Chemical Age

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18 March 1961

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

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

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INDEX TO ADVERTISERS

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A REMARKABLE INSTRUMENT

New standard of performance in colorimetric analysis

The accumulated experience gained during the last twenty-one years in producing photo-electric apparatus for colorimetric analysis has gone into the design and construction of the new "EEL" Spectra.

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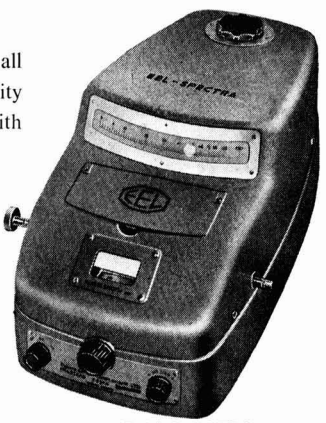

THE 'EEL' SPECTRA

The main features in the unique construction of the "EEL" Spectra are the high quality continuous spectrum wedge having a narrow band width giving accurate wave length selection over the range 400-700 microns and a sliding carriage to accommodate up to four cells or test tubes.

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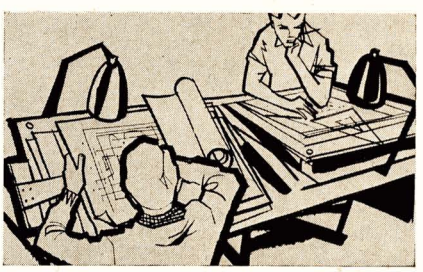

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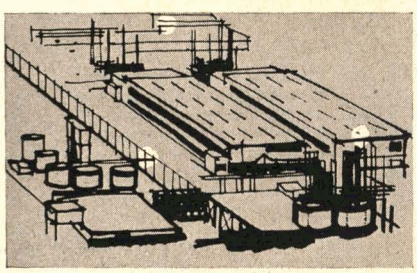

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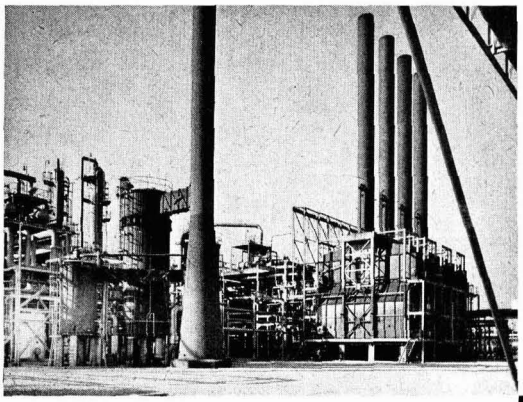
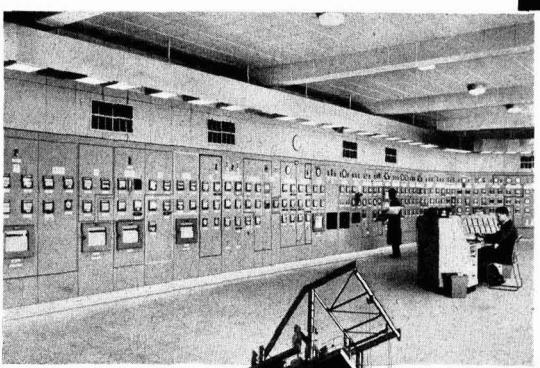
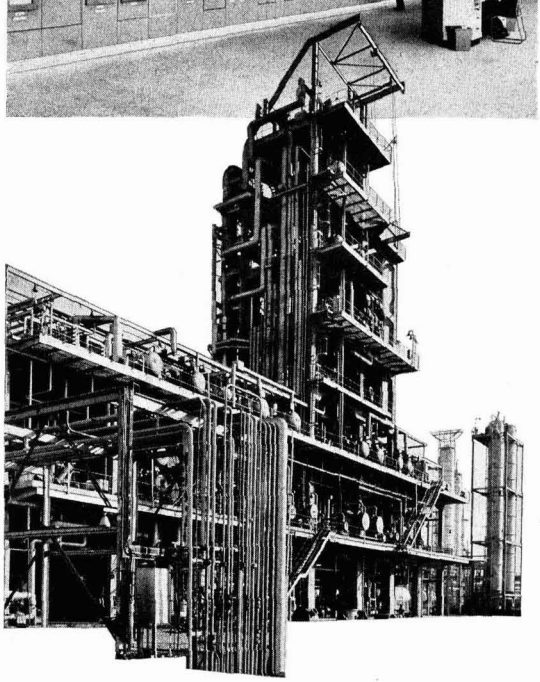


NEW SHELL CHEMICAL COMPANY ETHYLENE UNIT ON STREAM AT CARRINGTON, ENGLAND





The new Shell Chemical Company Ltd., Ethylene Unit, Carrington, England, has just been placed on stream. This unit was built for Shell by Kellogg International Corporation, London. It is designed ultimately to produce 55,000 long tons per annum of Ethylene from a straight run naphtha feed.

In addition to high purity Ethylene products, the unit produces debutanized gasoline, fuel oil, a Butadiène/Butylene product, with Propylene and Ethane, plus a refinery gas for fuel.

Naphtha is cracked in Kellogg steam cracking furnaces, using a very low steam to naphtha ratio for optimum yields at minimum operating costs. In order to increase the economy of operations, the effluent from the cracking furnaces is quenched in Dowtherm exchangers and subsequently, scrubbed with gas oil to remove entrained polymers and solids. The hot Dowtherm is utilized to generate medium pressure steam. After separation of the heavy ends, the remaining gas is subjected to water and caustic wash, drying, and acetylene removal before passing to the low temperature separation section for recovery of Ethylene and other fractions.

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The No. II Unit at Carrington is the first built for Shell by Kellogg International Corporation in the United Kingdom. Kellogg International Corporation supplied complete services covering all aspects of process design, engineering, procurement and construction, together with a team of operators for the commissioning programme.

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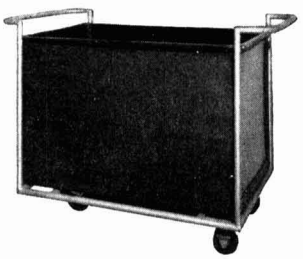

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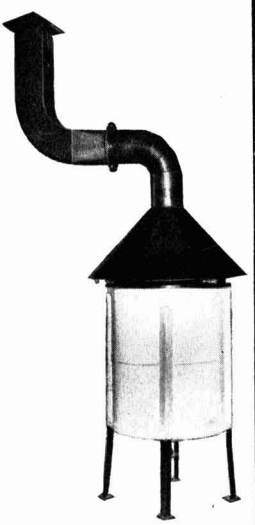

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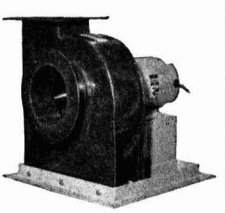

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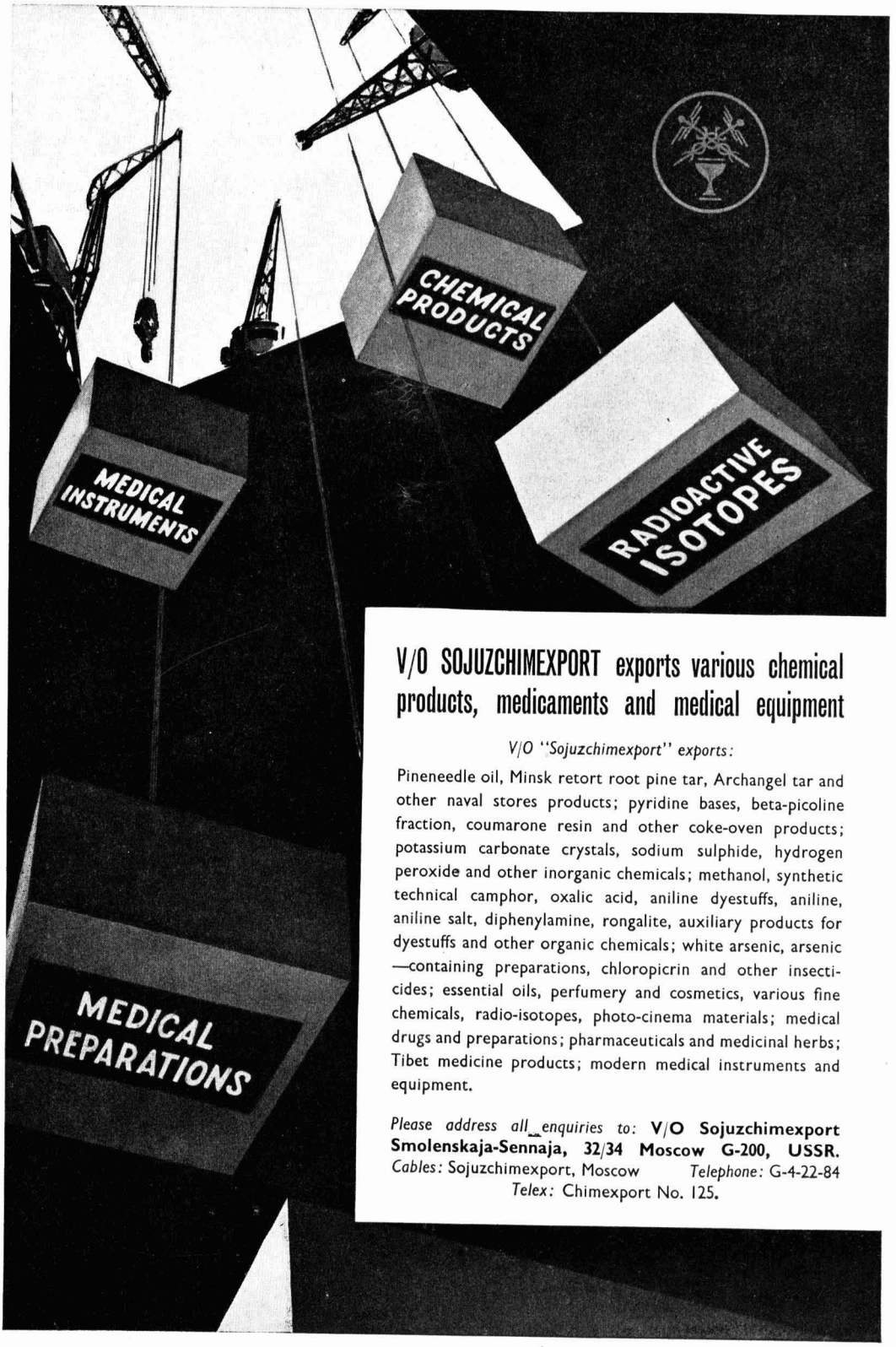
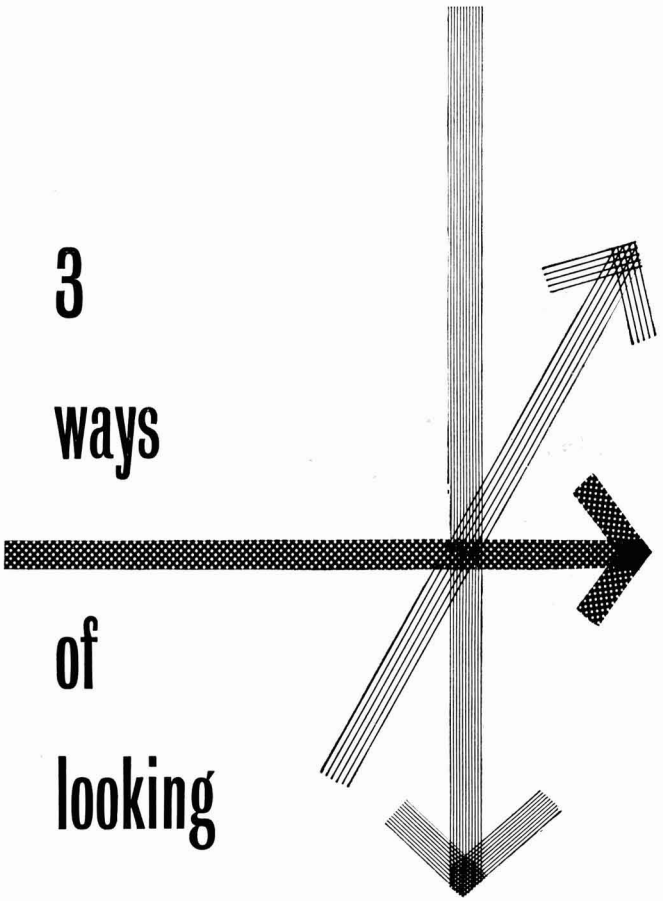
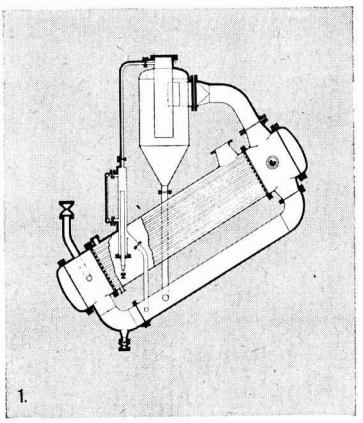


3 ways of looking at Evaporators





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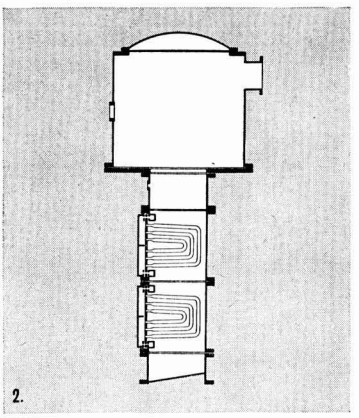

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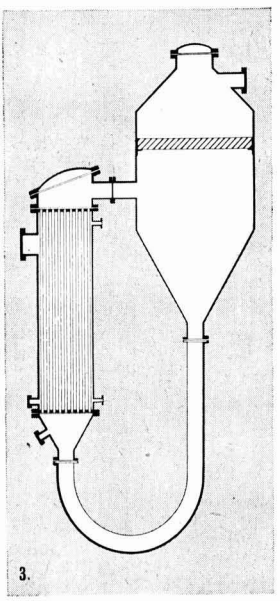

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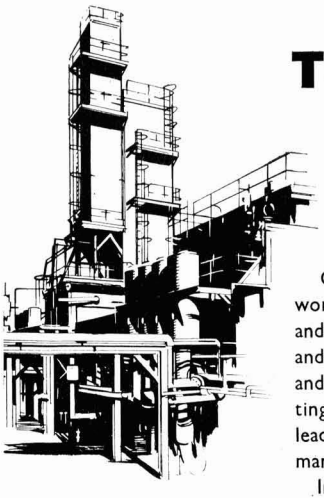

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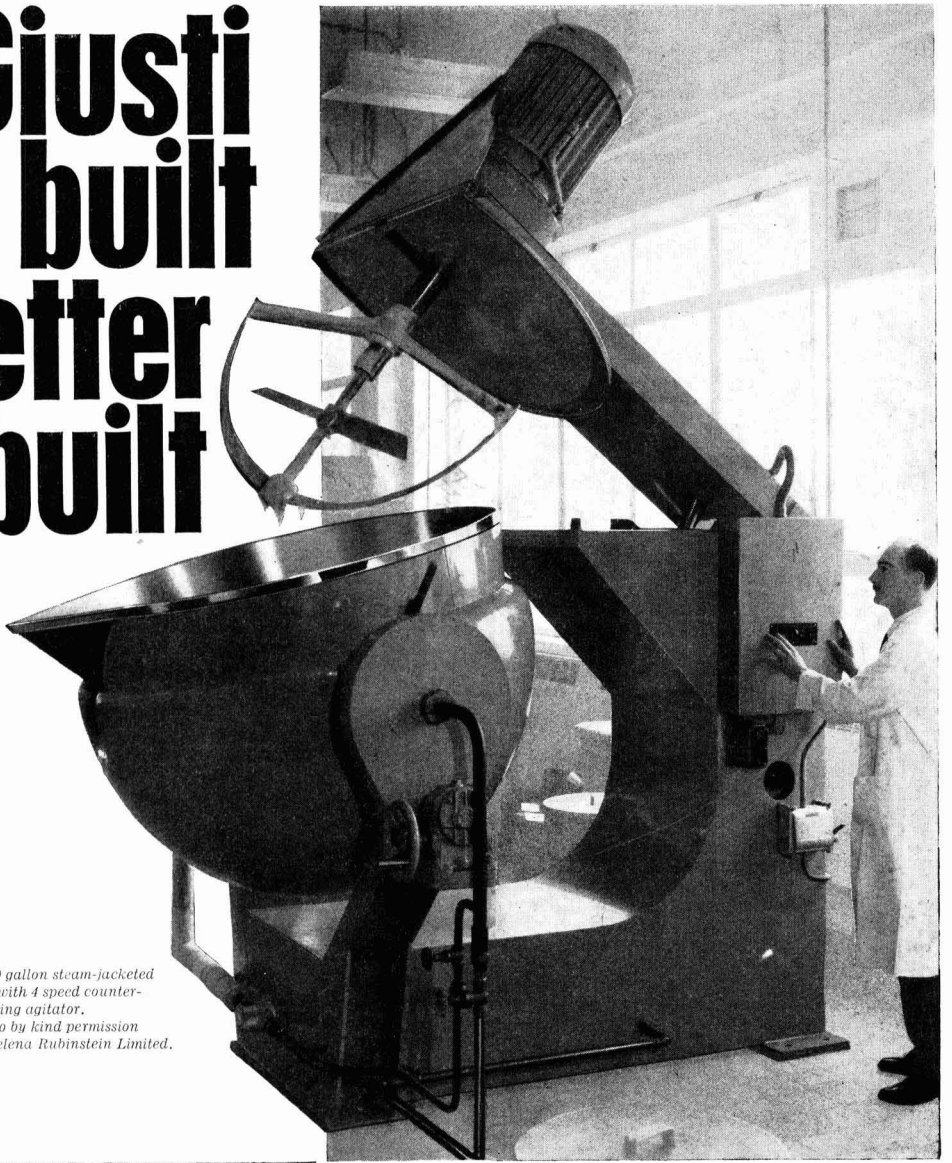
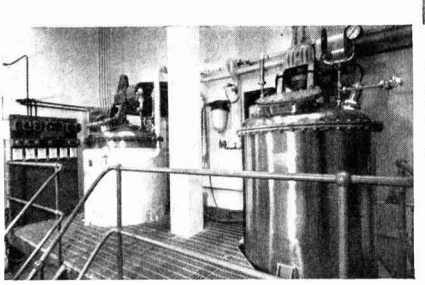


A 200 gallon steam-jacketed pan with 4 speed counter-rotating agitator. Photo by kind permission of Helena Rubinstein Limited.



Manufacturing Chemists' Process Plant. Photo by kind permission of John Wyeth & Brother Limited.

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Telephone: **FLEet Street 3212** *(26 lines)*
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Editor M. C. HYDE
Manager R. C. BENNETT
Director N. B. LIVINGSTONE WALLACE

Midland Office
Daimler House, Paradise Street, Birmingham. [*Midland* 0784-5]

Leeds Office
Permanent House, The Headrow, Leeds 1. [*Leeds* 22601]

Scottish Office
116 Hope Street, Glasgow C2. [*Central* 3954-5]

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CHEMICAL AGE

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TRADE WITH THE U.S.S.R.

PROBABLY fearing a change in official policy on U.S.-Soviet trade on the part of the new Kennedy administration, the Manufacturing Chemists' Association of America is again pressing the Government not to allow key chemical products or process know-how to be sold to the Soviet Union.

M.C.A. president, General John E. Hull, who made his association's view clear at the annual dinner last year of the British Chemical Plant Manufacturers' Association (CHEMICAL AGE, 22 October), has now written to the U.S. Secretary of Commerce saying that not only would such sales contribute to the Soviet military strength but that they could be used by her in economic warfare, "which she has declared openly against the West."

General Hull suggests that the U.S. Government should try to influence other western nations to support a similar policy of trade. M.C.A. deplores the more liberal policies of European chemical industries, which are currently making deals not permitted by U.S. export policy. M.C.A. seek a common policy on the sale of know-how or plants for making key and intermediate products.

There will be little sympathy in Europe for such a 'head-in-the-sand' attitude; indeed there are indications that President Kennedy may not wish to follow the policy of the Eisenhower administration in blocking U.S.-Soviet trade. Apart from a ban on trade in strategic materials and know-how which could have a military value, there is no earthly reason why the cold-war of politics should be brought into trade.

With the world's second largest chemical industry, the U.S.S.R. continues to expand fast and will, M.C.A. fear, take the offensive by the middle 1960's, becoming the most formidable competitor in world markets. From being a large importer, the Soviet Union will, it is thought, become a substantial exporter with the underdeveloped countries as the main target for its chemical exports.

That may well be, but it is far better that conflict with the Communist bloc should be confined to export markets, in which the West possess considerable skill and experience. In any event, the M.C.A. view entirely overlooks two important factors. Firstly, one of the main reasons why the U.S.S.R. has given top priority to the development of her chemical industry is the vital need to satisfy home demands, which have been starved of synthetic fibres, plastics materials and other products. Secondly, continuing expansion in industrial activity throughout the world can only be met by a continual process of expansion in the chemical industry.

The feeling in some quarters that the large increase in Soviet imports cannot last once the U.S.S.R. has built up its own production facilities is fallacious. In fact the reverse is likely to be the case for as the Soviet chemical industry develops, and there can be no doubting that it will eventually be the world's largest, its demands for chemicals will also develop. The best customers for chemicals are those countries with highly developed chemical industries.

Perhaps the best answer to U.S. critics of trade with the U.S.S.R. is given by Wycon Services Ltd., the company set up by Fisons and Constructors

(Continued on p. 446)

Dumping Duty Sought on Italian Dodecyl Benzene

ANTI-DUMPING duty on alkyl (dodecyl) benzene detergent alkylate from Italy is being sought, state the Board of Trade who are considering an application under the Customs Duties (Dumping and Subsidies) Act, 1957.

Representations in connection with this application must be submitted in writing to the B.o.T. Tariff and Import Policy Division, Room 3136, Horse Guards Avenue, London S.W.1, not later than 24 March. A statement of the applicants' case will be made available to interested parties if they undertake to treat the information contained as strictly confidential and allow their comments to be passed to the applicants for reply.

Requests for a statement of the case, with the undertaking required, should be sent to the address mentioned above.

U.K. producers of dodecyl benzene are Grange Chemicals Ltd. (15,000 t.p.a.), Monsanto Chemicals Ltd. (16,000 t.p.a.) and Shell Chemical Co. Ltd. (35,000 t.p.a.), making a total capacity 66,000 tons/year. U.K. domestic requirements are about 30,000 tons/year. From Customs and Excise returns available it is not possible to say precisely how much is imported, but the figure is probably of the order of one-fourth of total U.K. consumption; almost all of it comes from Italy. Delivered price of the Italian product is about 10% below the U.K. delivered price, with the f.o.b. price considerably lower.

Not only do the applicants have to establish that dumping is taking place if an anti-dumping duty is to be levied—they also have to establish that dumping is causing material injury to the British industry.

U.S. Chemical Plant Construction Nears Record Level, Says M.C.A.

CONFIDENCE in the future demand for chemical products is reflected in the U.S. chemical plant construction programme which is moving ahead at an almost record pace, in spite of talk of recession and in the face of the declining net earnings of chemical producers.

According to a U.S. Manufacturing Chemists' Association survey, total construction outlays for new chemical facilities during 1960 and 1961 are estimated at $3,550 million, $290 million below the 1957-58 record. Of the total outlay, more than $1,000 million was spent on facilities completed last year, and $1,700 million was appropriated for chemical plants and laboratories under construction but not completed in 1960. The rest will be spent on new facilities planned for construction this year.

More money is being spent on organic chemical plants than on any other type of construction—over $922 million on plants which are now being built or will be under construction before the end of the year. This is in addition to the $340 million spent on organic plants completed in 1960. This outlay on organic plants is a change over from the previous year when spending on inorganic plants headed the list.

In this survey, unlike previous ones, there is no separate category for petrochemicals. Instead they are included in the organic, fertiliser, plastics and resins, synthetic rubber and synthetic fibres sections. According to the survey, only $25.7 million are earmarked for new plastics and resins plants planned for this year. However, this must be set against the $358.4 million worth of new plastics and resins plants under construction in 1960.

Once again, it has been shown that more money is being spent in chemical facilities in Texas than in any other state.

Trade with U.S.S.R.

(*Continued from page 445*)

John Brown to handle contracts involving complete plant installations and know-how. If British firms do not accept this business, then companies in other countries will. In the long run, the Soviet Union will get the plant and know-how it needs and it is far better that British companies should capitalise on British process and engineering skills.

One lasting benefit that Britain is deriving from this trade is the collaboration of chemical producers and chemical engineering companies. For the first time chemical companies are working closely with contracting firms, and passing over to them their process techniques. This is the only way that Britain can compete in vast oversea projects and the breaking down of the 'know-how barrier' is surely a sign that British chemical engineering companies have grown immensely in stature and competence in the past few years.

I.C.I. Dyestuffs Contract at Leipzig Fair

A CONTRACT worth £150,000 has been signed between I.C.I. Dyestuffs Division and the East German State Trading Organisation, Dia Chemie, at the Leipzig Spring Fair. The contract, which covers the supply of dyestuffs, pigments, rubber and textile chemicals, represents a 35% increase on the 1960 figure.

Dyestuffs Division was host at a reception held by I.C.I. at Leipzig. The guests included the president of the Chamber of Foreign Trade of East Germany, the Deputy Minister of the State Planning Commission and the managing director of Dia Chemie.

Mr. Singer, the Deputy Minister, said that there have been extremely good commercial relations between the German Democratic Republic and I.C.I., and good relations were extending to an exchange of know-how and technical discussions between East Germany and I.C.I. It is particularly pleasing, said Mr. Singer, that the British chemical industry had not been deterred by political pressure.

Saharan Methane Could Reach U.K. by 1964

ON his return from Algeria last week where he had toured the Saharan natural gas field, Sir Henry Jones, chairman of the Gas Council, said he hoped to reach agreement on the scheme to import natural gas with the two French companies concerned (see also CHEMICAL AGE, last week, p. 400). Sir Henry described his visit as completely satisfactory and said he was optimistic about the agreement with S.N. Repal and the Compagnie Française des Petroles.

The next step will be for a detailed plan to be submitted to the Minister of Power for the import of gas in liquid form. The gas could be in use in the U.K. within about three years of an agreement being reached. After being piped to Oran the liquid methane will be shipped to the U.K. in special tankers.

S.C.I. Annual Meeting in Oxford

Annual meeting of the Society of Chemical Industry will this year be held in Oxford from 10 to 14 July. Reservations for accommodation have been made in three colleges. The annual dinner will be held in Keble College.

Obituary

Mr. Tom Martin, F.I.R.I., chairman of the Anchor Chemical Co. Ltd., Clayton Lane, Clayton, Manchester, died peacefully at his home on Tuesday, 7 March. He joined Anchor Chemical in 1914 and was a director for 38 years and chairman since 1956. His contributions to the rubber industry included many years of service on committees of the Institution of the Rubber Industry, of which he was a fellow and a vice-president. Mr. Martin was a member of the council of the newly formed Rubber and Plastics Research Association and chairman of the Factice Research and Development Association.

Project News

Reactor Stage of Ardeer Silicones Extensions in Operation

FIRST important phase of **I.C.I. Nobel Division's** silicones plant extensions at Ardeer has been completed—almost exactly a year from the time the project received official approval from I.C.I.'s main board—and the reactor stage is on commissioning trials. Existing capacity will deal with the additional product from the reactors until the remaining phases are completed.

In the construction of the new plant, first priority was given to the erection of buildings to house the reactors and to the installation of a new type of reactor, a Hygrotherm heat transfer system, an inert gas plant and a refrigeration unit. Second priority, for completion by mid-April this year, was given to the distillation stage, construction of which is well advanced. The third phase of the project is a hydrolysis section that will be ready by the middle of this year.

The distillation plant includes West plate equipment supplied by the A.P.V. Co. Ltd., as reported in CHEMICAL AGE, 21 January, p. 139—A.P.V. engineers have been co-operating closely with those of I.C.I. on this project. Other engineering firms, whose identities are not revealed, have been working on the design of important plant items. It is known that, in addition to the West plate equipment, A.P.V. are supplying a methyl chloride vaporiser, several more West distillation and recovery columns—three continuous and one batch—with condensers and reboilers, and a reactor scrubbing column.

Site clearance for the extensions started in April last year, driving of the piles for the 80 ft. high reactor building started in early May and from mid-June onwards the structural steelwork was erected.

A model was used to facilitate engineering discussions and ensured such close co-operation so that plant stoppage was cut to a minimum. By early December, the building had reached a stage where installation of plant items could begin; from that date until the end of February round-the-clock installation of plant vessels, electrical equipment and instrumentation was carried out.

Humglas Acquire Varga Hydro-cracking Process

● As a further result of the agreement recently concluded between **Humphreys and Glasgow Ltd.**, the London-based contracting firm, and Limex GmbH, the East German State trading concern, whereby Humglas gain access to all the main East German chemical processes (see CHEMICAL AGE, 24 December, 1960, p. 1047), Humglas have now been offered the licence for the Varga hydro-cracking process for the treatment of asphaltic crudes, developed jointly by East German and Hungarian engineers. Humglas will now study the possibilities of the process.

A full-scale plant using the Varga hydro-cracking process is at present in operation at the Otto Grotewohl factory in East Germany. Between the middle of April and the beginning of September 1960 the plant processed some 42,000 tons of Soviet crude oil of the Tuimasa and Romiomaschkino types.

The acquisition by Humglas of this process coincides with their successful participation in the Leipzig Fair (see report on page 451). Discussions at the Fair have given Humglas promise of a number of new contracts for the East German chemical industry. A fair proportion of enquiries received, totalling around £25 million and including those from the U.S.S.R., Poland and Hungary is expected to materialise.

Strasburg Butyl Contract Goes to Badger N.V.

● CONTRACT for their first European butyl rubber plant has been awarded by **Polymer Corporation,** Sarnia, Ont., to **Badger N.V.,** the Netherlands. To have a capacity of 10,000 tonnes/year, the new plant is scheduled for completion by mid-1962. Plant site is at Le Wantzenau, near Strasburg, and the project will cost an estimated $12 million.

Steetley's Magnesia Extensions Due for Completion in 1962

● IN 1962 the **Steetley Company** should have the benefits of increased magnesia production, for the £3 million extension to the sea-water magnesia plant at Hartlepool should be completed early next year.

Monsanto Fumaric Plant Due on Stream 1962

● THE new fumaric acid plant to be built for the Newport, Mon, works of **Monsanto Chemicals Ltd.,** referred to in 'Project News' last week, is scheduled for completion in 1962, when it will replace what are described as interim manufacturing facilities, also sited at Newport. The new plant, to be constructed by Monsanto's own engineering team, will, as indicated in our leading article last week, have a capacity of 5 million lb./year.

Fumaric acid will be derived from the company's new £1 million maleic anhydride plant at Newport, recently completed by Scientific Design of New York. Maleic capacity is 15 million lb./year. It is stated that these expansions will ensure adequate supplies of both products to cover forward U.K. demand and will enable Monsanto to develop and expand their export business.

Like maleic, fumaric is mainly used in the production of polyester resins, resins for surface coatings and printing inks and plasticisers. It is also used in the production of fungicides, pharmaceuticals and textile finishes.

Lincoln Fertiliser Firm Plans New Project

● DIRECTORS of **Lindsey and Kesteven Chemical Manure Co. Ltd.,** Saxilby, Lincoln, have approved a large capital programme. Plans will be completed shortly, but in the meantime to achieve the project envisaged, the company's capital has been raised from £100,000 to £250,000, and two new appointments have been made to the staff—Dr. R. H. Roberts as technical adviser to the board and Mr. A. D. Knowles as chemical engineer in charge of the new project.

Lindsey and Kesteven are producers of superphosphate, powder and granulated fertilisers, etc.

U.K. Mixers for Australian Synthetic Rubber Plant

● RECENT despatch to Australia of one of the largest consignments of fluid mixers ever to be exported from the U.K. is reported by **Lightnin Mixers Ltd.** of Poynton, Cheshire. The order comprised 47 units from the standard Lightnin range, many units fitted with mechanical seals; the mixers will be used in a new synthetic rubber plant for Australian Synthetic Rubber Co. Ltd.

Mexican Firm to Make Kestner Chemical Plant

CHEMICAL evaporators, crystallisers, dryers and acid-proof equipment are among chemical engineering equipment items which Kestner Evaporator and Engineering Co. Ltd., London, have licensed Dicon, S.A. de C.V., Avenida Popocateptl 26-302, Mexico City, D.F., to manufacture on a 'made-in-Mexico' basis.

Dicon have also been granted a licence by Richard M. Armstrong Co., West Chester, Penn., to manufacture Armstrong heat-transfer equipment in Mexico. This agreement covers shell and tube exchangers for chemical and petroleum plants, air-cooled heat exchangers, vaporisers and refrigeration shell and tube apparatus, including scaped shell heat exchangers for oil refining.

The Mexican company has under construction a plant to manufacture Kestner and Armstrong products in the Colonia Vallejo area of Mexico City. Kestner and Armstrong know-how will make available to Mexico engineered equipment that was previously largely imported.

Two Dead in TEL Explosion at Ethyl Plant

Two men were killed and 32 other people injured, four seriously, when explosions last week destroyed a chemical wash house in a tetraethyl-lead unit and damaged another unit at the Baton Rouge plant of the Ethyl Corporation. Production continues at the plant.

★ Two of the senior staff of Fisons and C.J.B. who will be involved in the overall supervision of the MCPA contract for the U.S.S.R. have pioneering connections with this hormone weed-killer. Mr. M. N. Gladstone, who headed the know-how team of Fisons Pest Control and a member of the negotiating team in Moscow, was in charge of the erection of the first MCPA plant just after the war. Now a director and commercial manager of F.P.C.L., Mr. Gladstone was also in charge of the team that erected the existing unit at Harston.

Not so well known is the fact that Dr. Mark Guter, C.J.B.'s senior chemical engineer, is also no newcomer to MCPA. While at I.C.I. Billingham towards the end of the war, he was associated with making the first quantities for field trials.

One of the pleasing aspects of this contract, and that for the DMEU plant, is that it will involve the handing over to a chemical engineering concern of process know-how by the chemical companies concerned. That they are doing so is both a sign of the confidence and respect in which C.J.B. are held, as well as recognition of the fact that major overseas contracts are only likely to come to Britain if chemical producers combine their process skills with contracting companies to offer a complete plant deal.

★ His many friends will have heard with much regret of the sudden illness on Monday of last week of Mr. D. R. Mackie, managing director of Monsanto Chemicals. He is suffering from a disease that affects so many busy executives—coronary thrombosis. I am delighted to hear, however, that he is now making good progress.

Mr. Mackie will, of course, be away from his desk at Monsanto House for some time. This is a double blow for the company, for only a few weeks ago Mr. J. W. Urban, a director since 1954, died in Bombay while visiting Monsanto Chemicals of India, of which he was managing director.

★ When I.C.I.'s plans for large-scale entry into production on the Continent were first announced (this journal, 4 March, p. 356), CHEMICAL AGE suggested that the divisions most likely to be concerned with the Rotterdam complex would be Heavy Organic Chemicals, Billingham, General Chemicals, Plastics, Fibres and Dyestuffs. That was not such a bad guess and if Fibres and Billingham are taken out and Paints inserted, then the list is in line with what I.C.I. themselves envisage.

These divisions, according to Mr. D. M. Bell, chairman of the company's European Council, will probably be called on to provide assistance in building the Continental plants, in running them and in selling the products. This work will be additional to their present commitments in the U.K. and elsewhere.

I.C.I.'s decision to plunge heavily into the Common Market was not taken simply to overcome tariffs; even if the U.K. were part of the Common Market bloc there would still be good reasons for I.C.I. to put up factories in Europe so as to get close to the market. After all, Imperial Preference has not stopped them building plants in Canada, Australia, etc.

★ Two other C.A. disclosures—featured last week—also proved correct, although in one instance the signing of a contract was anticipated by a few days! In the case of the I.C.I. second-stage polypropylene contract, naming Constructors John Brown as main contractors, this was said to have been signed recently; this was in fact slightly premature.

In the case of Monsanto's plans for fumaric acid—officially announced this week—this journal estimated that production would be 5 million lb./year. This is precisely the figure given in the company's own statement; CHEMICAL AGE'S estimate was based on the known capacity of Monsanto's maleic anhydride unit, recently brought on stream.

★ The pharmaceutical industry, which has been called some hard names lately in some quarters, was indirectly responsible for bestowing upon the world the musical genius of Sir Thomas Beecham, the great conductor who died last week. For it was undoubtedly the prosperity of the family patent medicine business that gave Sir Thomas such a good start in life and enabled him to make full use of his musical talents.

It was Thomas's grandfather, Thomas Beecham, a one-time shepherd, who secured the formula for the famous pill and sold it at a market stall in St. Helen's, where the first Beecham factory was built in 1876. It was Sir Joseph Beecham, Sir Thomas's father, who carried the business through extensive advertising to an extraordinarily high level of production for those days. When Sir Joseph, before his death in 1916, directed that the patent medicine business should go to trustees to form a private company with a capital of £50,000 in £1 shares, Sir Thomas, his eldest son, was given 460 shares out of every 1,000 issued.

The Beecham family relinquished its interest in the business in 1928 when it became a public company headed by the late Philip Hill. Since 1945 the business, with a much wider scope than the first Thomas Beecham ever dreamed of, has flourished and expanded as the Beecham Group that we now know.

★ Recent and persistent criticism regarding the cost of drugs and their promotion has led another company, Pfizer, to rise in defence of the drug firms. In a letter to *The Times*, a director of the company, Mr. B. J. G. Page, lists four points of which he believes most critics are ignorant.

It is implied, he said, that the drug firms receive all the £100 million spent on drugs, which is untrue; the profits of U.K. subsidiaries of foreign firms have been discussed without regard to the benefits they receive, free of charge, from their parent companies; the number of representatives, it is said that firms employ, is exaggerated; and the accusation that Pfizer's have been selling drugs at a lower price abroad, is quite untrue, said Mr. Page.

The pharmaceutical industry will suffer great harm, as Mr. Page says, if it continues to be subjected to biased criticism, but the firms themselves would help remedy the situation if more of them came forward, as Pfizer's and some others have done, with facts and figures to support their case.

★ In the interests of science, Dr. James Taylor probably took more baths in the course of recent corrosion research project than Archimedes did in his day. Sad to relate, Dr. Taylor could not utter 'Eureka', for his research in the bath water led to somewhat negative results. But it was conducted not just in Ancient Greece—I.C.I.'s director and the chairman of Yorkshire Imperial Metals immersed himself in the bath-tubs of Leeds, Sydney, Melbourne, Gunnedah, N.S.W., Melbourne again, Singapore, Kuala Lumpur, Karachi, the Khewra soda factory, the Royal Scottish Automobile Club, Glasgow, and London.

The reason for this bath mania was a study of the theory that, influenced by the rotation of the earth, bath water flows out clockwise in Britain, anti-clockwise 'down under'. The net result: hotel baths with large holes and no vortex, a shower-bath in New Zealand, loss of notes containing part of his research findings, plus 14 baths in Sydney of which 11 contrarywise, went clockwise, while the other three started anti-clockwise and ended clockwise.

According to the *I.C.I. Magazine*, Dr. Taylor has handed the problem of the spiral movement of liquids from vorting vessels to his research director—as soon as he has finished a study of throwing eggs over house tops to see if they break.

Alembic

FISONS–C.J.B. GET TWO SOVIET CONTRACTS

Know-how and Plant for MCPA and Drip-dry Resin

TWO contracts, worth a total of more than £2 million, for the design, supply and commissioning of two major chemical plants in the Soviet Union, are the results of a co-operative approach to the winning of such contracts by a large chemical group, Fisons, and a chemical engineering company, Constructors John Brown.

Their subsidiary, Wycon Services Ltd., owned on a 50-50 basis, have gained contracts for a 12,000 tons/year dimethylol ethyleneurea plant and a 4,200 tons/year MCPA plant—both to be built at Ufa, about 1,000 miles from Moscow. The DMEU plant is based on a similar but smaller plant of Whiffen and Sons Ltd., the industrial chemical subsidiary of Fisons, while the MCPA unit will be about four times bigger than the existing plant of Fisons Pest Control Ltd. The Soviet installations will be more highly instrumented than the U.K. equivalents.

Other Projects Discussed

Contract negotiations, which lasted over 15 months, were handled by Wycon Services, a company formed for the purpose of exporting chemical plants based on technical know-how of Fisons and C.J.B.; Wycon have also discussed other projects than the two named. The work will be carried out by C.J.B., Whiffen and Fisons Pest Control, with construction by Russian labour under the supervision of C.J.B. engineers. Commissioning and testing will be directed by technical personnel of the U.K. companies.

The contracts were signed at Leipzig on Friday, 10 March, by Mr. F. P. Korn, a director of Wycon in charge of contract negotiations throughout, and by Mr. O. Denisov, vice-president of Techmashimport. Announcing this signing in London on the same day, Mr. J. A. R. Staniforth, managing director of C.J.B. and chairman of Wycon, said the MEU plant would produce sufficient resin to treat fabric to make 500 million drip-dry garments. Based on Whiffen know-how, this contract is worth more than £750,000.

The MCPA plant, with an output capable of treating 11 million acres of crop, could on previous performance of this hormone weedkiller give the U.S.S.R. a 20% increase in crop yield. Based on F.P.C.L. know-how, this contract is worth more than £1.25 million.

Both contracts have been negotiated on a straight f.o.b. cash basis, payment to be made in sterling with normal retention against guarantees; there are penalties on delivery and utilities consumption. C.J.B. see no difficulties in this respect and it is significant that the Soviet authorities have never had to go to arbitration on contracts of this nature. After prolonged and 'tough' bargaining, the contract price was settled at what is believed to be about midway between the initial prices of both the Soviet negotiators and the Wycon team.

Mr. J. A. R. Staniforth, C.J.B., managing director and Wycon chairman, announcing the two new contracts in London. On his left is Mr. A. Robinson, chairman of Whiffen

The DMEU resin plant is expected on stream in three years and will, it is thought, be adequate to supply all U.S.S.R. needs over the next few years. Soviet technicians will be trained at Whiffen's Loughborough works in the operation of the unit. In the process, ethylenediamine is reacted with urea, liberating ammonia; this will be recovered as anhydrous ammonia. The design will also include a special urea section. The basic process is the same as that used at Loughborough, but to meet Soviet needs for minimum labour, it will be highly automated.

The DMEU resin, which will be produced in the form of a 50% aqueous solution, is the active basis both in Europe and the U.S. for anti-crease finishes for cotton and viscose rayon fabrics. Sometimes applied in combination with other chemicals having similar crease-resisting properties, it is said to be the most effective chemical of its class.

The MCPA plant, which it is hoped will be on stream in time for the 1964 crop season, will use a new process based on that operated by Fisons Pest Control at Harston. It will, however, be very much refined by that company and with an output about four times greater than the F.P.C.L. plant, which over the past four years has produced more than 5 million gall. The Soviet plant capacity of 4,200 tons of 100% technical material is equivalent to 3,760,000 gall. of Fisons MCPA. The refinements in the process, which will lead to a number of economies, particularly appealed to the Russians, as did the U.K. company's work at Harston on the purification of effluent. Soviet regulations in this respect are stringent, both for liquid and gaseous effluents.

MCPA, or phenoxylene-plus, has been sold in almost every major agricultural country in the world and is the most widely used selective weedkiller in the U.K.

Dr. Mark Guter, chief chemical engineer of C.J.B., and technical director of Wycon Services, on Friday, said that the MCPA plant presented an interesting challenge in scale-up; it was not a copy of the Harston unit for the Soviet demand was for greater output. A semi-continuous fully automated plant would be supplied; C.J.B. who specialise in control problems have already done much work in cooperation with the Russians on instrumenting both plants.

The product will be dry and not liquid as at Harston and this will involve having to spray-dry the finished product to overcome climatic conditions and transport problems.

British Brains and Skill

On the question of the ethics of trading with the U.S.S.R., Mr. A. Robinson, chairman of Whiffen and a director of Wycon, believes that since the know-how is available from a number of countries, Wycon should capitalise on British brains and skill. He stated that Wycon was formed to deal with a small number of specific contracts, but that "Another contract—a very big one—has been the subject of discussion with the Russians; we are not nearly at the end of the road on that one."

Wycon hoped the new contracts were only the beginning. Apart from the U.S.S.R., the company would be offering services to any country that needed know-how and construction skills. Mr. Robinson could see no reason why Wycon should not also interest themselves in acquiring Russian know-how, which in some sectors of the chemical industry was very advanced.

At the British Trade Fair to be held in Moscow this May, Fisons will feature both know-how and products. Last autumn, C.J.B. secured two other major contracts—in conjunction with Marchon Products, of the Albright and Wilson Group—for two complete plants for the production of detergent raw materials (see CHEMICAL AGE, 15 October).

Confidence in Polypropylene

I.C.I. MAY HAVE WORLD'S SECOND FIBRE PLANT

WITHIN four months of the opening of their 11,000 tons/year polypropylene plant at Wilton, I.C.I. have decided to build extensions, doubling the capacity. News of this was given in CHEMICAL AGE, last week, p. 401, when it was stated that Constructors John Brown Ltd. who built the original plant will handle the extensions, which should be completed by autumn 1962.

This increase from 11,000 to 22,000 tons shows I.C.I.'s confidence in the immediate prospects for polypropylene. Largest single outlet will be in the moulding field, particularly for automobile parts, luggage accessories, TV sets, washing machine components, spin dryers and refrigerators. Much interest is being shown in polypropylene for sheet manufacture in the fabrication of large containers such as water cisterns. I.C.I. expect that a considerable tonnage will go for film and fibre use.

In fact, as already announced, a polypropylene fibre plant is already under construction at Wilton. If this plant comes on stream this year, as it is thought it might, it will be the first in the world outside of Italy, where Montecatini, the licensing company, are in production. Next year the fibre will be introduced in the U.S. by Novamont Corporation, U.S. subsidiary of Montecatini, at a plant to be located at Neal, W. Va. U.S. plans for production of the fibre are said to depend on success with marketing in Italy this year and on the results of a survey of the potential U.S. demand.

Initial U.S. Output

Initial output in the U.S. will be about 25 million lb. a year, with outlets in carpets, curtains, home furnishings, etc. The fibre will be introduced at a price slightly below the existing levels for other man-made fibres in order to achieve mass consumption.

In February, Texas Eastman Co. became major producers of polypropylene resins with the start up of their plant at Longview, Tex. By mid-summer, production is expected to be at a rate of 20 million lb./year. This company uses a continuous process developed in its own research laboratories. It is said to be a continuous, low-pressure polymerisation process which permits closer control in the uniformity of the polymer than appears possible under batch processing. The catalyst is based on a metal hydride and titanium chloride.

Another process has been developed and is in the pilot-plant stage at the Kingsport, Tenn., plant of Tennessee Eastman. This uses a three-component catalyst—titanium trichloride, aluminium sesquichloride and an amine derivative. It is said to yield a highly crystalline polymer. No patent problems are anticipated by Texas Eastman in the U.S., but there is some doubt as to the patent's international acceptance.

U.S. domestic production of polypropylene last year totalled 40 million lb.; by the end of 1962, U.S. capacity will total 460 million lb. Demands are estimated variously from 300 million to 450 million lb., by 1965 with injection moulding taking 115 million lb.; film, 200 million lb.; monofilament, 35 million lb.; other extrusion applications 75 million lb., and textile fibres, 25 million lb.

In the U.K., Shell Chemical will be on stream this year with 67 million lb./year of polyolefins—polypropylene and both high and low density polythene. By the end of next year, U.K. polypropylene capacity should exceed 70 million lb.

In developing and producing polypropylene fibre, Montecatini have had to overcome many technical difficulties and one major problem, that of piece dyeing, is understood to have been practically solved. Difficulties connected with the production of monofilament have been overcome, but there are still considerable and quite serious problems in the development of continuous filament.

U.K. Plastics Sales Level Out But Output and Stock-building Proceed Apace

SALES of plastics materials, which reached a record peak of 147,000 tons in the first quarter of 1960 have since dropped to a more modest figure; in the last quarter of 1960 sales were less than 2% higher than a year earlier, and for the first quarter of this year seem to be on a similar level. However, production throughout 1960 was expanding at a greater rate than sales and considerable stocks have been built up, especially of thermoplastic materials. A further upward trend in sales is likely to be evident by the middle of the year.

NET SALES OF PLASTICS

	1959	1960
Thermosetting materials:		
Alkyds	49.7	49.9
Aminoplastics	54.6	59.9
Phenolics and cresylics	73.3	78.3
Unsaturated polyesters (a)	6.7	8.4
Others (b)	8.9	14.2
Total thermosetting	193.2	210.7
Thermoplastic materials:		
Cellulose plastics	11.7	13.5
Polyvinyl chloride (c)	88.3	103.3
Polystyrene	39.3	42.8
Polyvinyl acetate	13.2	14.6
Polyolefines (polythene and polypropylene)	155.0	106.7
Other (d)		70.1
Total thermoplastic	307.5	351.0
Total, all plastics materials	500.8	561.7

Figures issued by the Board of Trade show that sales of plastics materials in 1960 at 561,700 tons were 60,900 tons or more than 12% higher than in 1959. Sales in the first quarter were 30% higher than a year earlier; sales in the second and fourth quarters were a little below this record level, the third quarter being seasonally low.

Production over 1960 as a whole was 19% higher than in 1959, and in the last quarter was still about 8% higher than in the corresponding period in 1959. Stocks built up throughout the year, and at the end of the year were 102,900 tons (41,200 tons or some two-thirds higher than at the end of 1959) of which 81,900 tons were stocks of thermoplastic materials (37,500 tons higher than at the end of 1959).

Sales of thermosetting materials in 1960 were some 9% higher than in 1959 but in the fourth quarter were nearly 4% lower than a year earlier. Sales of thermoplastic materials in 1960 were 14% higher than in 1959; sales in the fourth quarter showed an increase of 5% as compared with a year earlier.

Direct exports of plastics materials in 1960 at 162,500 tons were almost 11% or 16,000 tons higher than in 1959 as compared with an increase of nearly 28% between 1958 and 1959. Imports during the year were at the very high level of 93,300 tons, 38,800 tons higher than in 1959.

Estimated U.K. consumption of plastics materials (manufacturers' sales less exports plus imports) was some 20% higher in 1960 than in 1959.

Progress in Plastics to Be Surveyed at Exhibition

THE International Plastics Convention, to be held at Olympia, London, on 21 June to 1 July in conjunction with Interplas, will survey current and technical progress in thermoplastics. Interplas is the sixth international plastics exhibition to be organised for British Plastics and International Plastics Engineering.

In three of the sessions advances in polymers and market prospects for polyolefins, vinyls and styrene polymers will be reviewed. A fourth session will be given to advances in the processing of thermoplastics.

Computer Exhibition and Symposium

The work of the 'new generation' of computers will be the theme of the Electronic Computer Exhibition to be held at Olympia, London, 3-12 October. Connected with the exhibition is the Business Computer Symposium, to be held at Olympia 4-6 October. Both events are organised jointly by the Electronic Engineering Association and by the Office Appliance and Business Equipment Trade Association, which also organises the Business Efficiency Exhibition running concurrently at Olympia.

U.K. FIRMS' SUCCESS AT LEIPZIG FAIR

Iron Curtain Customers Show Keen Interest in Chemicals, Chemical Plant

CHEMICAL industry figured prominently at the Leipzig Spring Fair, held from 5-14 March, in which 51 countries participated. Preliminary estimates put the number of visitors at 600,000, and although by no means all of them were trade buyers it is certain that as much business, and probably more, will result from the 300,000 sq. m. exhibition.

The U.K. was well represented in the technical fair which formed one part of the combined event—the other part being a consumer goods fair—with a number of British chemical companies exhibiting in the chemicals and plastics section and a further group showing chemical plant in another hall. The chemical companies were Imperial Chemical Industries Ltd., B.X. Plastics Ltd., Porous Plastics Ltd. of Dagenham, Bakelite Ltd., and Alginate Industries Ltd. of London W.C.2. Spokesmen of these companies told CHEMICAL AGE of a good start to the fair, considered by them an important event in view of the chance to meet Iron Curtain and other foreign customers and prospective customers personally, as well as from the 'flag-waving' viewpoint.

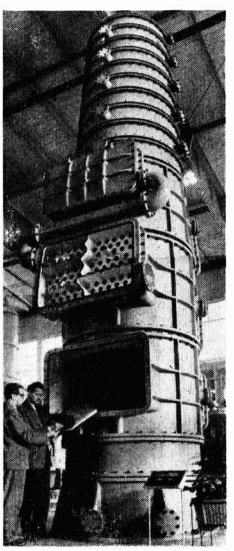
Chinese Interest

One firm showing at Leipzig for the first time—Porous Plastics Ltd. with their special porous polythene and p.v.c. —reported interest in their products from Communist China, while all British concerns were the object of general interest, particularly from East German visitors. Generally rather more restrained activity was reported by the chemical plant exhibitors on the joint stand—Oxley Engineering Co. Ltd., Anglo-Austrian Trading Co. Ltd., G. A. Harvey and Co. (London) Ltd., Humphreys and Glasgow Ltd., Langley Alloys Ltd., G. and J. Weir Ltd., Apex Construction Ltd., and Sharples Process Engineers Ltd. One of the highlights of the joint display was a huge chromed boiler base (12 ft. 9¾ in. dia.) before the stand of G. A. Harvey with, nearby, the scale model of an olefin plant shown by Humphreys and Glasgow Ltd. and illustrated in CHEMICAL AGE last week (p. 410). British exhibitors with stands not included in the two group exhibitions were Morton Machine Co. Ltd. of Wishaw, with chemical mixing and kneading and plastics manufacturing apparatus, and Telcon Plastics (the plastics division of the Telegraph Construction and Maintenance Co. Ltd.) of Farnborough, with thermoplastics for metal coatings and a range of other plastics.

In the field of chemical manufacture, virtually all the top names in the European industry were present, including such companies as Péchiney, CIBA, Farbenfabriken Bayer, Montecatini, Stickstoffwerke and many others, as well as the entire chemical manufacturing industry of the Soviet-controlled area of Eastern Germany in which Leipzig is situated. Although new developments were to be seen rather among the exhibitors of chemical plant than among chemical producers themselves, these issuing new chemicals as they are perfected or preferring to introduce them at a less general trade fair, there were a number of interesting chemicals offered.

New Chemicals. Among the 'visiting' chemical exhibitors, Deutsche Gold- und Silberscheideanstalt AG (Degussa) of Frankfurt-on-Main, Federal Germany, introduced a special sodium cyanide lye consisting of prussic acid and soda lye in a 28-32% aqueous solution for chemical plants using solid sodium cyanide as a starting material; the poisonous cyanide can thus be pumped straight from a storage tank to the reaction chamber, while transport outside the works may be by tanker wagon. The same concern has recently developed carbon black dispersions in liquid and solid binding agents and paste-form carbon black for softening agents, while among other carbon black types are several surface-enriched with chemically bound oxygen for the increasing of dispersion potential.

Produits Chimiques Péchiney - Saint Gobain of Paris, the joint marketing company of the two leading French chemical concerns, showed such plastic compounds as aceto-polyvinyl chloride resins (Afcovyl and Gobinyle), polyvinyl acetate and polyvinylide chloride co-polymer dispersions, and two special polystyrene types, Afcolene A polystyrene - acrynonitrile copolymer and Afcolene H polystyrene-butadiene-acrylonitrile copolymer—the former resistant against and the latter insensitive to alipathic solvents.



Some 50 tonnes/day of soda are produced in this record size precipitation column built and exhibited at Leipzig by VEB Maschinen- und Apparatebau Stassfurt

Deutsche Advance Produktion GmbH of Marienberg, Federal Germany, exhibited a range of interesting barium-cadmium, organic cadmium, calcium-zinc and tin compounds. The Austrian chemical producer Österreichische Stickstoffwerke AG of Linz, much of whose stand was given over to pharmaceutical production, announced that as from July of this year it will be able to supply on order derivatives of chemically pure succinic acid.

Among other interesting chemicals on show were chlorophyll from Riedel-de Haën AG of Seelze, Federal Germany, lanoline from Solvent Belge SA of Verviers, Belgium, and silicic acid from Degussa, while Elektrochemische Fabrik Kempen GmbH of Kempen, Federal Germany, offered alkylphenol-polyglycol ether, alkylpolyglycol ether and alkyl-polyglycol ester.

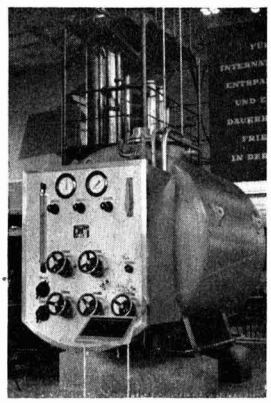
East German Exhibits

The East German exhibitors accounted for much of the space given over to the chemical production industry at Leipzig. VEB Chemische Werke Buna of Schkopau exhibited for the first time two new thermoplastics bearing the designations P 60 and P 70; these polystyrene types have a high degree of visual clarity and better heat resistance and mechanical properties than former Buna types. The Greiz-Dölau, Thuringia, firm VEB Chemiewerk Greiz-Dölau exhibited a new addition to their range of alumina-aluminium oxide CD for chromatography. This product, a standard adsorbent for basic and neutral materials, has a pH value of about 9.5 and a Brockmann activity rating of 2-3.

VEB Elektrochemisches Kombinat Bitterfeld, of Bitterfeld, which claims to be the birthplace of p.v.c. processing technique, exhibited a full range of p.v.c. types and p.c. powders and adherents, including rigid cellular p.v.c. manufactured by the addition to pure p.v.c. of organic blowers and treatment by a thermal process in blocks with densities of down to 0.03 g./cm^3. The nearby plant of VEB Farbenfabrik Wolfen showed its MK emulsifier, produced as an alkyl sodium sulphonate for use in polymerisation processes and as a raw material for washing media, cosmetics and pharmaceuticals, with practically neutral reaction and virtually with an unlimited durability. East Germany is now Europe's main exporter of paraffin waxes, and

the State trading organisation Mineralöle Import und Export GmbH of East Berlin exhibited solid paraffin free of chlorides and sulphates, with an oil content of not more than 0.5% and solidification at 52/54 and 56/58°C.

Chemical Plant. A number of countries displayed chemical plant and equipment in the technical fair, the host country here, too, playing an important part. VEB Maschinen- und Apparatebau Stassfurt, of Stassfurt, had on show one of the biggest units of all—a soda precipitation column capable of processing 335 u.m. of bicarbonate liquid to 50 tonnes of soda within 24 hr.; this unit is claimed thus to top by 50% former plant of this type. A similar large installation was on the stand of the Thale firm of VEB Eisen- und Hüttenwerke Thale in the form of a special alkylising tower of 24,000 litres effective capacity. Made of welded basic steel, this is enamelled on its outside surface and



Oxygen tank of 2,000 litres capacity shown by VEB Excelsior-Werke of Heidenau. A new development, it is fitted with vacuum-powder insulation

inside highly resistant both to acid and to temperature changes. VEB Excelsior-Werke of Heidenau introduced at this year's event a 2,000-litre oxygen tank with vacuum-powder insulation. VEB Apparate- und Rohrleitungsbau Reinsdorf has standardised autoclave parts so that one standard screw type is used in all the company's units from 1 to 5 litre capacity; the same concern also produces 10 and 50 litre autoclaves.

From outside the Soviet zone came Carl Padberg Zentrifugenbau GmbH of Lahr, West Germany, with four types of laboratory centrifuge working at 50,000 times gravity and seven different interchangeable centrifuge cylinders; a 1½ ton independent control hydraulic plastics press manufactured by Zywiecka Fabryka Maszyn of Zywice, Poland, and with a top pressure of 300 atm. and distributed with a number of other plastics units by Polimex of Warsaw; a range of centrifugal pumps manufactured by Pumpen- und Maschinenfabrik Lederle o.H.G. of Freiburg-in-Breisgau, West Germany, and including a special unit for the transportation of highly viscous substances.

Other West German contributions included new high-efficiency extruders from Bierhoff AG of Döttingen, Switzerland, with hourly capacities of 110-154 lb., 132-198 lb., 220-287 lb., 287-353 lb. or 397-507 lb. of soft p.v.c., polythene or polystyrene; the Chempump programme of special pumps for the transport and rotating of difficult liquids and liquid gases by F. Ladendorf of Hamburg, and capable of handling pressures of up to 16 atm. in standard models, up to 100 atm. in a special model and pressures of over 100 atm. in a special high-pressure Chempump developed in co-operation with Badische Anilin- und Soda-Fabrik AG; and a high-efficiency mixer manufactured under designation M 160 by another West German firm, Vaterland-Werk of Neuenrade, capable of completing the cold mixing of fluid, granular and powdered substances in 1-2 min. (effective capacity: 22 gall.) or such jobs for the plastics industry as heating by kinetic energy from its mixing tools 40 kg. of p.v.c. compound from room temperature to 120°C within 8-10 min., colouring polystyrene, polythene, etc., or drying 30 kg. of cellulose acetate within 10-15 min.

Metal Catalyst Film is Key to G.E.'s One-carat Man-made Diamond Process

INGENIOUS use is made of a metal catalyst in the process by which General Electric (U.S.) have achieved the production of synthetic diamonds of one-carat size (first reported in CHEMICAL AGE, 14 January, p. 108).

The G.E. process, started in 1955 in the laboratory and used for commercial production since 1957, employs a molten metal catalyst which acts as a thin film between the growing diamond crystal and the carbon, and depends on the development of super-pressure and high-temperature apparatus.

Without the catalyst, it is estimated that 3 million p.s.i. and a temperature of more than 7,000°F would be required to transform carbon into diamond. Such a combination is unobtainable in the laboratory, and the temperature would melt the pressure-generating apparatus. The catalyst—which may be chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, irridium or platinum—reduces the pressure-temperature combination to technically feasible levels—800,000-1,800,000 p.s.i. and 2,200-4,400°F.

Heart of the diamond-producing equipment is a small cylinder filled with graphite and layers of the catalyst metal. Tungsten carbide pistons converging on the cylinder build up the necessary pressure. Intense heat, applied by electric current, melts the catalyst and frees the carbon atoms from the graphite. As the molten catalyst spreads into the graphite, alloying with it, a thin film forms at the leading edge of the molten metal. Just behind the film the carbon atoms realign themselves and form diamonds.

The catalyst film has an essential but puzzling role in the process of making synthetic diamonds. Diamonds will not grow without it, nor will they grow very far from it. Despite the presence of the film, however, the process occasionally yields graphite and no diamonds.

The G.E. research team found that new diamonds can form whether diamond seed crystals are there or not, and that the diamond can grow rapidly. The formation of industrial diamonds of 80 mesh or finer is completed in a few minutes. Tantalum used as a catalyst is particularly effective in inducing growth of small diamonds, although under some circumstances it is not as good as other metals, or their metal yielding salts. Lower pressure temperature levels, it was found, slow up the synthesis but produce somewhat larger stones. Best results were obtained when using pure graphite as a starting material. Other carbonaceous material, such as carbon black, sugar charcoal, or carburising compound, may be used as the source of carbon, but graphite is preferred.

The discovery that the shape of the diamond crystal varies with the temperature was regarded as particularly significant. It was found that cubes predominate at comparatively low temperatures, mixed cubes, cubo-octahedra and dodecahedra at medium temperatures, and octahedra at high temperatures. Colour is also governed by temperature, varying from black at low temperatures, through dark green, light green and yellow to white at the highest temperatures.

By controlling the shape and other characteristics of the diamonds it will be possible to make them more nearly to requirements for special cutting, polishing and grinding operations in industry. Each year the U.S. alone uses more than 2 tons of industrial diamonds for this work.

D.S.I.R. Working Party Will Enquire into Use of Film in Research

THE Department of Scientific and Industrial Research has set up a working party to consider national needs in the field of scientific film. It is especially interested in the aspects of film as a research tool and in communicating research results.

To assist the working party, D.S.I.R. in co-operation with the other research councils, the Atomic Energy Authority and some Government Departments, is circulating a questionnaire to industry, universities and research organisations. Anyone who can contribute to the enquiry, but who has not received the questionnaire, is asked to contact the D.S.I.R. Information Division, 14-18 Cornwall Terrace, London N.W.1.

Classical Analysts Not Made Superfluous by Newer Techniques—S.A.C. President

THE next 30 years would see radical changes in analytical chemistry declared Mr. R. C. Chirnside, retiring president at the recent annual meeting of the Society for Analytical Chemistry.

Relatively recently analysis had meant the separation or preparation of materials so that some measurement, usually of mass or volume could be made. Already the composition of minute areas of surface could be determined non-destructively. Advances were stimulated both by advances in other technologies and by the need for information different in character to that previously offered by the analyst.

R. C. Chirnside

Some of the chemistry was going out of analytical chemistry and this raised problems both in industry and in the educational establishments. Micro-chemistry, too, as conventionally defined, would have to take note of the newer techniques of electron diffraction and the electron micro-probe, for example. By means of these it was now possible to make a point-to-point analysis over minute areas of specimen, often non-destructively. Such information might prove of inestimable value, greater by far than the average figures obtained on relatively large samples. This was already true of solid state devices, such as semi-conductors. It must surely be applicable to both the metallurgical and the biochemical fields of work.

In his presidential address, entitled 'The enlargement of horizons in analytical chemistry,' Mr. Chirnside saw as one danger the possibility that the newer techniques might simply be used for the rapid amassing of many more analytical results, but a greater hazard was the spread of the idea that they rendered superfluous the classical analyst. This was not true, even if the application of new techniques to the continuous monitoring of a chemical plant to control the process did sometimes make the analytical laboratory itself superfluous—the true meaning of automation. The value of the classical analyst must not be minimised; many instrumental techniques depended for calibration on his skill.

Mr. Chirnside was disturbed by the range of measurements that did not specifically lie within the society's province. Because the S.A.C. could only provide for a limited number of techniques, other bodies had come into being, such as the Polarographic Society and the Gas Chromatography Discussion Group. Many of the groups concerned with techniques of measurement which, sooner or later, would be thought of as analytical, were firmly attached to other societies; some were loosely attached, others had no affinities but were associated mainly with the fields of work for which they were developed.

Paradoxically there was both a gap and an overlap; the society had to do still more to try to bridge that gap, to accept at a faster rate the conception of those new kinds of measurement as 'analysis'. There was even greater need for the exponents of those new techniques to recognise the overlap and to accept, for example, that spectrometry was not the most sensitive technique for many elements and that chemical analysis was not necessarily always more time-consuming than other methods.

Annual Report. Judged even against the records set in recent years, 1960 was shown a year full of varied activities. The S.A.C. now has 1998 members, an increase of 57 over a year ago.

The Analytical Methods Committee had set up a new sub-committee which was working on primary analytical standards; it was set-up to examine critically the various substances proposed as standards with a view to making specific recommendations on behalf of the U.K.

Officers. As stated in CHEMICAL AGE, 18 February, p. 297, Mr. Chirnside is succeeded as president by Dr A. J. Amos (Drs. D. W. Kent-Jones and A. J. Amos). Other officers are: *past-presidents serving on council*: R. C. Chirnside, J. H. Hamence, D. W. Kent-Jones, K. A. Williams; *vice-presidents*: A. L. Bacharach, J. R. Edisbury, F. C. J. Poulton; *hon. treasurer*: D. T. Lewis; *hon. secretary*: R. E. Stuckey (British Drug Houses Ltd.); *hon. assistant secretaries*: C. A. Johnson (programmes secretary), S. A. Price; *other council members*: D. M. W. Anderson, B. Bagshawe, E. Bishop, S. G. Burgess, R. A. Chalmers, D. C. Garratt, E. Q. Laws, S. H. Jenkins, W. M. Lewis, C. A. Parker, D. W. Wilson, J. T. Yardley and as ex-officio members chairman of sections and groups.

Fourfold Lab. and Pilot Plant Extension for Reading Consultants

CHANGES in the organisation of the practice of J. A. Radley, M.Sc., F.R.I.C., F.S.D.C., chemical consultant, 220-222 Elgar Road, Reading, Berks, have followed its registration as a limited company under the name of J. A. Radley (Laboratories) Ltd. The company will continue to supply analytical, technological and development services as before.

The laboratories have recently been extended and stores, pilot plant, library and other extensions have been added to give a fourfold increase of floor area over 1960. During this time, the staff has been doubled and more are being recruited for all sections.

The sponsored and pure research work, which has been a marked feature of the practice in the past few years, has been taken over by the newly-formed J. A. Radley Research Institute. The permanent board of governors of this Institute consist of Mr. J. A. Radley, Mr. F. A. Lyne, B.Sc., F.R.I.C., and Dr. J. S. Stanley, Ph.D. In addition the following have consented to act as co-opted governors for the purposes of consultation, etc.:

Prof. H. V. A. Briscoe, D.Sc., A.R.C.S., F.R.I.C., Imperial College; Prof. F. C. Frank, O.B.E., D. Phil, F.R.S., Bristol University; Dr. C. H. Giles, D.Sc., F.S.D.C., Glasgow University; Dr. P. F. Holt, D.Sc., F.R.I.C., Reading University; Prof. A. J. Kennedy, Ph.D., A.M.I.E.E., College of Aeronautics, Dr. A. C. Riddiford, Ph.D., Southampton University; and Dr. W. Whelan, D.Sc., F.R.I.C., Lister Research Institute.

With completion of the new facilities, the functions of the company and the Institute have now been separated. A report on sponsored research work carried out in the past 12 months is being published and copies can be had on application.

Preventive Plant Maintenance System

EFFICIENCY in any type of plant ultimately depends upon efficient maintenance. Generally, maintenance is regarded as being essential only when some section of the plant breaks down. A preventive plant maintenance system, however, has recently been installed in an atomic energy plant, the third installation of its kind by Adrema (Holdings) Ltd., devisers of the Bradma System.

Preventive maintenance is designed as a service to production; it eliminates the nuisance element of maintenance by making it part of planned, controlled production.

The industries where preventive plant maintenance can be applied cover a wide field, both in small scale manufacturing and the large factory, including food, chemical and packaging.

VEGETABLE COLLOID FROM SEAWEED CLAIMED TO CONDITION ALL TYPES OF SOIL

ANY soil will grow plants if the right crumb structure can be induced, a state achieved by the right soil conditioner. Sodium alginate has for many years been acknowledged as an excellent soil conditioner but, because of its high production costs, it has been far too expensive to use. A number of soil conditioners have been produced in recent years but these have also proved too expensive for general use.

Now a new product, which appears to have overcome the difficulty of prohibitive cost (£120 per ton as opposed to over £1,000 per ton for sodium alginate) while retaining its effectiveness, has been developed and is being produced by a company formed at the beginning of 1960, Oxford Horticultural Laboratories Ltd.

Vegetable Colloid

The new product, Alginure, is a vegetable colloid derived from seaweed, containing substances which stabilise soil structure and create a suitable environment for healthy plant growth. One of the main constituents of Alginure is sodium alginate. Sodium alginate is a naturally occurring polyelectrolyte consisting of a polymeric acid of high molecular weight which can be neutralised by any base.

Alginure soil conditioner is not a fertiliser. It has the properties of humus and its effect in plants is largely indirect.

Alginure soil conditioner will absorb up to 200 times its own weight of water. In the soil it absorbs moisture and so forms a water-soluble gel. A second reaction occurs with lime in the soil giving an insoluble calcium alginate which cannot be washed away. The calcium alginate is a polyelectrolyte which has a twofold effect. It has an electrochemical effect on clay causing flocculation, the mechanism for which is not entirely understood. The charges are removed from the de-flocculated particles so that the neutral particles no longer attract one another. On sandy soil the jelly acts as a strong bonding material holding the small particles together.

Although the effect of Alginure on the plants is mainly indirect, there are certain direct effects as well. The hormones present in the original seaweed are not destroyed by the process. These have been proved to have a stimulating effect on germination. Trace elements, notably boron, molybdenum and manganese, often deficient in soils, are also carried through the process. Alginure also appears to have an effect on the carbon/nitrogen ratio of the soil, although the mechanism is not known.

Several kinds of seaweed can be used to produce the conditioner. The company's supplies at present are being obtained from Norway. The process consists of the breakdown of the cell structure of the seaweed and the incorporation of various additives. The exact nature of the process, on which patents are pending and which is not a complicated one, is not revealed. At the moment sources of seaweed are adequate—the world's supply of practical available seaweed will produce enough Alginure to treat 100,000 square miles. A shortage of raw materials is not foreseen since the process could be adapted to any carbohydrate source. The essential feature of a soil conditioner is that it should have a $-COOH$ group on each uronic acid ring of the polymer chain, so that essentially any carbohydrate could be treated to fulfil this condition. Possible sources of raw material are sisal waste and baggas.

The pilot plant at present in operation with a capacity which is "increasing and is quite a large amount" is producing Alginure at the rate of 3 tons per 8 hour shift. Increasing the size of the plant does not involve any major reconstruction and the capacity could be doubled in a matter of two weeks.

Alginure is expected to have far reaching effects in such fields as desert reclamation and the prevention of soil erosion. Oxford Horticultural Laboratories are already building up an export market and trials on desert reclamation are being undertaken at Kuwait in the Persian Gulf.

Q.V.F. Glass Tower Will Be Achema Landmark

A 40 ft. glass distillation column towering over the pavilion of the Quickfit Group will form a striking landmark at the Achema international chemical plant exhibition, to be held at Frankfurt in June. The glass column—18 in. in diameter—is part of a distillation unit which visitors will see working. It is one of the exhibits staged by Q.V.F. Ltd., Stoke-on-Trent.

Among other examples of Q.V.F. plant on show will be a reaction unit with a a new type of immersion cooler; an absorption column with liquid circulated by a glass pump of the latest design; and examples of glass overhead plant for use with glass-lined steel vessels.

Q.V.F.'s German subsidiary, Q.V.F. Glastechnik of Wiesbaden, will be represented in the Quickfit pavilion. Glastechnik are building a new £100,000 factory for local manufacture and warehousing.

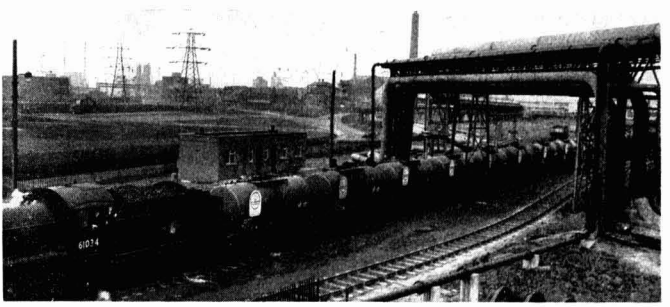
Special Trains for Iso-Octanol Freight

THE first of a series of special trains conveying 300 tons of iso-octanol left I.C.I. Heavy Organic Chemicals Division plant at Billingham recently for King George V Docks, London. This plasticiser alcohol was then pumped on board s.s. *Afric*, destined for Imperial Chemical Industries of Australia and New Zealand Ltd. at Melbourne.

The train was made up of a fleet of I.C.I.'s newest rail tank wagons, all of which are fitted with the continuous vacuum braking systems so that the special trains can travel at express speeds. On arrival at the dock, the liquid was pumped from the tank wagons into a tank on board the vessel by an I.C.I. pumping unit.

Conveyance of this chemical in bulk by train enables a quicker and more efficient service to be given and the first of these special shipments by rail follows co-operation between the company, British Railways (North Eastern Region) and the shippers. The wagons were supplied to I.C.I. by Charles Roberts and Co. Ltd., Horbury Junction, Wakefield.

Other new developments in transport of chemicals will be discussed in a special 'Containers and Transport' issue of 'Chemical Age' to be published next week.



The special train leaves Billingham with its load of 300 tons of iso-octanol

N.W. I.Chem.E. Annual Meeting and Dinner

Seen here at the I.Chem.E., N.W. Branch annual dinner are, left to right: Sir Leonard Owen (U.K.A.E.A.), Lady Owen, Mrs. Ross and K. B. Ross (U.K.A.E.A.), Dr. J. B. Brennan (I.Chem.E. general secretary), Mrs. Wilson and A. D. Wilson (chairman, Joseph Crosfield and Sons), Dr. B. V. Bowden (principal, Manchester College of Science and Technology)

Professor Morton on 'Mere Trickle' of Graduates for Industry

WHATEVER else the U.K. Atomic Energy Authority had achieved, it had shaken us out of our dependence on American methods and American ideas, said Prof. F. Morton, professor of chemical engineering at Manchester College of Science and Technology, in what he termed his "swan song" after three successive years as chairman of the North Western Branch of the Institution of Chemicals Engineers, at the annual dinner of the Branch at the Midlands Hotel, Manchester, on 10 March. The new chairman for 1961 is Mr. J. S. Hunter of the U.K. Atomic Energy Authority, whose place as vice-chairman of the Branch Prof. Morton now takes.

Speaking of the supply of technologists in the U.K., and of chemical engineering in particular, Prof. Morton referred to the "painfully slow" progress that was being made, with a "mere trickle" of graduates coming from the universities and colleges. With this, there was a stifling of original thought and endeavour. We were now at the point of no return; industry was breaking into new fields and the opportunity provided by the new chemical engineering ideas must not be lost.

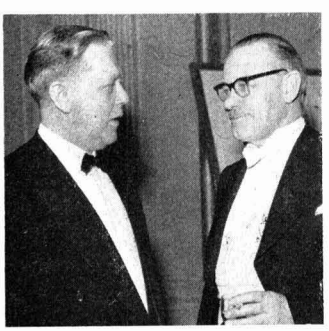
Prof. Morton went on to refer to the Institution of Chemical Engineers as a valuable link between the universities and industry, helping to achieve a healthy relationship between the two.

Prof. Morton was responding to the toast of "The Institution of Chemical Engineers, North Western Branch" proposed by Dr. B. V. Bowden, principal, Manchester College of Science and Technology, who paid tribute to the Branch as the oldest Branch of the I.Chem.E. and one which had played an important part in the development of industry.

Other guests at the dinner included Mr. W. K. Hutchison, C.B.E., president of the Institution; Sir W. Leonard Owen, K.B., C.B.E., managing director, Production Group, U.K.A.E.A.; Mr. K. B. Ross, O.B.E., operations director, Production Group, U.K.A.E.A.; Mr. George Brearley, director, Association of British Chemical Manufacturers; Dr. E. H. T. Hoblyn, M.B.E., director, British Chemical Plant Manufacturers' Association; Dr. J. B. Brennan, M.B.E., general secretary, I.Chem.E.; Dr. B. V. Bowden, principal, Manchester College of Science and Technology; and Prof. G. G. Haselden, Brotherton Professor of Chemical Engineering, Leeds University.

The toast of "Our Guests" was proposed by Mr. J. S. Hunter and Mr. K. B. Ross responded on behalf of the guests.

The annual dinner and dance followed the annual general meeting, at which the following officers and new members of the Committee for 1961 were elected: *Chairman,* Mr. J. S. Hunter; *vice-chairman,* Prof. F. Morton; *hon. sec.,* Mr. A. V. Bailey (Hardman and Holden Ltd.); *hon. treasurer,* Mr. R. J. Kingsley (Lankro Chemicals Ltd.); *members of committee,* Mr. G. P. A. M. Balfour (Stockdale Engineering Ltd.), Mr. R. H. Simpson (Monsanto Chemicals Ltd.), and Mr. A. D. Wilson (Joseph Crosfield and Sons Ltd.).



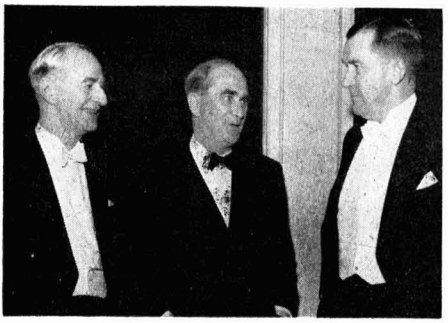
Professor F. Morton (right), retiring chairman of the Branch, chats with J. J. Priestley (W. C. Holmes and Co.)

U.S. Nuclear Power Supply Already Significant, Says A.E.A.'s K. B. Ross

THAT the contribution of nuclear energy to the generation of electricity in the U.K. is already significant was a point brought out in an address entitled 'The operation and maintenance of U.K.A.E.A. Calder Hall type reactors,' given by Mr. K. B. Ross, O.B.E., B.A., B.Sc. (Oxon), M.I.Chem.E., operations director of the U.K.A.E.A. Production Group, at the annual general meeting of the North Western Branch of the Institution of Chemical Engineers.

He gave figures to show that total units sent out from the reactors at Calder Hall during the year 1959-60 represent 11.3% of the electricity disposed of by the North Western Electricity Board, while in the South of Scotland Electricity Board area, electricity generated by Chapelcross station varied between 20% and the high figure of 59% during the Glasgow holiday period. High utilisation factors for the installed nuclear generating plant had been achieved despite the heavy experimental programme which entails additional and occasional shut-down.

Mr. Ross gave an account of the planned maintenance work carried out on the reactor plants. The unique teamwork between the operators and technical development staffs introduced to industry a novel concept of professional manpower utilisation. He described how



L. to r.: G. Brearley (director, A.B.C.M.), W. K. Hutchison (president, I.Chem.E.) and Dr. E. H. T. Hoblyn (director, B.C.P.M.A.)

efficient handling of small units was a problem which arose in the changing of the reactor fuel—130 tons of irradiated uranium has to be removed from the core and replaced by unirradiated elements. This called for detailed planning of mechanical handling methods, with the added complication that, in general, every ton of irradiated uranium fuel that is removed from one place to another has to be moved in a shielded container weighing 20-50 tons. In remote handling, use of the television camera has been found increasingly necessary. Modifications have been made enabling a camera to operate in an ambient of 100°C—the shut-down temperature of the reactor.

Reactor vessels and heat exchangers in nuclear plants cannot be inspected by normal methods and a special committee set up to deal with this problem recommended that samples of materials used in the construction of the pressure vessel should be irradiated in the reactor and periodically tested. Television was playing a large part in the internal inspection of vessels while the maintenance staffs had achieved amazing feats of ingenuity in devising special grabs and other equipment for use in this work.

Mr. Ross concluded that after 18 years of operation at Calder Hall and Chapelcross these first prototype reactors may be justly considered to have taken their place in modern industry.

In moving a vote of thanks to Mr. Ross for his paper, Mr. A. D. Wilson, B.Sc., M.I.Chem.E., a member of the N.W. Branch committee, said it was particularly interesting to hear of some maintenance that was really planned, and of the thorough way in which the U.K.A.E.A. appears to be tackling its problems.

I.C.I. Capital Spending at Wilton Tops £120 Million Mark

CAPITAL spending at I.C.I.'s Wilton Works will be higher this year than in 1960, despite the start of large-scale work on the Severnside site. Construction spending at Wilton has now topped the £120 million mark and in the past two or three years has averaged about £1 million a month. First activity at Wilton took place in 1945 and the first plant went on stream in 1949.

These figures were given at a recent dinner of construction personnel in Wilton's Engineering Department, held to mark I.C.I.'s spending of £120 million on the site. In the absence through illness of Mr. J. C. H. McEntee, Wilton Council chairman, Mr. R. E. Newell, managing director, said that over the years construction productivity had risen 50%.

Future expansion would sometimes take place at Wilton, sometimes at Severnside, but most of the time at both sites. It was not possible to say, added Mr. Newell, what proportion of that split would go to Wilton in any one year.

Mr. C. Hunter, construction works manager, said that in their 14 or 15 years on site at Wilton, they had built up an area of about 600 acres. An enormous amount of experience in both new and old techniques had been gained and much high-pressure know-how had been exported overseas. They had learned how to handle large distillation columns, to say nothing of new materials and the development of new techniques to deal with them.

Packaging Exhibition 1961

The 7th International Packaging Exhibition will be held at Olympia, London, from 5-15 September, 1961, and more than 300 firms will show packaging materials, containers, machinery and equipment.

A convention to be held concurrently with the exhibition will cover packaging for export to North America, Latin America and the Caribbean.

Gordon Research Conference

The Gordon Research Conference of 1961 is to be held from 12 June to 1 September. The conference was established to stimulate research in universities, research foundations and industrial laboratories. It covers a wide range of subjects in many branches of chemistry and biochemistry. Details of the conference may be obtained from W. George Parks, University of Rhode Island, Kingston, Rhode Island.

Duty Drawback Sought on Cyanoacetamide

AN application for the granting of drawback of duty on imported cyanoacetamide when used in the production of pyridoxine hydrochloride for export is being considered by the Board of Trade. Only listed U.K. producers of pyridoxal hydrochloride are L. Light and Co. Ltd.; Light's are one of three producers of cyanoacetamide, the others being R. F. Reed Ltd. and Theodore St. Just and Co. Ltd.

Representations on this application should be sent in writing to the B.o.T. Tariff and Import Policy Division, Horse Guards Avenue, London S.W.1, not later than 31 March.

Sulphuric Acid and Related Chemical Plant

A BROCHURE describing and illustrating several types of sulphuric acid and related chemical plant which are available through the Power-Gas Corporation Ltd., one of the Davy-Ashmore Group, has been issued by the company.

The Power-Gas Corporation specialises in the design, supply and erection of plant and equipment for the chemical, petrochemical, petroleum, gas and nuclear energy industries. Plant designs are based entirely on the specific requirements of the client.

The types of plant described in the brochure with ample illustrations by photographs and flow sheets are: plant for the manufacture of sulphuric acid from any sulphur-bearing material such as sulphur, pyrites, hydrogen sulphide, sinter and other SO_2 gases, spent oxide, gypsum, etc.; plants for the production of phosphoric acid from sulphuric acid and phosphate rock, and triple superphosphate from phosphoric acid, and phosphate rock (S.I.A.P.E.) process; liquid sulphur dioxide from SO_2 gases by the pressure absorption process; plant for the concentration of sulphuric acid; and mechanical type muffle furnaces for the production of alkali sulphates and hydrochloric acid.

Cost to the N.H.S. of Proprietary and Standard Drugs

Total cost to the Exchequer of National Health Service prescriptions specifying drugs by proprietary names in 1960 was £50.7 million (£45.2 million in 1959 and £30.8 million in 1958). Prescriptions specifying drugs by standard names cost £14.1 million in 1960 (£13.9 million in 1959 and £16.6 million in 1958). Just under half the drugs prescribed by standard names in 1959 and 1960 were available only as proprietaries. This was stated on Monday by Mr. Enoch Powell, Minister of Health.

Will

Mr. Cecil Frederick Victor Blagden, a director of Victor Blagden and Co. Ltd., who died on 8 September last, left £16,619 gross; £8,706 net value (duty paid £2,776).

Overseas News

U.S.–INDIAN CONSORTIUM GRANTED LICENCE FOR $51 MILLION FERTILISER PROJECT

A LICENCE has been granted by the Indian government for the construction of a $51 million fertiliser plant by a combination of U.S. and Indian interests. The companies concerned are the International Minerals and Chemical Corporation, the California Chemical Co., a subsidiary of Standard Oil, and the East India Distilleries-Parry Group. Private Indian shareholders will be invited to take part in the venture. The three basic partners will provide know-how and will manage the undertaking.

The new plant is to be built on the east coast of India at Visakhapatnam where the Caltex refinery, from which it will obtain its raw materials, is situated. It will produce about 350,000 tons of fertilisers a year—200,000 tons of ammonium phosphate and 150,000 tons of ammonium sulphate.

Several U.S. companies, including Koppers, Kaiser Engineering, and International Agricultural Corporation have been involved in discussions with the Indian government on this and several other proposed projects. With the granting of the licence, the U.S. companies will conduct complete feasibility studies and further negotiations with the government before making a final decision to take part. International Minerals have sent teams to India to study the situation in the past 18 months.

Completion of the project is expected to coincide with the third year of India's third five-year plan, in which the principal emphasis is on the food situation.

Grace Chemical to Increase Polythene Capacity

A major expansion programme is planned by the polymer chemicals division of the U.S. company, Grace Chemical. This includes a 50% increase in the production capacity of high density polythene as well as improved facilities to supply polymers highly suitable for advanced blow moulding and vacuum forming techniques.

Soviet Progress in Synthesising Acetone-Furfurol Resins

Soviet chemists have undertaken a study, the first of a series, aimed at developing the most efficient methods for synthesising furfurol-acetone resins and determining the properties of these resins. For maximum yields, a ratio of one mole of furfurol to six moles of acetone is used for the mono-compound; for the di-compound the molar ratio is 1:0.5. Alkalis and some amines are considered to be the best condensing agents. The concentration of alkali and the composition of the reacting mixture are important in obtaining optimum yields (96 to 97% for difurfurylideneacetone and 70% for furfurylideneacetone). Both compounds are crystalline and can be polymerised in the presence of alkaline catalysts.

The resins obtained are yellow or yellow-brown brittle solids and are soluble in polar organic solvents, such as acetone or dioxane. They have a comparatively low molecular weight (1200-1300) and are capable of further hardening in the presence of acid catalysts. The bromine numbers (over 300) indicate that the double bonds of the furane ring are maintained and take no part in the polymerisation. Heat resistance is not specified. The general properties of the resins obtained are compared briefly with those of Novolac phenolformaldehyde resins.

Cosden Expanded Styrene Capacity on Stream

Cosden Petroleum Corporation's expanded facilities for styrene production have been completed, tripling their styrene monomer capacity to 70 million lb. a year. Part of the output will go into Cosden's polystyrene resins.

Saffron to be Grown in Dominican Republic

The Dominican Republic is to launch a full-scale saffron growing campaign. The plant is produced commercially in Mexico where the oil extracted is used in proprietary preparations which are said to reduce the cholesterol danger. The oil from the seeds will be used as a constituent in cattle feeding stuffs and in soaps and paint.

Mitsubishi Petrochemical to Import Bisphenol-A

Negotiations of Mitsubishi Petrochemical with Mitsui Petrochemical to acquire a cumene-phenol process have been abandoned (see 'Overseas News,' 14 January). Instead Mitsubishi will import 500 tons Bisphenol-A from the U.S. for the production this year of 1,000 tons of polycarbonate. By 1965, polycarbonate output is expected to have reached 4,000 tons/year.

New U.S. Tax Rules for Know-how Agreements

The U.S. Internal Revenue Service has temporarily stopped issuing rulings on know-how agreements between U.S. chemical firms and foreign companies. The reason is that the tax rules are to be revised. Previously if a U.S. corporation received a controlling interest in a foreign company in exchange for know-how, the transaction was non-taxable. In the past, know-how has been described as 'property' as opposed to 'services', and therefore came under Section 351 of the revenue code which does not apply to services. Now a revision of what constitutes property and services is underway.

New Sulphuric Acid Plant for Japan

Nippon Kokan are to build a new 400 tons/day sulphuric acid plant to meet increased consumption demands. Their existing 120 tons/day dilute acid plant will be closed down. Construction will start in April and is expected to be completed by March next year.

Ishihara Sangyo also plan a new sulphuric acid plant with total capacity of 200 tons/day. This will be built at Yokkaichi and will use the Zieren process of West Germany. At present the company has plant at Yokkaichi for producing 7,000 tons/month by the contact process and for 6,000 tons/month of dilute acid (as 50° Be acid). The plant will be completed this year and will use sulphide ores.

Sales Increase Looked for by U.S. Nitrogen Producers

Nitrogen fertiliser producers in the U.S. look for an increase in sales this season of between 5 and 10%. Last year consumption accounted for 2.76 million tons of nitrogen. Shortly a new 60,000 tons/year ammonia expansion scheme will come into operation at the Woodstock, Tenn, facilities of W. R. Grace.

Other producers reporting increased facilities are Texaco, who are raising anhydrous ammonia capacity from 180 to 220 tons/day at Lockport, Ill, and Solar Nitrogen Chemical (owned by Atals Powder and Standard Oil of Ohio) who came on stream at the end of 1960 with a 25,000 tons/year ammonia plant at Lima, Ohio.

New Phthalic Anhydride Plant for Colombia

Grace Chemical Co. are to start construction soon on a plant near Bogota to produce phthalic anhydride and plasticisers. Naphthalene, creosote and pitch, which are now manufactured at the company's Carboquimica plant, will also be produced.

New Company to Make Ammonia, Acids and Fertilisers

A new company, the Aruba Chemical Industries N.V., has been established in the island of Aruba (Netherlands Antilles) to build and operate six plants for the manufacture of ammonia, sulphuric acid, phosphoric acid, nitric acid, urea and mixed fertilisers. The project, financed by Dutch, U.S., Italian and German local capital, will cost 50 million Antillean guilders.

Construction will begin in the middle of the year and is expected to be completed in about three years. The port of

Oranjestad will be enlarged, an entirely new port built on the south coast of the island, and the water works and electricity utilities will be extended. These developments will cost an additional 33.5 million guilders.

Good Outlet for Polyformaldehydes in Cars

According to the supervisor of materials development of Ford Motor's research and engineering department, the outlet for polyformaldehydes in the car industry is very encouraging. The main reason why Ford's are considering the use of polyformaldehyde resins for large plastics applications is the recent decrease in price of Du Pont's Delrin resin.

New Partial Oxidation Process for Acetylene

In a new modified partial oxidation process for the production of acetylene, natural gas and oxygen are cold-mixed instead of being heated separately before mixing. The cold gas mixture is then heated to produce acetylene. This modification is said to allow the mixture to be heated to higher temperatures than was possible when the gases were heated separately before mixing.

Hydrocarbon Research Inc., Trenton, N.J., state that the cold mix gives 15% more acetylene per cubic foot of natural gas and a 15 to 20% decrease in oxygen needs. The process is being offered for licensing and commercial application.

Shell Plan Australia's Third Lube-oil Refinery

A £A6 million plant for the production of lube-oils is to be set up in Australia by Shell at their Geelong refinery. Due on stream by 1964, the new plant will have an initial capacity of 80,000 tons of lube-oil components.

Caltex, Ampol and H. C. Sleight have announced a joint venture to set up a lube-oil refinery at Kernell, N.S.W., at a cost of between £A11 million and £A13 million; this is designed to cater for all Australian demand. British Petroleum have also announced plans for a lube-oil refinery with a capacity of 100,000 tons/year; cost will be between £A8 million and £A10 million. Currently Australia meets the need for lubricating oils by imports.

Two U.S. Firms to Develop Catalyst for Exhaust Gases

Two U.S. companies—Ethyl Corporation and Catalysts and Chemicals Inc., Lousville, have agreed to work together on the development of a catalyst for use in catalytic converters for car exhaust gas.

Pemex May Curtail Expansion Plans

Petroleos Mexicanos, the Mexican state petroleum company, are reported to have been ordered to cutback on their expansion plans this year. Some planned petrochemical projects are thought to have been curtailed, although Pemex contend that the slow-down affects only certain small and unimportant projects.

Chemical Week (4 March, p. 23), however, reports that construction plans have been suspended for a refinery at Ciudad Madero, where a number of petrochemical plants were to have been built and that an ammonia plant at Minatitlan and other petrochemical projects at Mexico City, Salamanca, La Venta and Poxa Rica have been held up.

Recently, British Oil Equipment Credits granted a further £3.5 million credit in respect of work on the Pemex plants.

Extending Life of Commercial Silicone Oils

According to a U.S. Navy study on the stabilisation of silicone oils at temperatures between 250° and 371°C, the useful life of commercial silicone oils can be extended from three to five times by the use of oxidation inhibitors effective in other systems. A research report of this study is available from the Office of Technical Services, Business and Defense Services Administration, U.S. Department of Commerce, Washington 25, D.C.

U.S.-German Petrochemical Project for Hamburg

Plans to construct a multi-million-dollar petrochemical plant near Hamburg, and to form a German-based firm to produce and sell the plant's alfol line of industrial alcohols have been announced by Continental Oil Co., Houston, and Deutsche Erdol AG, Hamburg.

Rohm and Haas to Build Plant in Canada

Rohm and Haas, North America's fifth largest chemical and pharmaceutical company, will build a plant at Morrisburg, about 80 miles west of Montreal. Construction on a 210-acre site is scheduled to begin later this year or early in 1962.

Rubber and Plastics May Be Stronger in Outer Space—U.S. Report

RUBBER and plastics sent into space as films, foams, and coatings for solar collectors, and other expandable space structures, may actually become stronger than on earth when exposed to environmental extremes that can weaken or destroy metal. This was reported at a recent Air Force conference at Dayton, Ohio (U.S.), in a paper evaluating the reaction of polymers (rubber and plastic) to extreme vacuum and ultra-violet radiation.

Dr. Carl E. Synder of the Goodyear Tire and Rubber Co.'s research division, Akron, Ohio, co-author of the paper with Mr. W. B. Cross of Goodyear Aircraft Corp., said that polymers had lower volatility than metals and therefore would not boil away as easily as metals under the influence of the near-complete vacuum of space. Also, those molecules that did boil away from polymers owing to vacuum were the molecular system's 'weak sisters' whose loss frequently left an enhanced polymer.

A further point made was that the tendency of many polymers to deteriorate under the influence of ultra-violet radiation can, paradoxically, prove beneficial. Gases such as oxygen tend to fuse to the ends of molecular chains broken by ultra-violet bombardment, thus making the break permanent. But oxygen exists only in small quantity in space, so even if the molecular chains break, they can re-combine to form a strong, and sometimes even stronger, polymer structure.

Of the commercial rubbers, butyl rubber presently appears to be an outstanding candidate for space use. Second in desirable properties is neoprene rubber, it was stated. In plastics, laboratory tests approximating actual space conditions show polyethylene terephthalate and polypropylene as outstanding candidates.

Dr. Synder steadies an experimental solar condenser as it slowly inflates. The melon shaped plastic balloon, its lower half coated with a film of aluminium, is designed to be inflated in space, where the two halves will separate, leaving the aluminised section to collect solar energy to run delicate satellite machinery

Exchange of Professors Between U.K. and U.S.S.R.

UNDER arrangements made between the British Council and the Ministry of Higher Education of the U.S.S.R., 10 British university professors will lecture at Soviet universities during the next two months. Among them are Dr. R. Markham, F.R.S., Ph.D., director, Virus Research Unit, Agricultural Research Council who will lecture on chemistry and Dr. W. A. Waters, F.R.S., Balliol College, University of Oxford, on organic chemistry.

This is part of the second exchange of British and Soviet professors to lecture, and to establish contacts with scholars. A number of Soviet professors will be visiting British universities during the same period. The subjects and professors are chosen by mutual agreement between the universities concerned.

Middle East Trade Group Formed

THE Middle East Association has been set up as a limited company without share capital by 50 leading banks, chemical and other industrial companies to promote closer trade relationships between representatives of Middle East countries and the U.K. The immediate aim is to set up a centre for Middle East trade visitors in London. Joint sales promotion of British exports is not planned immediately although it is hoped that it will come in due course.

Members of the association include: British Petroleum Co. Ltd., Constructors John Brown Ltd., Courtaulds Ltd., Distillers Company Ltd., Dunlop Rubber Co. Ltd., Glaxo-Allenburys (Export) Ltd., Imperial Chemical Industries Ltd., Industrial and Process Engineering Consultants (Great Britain), Matthew Hall and Co. Ltd., Newman Hender and Co. Ltd., Shell International Petroleum Co. Ltd., Unilever Ltd., Vickers Ltd., and George Wimpey and Co. Ltd.

Chairman of the new group is Sir Neville Gass and the secretary is Mr. R. H. Arnold (British Petroleum). Mr. R. M. Wynne-Edwards, a C.J.B. managing director is vice-chairman.

More O.C.C.A Exhibition Visitors

A further increase in the number of visitors, particularly from overseas, is reported by the Oil and Colour Chemists' Association following the Association's 13th Technical Exhibition held in London 6-9 March. Turnstile figures show that at least 9,000 people visited the exhibition and representatives from 23 overseas countries signed the visitors' book.

Resistivity of Sodium Chloride

The U.K. Atomic Energy Authority has published tables of resistivity of aqueous chloride solutions. The specific resistivities are given in terms of weight percentage. The unclassified report (AERE-R 3497) is obtainable from the Chemical Engineering Division, A.E.R.E., Harwell.

Microfractor, New Battelle Research Tool Will Help Separate Difficult Materials

A NEW research tool which is expected to be particularly useful for separating materials of very close molecular weight, has been developed by the Battelle Memorial Institute (*Chem. and Engng. News*, Vol. 39, No. 10).

This high vacuum distillation apparatus, called a microfractor, will resolve mixtures of materials that are otherwise difficult or impossible to separate such as alkaloids or steroids. To date it has been used to separate mixtures of dyes with molecular weights of 280, 300 and 261 into red and blue fractions of about 85% purity and a yellow fraction of 100% purity; a synthetic alkaloid mixture of cinchonine (294) and papaverine (339), has been separated into fractions of at least 90% purity; and purities of 80% are achieved in the separation of the sterols, stigmasterol and β-sistosterol, which differ only in that the former has a *trans* double bond in the hydrocarbon side chain. The microfractor is being used initially in pharmaceutical study sponsored by Abbott Laboratories.

The unit consists of a stainless steel U-band with a similar transverse band running between the legs of the U. By means of heating and cooling platens, evaporation and condensation take place where the bands cross. The material to be separated is placed along the length of the transverse band where, as the band travels round the rollers, the material passes over the heater. The heater filaments, adjusted to the correct temperature for a given material, are set on the skew so that the lighter components of the mixture vaporise first, followed by the heavier components.

A cooling platen is located on the underside of the U-band directly over the spot where the vapour is coming off the transverse band, hence the vapour condenses. The U-band carries the material now partially separated around the upper leg and down the lower leg.

After passing another series of heaters and coolers the material condenses back onto the transverse band ready to go through the whole operation again. Each time the process is repeated the material separates more and more.

The microfractor has several advantages over conventional distillation of high molecular weight materials. Each fraction of the material joins like material and does not dilute the richer distillate as is usually the case. Also with a conventional distillation process, condensers, liquid pumps and pipelines must be kept hot so that solid constituents will not block the transfer lines. The microfractor does not present this thermal hazard, and will separate many materials that would degrade or decompose during distillation.

Production of Silicon by Low-temperature Irradiation of Silane

RADIOISOTOPES and their applications in industrial processes are featured in the U.S. atomic energy programme, according to the U.S. Government Printing Office publication 'Major activities in the atomic energy programs'.

The Atomic Energy Commission's programme for applications of radiation sponsors research and development directed towards using massive quantities—millions of curies—of radiation energy in industrial processes. Evaluations made on the current state of the technology and research and development requirements for using radiation show that there are certain needs. These include: a better understanding of the mechanisms by which radiation interacts with molecules and the excited species thus produced; a further study of the means of increasing yields of desired products by changing experimental variables such as temperature, pressure, etc.; and the need to reduce the costs of radiation.

Radioisotope tracer techniques are being investigated as methods of using variables in an industrial process to control or regulate the process. A laboratory set-up of a nickel refining process has been built to determine the feasibility of controlling iron removal from the process flows by measuring changes in activity of incorporated radioactive iron 59 and automatically adjusting chemical, temperature and other parameters.

Further investigations into the use of radioisotopes in drug and food research have shown that radioisotopes offer a useful technique for measuring small quantities of medicaments in complex mixtures. The Commission is continuing developmental studies on using radioisotope techniques to detect in foods the residues of agricultural chemicals, of detergents used in washing fresh vegetables, and of toxic derivatives of wrapping materials.

A representative study in process research has demonstrated that silicon of a semi-conductor grade could be produced by irradiation of silane at temperatures well below that now necessary in thermal production techniques; this has established the possibility of future development by private industry of a radiation process for the product. Success was also achieved in adding acrylonitrile to cotton by radiation techniques, in proving its resistance to attacks by micro-organisms.

Bookshelf

OUTSTANDING BOOK ON ORGANOMETALLIC CHEMISTRY

ORGANOMETALLIC CHEMISTRY. Edited by *H. H. Zeiss.* Rheinhold, New York; Chapman and Hall. Pp. xiv + 549, 140s.

The growth of interest in organometallic compounds has been one of the few outstanding developments in chemistry in the last ten years. Dr. Zeiss has been notably successful in persuading many of the chemists most intimately concerned with the development to contribute chapters to this book. Thus Ziegler writes on organoaluminium compounds (76 pages), H.C. Brown on organo-boranes (44 pages), Stone and Kaesz on vinylmetallics (62 pages), Pauson on cyclopentadienyl metal compounds (34 pages) and again with Chatt and Venanzi on metal carbonyls (61 pages), Coates and Glockling on transition metal alkyls and aryls (42 pages) and, rather less obviously to the point but very interestingly, Huisgen writes on benzene (52 pages). Gilman has long been the prophet of organometallics and it is a pleasure to see that his advocacy is recognised by the editor who has asked him with Winkler to write on organosilylmetallics (76 pages). Richardson (36 pages) has made a brave attempt at the almost impossible task of giving a brief description of metal-carbon bonding. Each chapter contains full references to the literature.

Altogether this is an outstanding book which will be an essential purchase for all libraries. The publishers claim that this is the first major work in organometallic chemistry in over a decade. This is untrue; Coates' excellent book on organometallics, which is incidentally far better value for money, was noticed a few weeks ago in these columns.

Polarography

ADVANCES IN POLAROGRAPHY. Edited by *I. S. Longmuir.* Pergamon Press, Oxford, 1960. Three Vols: xvi + 407, xi + 408-803, ix + 804-1204. 300s.

These volumes record the proceedings of the Second International Congress on Polarography held at Cambridge (England) in 1959. Many chemists have been somewhat overwhelmed by the massive tomes that record the Combustion Symposia. They are appropriately dedicated to Heyrovsky who gave an inaugural lecture on oscillographic polarography. This is the first printed paper and has no references. It is followed by reprints of (apparently) four plenary lectures, only two of which are listed as such, given by Delahay, Irving, V. Stackelberg, and Kemula. They are largely devoted to the lecturers own work except for that of Irving who lists none of his own references.

The volumes contain over 100 papers. Not surprisingly every facet of polarography appears to be covered under the headings: instrumentation, theory and kinetics, analytical and industrial applications, fundamental studies, biological and medical applications. It is difficult to identify any particularly significant trend in the field from this collection.

The discussion yielded few long or exciting contributions. Accordingly all we have here is a collection of papers on polarography. It will be useful to the expert in the field but little use as an introduction to the outsider. The editor has supplied an author index to the references cited.

Electrode Processes

ELECTRODE PROCESSES. Discussions of the Faraday Society, No. 1, 1947, Reprint. Butterworths, London, 1961. Pp. 338. 60s.

In response to many requests, Butterworths have prepared fresh supplies of this Discussion which has been out of print for some time. Like many others of this series, the experimental procedures and theoretical treatments presented by specialists from many countries have provided stimulating and authoritative accounts of important topics both for academic instruction and for research workers of all kinds.

The 40 papers which make up this particular volume were classified under five headings each of which is appended by extensive discussions. They are as follows. I (General and Theoretical); this includes discourses on e.g. the kinetics of rapid electrode reactions, electrode behaviour in A.C. fields and concentration polarisation. II (Hydrogen overvoltage) in which the mechanism and theory are considered, with reports on studies with platinum and palladium electrodes. III (Deposition of metals) which deals with cathode crystal growth, the influence of electrode size, nickel overvoltage and polarisation effects, and also mercury cathodic reactions. IV (Oxygen overvoltage). V (General anodic processes and cell reactions) is a mixed bag which includes anodic oxidation, electrode kinetics on iron, A.C. studies, silver anodes, zinc-lead dioxide cell discharge, potentials of ion-exchangers, etc.

Since this is a reprint of work done 23 years ago it is inevitable that a part of it is now out-moded. On the other hand this is such a large and difficult subject that it must remain one of the most important sources of information for many more years yet. All academic and technical chemistry departments should have this work in their libraries and the same is true of industrial concerns that make use of electrolytic processes.

Sewage Treatment

SEWAGE TREATMENT. By *R. L. Bolton* and *L. Klein.* Butterworths, London, 1961. Pp. 161. 30s.

This is a short textbook on the treatment of sewage which succeeds in giving an overall picture of the problems of dealing with the water-borne waste of men living in large communities. After an account of the nature of sewage and its analysis, its collection and the effect of storm water on the sewage system are considered. The treatment of sewage is covered under the headings; preliminary treatment, primary sedimentation aerobic biological treatment, improving effluents and the disposal of sludge. The special problems caused by trade wastes are considered separately and the book is concluded by short chapters on small sewage treatment plants and trends in treatment. There are, a list of 88 references, some suggestions for further reading and a rather short index.

The book could be useful to many concerned with sewage treatment, or provide an introduction to the subject for students who might make a career in what is now a large industry.

Microbiological Materials

MICRO-ORGANISMS AS ALLIES. By *C. L. Duddington.* Faber and Faber, London, 1961. Pp. 256. 25s.

After a chapter on the 'livestock of industry' which includes some historical facts, the book is divided into sections. 120 pages are devoted to the importance of yeast to the brewer, wine-maker, distiller and baker, and 45 pages on moulds are mainly concerned with antibiotics but cover the production of some acids, vitamin B_{12}, the modification of steroids and preparations of enzymes such as 'taka-diastase'. The 45 pages on bacteria start with a short account of their nature and characteristics followed by their use in the production of chemicals (e.g. acetone, butanol, acetic acid and dextrans) and the preservation of foods (e.g. cheese, silage), and the production of flax and tobacco. The section is concluded by a discussion of nitrogen fixation.

The book, which is concluded by a few pages on future possibilities such as the use of lichens and the recovery of sulphur, is entertaining and should achieve its objective of bringing to the notice of lay readers a field which they do not meet often in such an understandable form. Many technicians could obtain a useful background from it. The diagrams and illustrations are clear and not excessive.

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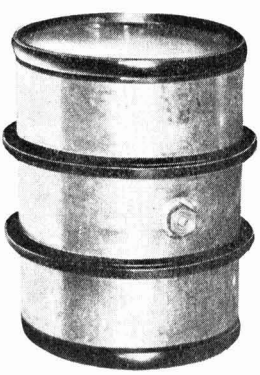

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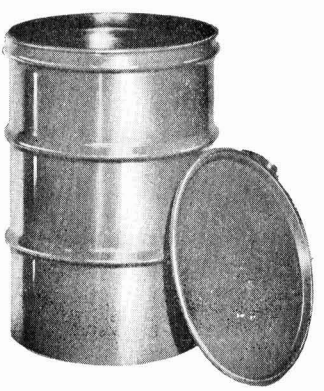

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PEOPLE in the news

● **Mr. C. Whalley, B.Sc., F.R.I.C.,** chief analyst of Laporte Chemicals Ltd., Luton, Beds, was elected chairman of the Microchemistry Group, Society for Analytical Chemistry, in succession to **Mr. F. Holmes, B.Sc., A.R.I.C.,** chemistry lecturer at the University College of Wales, Bangor, at the recent annual meeting. **Miss M. Corner, B.Sc., F.R.I.C.,** microanalyst (Principal Scientific Officer) at the National Chemical Laboratory, Teddington, was elected vice-chairman. Hon. secretary is **Mr. D. W. Wilson** of Sir John Cass College, Jewry Street, London E.C.3, and **Mr. G. Ingham, A.R.I.C.,** chief microanalyst at the Courtaulds' research laboratory, Maidenhead, was re-elected hon. treasurer.

● **Mr. T. B. Clark,** commercial director of I.C.I. Heavy Organic Chemicals Division since 1958, and a visiting director of Dyestuffs Division, has been appointed joint managing director of H.O.C. Division, to succeed **Mr. D. M.**

T. B. Clark

A. D. McLean

Bell, chairman of I.C.I.'s new European Council. Mr. Clark joined I.C.I. in 1934 as a Billingham Division research chemist; before joining the H.O.C. board he was organic sales control manager at Billingham. **Mr. A. D. McLean,** commercial and home sales director, Nobel Division, who succeeds Mr. Clark as H.O.C. commercial director, also started his I.C.I. career in the Billingham research department. He joined Nobel Division board in 1955.

● **Dr. K. Wade** has been appointed lecturer in chemistry at Durham University from 1 October.

● **Mr. I. V. L. Fergusson,** chairman and managing director of Evans Medical Ltd., Liverpool, has been appointed a director of Glaxo Laboratories Ltd., Greenford. Glaxo recently made a successful bid for the share capital of Evans Medical.

● **Dr. M. C. L. Cox** has been appointed director of public relations to all companies within the Pfizer Group, from 4 April 1961. He has been with the company for about two years.

● **Mr. D. C. M. Salt** has been appointed a member of the board of Monsanto Chemicals Ltd. He joined Monsanto in 1935, and has wide experience and knowledge of the company's sales activities. He has been director of sales since 1959. He was appointed general manager of sales in 1956, and was also alternate director to the late Mr. J. W. Urban.

● Following the death of Sir Thomas D. Nicol, K.B.E., **Mr. Geo. H. Duncan** has been appointed chairman of Tennants Consolidated Ltd., 69 Grosvenor Street, London W.1, and **Dr. W. B. Alexander** and **Mr. K. A. Alexander** have been appointed directors. The recent death of Sir Thomas has also led to the appointment of **Mr. R. A. Walpole** as chairman of Chemical and Petroleum Investments Ltd.

● **Mr. H. H. Woolveridge, B.Sc.,** a director of the Distillers Co. Ltd. and chairman of British Resin Products Ltd., has been appointed a director of the British Xylonite Co. Ltd.

● **Mr. Bernard J. Nicholson,** joint vice-chairman with **Mrs. Vera Lilley** of Berger Jenson and Nicholson Group, has been appointed the first president. He remains a member of the board. **Mr. R. Ashley Hall,** a director, becomes joint vice-chairman. **Mr. Stanley G. Barnett,** a director, has been appointed deputy to the joint managing directors, **Mr. W. J. Vines** and **Mr. J. Nicholson.**

● **Mr. S. W. Buglass,** youth supervisor of I.C.I., has been appointed to serve on the new Central Advisory Council for Education in England. This council will consider the education between the ages of 13 and 16 of pupils of average or less than average ability, who will be following full-time courses. Chairman of the council is **Lord Amory,** former Chancellor of the Exchequer and a director of I.C.I.

● **Sir John Carmichael, K.B.E.,** has been appointed to the board of Fisons Ltd. Sir John, who is 50, was under-secretary to the Sudan Ministry of Finance and Economics from 1954 when the State became self-governing. From 1956-59 he was financial and economic adviser to the Sudan Government. He was a member of the U.K. delegation to the general assembly of the United Nations in 1959. In March 1960 he was appointed chairman of Fisons Pest Control's Sudan subsidiary company, and later in that year he became a director of Fisons Pest Control Ltd. in the U.K. He is a member of the Scottish Gas Board.

● Cyanamid of Great Britain Ltd. have appointed two product managers, **Mr. N. L. Good** and **Mr. W. S. Buck** who will direct sales in the general field of Cyanamid products for the paint, plastics and paper industries. The appointment follows the development of manufacturing facilities in the U.K. and general expansion of Cyanamid's operations.

Mr. F. G. Pentecost, Abrac Chairman, to Retire After 57 Years' Service

AFTER 57 years' service, **Mr. F. G. Pentecost** will be retiring from the chairmanship of A. Boake Roberts and Co. (Holding) Ltd. and the main subsidiary, A. Boake Roberts and Co. Ltd., on 31 March. He will retain his directorship of Albright and Wilson. Mr. Pentecost joined Abrac in 1904 and his outstanding ability was recognised in 1926 when he joined the board, becoming managing director in 1943 and chairman in 1952.

His broad experience and wise leadership have made a major contribution to the development of the company and Abrac's successful entry into fine chemicals and plasticisers was in fact due to his efforts. He also played a leading part in expanding export trade, particularly during his world-wide travels after the first world war. Mr. Pentecost has served on the council of the Association of British Chemical Manufacturers, and until recently was chairman of the British Essence Manufacturers' Association.

F. G. Pentecost

He will be succeeded as chairman of A. Boake Roberts and Co. (Holding) and the main subsidiary on 1 April by **Mr. Bertram White, B.Sc. (Lon.), F.R.I.C.,** who will continue as managing director of both companies. Mr. White was technical director of the Federation of British Industries from 1946 to 1953. **Mr. W. E. K. Piercy, B.Sc.,** director of Albright and Wilson, has been appointed a director of the two Abrac companies from 1 April.

Commercial News

- 'Temporary Setbacks' in Aspro Results
- Bids for Bush, Howards Now Unconditional
- Berk Trade 'Well Maintained' in 1961
- Big Jump in C.P.A. Terylene Royalties

Allied Colloids

Particulars of Allied Colloids (Manufacturing) Co. Ltd. necessary for the marketing of the 2s ordinary shares on the London Stock Exchange are now available, and Federated Securities have agreed to buy 780,000 of the ordinary shares at 5s 9½d.

Allied Colloids are distributors in the U.K. of a range of dyestuffs and auxiliary and specialised chemical products for Badische Anilin-und Soda-Fabrik, Germany, and also manufacture chemical auxiliary products for the textile, leather and general industries at their Low Moor, Bradford, factory. In the last 10 years the company's profits have more than doubled, reaching a figure of £138,905 for 1959-60. The board anticipate that this will be exceeded in 1960-61 and that the dividend will be 17½%.

Aspro-Nicholas

For the year ending 31 March next, trading results of Aspro-Nicholas Ltd. have fallen below expectations in the ethical and veterinary fields, state the directors. There has also been a rise in spending involved in preparing the ground for full integration of the Aspro-Nicholas and Griffiths Hughes businesses.

This dip in profits is felt to be temporary and the directors consider they are justified in declaring a third quarterly interim dividend of 3½%, the same as for the first two quarters. In the absence of future adverse circumstances the final will be 3½%, making 14%, as forecast (equivalent to 13·6%).

Two overseas companies have been acquired, the French subsidiaries having purchased the business of Laboratoires Vitapointe S.A. throughout the world excluding the U.K. and Commonwealth, for about £415,000. In the U.S. Nicholas International have acquired a small veterinary company to supplement the range now marketed by Nicholas Glidden Laboratories Inc., for about £30,000.

W. J. Bush

Albright and Wilson's offer for the whole of the issued share capital of W. J. Bush and Co., Ltd. has been accepted by the holders of more than 92% of each class of shares, and is now unconditional. The Stock Exchange has granted quotation for the new shares of Albright and Wilson which will be issued as a result of the Offer.

F. W. Berk and Co.

Pre-tax group profits of F. W. Berk and Co. Ltd. for 1960 were about £679,000 (£524,583). Business for the first two months of 1961 was well maintained, says Mr. C. H. Tanner, chairman. Berk have now entered into a conditional agreement to acquire from Alluvial and General Industries (London) Ltd. all the 1,076,000 5s. ordinary shares of St. Albans Sand and Gravel Co. Ltd. Alluvial will be allotted 1 million 5s. ordinary shares in Berk; Berk capital is to be raised to £2.25 million. It is proposed that Mr. Tanner and Mr. B. E. Mileham should join the St. Alban's board.

Calico Printers

Calico Printers' Association are paying an interim of 7½% on ordinary capital doubled by a scrip issue, for the year ending 30 June 1961. Revenue from Terylene and other royalties during the six months ended 31 December 1960, before tax, amounted to £1,102,000, an increase of £181,000 over the preceding six months, and comparable with the total of £1,686,000 for the year ended 30 June, 1960. Most of the additional revenue is attributed to increased sales of polyester fibres manufactured abroad by sub-licensees, with a material contribution from the increase in sales of Terylene by I.C.I. About 70% of the half-year revenue came from foreign patents.

CIBA United Kingdom

A new private company with capital of £3 million in £1 shares has been registered under the title CIBA United Kingdom Ltd. to act as parent company of the British CIBA companies. The new company which will have its registered office at 96 Piccadilly, London W.1, will acquire not less than 90% of the issued share capital of CIBA Laboratories Ltd., CIBA (A.R.L.) Ltd. and CIBA Clayton Ltd. and the whole or any part of the issued shares of the Clayton Aniline Co. Ltd.

Howards and Sons

The offer of Laporte Industries Ltd. for the capital of Howards and Sons Ltd., Ilford, has been accepted in respect of more than 90% of both ordinary and preference shares and has become unconditional. Acceptances will be received until further notice. Share certificates for the Laporte shares and cheques in respect of the cash portion of the offer will be posted not later than 24 March. (The offer was reported in CHEMICAL AGE, 4 February, p. 206).

Scottish Tar Distillers

Interim dividend of 2½% (same) is declared by Scottish Tar Distillers Ltd. for year ending 30 June 1961. Profit for six months ended 31 December 1960 was £46,780 (£35,870), after provisional tax of £61,218 (£40,557).

United States Borax

The half-year earnings of United States Borax and Chemical, U.S., operating company of Borax (Holdings), are expected to be below the £3.3 million, or 71 cents a share, level of the half-year ended 31 March last. Net income for the quarter to 31 December 1960 was $1.1 million, or 23 cents ($1.5 million, or 31 cents). Sales for the current six months ending 31 March 1961 should be about the same as the $32.6 million for the first half of 1959-60.

Kaiser Aluminium

Kaiser Aluminium and Chemical Corporation, U.S., recorded for 1960 a net profit of $22,770,000 or $1.20 a share ($22,330,000, or $1.17 a share). Sales, however, fell over the year from $435,600,000 to $406,600,000, while tax totalled $9,700,000 ($14,500,000).

Montecatini

Dividend for 1960 is unchanged at Lire 115, state Montecatini; a pro-rata dividend of Lire 28.75 will be paid on shares issued with rights on 1 October. To finance developments in Italy and abroad, a debenture loan of Lire 50,000 million will be issued at 5½%.

NEW COMPANIES

BREFCON (BRAZIL) LTD. Cap. £100. To acquire and deal in plant and machinery for use in the oil and petrochemical industries of Brazil, etc. Subscribers: R. M. A. Braine, 49 Cadogan Place, London S.W.1 (general manager); B. Wilkins (shipping manager). Babcock and Wilcox Ltd. Associated Electrical Industries Ltd., John Thompson Ltd., and Stewarts and Lloyds Ltd., shall each be entitled to appoint and remove one director. Secretary: R. M. A. Braine.

HUMPHREYS AND GLASGOW (OVERSEAS) LTD. Cap. £5,000. To enter into an agreement with Humphreys and Glasgow Ltd., to carry out in India (as a principal party) services works and operations relating to constructions for Atul Products Ltd., etc. Directors: A. C. Congreve, G. G. Farthing, G. V. C. Davies and R. Langford.

MOND NICKEL COMPANY LTD. Cap. £100. Director: International Nickel Company (Mond) Ltd. Reg. office: Thames House, Millbank, London S.W.1.

QUADRALENE CHEMICAL PRODUCTS LTD. Cap. £100. Directors: F. V. Smith-Neal, H. Walker, J. B. Walker, J. Walker, H. J. Smith-Neal and N. W. Vale. Reg. office: 94 Liversage Street, Derby.

INCREASE OF CAPITAL

YORKSHIRE DYEWARE AND CHEMICAL CO. LTD., 24 Basinghall Street, Leeds. Increased by £500,000 beyond the registered capital of £800,000.

TRADE NOTES

New Laporte Bleach

A new product, Lapotex P.C., which simplifies hydrogen peroxide processes for bleaching cotton, has been developed by Laporte Chemicals Ltd.. Bleaching recipes based on hydrogen peroxide are usually made up of several separate additional ingredients, but Lapotex P.C. has been designed to replace all these additions while maintaining bleaching efficiency. A descriptive booklet can be obtained on request from Laporte Chemicals at P.O. Box 8, Luton, Beds.

Dryers and Gas Plant

Because of the relationship between atmosphere generators and adsorption drying equipment, furnace atmosphere gases being sometimes dried or otherwise purified by adsorption methods, AEI-Birlec Ltd. have co-ordinated the sales, design, research and service activities applicable to both gas generators and dryers.

Change of Address

New address of Croxton and Garry Ltd. is 27 St. James Road. Kingston-on-Thames. Surrey. Telephone number is unchanged at Kingston 9444.

Non-destructive Testing

A booklet reviewing the site methods of non-destructive testing provided by the company, including visual welding inspection, X-radiography, gamma radiography, penetrants, ultrasonic flaw detection and magnetic particle inspection, has been produced by Solus-Schall Ltd., County Building, Honeypot Lane, Stanmore, Middlesex.

Neoprene Accelerator

A data sheet on Robac 22 (ethylene thiourea), a standard accelerator for neoprene, is available from Robinson Bros. Ltd., Ryders Green, West Bromwich. The data sheet gives details on storage characteristics, vulcanising properties, and some suggested formulations.

New I.C.I. Pigment

A new greenish yellow lead chrome pigment, supra primrose chrome 6GS, has been developed by I.C.I. Dyestuffs Division. It is recommended for the economical pigmentation of industrial finishes in view of its good weathering resistance. Supra primrose chrome 6GS, is expected to find its main value for stoved transport finishes for lorries, etc., and in stoving fittings for petrol tankers.

Unikote Agent Appointed

The United Insulator Division of the Telegraph Condenser Co. Ltd., have appointed Celtic (Leicester) Distributors Ltd., 89 London Road, Leicester, as East Midlands agent for Unikote ceramic coatings.

Fungus Resistance to Vinyl Films

A new plasticiser, Flexol plasticiser PEP, produced by Union Carbide International Co., can make vinyl films fungus resistant it is claimed. The new compound, an epoxy plasticiser-stabiliser, is now commercially available. More detailed information can be obtained from Chemicals Department, Union Carbide International Co., Division of Union Carbide Corporation, 270 Park Avenue, New York, 17.

24-hour D.C.L. 'Phone Service

A new recording telephone answering system, enabling messages to be accepted outside normal working hours, has been installed by British Geon Ltd., British Resin Products Ltd. and Distrene Ltd., members of the Distillers Plastics Group, at their London offices. For this service, telephone Hyde Park 0151.

New Dow Selective Weedkiller Said to Be Safe

MECOPON, based on CMPP and silvex, is a new broad-leaved selective weedkiller to be marketed by Dow Agrochemicals Ltd., London and King's Lynn. Ministry approved, this product will not, it is claimed, sterilise the soil, it is non-poisonous, and is applied by low volume sprayer.

Because Mecopon controls such arable pests as charlock, fat hen, orache, corn-buttercup, docks, poppy, wild radish, annual nettle and creeping thistle, it is described as a safe alternative to the toxic chemicals that have been used for the control of these weeds. Notably it controls cleavers and chickweed which have formerly resisted some chemicals.

New Sturge Dessicant Overcomes Porosity in Natural and Synthetic Rubbers

POROSITY in vulcanised rubber has been a problem since the beginning of the rubber industry and is most acute when vulcanisation is carried out under conditions of low hydrostatic pressure. Porosity can be caused by moisture, trapped air or volatile substances given off during cure, but the Rubber and Plastics Research Association has shown that moisture is the primary cause in many cases.

With the development of the R.A.P.R.A. fluid bed method of heating rubber it became necessary to find an effective dessicant to eliminate porosity due to moisture. Several dessicants have been tried without a great deal of success. Calcium oxide, which absorbs 32% of its own weight of water, was the most effective but difficulties of dispersion in the dry state were experienced.

It was at this point that John and E. Sturge Ltd., Wheeleys Road, Birmingham, were asked by the association to investigate the problem and they produced in conjunction with the association a 3:1 dispersion of high grade calcium oxide in mineral oil designed both to overcome the dispersion problem and to avoid moisture uptake in storage.

The dessicant, known as Caloxol, is a thick, odourless paste which can be poured at room temperature. It is claimed to be non-scorching when used with a wide range of conventional accelerators and it can be incorporated without difficulty into rubber compounds. The addition of 3 to 8 parts of Caloxol per 100 parts of rubber or polymer is recommended.

One general purpose grade is available at present but it is expected that others will be developed, with different dispersing media, following customer evaluation. The compound is being manufactured by Sturge at their Lifford Chemical Works.

A technical bulletin summarising a series of tests showing the effect of adding Caloxol to natural and synthetic rubber is available.

Paint, Oil and Colour Year Book

The 1961 year book of the *Paint, Oil and Colour Journal* is available free of charge to subscribers. The volume comprises a guide to suppliers of raw materials used in surface coatings. It contains sections on chemicals, solvents, media, resins and pigments together with the names and addresses of manufacturers, suppliers, etc.

Market Reports

STRONG CALL FOR NAPHTHALENE, PYRIDINE

LONDON New business on home account continues on a satisfactory scale, and the movement of industrial chemicals against contracts covered good quantities. There has been a steady demand for the routine soda products and potash chemicals, while borax and boric acid, hydrogen peroxide and the barium compounds continue to attract attention.

The seasonal demand for fertilisers is now well under way, and the next few weeks should witness increased pressure for supplies. Naphthalene and pyridine are in strong request on a firm market.

SCOTLAND In many sections of the manufacturing trade demands for raw materials have been extremely brisk and the position overall adds up to a week of good steady business. The outlook, with a few exceptions, is good, and to the general chemical trade has been added an ever increasing seasonal demand from the agricultural industry. In exports the position has been somewhat easier but this by no means should be taken as an indication of any dropping off in interest in overseas trade.

NEW PATENTS

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

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

AMENDED SPECIFICATIONS

On Sale 19 April

Coating materials. Chromalloy Corporation. **810 051**

Polymerisation products from olefinically unsaturated hydrocarbons. Badische Anilin- & Soda-Fabrik AG. **810 228**

3:5:4¹-tribromosalicylanilide. Unilever Ltd. **840 366**

ACCEPTANCES

Open to public inspection 19 April

Preparation of mercaptans. Pennsalt Chemicals Corp. **865 850**

Removing organic solvents from polymer latices by evaporation. Esso Research & Engineering Co. **865 854**

Preparation of polymers of olefinic hydrocarbons having terminal ethylene unsaturation. Du Pont de Nemours & Co., E. I. [Addition to 776 326.] **865 743**

Chemical process and products. Bristol-Myers Co. **865 836**

Producing crystalline lactulose. Tervalon Maatschappij Voor Voedingsmiddelen Op Wetenschappelijke Basis N.V. [Divided out of 865 593.] **865 594**

Thermoplastic mixtures of copolymers. Farbenfabriken Bayer AG. [Addition to 837 704.] **865 374**

Apparatus for the continuous oxidation of normal butane in liquid phase. Chemische Werke Hüls AG. **865 747**

Organic phosphorus compounds and process for preparing same. American Cyanamid Co. **865 844**

Metallisable tetrakisazo dyestuffs. Farbenfabriken Bayer AG. **865 748**

Process for the manufacture of unsaturated ketones. Hoffmann-La Roche & Co. AG, F. **865 478, 865 479**

Spirophosphonium salts. American Cyanamid Co. **865 750**

Process for the preparation of a compound of the allopregnane series. Organon Laboratories Ltd. **865 751**

Phenothiazine derivatives and their preparation. National Drug Co. **865 752**

Preparation of organic halides. Continental Oil Co. **865 386**

Pyrazole compounds and the preparation thereof. Ciba Ltd. [Divided out of 865 708.] **865 709**

Process for the preparation of beta-ether-substituted propionaldehydes. Shell Internationalle Research Maatschappij N.V. **865 880**

Manufacture of halohydro-carbons. Imperial Chemical Industries Ltd. [Addition to 767 779.] **865 754**

Curing of polymers. General Mills Inc. **865 755**

5-Nitro-2-furyl compound. Pfizer & Co. Inc., C. **865 796**

Process for reactivating catalysts. Deutsche Akademie der Wissenschaften Zu Berlin. **865 490**

Isoprene polymerisation process. Shell Internationale Research Maatschappij N.V. **865 758**

Open to public inspection 26 April

Manufacture of plastics. T.I. (Group Services) Ltd. **866 069**

Deposition of particles from mists, smokes and aerosols. National Research Development Corporation. **866 256**

Process for treating the residual gases in the manufacture of titanium tetrachloride. Laporte Titanium Ltd. **866 002**

Production of combustible gases from hydrocarbons. Power-Gas Corporation Ltd. **866 161**

Process for the manufacture of modified cyclohexanone resins. Howards of Ilford Ltd. **866 219**

Lactone adducts. Union Carbide Corporation. **865 967**

Polyester compositions. Chemstrand Corporation. **866 220**

Composition and process for the cleaning of metal parts. Turco Products Inc. **865 914**

Organic molybdenum blue derivatives and mineral lubricating oils containing them. Alpha Molykote Corporation. **865 970**

Lactones of the steroid series and a process for their manufacture. Farbwerke Hoechst AG. **865 915**

Process for the production of 1, 8-dihydroxy-2, 6-octodiene and octomethylene glycol. Montecatini Soc. Generale Per L'Industria Mineraria E. Chimica. **865 916**

Preparation of alkyl ethers. Rohm & Haas Co. **866 116**

Processes of production of compounds with a cortisone-like action and products thereof. Vilax, J. E. **866 056**

Method of preparing octahydrophenanthrene carboxylic acids with estrogenic activity. Protiva, M., and Jilek, J. **865 972**

Manufacture of phenylquinuclidines. Ciba Ltd. **865 973**

Processes for the production of copolymers. Houilleres Du Bassin Du Nord Et Du Pas De Calais. **866 131**

Melamine resin colloid and manufacture of wet-strength paper therewith. American Cyanamid Co. **866 103**

Substituted oxazolidones. Union Carbide Corporation. **866 061**

Anthraquinone derivatives. Ciba Ltd. **866 062**

Anthraquinone dyestuffs and their use. Geigy, AG, J. R. **866 065**

Process for preparing salts of quaternary ammonium monoazo dyes. American Cyanamid Co. **866 087**

Method of dehydrating gypsum. Compton, C. E. **866 126**

Polyvinyl acetate powder and method of making same. Air Reduction Co. Inc. **866 038**

Process for the production of dichlorophosphoric acid esters. Deutsche Akademie Der Wissenschaften Zu Berlin. **866 067**

Process for the preparation of aromatic phosphinic acids. Imperial Chemical Industries Ltd. **866 042**

Process for the production of phosphoric acid esters. Deutsche Akademie Der Wissenschaften Zu Berlin. [Addition to 866 067.] **866 068**

Method for the manufacture of paraformaldehyde in a crape-chip form. Sumitomo Chemical Co. Ltd. **866 079**

Process for the production of chlorides from oxides. Stauffer Chemical Co. **865 939**

Rubber-like compositions. Imperial Chemical Industries Ltd. **866 294**

Process for the preparation of unsaturated carboxylic acids and their derivatives. Knapsack-Griesheim AG. [Addition to 792 572.] **866 181**

Process and plant for the decomposition of gas oils into hydrogen and carbon dioxide by water vapour. Ateliers Des Charmilles S.A. **866 085**

Tri-iodo-benzoic acid derivatives. Sterling Drug Inc. **866 184**

Process and apparatus for digesting bauxite. Aluminium Laboratories Ltd. **866 185**

Manufacture of phenyl-quinuclidines. Ciba Ltd. [Divided out of 865 973.] **865 974**

Process for the preparation of unsaturated nitriles. Knapsack-Griesheim AG. [Divided out of 866 181.] [Addition to 792 572.] **866 182**

DIARY DATES

MONDAY 20 MARCH

R.I.C.—London: Ewell County Tech. Coll., 6.30 p.m. 'The chemistry of fluorine', by Dr. R. W. Hazeldine.

S.C.I.—London: 14 Belgrave Sq. 2-day symposium, 'Fungicides in agriculture & horticulture'.

TUESDAY 21 MARCH

S.C.I.—Birmingham: Birmingham & Midland Instit., 6.30 p.m. 'Aldehyde polymers', by Dr. J. C. Bevington.

S.C.I.—Dublin: Trinity Coll. Chem. Dept., 5.30 p.m. 'Case histories from a petroleum product development & technical service laboratory', by H. Russell.

S.C.I. with R.I.C.—Cambridge: Tech. Res. Station, Spillers Ltd., Station Rd., Cambridge, 7.45 p.m. 'Platinum group metals', by E. C. Davies.

WEDNESDAY 23 MARCH

F.S.—London: Geol. Soc., Burlington House, W.1, 2.30 p.m. 'Developments in phosphoric acid manufacture', by W. C. Weber & F. W. Edwards.

Plast. Inst.—Glasgow: Kenilworth Hotel, 7.30 p.m. 'Pre-impregnated materials', by S. C. Maskell.

S.A.C.—Nottingham: Coll. of Tech., 7 p.m. 'The measurment of pH & electrode potential for analytical purposes', by Dr. G. Mattock.

S.C.I.—London: Queen Elizabeth Coll., W 8, 6.15 p.m. Converszione on microbiological apparatus & methods.

S.C.I.—London: Sir John Atkins Lab., Queen Elizabeth Coll., Campden Hill, W.8, 4 p.m. to 8 p.m. Microbiological demonstration meeting.

THURSDAY 24 MARCH

S.A.C.—Glasgow: Royal Coll. Sc. & Tech., George St., 7.15 p.m. 'Titration of weak acids in non-aqueous solvents', by G. R. Jamieson & 'High-frequency end-point detection in non-aqueous titrimetry', by Dr. E. S. Lane.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6.30 p.m. Fine chemicals conversazione.

S.C.I. with C.S. and R.I.C.—Manchester: Univ. Chem. Dept., 10.30 a.m. Symposium, 'Organic intermediates in 1960s'.

S.C.I. with R.I.C.—Newport: Coll. of Tech., 7 p.m. Domestic evening. Paper by Dr. E. M. Evans.

FRIDAY 25 MARCH

S.A.C.—Liverpool: City Labs., Mount Pleasant, 2.15 p.m. 'The analysis of intact samples'.

Quickfit Get Go-ahead for New Stone Factory

PERMISSION for a £500,000 factory for the manufacture of laboratory and industrial glassware at Stone, Staffs, has now been granted by the Ministry of Housing and Local Government. This is, for the Quickfit group of companies, a successful outcome of the public inquiry, held at Stone in December last year following local objections to the development of the 90-acre site.

The new factory and administrative unit, building of which will start immediately, will bring Quickfit and Quartz Ltd. and their associated firm, Q.V.F. Ltd., together for the first time in one unit covering 150,000 sq. ft.

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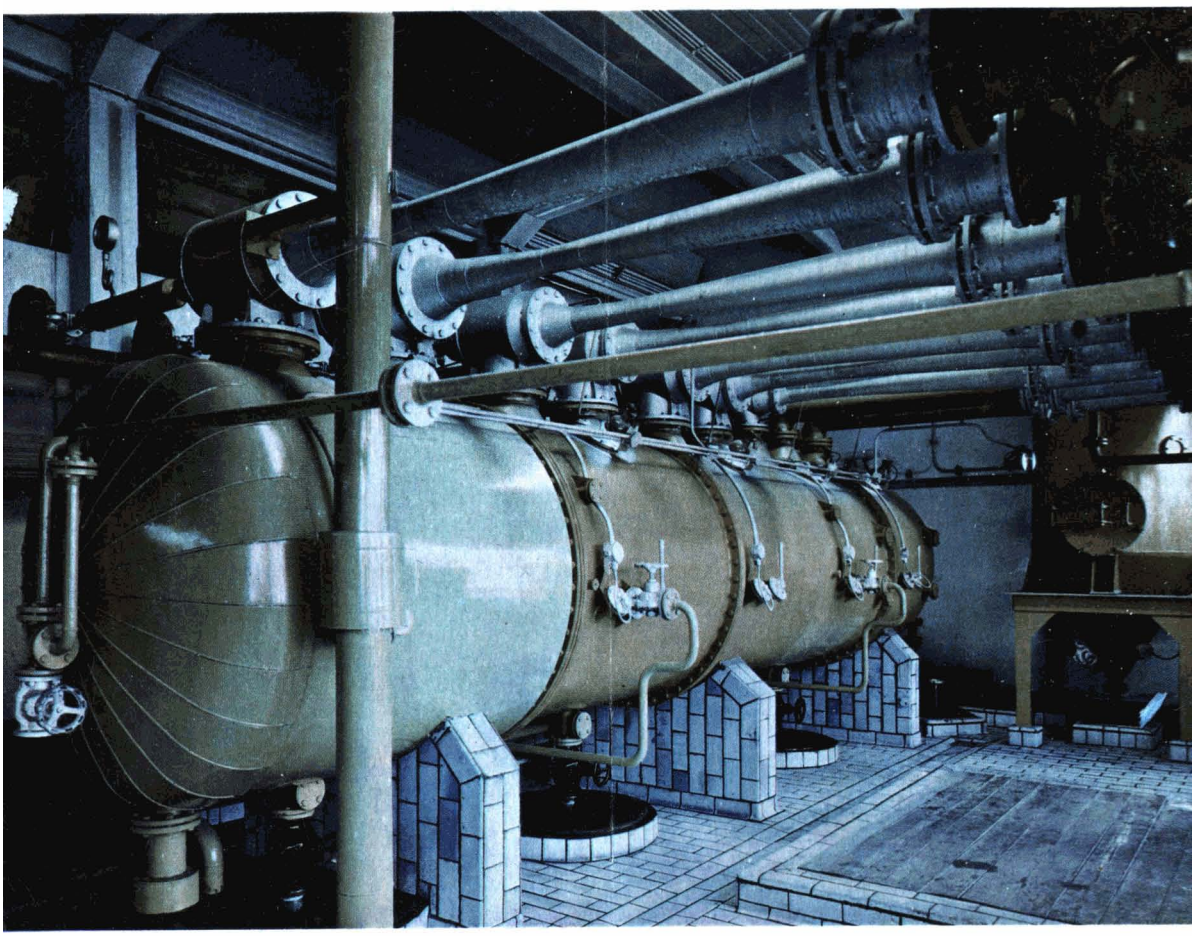

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