1960. (See also 'Chemical Age', 10 March, p. 398)

● After 49 years with Associated Lead Manufacturers Ltd., Newcastle upon Tyne, **Mr. Edward R. Nixon** has retired and has been presented by the firm with a piece of antique silver and a TV set. He was commercial manager of the zirconium and special chemicals divisions of the company.

● **Dr. J. Overhoff** has vacated the post of director of the Delft laboratories of the Royal Dutch Plastics concern. He is succeeded by **Dr. J. M. Goppel.**

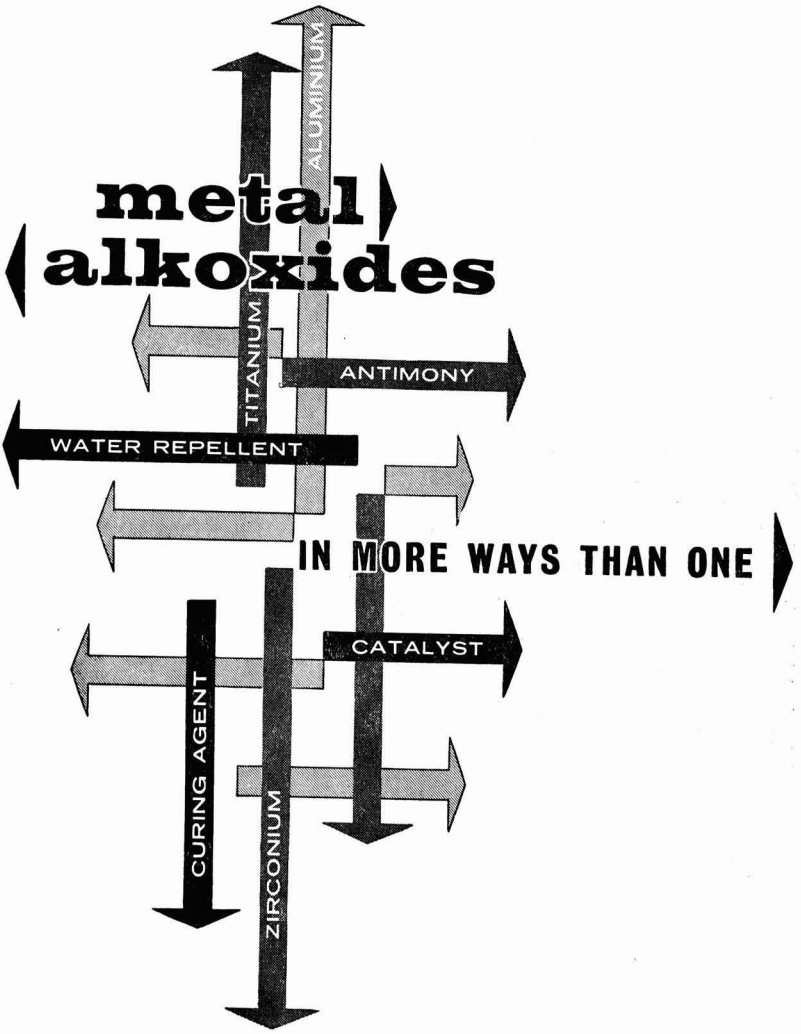
● **Dr. J. C. R. Turner,** Trinity College, Cambridge, a lecturer in chemical engineering has been elected into a fellowship.

● **Mr. Harold A. White,** assistant managing director of Hercules Powder Co. Ltd., and **Mr. Colin R. Colman,** a director of Hercules, have been appointed to the board of Nelsons Acetate Ltd. Mr. White has also been appointed to the board of the Holden Vale Manufacturing Co. Ltd. **Mr. E. Frank Parker,** a director of Hercules, has been appointed to the board of Resiquimica-Resinas Quimicas Ltd.

Among U.K. exhibitors at the Leipzig Fair were the divisions of I.C.I., backing up their sales drive which last year brought £5,000,000 in exports to East Europe. G. Weiss, Deputy Minister of Trade (left), shakes hands with R. J. Smith, I.C.I. Dyestuffs Division's publicity manager. Centre is F. K. Thornton, manager of the I.C.I. stand

Drawback on hydrocarbon oils used for lube-oil additives

Hydrocarbon Oil Duties (Drawback) (No. 2) Order (S.I.349/1961) allows drawback of customs or excise duty paid in respect of hydrocarbon oil used in the manufacture or preparation of certain lube-oil additives.



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

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

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Bookshelf

INDUSTRIAL DISTILLATION SYSTEMS DESCRIBED

DISTILLATION. By *R. J. Hengstebeck*. Chapman and Hall (Reinhold). London. 1962. Pp. xiv+365. 92s.

This volume treats of the principles and design procedures in industrial distillation systems. It deals systematically and thoroughly with most aspects other than the purely mechanical.

The first 40 pages give a particularly clear statement of the essentials of fractional distillation, followed by 30 pages on the functions and design of industrial column packings. The evaluation of conditions (Theile-McCabe and Lewis-Matheson) in simple, reflux and azeotropic distillations are presented with instructive graphical and tabular illustration of typical conditions: there is a brief section on computer calculations.

Multi-component systems, the efficiencies and resistances of various packings and the choice of column and component sizes are dealt with in separate chapters. Finally, there are useful and careful sections on the estimation and enthalpy data.

The book is a first-class addition to the extensive literature in its field of chemical engineering.

Thermodynamics

CONTRIBUTIONS TO THE THERMODYNAMICS OF SURFACES. By *J. J. Bikerman, M.I.T.* Published by the author, 1961. Pp. 76.

This is a collection of four papers which Dr. Bikerman, a leading specialist in the physical chemistry of surfaces, has himself published. The subjects dealt with are: the thermodynamics of capillarity; the nature of surface pressure; the theory of Young's equation of wetting; experiments on Young's equation.

In the first he points out certain deficiencies in Gibbs's formulation; in the second, emphasises that surface pressure is not analogous to osmotic pressure; and in the other papers shows the limitations of Young's equation.

Copolymers

BLOCK AND GRAFT COPOLYMERS. By *R. J. Ceresa*. Butterworths, London, 1962. Pp. xvi+196. 42s.

Polymer technology has grown immensely in the last 10 years and continues to grow at an ever-increasing rate. There is a continuing need for a succession of books that survey the field.

The author has attempted to make his book more comprehensive than is usual for a work of this size. He gives a copolymer index of some 1,400 substances that are discussed in the text, which is a large proportion of the 2,000 or more polymers described. Despite this documentation, the early chapters are well balanced and clearly set out. They could form part of a university course spiced by a number of recipes for the production of the materials. This is a good feature.

Books that deal with complex technologies all too readily deteriorate into printed card indices. It is a tribute to the grasp that this author has over his subject that he can dominate his material and produce a pleasing work.

Nuclear energy

PROGRESS IN NUCLEAR ENERGY, SERIES V, METALLURGY AND FUELS, VOLS. 3 AND 4. Edited by *H. M. Finniston* and *J. P. Howe*. Pergamon Press, Oxford, 1961. Pp. xx+xii (both vols.) + 476 + 434. 105s each.

These volumes contain papers given at the Geneva Conference in 1958. The contents of the 3rd volume, which is entitled 'Basic materials and phenomena', deal with various aspects of uranium and its alloys, beryllium, neptunium, phase studies of uranium and plutonium oxides and the effects of irradiation, particularly on fuel material.

Volume 4 ('Metallurgy of nuclear reactor components') contains firstly 12 articles on solid reactor fuel fabrication, one of which is by Russian contributors. The other sections deal with the behaviour of fuels in reactors with regard to their stability, moderators, cladding, control materials and the corrosion of plutonium and uranium.

Laboratory chemicals

REAGENT CHEMICALS AND STANDARDS. By *J. Rosin*. Van Nostrand Co. Ltd., New Jersey, U.S. Fourth edition 1961. Pp. viii+557. 112s 6d.

The third edition of this book has been expanded to include about 30 new reagents (among them are cellosolve, *n*-hexane, lead tetra-acetate, etc.); standards and tests for some 10 natural amino acids; recently developed methods of assay; tables of the pH of some chemicals and tables of gravimetric factors. The main part of the book (477 pages) deals with the physical properties (molecular weight, appearance, density, freezing and boiling points, miscibility with solvents), standards of quality and purity tests for over 600 chemicals. The remainder of the book describes some of the analytical and physical techniques used in the evaluation of purity, together with small sections on primary standards for volumetric work, preparation and standardisation of volumetric solution, indicators, and the equivalents of volumetric solutions. Inclusion of these chapters adds greatly to the value of the book and one often wonders why some other books on reagent chemicals omit these altogether.

This is a well produced book which should find a place in every analytical laboratory and also on the reference shelves of most libraries.

Spectrophotometry

ATOMIC-ABSORPTION SPECTROPHOTOMETRY. By *W. T. Elwell* and *J. A. F. Gidley*. Pergamon Press, London, 1961. Pp. vii+102. 30s.

The application of atomic absorption to quantitative chemical analysis is relatively new in the field of instrumental analysis. Since its introduction in 1955 it has, however, gained wide acceptance and it is clear from the 66 references cited in this book that the technique has some commendable features. It is particularly useful where small amounts of certain elements are to be determined.

The book is divided into eight chapters of which five, comprising half the book, deal with the theory and equipment used.

Full details for typical analyses are given in the rest of the book. A table lists 30 elements which have already been determined accurately by the atomic-absorption technique; among these are zinc, lead, magnesium, manganese, iron, calcium, sodium, copper and cadmium.

The atomic-absorption technique is not, as yet, widely used and this book is welcome on this account.

Supplement to Mellor

SUPPLEMENT TO MELLOR'S COMPREHENSIVE TREATISE ON INORGANIC AND THEORETICAL CHEMISTRY; VOL. 2, SUPPLEMENT II. THE ALKALI METALS. PART 1. Longmans, London, 1961. Pp. xxxix +1458. 300s.

The new supplement to Mellor is of interest to all chemists who ever deal with inorganic compounds. It is less certain to whom a review should be directed. All substantial chemical libraries must buy the volumes as they appear, but few individuals will, even momentarily, consider a purchase.

An enormous amount of literature has been scanned to produce this volume, about 300 pages of which are devoted to lithium. One indication of the task is that 26 pages are allotted to listing the titles of journals to which reference is now made but which were not referred to in either the first volume of supplement or in Partington's *Physical Chemistry*. Unfortunately only a tiny proportion of the references are to papers published since 1955 so that the material is already seriously out of date. The gap between the appearance of the first and second volumes of supplement has been very large, which has no doubt contributed to the delay. To judge by the history of most series, the prospect is not reassuring. The editors will have to work hard to catch up with the literature.

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Commercial News

- Increase in C.P.A.'s revenue from Terylene
- Crosfield profit down by £238,000
- Montecatini plan new share, loan issues
- Naphtachimie sales rose 33% last year

Anchor Chemical

Referring to 1962, the annual report of the Anchor Chemical Co. Ltd. states that the level of business is being maintained. Unless there is a serious reduction in trading for political reasons, the directors are reasonably confident in being able to maintain steady progress. Annual meeting will be held in Manchester at 2.30 p.m. on 28 March. For 1961 results see 'Commercial News,' 3 March, p. 370.

Bakelite Ltd.

Group profit of Bakelite Ltd. for 1961 totalled £852,924 (£1,350,808). Tax took £369,549 (£662,800) and net profit was £442,490 (£644,679). A final dividend of 11½%, making 17½% (same) is recommended.

Calico Printers

Revenue from 'Terylene' and other royalties during the six months ended 31 December 1961 amounted to £1,293,800, before tax—an increase of £101,600 over the corresponding period of 1960. Total revenue from this source for the year ended 30 June 1960 was £2,158,000. A dividend of 7½% has been declared.

There was a further expansion in the sales of polyester fibre manufactured overseas by sub-licensees, and over 70% of the revenue for the half year was derived from associated foreign patents.

Dussek Brothers

Group profits of Dussek Brothers and Co. Ltd., oil refiners and distillers, for 1961 were £266,491 (£214,856), subject to tax of £139,797 (£107,777). Group profits include for the first time those of Claud Campbell and Dussek Brothers (Australia).

Joseph Crosfield

Net profit of Joseph Crosfield and Sons Ltd., a subsidiary of Unilever Ltd., for 1961 was £834,199 (£1,071,815) after tax of £721,548 (£1,002,721). Proposed dividend on ordinary will be £694,849 after tax. The annual report will be issued on 22 March.

William Gossage

Net profit of William Gossage, distributors of soap, glycerine and chemicals (subsidiary of Unilever), for 1961 was £114,426 (£144,114), after tax of £131,578 (£148,992). Dividend of £70,782 has been recommended.

Newton Chambers

Group trading profit of Newton Chambers and Co. Ltd. for 1961 was £1,393,632 (£1,551,003). Balance after tax and depreciation was £482,674 (£618,001). Group turnover was a record. Final dividend is 10% (12%), making 18% (20%).

Scottish Tar

Profit of Scottish Tar Distillers Ltd. for the six months to 31 December was £36,888 (£46,780), after provisional tax of £54,028 (£61,218). Interim dividend is 2½% (same) on capital increased by 10% scrip issue.

Thermal Syndicate

Group net profit of Thermal Syndicate Ltd. for the year ended 31 October was £199,699 (£228,004). Dividend of 6d per 5s share is declared on capital increased by one-for-one scrip and two-for-five rights issues. An increasing rate of orders has confirmed the company's current expansion policy, says the chairman. Equipment for new processes is now being installed by the U.S. subsidiary.

Whessoe

Whessoe Ltd., chemical engineers, of Darlington, have acquired Express Tools Ltd., precision tool makers, of Chessington, under their policy of diversification. Cost is between £60,000 and £70,000.

Roger Bellon

Laboratoire Roger Bellon report a profit of F.2,860,000 for 1960/61 and will distribute a dividend of F.9.25. Turnover increased by 20% compared with the previous year.

Chatillon

Chatillon, synthetic fibre producers, Milan, announce for 1961 a net profit of 1,280 million Lire (1,250 million Lire). A dividend of 10% (same) is to be paid. The company is further to raise capital by a ratio of 1:100 to 11,510 million Lire by the issue of free shares. Over 1961 Chatillon produced 12.3% more man-made fibres than in 1960, this figure including 67.6% rise in respect of fully-synthetic fibres.

Chemical Fund

The U.S. chemical industry investment fund Chemical Fund Inc., New York, reports that by 31 December 1961 its total holdings were of $313,700,000 ($268,480,000). Actual worth per certificate rose over the period from $11.04 to $12.38. The Fund has holdings in several leading European chemical companies.

Fertilizers & Chemicals

Increased production, accompanied by improvements in processes and plant, maintenance and stores, with consequent savings in services and manpower is reported by Fertilizers and Chemicals Ltd., Haifa, for 1960/61. Production increases were noted in potassium sulphate and dicalcium phosphate, now made by a new process.

Sales of fertilisers were worth I£17,543,554 (I£17,569,556), while sales of other chemicals, including detergents were worth I£11,227,452 (I£8,388,541).

Research and development resulted in commercial production of zinc chloride, potassium silicate, aluminium sulphate, zinc ammonium chloride, new detergents, granular fertilisers. The company has also purchased a pigments plant.

Kishon Chemicals Ltd., exporters, are now a full subsidiary and will in future also import raw materials and chemicals and act as Israel agents for overseas companies. Ferson is the title of a company set up jointly with Sonol (Israel) Ltd. for the production of water repellants, floor and wall coatings, utilising know-how of Sonneborn Chemicals and Refining of the U.S.

Production in 1960/61 was valued at I£24.67 million, (I£23.61 million). Inland sales were worth I£26.85 million (I£24.18 million) and exports I£1.92 million (I£1.77 million). Gross profit on sales was I£8.55 million (I£6.37 million) and net income was I£4.58 million (I£3.14 million).

Graco International

Graco International S.A. is the name of a new company formed in Geneva, Switzerland, by Gray Co. Inc., of Minneapolis, whose production programme includes chemical pumps and other chemical apparatus.

W. A. Hoek's

The Schiedam, Holland, concern, W. A. Hoek's Machine—en Zuurstoffabriek NV, are to pay a jubilee bonus dividend of 5% to celebrate their 50th anniversary.

Montecatini

Montecatini are to pay a 1961 dividend of 115 Lire (same). Other proposals are a one-for-five distribution on payment of 25 Lire a share as reimbursement of expenses. The issue will increase the capital to 180.000 million Lire to be followed by an increase to 225,000 million by issuing new shares on the basis of one-for-four. On 30 June, Montecatini are to make a 5.50% loan issue of 50,000 million Lire.

Naphtachimie

Naphtachimie, 53.6% Péchiney controlled, increased their sales by 33% during 1961, but turnover increased by only 7%.

Saint-Gobain have announced an increase in capital from F521,950,800 to F626,340,900 by an issue of 1,391,868 F75 shares at F180.

Turnover of *Progil* for the second half

(*Continued on page 454*)

Increases of capital for Lankro, L. A. Mitchell and CIBA AG

of 1961 showed an increase of 7% over the same period of 1960.

Turnover of *Française des Matières Colorantes* in 1961 was F24,380 million, after tax, F23,660 million.

1960/61 turnover of *Pierrefitte* (a period of 18 months) has not yet been published, but it is expected to be about F80 million.

Olin

Olin Mathieson Chemical Corporation announce for 1961 sales of $700,720,000 ($668,170,000). Net profit fell over the year, however, from $2.86 to $2.47/share.

Chas. Pfizer

Chas. Pfizer and Co. Inc., U.S., announce 1961 sales of $312.4 million ($269.4 million). Net profit increased over the year from $26.18 million or $1.58/share, to $31.44 million or $1.74/share, the number of shares having increased over the year from 16.5 million to 18 million.

Poudreries Reunies

Poudreries Reunies de Belgique have merged with Fabrique Nationale de Produits Chimiques et d'Explosives by an exchange of shares in the proportion of five in the former company against four of the latter. Capital of Poudreries Reunies has been raised a second time to Fr.252,226,000 by the creation of 2,975 shares which have been allotted to Soc. Generale de Belgique in exchange for 5,530 shares of the Soc. Anonyme d'Rendonk.

Reichhold Chemicals

Although sales were a record in 1961, totalling $102 million, Reichhold Chemicals report that net profit was 79 cents/share (83 cents). This was due to the shortage and high price of naphthalene and heavy start-up expenses of new plants in 1961. R.C.I.'s U.S. phthalic plants have now switched over to petroleum naphthalene feedstock supplied by Ashland Oil and Sun Oil; this has led to higher yields at lower cost. Greatly improved earnings are expected for 1962.

Schering Corp.

The Schering Corporation have announced sales of $87.1 million in 1961 ($88.5 million). Net profit rose, however, from $9.87 million to $10.03 million after *tax of $7.9 million ($7.5 million).*

S.B.A.

The Belgian chemical company Société Belge de l'Azote et des Produits Chimiques du Marly (S.B.A.), of Liège, announced a net profit for the 1961 financial year of BF4.98 million. This compares with a loss over 1960 of some BF32.64 million. The company has further decided to increase its capital from 650 million to 712.5 million francs by the issue of 198,140 new shares to existing shareholders at a rate of 1:4 and a price of 797 francs/share.

Snia Viscosa

Snia Viscosa of Milan, who are maintaining their 1961 dividend at 140 Lire/share, are to make two new issues. The first is a scrip issue of 6,671,875 shares on a two-for-10 basis and the second a rights issue of the same number of shares and on a similar basis at par, plus 500 Lire/share. These moves would raise the company's capital to 56,043,750,000 Lire.

NEW COMPANIES

MAYBRIDGE CHEMICAL CO. LTD. Cap. £500. To acquire the business of Maybridge Chemical Company from Mrs. G. M. Bridgwater; to buy, sell and manufacture chemicals, etc. Directors: G. M. Bridgwater and R. J. Bridgwater. Reg. office: 45 Cove Road, Rustington, Sussex.

WILLIAM H. MOSS RESEARCH LTD. Cap. £100. Objects: To carry on the business of and to act as consultants and advise on chemical processes, on methods of manufacture of organic and inorganic compounds, synthetic resins, polymers and plastics, etc. Directors: Mr. W. H. Moss and Elsie Moss. Reg. office: 9 Old Lodge Way, Stanmore, Middx.

STRATTON CHEMICALS (HOLDINGS) LTD. Cap. £100. Objects: To acquire the whole or any part or parts of the issued share capital of Chemitrade Ltd., manufacturers of and dealers in chemical, pharmaceutical and other preparations, foods, drugs, capsules, disinfectants, deodorants, insecticides, fertilisers, etc. Reg. office: Berkeley Square House, Berkeley Square, W.1.

REDISTIL LTD. Cap. £600. Solvent distillers; recoverers of solvents from waste and other materials, etc. Directors: P. Mathews, W. A. J. Humpage, D. J. Hammond. Reg. office: Bromford Lane, West Bromwich, Staffs.

D. AND O. ROBERTS LTD. Cap. £2,500. Manufacturers and distillers of and dealers in tar, bitumen, pitch, oils, petroleum, etc. Director: D. Roberts, High Meadows, Southway, Tranmere Park, Guiseley, near Leeds.

INCREASE IN CAPITAL

ANCORITE LTD., chemical engineers, etc., 116 Grafton Road, London N.W.5. Increased by £15,000 beyond the registered capital of £10,000.

CHEMICAL STORAGE LTD., Berkeley Square House, London W.1. Increased by £24,900 beyond the registered capital of £100.

LANKRO CHEMICALS LTD., Bentcliffe Works, Salters Lane, Eccles, Lancs. Increased by £875.000 beyond the registered capital of £125,000.

L. A. MITCHELL (HOLDINGS) LTD., consulting chemical engineers, etc., Harvester House, 37 Peter Street, Manchester 2. Increased by £900,000 beyond the registered capital of £100.

CIBA AG, Basle, will on 12 April recommend to shareholders an increase of capital from S.Fr.100 million to S.Fr.120 million. It is proposed to issue 40,000 new registered shares, each of 500 francs nominal value, at a rate of 250%.

U.K. aerosol output reaches 48 m. units

THE second annual survey conducted by the British Aerosol Manufacturers' Association revealed that 48 million non-food metal aerosol containers were filled by members of the Association during the year ended 31 December, 1961.

The last annual survey which covered 1960 (see CHEMICAL AGE, 25 November, 1961, page 852) showed that 44 million containers were filled.

Chemical plant directory

A limited number of copies of the 1961 edition of 'British Chemical Plant,' *the B.C.P.M.A.'s biennial illustrated* directory of members, are now available without charge to meet requests from firms not on the mailing lists. This edition, the sixteenth, gives a comprehensive and authoritative guide to the products of some 270 members and associates who manufacture plant and ancillary equipment for the chemical and process industries. Applications should be made to the secretary, B.C.P.M.A., 14 Suffolk Street, London S.W.1.

B.N.S. introduce new nylon yarn

NOVEL polymerisation and melt-spinning processes, no details of which are revealed, lie behind the introduction of a new nylon industrial yarn by British Nylon Spinners Ltd. This yarn is claimed to show markedly improved resistance to heat, light and fatigue and to incorporate other important improvements. Known as type 900, it is especially suited for tyre cord and has already almost completely superseded the earlier type 600 nylon for this use.

B.N.S. give no information about the plant where type 900 is being produced or about any future plant projects, but say that the yarn is now in bulk pro*duction in 840 denier and that it is being* introduced for other industrial applications besides tyre cord.

New Yorkshire branch for I.Chem.E.

Inaugural meeting of the Yorkshire Branch, Institution of Chemical Engineers, will be held at the Houldsworth School of Applied Science, Leeds, at 6.30 p.m. on 10 April.

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 11 April

Synthetic products from carbon monoxide, hydrogen and olefins. Anglo-Iranian Oil Co. Ltd **702 195**

Oxygen-containing organic compounds. Anglo-Iranian Oil Co. Ltd **702 241**

Organo-tin compounds containing sulphur and their application. Pure Chemicals Ltd. **855 214**

Cyclopentanophenanthrene derivatives. Syntex S.A. **855 800**

ACCEPTANCES

Open to public inspection 18 April

Germicidal compositions. Unilever Ltd. **894 294**

Polymeric cation exchangers with a sponge structure. Farbenfabriken Bayer AG. **894 391**

Polysiloxane dyestuffs. Union Carbide Corporation. **894 415**

Recovery of benzole and naphthalene from the crude gas produced and/or treated in coke oven and/or gas works by-product recovery plants. Woodall-Duckham Construction Co. Ltd. [Addition to 775 978.] **894 203**

Catalyst. Scientific Design Co. Inc. **894 295**

Process for the manufacture of nitro-substituted aromatic chlorophosphoric acid derivatives. Farbwerke Hoechst AG. **894 427**

Benzothiadiazine compounds. Merck & Co. Inc. **894 257**

Antibotic A9575 and pharmaceutical compositions containing same. Ciba Ltd. **893 880**

Copper-containing disazo dyestuffs. Farbenfabriken Bayer AG. **893 882**

Process for the manufacture of basically substituted phthalazines. Deutches Hydrierwerk Rodleben Veb. **894 428**

Polymerisation. Du Pont de Nemours & Co., E. I. **894 429**

Carbon black production. Huber Corporation, J. M. **894 108**

Cobalt-containing monoazo dyestuffs and their use. Geigy AG, J. R. **894 430**

Graft copolymers of condensation polymers. Du Pont de Nemours & Co., E. I. **894 395**

5-aryloxymethyl-2-oxazolidinones. American Cyanamid Co. **894 198**

Process for the stabilisation of polypyrolidone. Minnesota Mining & Manufacturing Co. **894 433**

Catalysts for decomposing hydrogen peroxide. Napier & Son Ltd., D. **893 987**

Tetrahydrofurane derivatives. Geigy AG, J. R. **894 191, 894 192**

Phosphonitrilic polymers Imperial Chemical Industries Ltd. **893 988**

Process for modifying polymers and products obtained thereby. Du Pont de Nemours & Co., E. I. **893 989**

Mercaptopyridine derivatives. Olin Mathieson Chemical Corporation. **894 128**

Preparation of high purity streptokinase. American Cyanamid Co. **894 151**

Phosphorus-nitrilo compounds. Imperial Chemical Industries Ltd. **894 152**

Orthohydroxybenzophenones with unsaturated ether substituents. American Cyanamid Co. **894 154**

Production of salts of mercaptothiazoles. Monsanto Chemicals Ltd. **894 337**

Monoazo dyestuffs. Imperial Chemical Industries Ltd. **894 012**

Multistage xylene separation process. California Research Corporation. **894 133**

Active insecticidal esters of the pyrethrum type and a process for the production thereof. Sorm, F., and Farkas, J. **894 134**

Hardenable compositions comprising epoxide compounds and cyclic ethers or thioethers. Ciba Ltd. **894 037, 894 038**

Pharmaceutical preparations containing 6-chloro-7-sulphamyl-3:4-dihydro - 1,2,4 - benzothiadiazine-1,1-dioxide. Ciba Ltd. **894 339**

Production of cyclohexanone oxime. Inventa AG für Forschung und Patentverwertung. **894 135**

Stabilisation of halogenated alkarl hydrocarbons. Diamond Alkali Co. **894 111**

Dicarbamates and therapeutic compositions containing them. British Celanese Ltd. **894 434**

Process for the production of chlorinated hydrocarbons. Columbia-Southern Chemical Corporation. **894 137, 894 138**

Preparation of polyester resins. Drayton Research Ltd. **894 139**

Salts of kanamycin and therapeutic compositions containing same. Bristol Laboratories International S.A. **894 040**

Herbicidal compositions. Velsicol Chemical Corporation. **894 435**

Complex silicate fillers. Imperial Chemical Industries Ltd. **894 364**

Process for reducing the carbon monoxide content of industrial combustible gases. Gas Council. **894 451**

Separation of a carbon dioxide from gaseous mixtures. Fluor Corporation Ltd. **893 971**

Stabilised chlorinated hydrocarbon solvent. Argus Chemical Corporation. **894 045**

Bis(acetaldehyde) bis(threoninato) copper and preparation thereof. Tanabe Seiyaku Co. Ltd. **894 046**

Isolation of threonine and allothreonine from their mixture. Tanabe Seiyaku Co. Ltd. **894 047**

Process for preparing platinum-alumina catalyst. American Cyanamid Co. **894 412**

Process for the preparation of copolymers. Dynamit Nobel AG. **894 436**

Pivalic acid derivative. Imperial Chemical Industries Ltd. **894 119**

Metal ion complexes of a pivalic acid derivative. Imperial Chemical Industries Ltd. **894 120**

Polyoxyalkylene derivatives of castor oil. Institut Francaise du Petrole, des Carburants et Lubrifiants. **894 145**

Halogenated o-quinones. Dow Chemical Co. **894 060**

Preparations of azoic coupling components. Farbwerke Hoechst AG. **893 965**

Penicillin derivatives. Beecham Research Laboratories Ltd. **894 457**

Preparation of 1-β-hydroxypropyltheobromine. Simes S.p.A. **893 967**

Carbonisation. Union Carbide Corporation. **894 458**

Heterocyclic dyestuffs derived from benzanthrone and process for their manufacture. Ciba Ltd. **894 150**

Production of alcohols. Distillers Co. Ltd. **894 088**

Process and composition for the manufacture of epoxy-resins. Ciba Ltd. **893 912**

Process for the manufacture of alkyl aluminium compounds and dialkyl aluminium hydrides. Ethyl Corporation. **894 089**

Penicillins. Beecham Research Laboratories Ltd. **894 460**

Destructive hydrogenation of crude oils, tars and their residues. Badische Anilin-&-Soda-Fabrik AG. **893 979**

Removal of contaminants from acqueous ammonia. Polymer Corporation Ltd. **893 946**

Glycyrrhetic acid esters. Biorex Laboratories Ltd. **894 265**

Process for the generation of fuel gas containing carbon monoxide. Lentjes Kesselschmiede und Maschinenbau, Ferdinand. [Addition to 854 661.] **893 917**

Triphenylmethane dye salts and methods for their production. Parke, Davis & Co. **894 382**

4,7 - diamino-n-aralkyl-2-aryl-6-pteridinecarboxamides. Smith Kline & French Laboraties. **894 384**

Method of preparing derivatives of 3,3-pentamethylene-4-hydroxybutyric acid. Warner-Lambert Pharmaceutical Co. **894 385**

Polyamine-diol reaction products and corrosion inhibiting compositions containing same. Continental Oil Co. **894 386**

Production of hyaluronic acid. American Home Products Corporation. **894 387**

Steriods and the manufacture thereof. Upjohn Co. **894 921**

Process for preparing arylamino-nitro-dihydroxy-anthraquinone. Du Pont de Nemours & Co., E. I. **894 388**

Polymerisation. F.M.C. Corporation. **894 239**

Polycyclic amino compounds and methods for their production. Parke, Davis & Co. **893 920**

Cationic azo dyes for acrylic and polyester fibres having acid sites. Du Pont de Nemours & Co., E. I. **894 389**

Medicinally active 9-methyl-3-oxa-9-azabicyclo (3.3.1)-nonan-7-yl-benzilate compositions. Smith Kline & French Laboratories. **894 423**

Process for the production of extremely high molecular weight polyamides. Farbenfabriken Bayer AG. **893 895**

Therapeutically valuable steroid compounds, their production, and conversion into other pharmacologically useful substances. Laboratoires Francais de Chimiotherapie. **894 159**

Pharmaceutical compositions for topical application comprising steroids. Upjohn Co. **894 424**

Boric acid amides. Farbenfabriken Bayer AG. **894 425**

Thiophosphoric acid esters. Farbenfabriken Bayer AG. **894 163**

Stabilised crystalline polyaldehydes having 2-10 carbon atoms per monomer unit. Du Pont de Nemours & Co., E. I. **894 399**

Carbamic acid derivatives. Farbenfabriken Bayer AG. **894 004**

Process for the preparation of alkyl-substituted hydroxy-benzyl alcohols. Shell Internationale Research Maatschappij N.V. **893 896**

Steroid compounds and processes for their production. Laboratoires Francais de Chimiotherapie. **874 168**

Production of alkyl phosphites. Montrose Chemical Co. **894 169**

Preparation of 10-hydroxydecanoic acid and 10-acetoxydecanoic acid. Shell Research Ltd. **894 244**

3-Indolylsuccinimides. Bristol Myers Co. **893 898**

2,4-Diamino-6-substituted-1,3,5-triazines. Sud-deutsche Kalkstickstoffwerke AG. **893 900**

Anionic aminoplast resins. Nopco Chemical Co. **893 901**

Process for reducing the discoloration of isocyanates. Farbenfabriken Bayer AG. **893 902**

Oil-soluble polymeric compounds, their preparation and hydrocarbon compositions containing them. Shell Internationale Research Maatschappij N.V. **894 077**

Process for the purification of 1-dehydro-17α-methyl-testosterone. Ciba Ltd. **894 029**

Herbicidal composition. Leuna-Werke W. Ulbricht Veb. **894 438**

Resins. Union Carbide Corporation. **894 245, 894 246**

Stabilisating high molecular weight formaldehyde polymers. Soc. Italiana Resine. **894 439**

Dyeable polymeric composition. Montecatini. **894 178**

TRADE NOTES

Bead polymerisation of resins

Supplies of specialised copolymer resins in bead form, made to customers' specifications, are being offered by the Permutit Co. Ltd., Gunnersbury Avenue, London W.4, who have had wide experience in the manufacture of polymer beads arising from the production of such materials as an intermediate stage in the manufacture of ion exchange resins.

Monomers that can be dealt with include styrene, acrylate esters, methacrylate esters and methacrylic acid; vinyl acetate and other esters of vinyl alcohol; fumarates, maleates, itaconates, acrylonitrile and acrylamide. Enquiries for resins with other monomers are also invited by the company.

Laboratory planning

'Laboratory planning and construction' is the title of a new illustrated publication issued by Baird and Tatlock (London) Ltd., Chadwell Heath, Essex. This describes the four B.T.L. laboratory benching systems.

Adhesive for 'foambacks'

Daltoflex 2S is a polyurethane composition in the form of small chips, specially developed for use (in conjunction with Daltorol PR1 and Suprasec G) as an adhesive for the transfer bonding method of making 'foambacks'—textile fabric/polyurethane foam laminates. Although complementary to the earlier Daltoflex 1S, Daltoflex 2S is expected to replace the latter to a large extent because of the much greater ease of dissolving and preparing it for use. Full technical information is available from Imperial Chemical Industries Ltd., Millbank, London S.W.1.

Rotary pump

Acids, alkalis and a range of chemicals are among materials handled by the Douglas pump—a concentric slow speed, rotary positive-acting unit—which is the subject of an illustrated brochure from Baker Perkins Ltd., Westwood Works, Peterborough.

Thioglycollates for cosmetics

A new edition of the data sheet on 'Thioglycollates in the cosmetic industry' has been published by Robinson Bros. Ltd., Ryders Green, West Bromwich. It has been entirely rewritten and brought up-to-date.

Durez resin formulations

Two formulations, which include Durez 12687 and 12987 resins have been produced by Naugatuck Chemical International and are recommended by them for brake lining cement. Copies of the formulations, samples and data sheets as well as prices can be obtained from Omni (G.B.) Ltd., 35 Dover Street, London, W.1.

B.D.H. chemicals

Additions to the B.D.H. range of chemicals include: germanium tetrachloride, an intermediate in the preparation of many organic organo-germanium compounds; 1-methyl-cyclohexane-1-ol, a cyclo-alkyl tertiary alcohol; and Scharrer and Kürschner's reagents.

Buna SBR agents

Agricultural and Chemical Products Ltd. have been appointed U.K. agents for SBR produced by Chemische Werke Buna, in East Germany.

Antimony price up

Associated Lead Manufacturers Ltd. have increased prices for crude and black powdered antimony by £10/ton. Black powdered is now £225/ton and crude £210/ton.

I.S.R. cut latex prices

International Synthetic Rubber Co. Ltd., Hythe, have cut their prices of SBR latex. Intex 100 high solids is now 25d/lb. of total solids content naked ex works (bulk) and 28.5d/lb of total solids content in free, non-returnable drums. I.S.R. have also introduced a new range of four SBR/carbon black masterbatches.

Precipitated calcium carbonates

A folder containing illustrated data sheets on the Socal range of precipitated calcium carbonates manufactured by Solvay et Cie (by chemical precipitation) is available from 33 rue Prince Albert, Brussels 5, Belgium.

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Market Reports

HOME TRADE DEMAND CONTINUES STEADY

LONDON In the market for industrial chemicals the call for supplies against contracts has been fully maintained and there has been a moderate flow of new business.

Among the soda products there has been a fair request for sodium chlorate and the photographic grades of sodium hyposulphite, while a steady demand has been reported for hydrogen peroxide; and borax at the lower rates now ruling. The fertiliser market is attracting increasing attention as the seasonal demand approaches.

The coal tar products market is without feature but prices are held steady.

MANCHESTER Chemical traders have handled a fair number of enquiries from users in the Lancashire and West Riding areas and also from shippers; these have resulted in moderate additions to order books in the alkalis and other bread-and-butter lines. A satisfactory feature is that existing contracts are being drawn against reasonably well in most instances. There have been one or two further price cuts, but the general undertone remains steady.

In the tar products section, business has again been on quietly steady lines. Compound fertilisers and the nitrogenous descriptions are said to be moving satisfactorily.

SCOTLAND A very much better level of trading was maintained during the past week. Buying for the home market showed an improvement and from some sections of industry quantity increases were noted, particularly for immediate requirements. Apart from the usual range of heavy chemicals which featured well, demands were quite varied. Although prices on the whole were steady there was a reduction of £5/ton in the price of acetone.

There was also continued activity in the export market while in agricultural chemicals there was a good volume of demands for forward seasonal requirements.

I.Chem.E. annual meeting and dinner

THE evolution of chemical engineering will be the subject of the presidential address, to be given by Mr. Colin F. Spearing (Kellogg International Corporation) at the annual meeting of the Institution of Chemical Engineers at Park Lane Hotel, London W.1, on 1 May.

In the evening, Sir Harold Roxbee Cox, chairman of the Council for Scientific and Industrial Research, will be chief guest at the annual dinner.

DIARY DATES

MONDAY 19 MARCH

C.S.—Swansea: Chem. Dept., Univ. Col., 4.30 p.m., 'Hybrids and related organo-complexes of transition metals' by Dr. J. Chatt.

S.C.I.—London: 14, Belgrave Sq., S.W.1, 3 p.m. 'Pesticides and wild life' by Dr. E. E. Turtle and Dr. N. W. Moore.

S.C.I.—London: Horseshoe Hotel, Tottenham Court Rd., W.1, Annual dinner, Pesticides Group.

TUESDAY 20 MARCH

I.Chem.E.—Manchester 2, Engineers Club, Albert Sq., 9.30 a.m. Symposium.

WEDNESDAY 21 MARCH

C.S.—Dublin: Chem. Dept., Univ., Col., 5.30 p.m. 'Some stereochemical problems in eudesmane chemistry' by Prof. Wesley Cocker.

Plas. Inst.—Glasgow: Kenilworth Hotel, 7.30 p.m. 'Plastics in the motor car industry' by E. A. Bray.

S.C.I.—London: 14, Belgrave Sq., S.W.1, 6.30 p.m. Conversazione and Exhibition of 'Corrosion science in research and industry.

THURSDAY 22 MARCH

C.S.—London: Lec. Theatre, Royal Institution, Albermarle St., W.1, 7.30 p.m. 'Mechanism of olefin-forming eliminations' by Sir Christopher Ingold.

Inst. Packaging.—London: Bonnington Hotel, Southampton Row, W.C.1, 6.30 p.m. 'New developments in packaging films.'

S.C.I.—Belfast 7: Chem. Lec. Theatre, Queen's Univ., Strannillis Rd., 7.45 p.m. A.g.m. and 'Recent trends in instrumentation.'

S.C.I.—Edinburgh 1: Heriot-Watt Col., Chambers St., 7.30 p.m. 3 short papers on chemical engineering topics.

FRIDAY 23 MARCH

Plas. Inst.—Birmingham 3: James Wall Memorial Institute, Gt. Charles St., 7 p.m. 'The painting of reinforced laminates,' by E. J. Robins.

S.A.C.—Glasgow: Royal Col. of Sc., and Tech., George St., 7.15 p.m. 'The history of food technology' by T. McLachlan.

S.C.I.—London: 14, Belgrave Sq., S.W.1, 6.30 p.m., 'Modern electrochemistry and its applications' by Prof. W. F. K. Wynne-Jones.

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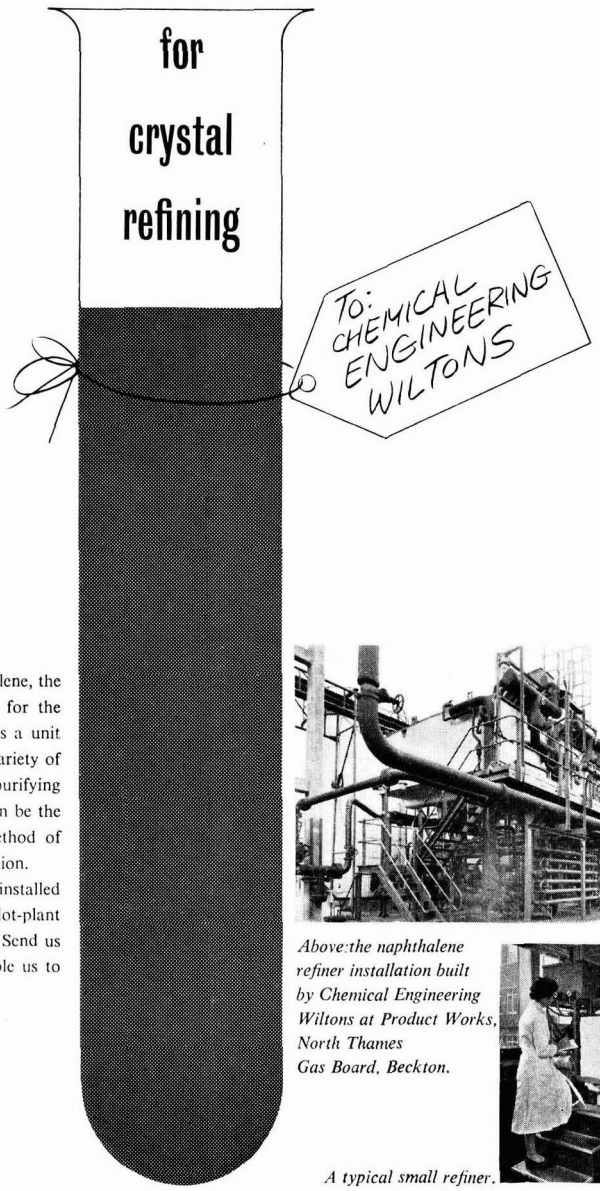

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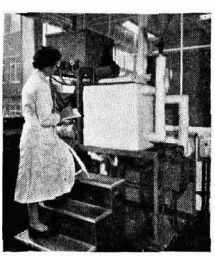

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