Chemical Age

VOL. 84 No. 2151

1 October 1960

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

Liverpool Meeting on Petroleum Catalysts (page 535)

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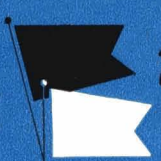

'Celanese' chemicals

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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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CHEMICAL AGE

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IN THIS ISSUE

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LEGISLATION FOR MEDICINES

IT seems that a 'witch-hunt' into medicines and drug manufacturing houses such as has taken place in the U.S., under Kefauver's investigating Senate Committee is unlikely to occur in the U.K. if legislation called for by the Pharmaceutical Society of Great Britain is effected. The society has submitted evidence to the Inter-Departmental Working Party on Legislation Concerning Medicines set up by the Ministry of Health, and in its report calls for legislation similar to that on poisons for dealing with medicines.

At the present time existing legislation in the U.K. is contained in a variety of Acts of Parliament, as a result of piecemeal approach to control. Many of the Acts were laid down when the state of medicine was very different from that of today, when new medicinal preparations are marketed every week by manufacturers without any prior reference to any legislative body or submission of a description of the formula.

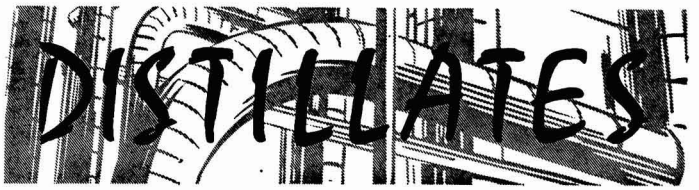
The society emphasises the weakness of the present legislation which "derives from the concept that, in general, medicines should be free from control and only particular medicines or classes of medicines require legal restrictions placed on them." This view the society considers is the opposite of the one which should be the basis of legislation. Instead of medicines being free from control as a general principle, to which exceptions—namely poisonous substances and drugs, including habit-forming drugs—may be made, they should be subject to control as a principle to which exceptions may be made.

All substances used for medicinal purposes are, by their nature, harmful if abused, so it is proper that there should be legislative control over medicines as a class.

The medical, dental, veterinary and pharmaceutical professions in the U.K. exert a considerable control on medicines. The new legislation if introduced, however, should provide for the control of medicines being separated from the control of other substances, e.g. food additives and should be vested in the Minister of Health, the Secretary of State for Scotland and the Ministry of Agriculture, Fisheries and Food.

The Pharmaceutical Society has expressed its concern for some years now regarding over-the-counter sales of drugs such as tranquillisers and new drugs which are not subjected to any control before general distribution. Early this year the Poisons Board took action on some 25 substances which included slimming drugs and tranquillisers.

With so many medicines and drugs coming on to the market, however, there is difficulty in deciding which drugs should be left out of the Poisons List. Pharmacists and medical practitioners in the U.K. would particularly welcome control of new drugs until these have been proved safe for general distribution although in all fairness, it must be stated that the pharmaceutical manufacturing houses do carry out extensive testing and lengthy clinical trials before marketing any new preparation. The new legislation called for by the society, however, will not cause undue concern to the U.K. drug manufacturers who have indicated that they would welcome restriction of sales of drugs and medicinals to doctors' prescriptions.



USE of the term 'Bikini factor' to ward off one awkward question at the S.C.I. symposium in Liverpool last week on catalysts in the petroleum and petrochemical industries might have puzzled some members. The explanation is simple. The 'Bikini factor' represents the ratio of the amount revealed to the amount concealed. On that basis a number of U.K. chemical companies are still in the era of Victorian swimming attire, although most are probably now in the one-piece stage.

Catalysis is still something of an 'art' as Mr. G. W. Bridger, co-author of a paper on catalysts for synthetic ammonia, engagingly admitted. It is progressing towards a more scientific base and Mr. Bridger said that with his 'know-how', the catalyst producer when looking for a catalyst for a particular process at least knew in which half of the periodic table to start his search. As Mr. E. W. Greensmith added, the age of alchemy is still with us.

That the conference was voted such a great success was partly due to the calibre of the papers and the fact that two local catalysts manufacturers both for the first time admitted large parties of visitors to their works. Credit must also be given to the local organisers, under Mr. J. H. Harwood.

EFFECT of non-cellulosic materials on the viscose process has been the subject of one phase of the Buckeye Cellulose Corporation viscose research project. It has been revealed that new knowledge obtained could lead to improvements in a wide variety of consumer products.

The new findings are concerned with the ripening stage of the process. Among the non-cellulosic materials studied are the by-products of xanthate formation and trace components normally present in the reagents used in the viscose process. It is claimed that greater knowledge of the effects of these materials could lead to improved products by permitting closer control over the viscose ripening, which affects the solution properties and coagulation characteristics of the viscose.

WHILE I.C.I., Britain's biggest chemical producers, have followed the general trend by announcing higher sales, income and dividend, they have bettered most with their excellent progress during the first half of 1960. Both profits and interim dividend are much higher than either the City or the chemical industry expected; so unfortunately is taxation, which shows the biggest rise of all, being up by 67%.

Undoubtedly the big increase in income —up nearly 50% before tax—was due to the fact that most plants in the first half of the year were operating close to full capacities, thereby cutting unit costs. This led to the most encouraging increase, the widening of profit margins from 19.9% in January-June 1959, to 21.9% in the second half of last year to 23.9% in the first half of this year.

The total value, declared and estimated, of all the projects listed for I.C.I. divisions in our special survey of U.K. chemical plant projects last week, gives I.C.I. a total far in excess of the figure of £40-£45 million quoted in the national Press last week. Despite their high rate of capital spending, I.C.I. are still able to redeem out of their own resources £20 million of 4% unsecured loan stock which matures in December.

THAT uneasy individual, the 'man in the street', whose suspicions of the 'chemicals' that go into modern, processed foods do not extend to the sodium chloride he sprinkles liberally on his meat, will find much to his comfort in the Pure Food and Drink Exhibition which was recently opened in London, as reported in CHEMICAL AGE last week. But science has further shocks in store for him—as, for instance food products from wood. For synthetic hamburgers made from torula yeast and enriched cellulose fodder for cows—both products of war-time Sweden—not to mention *aquavit*, Scandinavia's favourite drink, which is a product of sulphite liquor, offer convincing evidence that wood, through conversion to sugar, is an up-and-coming raw material for food manufacture, as well as for other necessities of modern life.

This mixture of bizarre experimentation and proven industrial production forms part of the background of the forthcoming second meeting of the F.A.O. working party on wood hydrolysis, which is being held in Tokyo this month (further details, p. 540). From preliminary news I have had of the papers I anticipate some exciting revelations about developments that have taken place in the conversion of wood into sugar.

HEADACHES being the most common of our afflictions in this modern life, the world owes a special debt of gratitude to George R. Nicholas, the creator of Aspro, whose death was reported in CHEMICAL AGE last week (p. 487). By his pioneering work in the synthesis of acetyl-salicylic acid he probably bestowed a greater gift on humanity than he could have done by achieving his early ambition of becoming a doctor.

The son of a Cornish tin miner who emigrated to Australia, he could not afford the expense of a medical training, but compromised by opening a chemist's shop in a Melbourne suburb. It was during the first world war, when there was a desperate shortage of drugs in Australia, that George Nicholas became the first chemist to synthesise acetyl-salicylic acid—a discovery which was so important that, at the public analysis of his sample of acid in 1915, the Commonwealth Prime Minister attended in person.

After the war George Nicholas, who was awarded a C.B.E., launched Aspro and with his brother Alfred founded the world-wide Aspro-Nicholas organisation.

AUTOMATION of a welcome kind has been introduced to the dispatch section of the Chemical Division of the Distillers Company. The loading of drums of industrial solvent has up to now been carried out on a platform at lorry level. This involved the manhandling of drums from the stack onto the deck and then to the lorry to form the first layer. Subsequent layers were loaded by crane.

It is reported in the bulletin of the British Productivity Council that specially adapted fork-lift trucks are now being used. The truck lift has four prongs in parallel which allow them to be used in the roughly triangular spaces formed between the horizontally stacked drums.

Having picked up three drums from the stack with the prongs, the driver manœuvres his truck to the lorry. The drums are lowered to the loading surface and the prongs partially withdrawn. The prongs are then raised, tilting the drums into a vertical position. The second layer of drums are loaded horizontally.

IN the newly and attractively restyled *Laporte News*, house magazine of the Laporte Group, I notice an article on the chlorination of swimming pools, including the new 'do-it-yourself' plastics types. Because automatic chlorination is too costly for year-round use, Laporte's Lavozone (sodium hypochlorite) is used at the beginning of the season in the major holiday camps.

Improved Brakol looks after alkalinity of the larger pools, with Alkasol for the smaller pools. Laporte products recently featured in the English Schools Swimming Association's 'teaching swimming' scheme. Laporte can, therefore, claim to be playing a big part in the campaign for healthier swimming pools.

In the coming years, however, they can expect competition from bromine, which as stated in CHEMICAL AGE, 10 September, p. 381, is the subject of current research projects in the U.S. One enterprising producer has formulated a tablet combining elemental bromine with a quaternary ammonium compound which is a powerful germicide in its own right. The Illinois Department of Public Health reports that complaints of skin and eye irritation dropped drastically when bromine was used; bromine is also claimed to give water a pleasant blue tint.

Alembic

Project News

Simon-Carves to Build Acid Plant for I.C.I. in Argentina

● CONTRACT valued at £250,000 has been awarded to **Simon-Carves Ltd.,** Cheadle Heath, Stockport, Cheshire, by Industrias Quimicas Argentinas Duperial S.A.I.C. (a subsidiary of Imperial Chemical Industries Ltd.) for a sulphuric acid plant at San Lorenzo to produce 207 long tons/day of acid for general sale in the Argentine, where they are the largest suppliers of sulphuric acid. In addition to the conventional acid-producing plant the contract includes sulphur filtration equipment, a pure acid unit for production of reagent and battery acids, and facilities for production of 65% oleum.

The whole of the material is being supplied from the U.K. Construction on site has already begun, and the plant is expected to go into service about the end of 1961.

Kellogg Awarded Contract for New Pakistan Refinery

● THE new 34,000 bbl/day refinery for Pakistan Refinery Ltd., near Karachi, is to be engineered and built by **Kellogg International Corporation,** London, subsidiary of the M. W. Kellogg Co., New York. The refinery will consist of a crude distillation unit, a catalytic reforming unit, and a hydrotreater. Off-site facilities include a marine terminal and a crude oil pipeline from the port to the refinery site. Engineering for the project is now under way. Construction is scheduled to be completed late in 1962.

Participating in Pakistan Refinery Ltd. are the Burmah Oil Co., Caltex, Shell and Stanvac, together with Pakistani interests. Bataafse Internationale Petroleum Maatschappij are the technical co-ordinators for Pakistan Refinery Ltd.

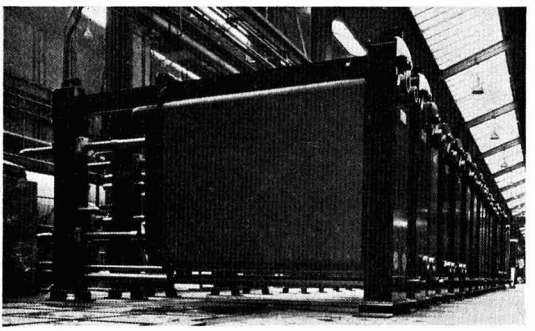
Water Treatment Plant Contracts

● RECENT contracts obtained by **Neckar Water Softener Co. Ltd.** include the following:

The Steel Company of Wales Ltd. Multi-stage deionisation plant, having a capacity of 20,000 gall./hr., with ultimate extension to 40,000 gall./hr.

Reed Board Mills (Colthrop) Ltd. Low pressure dosage by pump with automatic control to treat a flow rate of 6,000 gall./hr., also phosphate injection for four water tube boilers working at 250 p.s.i.

International Combustion (Africa) Ltd. For the Usutu Pulp Co. Ltd., Swaziland, twin mixed bed deionisation plants, having a capacity of 10,000 gall./hr. and 240,000 gall. between regenerations. Also low pressure and high pressure dosing for boiler feed.



This impressive array of A.P.V. Paraflow plate heat exchangers is part of an order for 20 received by the A.P.V. Company, Crawley, from a West German company as part of a large chemical plant destined for the U.S.S.R. The order is for 16 of the large C.H.F. type and four of the I.H.M.B. type

Wiggins Teape and Co. Ltd., for Glory Mill, High Wycombe, Bucks. Acid and melamine handling, mixing, storage and circulating plant. Circulating load 2000 gall./hr.

Express Dairy Co. (London) Ltd. Milk of lime/soda ash plant with anthracite pressure filter for pre-treatment of boiler feed water for Staplemead Depot—capacity 3,500 gall./hr.

Greaves Cotton and Co. Ltd., Madras, India. This contract, placed through Clarke, Chapman and Co. Ltd., is for a deionisation plant of 2,500 gall./hr. capacity, consisting of a weakly acidic cation exchanger, a de-gasser and finally a mixed bed polishing unit.

A.P.V. to Build Batch Still for B.H.C. at Grangemouth

● CHEMICAL Engineering Division of the **A.P.V. Company Ltd.,** Crawley, is to design and build a general purpose batch still for British Hydrocarbon Chemicals Ltd. which will be installed at Grangemouth.

The new still will be used for the separation of limited amounts of intermediate and product streams into closely cut fractions. Owing to the diversity of the composition of these streams, great emphasis has been laid on flexibility and the design of distillation column adopted, which incorporates A.P.V. West plates, satisfies this requirement due to low pressure drop and hold-up characteristics and high efficiency over a wide range of boil-up rates and reflux ratios. The unit is capable of both batch or semi-continuous operation, and of operating under vacuum.

Besides designing and building the plant, A.P.V. will also be responsible for civil and electrical engineering.

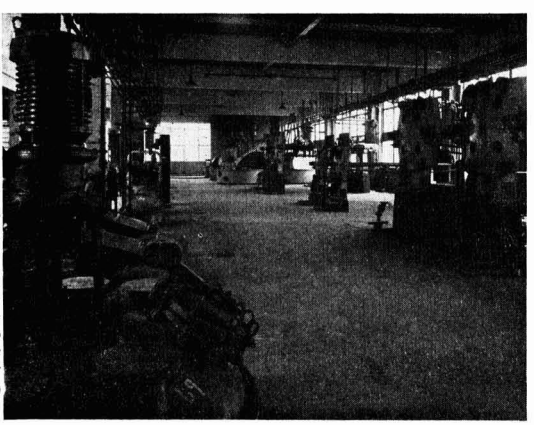
B.P. Commission First U.K. Solvents Plant

● FIRST U.K. facilities for the production of a range of special solvent for the British Petroleum Co. has now been commissioned at the Isle of Grain refinery, Kent. With a total annual capacity of 30,000 tons, the plant was designed by B.P. and comprises two process units for desulphurising and fractionating the feedstock and 17 floating roof storage tanks. Main contractors were **Constructors John Brown Ltd., Motherwell Bridge and Engineering Ltd.,** and **George Wimpey and Co. Ltd.**

Gerrard Get Building Contract for Murgatroyd's

● WITHIN four years of completing certain extensions for Murgatroyd's Salt

Araldite Floor for New Dyestuffs Plant



New dyestuffs section of Clayton Aniline Co. Ltd., Manchester, has an Araldite floor laid by Technical Applications Ltd., Eccles. Araldite resins are made by CIBA (A.R.L.) Ltd., Duxford

and Chemical Co., Sandbach, Ches., **J. Gerrard and Sons Ltd.**, Swinton, Lancs, have been awarded a £100,000 contract for further extensions at the chlorine and caustic soda plant. Main contractors are **W. J. Fraser and Co. Ltd.** and the project includes building of extensions in the following sections: mercury cell, rectifier, brine treatment, caustic storage tank bases, chlorine dryers, refrigeration, first and second stage compressors and chlorine storage. Architects are Bernard Taylor and Associates.

● CONTRACT for Europe's first phthalic anhydride plant based on ortho-xylene as feedstock has been awarded to **Scientific Design Inc.** Name of the client is not yet revealed, but the contract was placed with S.D.'s Paris office.

Aman HCl Process Licenced to Nordac Ltd.

A LICENCE to sell and construct plant in accordance with the Aman process, invented in Israel as a means of obtaining hydrochloric acid and magnesium oxide from Dead Sea brines, has been granted by the Israeli Ministry of Development to Nordac Ltd., Uxbridge, Middlesex, one of the Woodall-Duckham Group.

The Aman process is a continuous spray technique for the hydrolysis of metal salts, being particularly suitable for the recovery of hydrochloric acid from spent pickle liquors and other chloride effluents. In this application, acid consumption can be cut by more than 90%, recovered acid of up to 20% HCl being ready for re-use.

The reaction takes places in a vertical furnace or reactor directly heated by the combustion of oil or gas in the lower part. The feed liquor, slurry or melt is fed through atomisers into the top of the reactor.

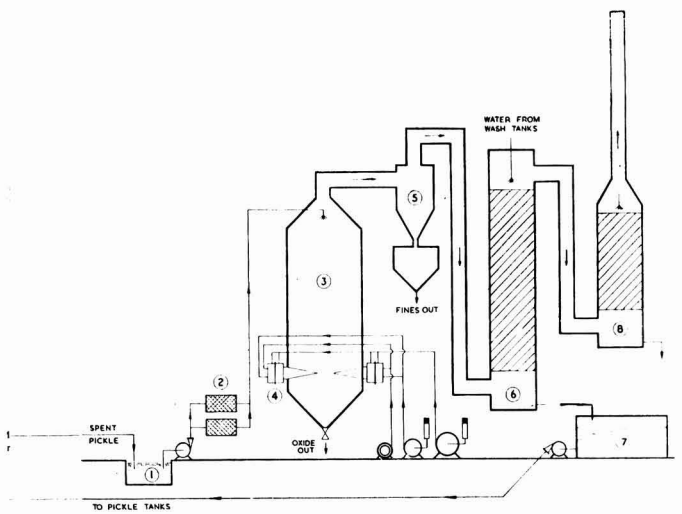
The process is claimed to cut acid costs and solve many effluent problems. Nordac have a pilot plant available for testing liquors.

As an example of the cost savings possible, the case may be cited of a plant using around 2,500 tons/year of 28% hydrochloric acid, at the market price of £10 17s 6d/ton, for the pickling of steel, in which the spent acid would normally have to be neutralised. Treatment of the spent liquor by the Aman process could lead to an operating cost (allowing for depreciation, maintenance, etc.) of between £6 and £9 per ton of 28% acid, depending on the prevailing conditions.

Ban on Organo-phosphorus Insecticides Urged

A SUGGESTION that production of organo-phosphorus insecticides should cease, and that the introduction of an equally effective, but less dangerous, alternative should be encouraged, was made by Mr. Charles Floyd, chairman of the conservation committee of the Council for Nature, in a letter to *The Observer* last week.

To prevent accidents, manufacturers should collect used containers, but better still they should follow the example set by producers of arsenical sprays and cease production.



Flow-sheet of Aman hydrochloric acid recovery process. 1, liquor sump tank; 2, pump and filter; 3, reactor; 4, burners; 5, cyclone and hopper; 6, acid absorber; 7, recovered acid storage; 8, scrubber and chimney

I.C.I.'s Record Half-year

A 49% rise in I.C.I. pre-tax group income for the first half of 1960 and a 37.8% rise in group income after tax, plus the raising of the interim dividend by 6d. to 1s 3d per £1 ordinary unit, are the highlights of the half-yearly report of Imperial Chemical Industries Ltd. (See 'Commercial News', p. 546 for full details.)

Plants have been operating at near full capacities and despite lower home selling prices, sales in the U.K. have risen. Export sales were up by 14.5%.

Nitrogen Gas is Seal in HF Pump

A NEW idea for sealing a pump handling hydrofluoric acid, developed by engineers of the United Kingdom Atomic Energy Authority, is worthy of note by all who have problems in handling highly corrosive media, especially since the idea has application to other forms of rotary apparatus, such as stirrers, and to other corrosive fluids.

In its uranium refining operations the A.E.A. handles tonnage quantities of hydrofluoric acid and pumping presents a problem because of the difficulty of finding a suitable material to provide a leak-proof seal. The answer has now been found by using nitrogen gas to provide a seal, using a specially designed rotary pump in an unconventional arrangement.

An important feature of the pump, which operates from above the vessel, is its arrangement of a long hollow shaft with bearings self-lubricated by an enclosed oil circuit. The shaft constitutes the oil container and bearing housing, and operation of the pump for long periods of time without maintenance is expected. A continuous flow of nitrogen gas from a low-pressure supply prevents hydrofluoric acid vapour from diffusing into the working parts, and also ensures that oil vapour from the lubricant does not contaminate the liquid being pumped.

The A.E.A. are granting a licence for the manufacture of this pump to Appleton and Howard Ltd., of St. Helen's, Lancs.

New A.E.R.E. Division for Solid State Physics

A Solid State Physics Division has been formed at the Atomic Energy Research Establishment, Harwell. The division will carry out basic research leading to a greater knowledge and understanding of the structure and behaviour of solids, carried out without reference to any particular application to reactor technology. It will include studies of the formation and nature of defects in crystals; other physical properties of metals, alloys and magnetic materials; and fundamental crystal physics using extracted beams of neutrons from the Harwell reactors.

CATALYST SYMPOSIUM AT LIVERPOOL

Speakers Give Details of Catalyst Manufacturing Processes

A UNIQUE symposium in that it gave for the first time some publicity to the processes used in the production of catalysts for the petroleum and petrochemical industries was held in the Donnan Laboratories, Liverpool University, on 22 and 23 September.

Attended by some 150 members of the Society of Chemical Industry, the symposium included visits to Peter Spence and Sons Ltd., Widnes, where desulphurisation and other catalysts are made, to Joseph Crosfield and Sons Ltd., Warrington, where alumina-silica cracking catalysts are produced, and to the Stanlow refinery of Shell Refining and Marketing Co. Ltd. to inspect the catalytic cracking and desulphurising units.

The symposium papers, which with discussion are to be published in *Chemistry and Industry,* were 'Cobalt-molybdenum desulphurisation catalysts', by Dr. E. B. Andrews, research manager, catalysts, Peter Spence and Sons; 'Silica-alumina cracking catalysts', by Mr. S. G. Gabriel, development manager, Joseph Crosfield and Sons; 'Catalysts used in the manufacture of ammonia', by Mr. G. W. Bridger and Mr. D. J. Borgars, I.C.I. Billingham Division; and 'Platinum reforming catalysts', by Mr. H. Connor, technical sales consultant, Johnson Matthey and Co. Ltd.

Professor C. E. H. Bawn, C.B.E., F.R.S., Grant-Brunner Professor of Inorganic and Physical Chemistry, Liverpool University, and chairman of the Liverpool Section, S.C.I., presided for the first two papers and Mr. E. W. Greensmith, head of the I.C.I. Central Engineering Department and chairman of the S.C.I. Chemical Engineering Group, president over the latter two.

A symposium dinner was held at the Lyceum, Liverpool, on 22 September, when Mr. E. LeQ. Herbert, managing director of Shell Refining Co. Ltd. and president, Royal Institute of Chemistry, was guest of honour.

World Refinery Desulphurisation is Handled by 5,000-7,500 Tons of Catalyst

CATALYTIC hydrosulphurisation plant at U.K. refineries in 1960 might total a little more than the 90,000 barrels per stream day (B.P.S.D.) given in his paper 'Cobalt molybdenum desulphurisation catalysts', declared Dr. E. B. Andrews, research manager, catalysts, Peter Spence and Sons Ltd., when he introduced his paper for discussion. That figure represented some 10% of total U.K. refinery throughout or about 3 million tons of petroleum products desulphurised by catalytic methods in each year, in addition to quantities treated by other means.

Dr. Andrews thought that 1960 output at U.K. refineries might well be 40 million tons, of which 4 million tons would be catalytically desulphurised this year. In 1959, some 8 million tons were desulphurised by other methods. Catalytic desulphurisation would, therefore, account for about 10% of total U.K. refinery capacity.

Compared with the U.K. catalytic desulphurisation of 100,000 B.P.S.D., the world total was 2,750,000 B.P.S.D. To give some idea of the amount of catalyst used in petroleum desulphurisation, Dr. Andrews estimated that the installed world capacity represented some 5,000 to 7,500 tons of catalyst. Some catalyst charges installed eight or nine years ago were still in use today and he added that replacements were not likely to call for more than 1,000 tons a year throughout the world.

Catalytic hydrodesulphurisation plants in the U.K. are sited at B.P. Grangemouth (500 B.P.S.D.); B.P. Isle of Grain (30,000 B.P.S.D.); B.P. Llandarcy (3,500 B.P.S.D.); Esso Fawley (26,500 B.P.S.D.); Esso Milford Haven (16,500 B.P.S.D.); Mobil Coryton (6,000 B.P.S.D.) and for Shell at Shell Haven and Stanlow.

Outlining some of the principles of catalytic desulphurisation, Dr. Andrews said that the heavier the fraction, the larger the molecules of the sulphur compounds to be removed; it was therefore difficult to effect removal as more complex compounds were found higher up the boiling scale range. Sulphur in naphtha cracked from heavy oils was different from sulphur contained in virgin naphtha.

Other principles included: the fact that more effective desulphurisation occurred at higher temperatures; greater contact times between reactant and catalyst increased the effect of desulphurisation; the greater the pressure the more desulphurisation occurred; so far as mass action effects were concerned, if there were more sulphur present, that would to some extent affect desulphurisation.

Commercial catalysts usually contained between 2 and 4% cobalt (as CoO) and 8 and 15% of molybdenum (as MoO_3). A few per cent by weight of silica could be added to improve stability, but catalyst charges used in U.K. refineries did not incorporate silica. Because some of the intrinsic activity of the catalyst was lost in tabletting, extruded pieces of 0.100 in. or even 0.060 in. diameter were being used to give greater activity.

Dr. Andrews thought there was scope for further fundamental research work in this field to determine the function of the very small amount of water (0.1% H_2O) present. The fact that there was no evidence that any other absorbent catalyst support was quite as good as 'Gamma' alumina might be related to the small amount of water.

The actual mechanism of the desulphurisation reaction could well form the subject of much interesting research, which so far as was known was not being undertaken. In the mechanism, sulphur-compounds reacted with catalysts to give catalyst sulphide plus a free radical which might then be hydrogenated. The catalysts sulphide was hydrogenated to give back the original catalyst plus H_2S.

In reply to *Dr. K. S. W. Sing,* head of the Department of Chemistry Liverpool University, Dr. Andrews, said there was a marked preference among the oil refineries for 'Gamma' type catalysts based on a boehmite-rich type of precipitate.

Referring to the remarks about the removal of sulphur from the heavier fractions, *Mr. F. W. B. Porter,* British Petroleum Co. Ltd., said that the sulphur content of light fractions was from 0.1 to 0.3% and in the heavier range from about 2.0 to 5.0%. The Comox cobalt-molybdenum catalyst would desulphurise both light and heavy fractions without difficulty; it was a question of bulk and not one of more complex sulphur compounds.

Visitors See Catalyst Extruder at Spence's

WHEN symposium members visited the Widnes works of Peter Spence and Sons Ltd. they were shown the tabletting and extruding of Comox cobalt-molybdenum desulphurisation catalysts, a catalyst testing section that simulates refinery conditions, the research laboratory and an exhibition of catalysts.

Visitors learned that the special catalyst extruder which produces various grades of extrudates was designed, developed and built by the company in an intensive six months' period, following a request from the oil companies that they wished to switch from pelletted to extruded catalysts, in order to gain greater activity. In a paste-like form, the catalyst is forced by carefully-controlled hydraulic rams through multi-orifice dies. Extruded pieces are run on an expanded mesh conveyor belt that takes them through a preliminary drying process.

Tabletted catalyst is produced on a large battery of Manesty machines and these, too, were inspected.

U.K. Oil Crackers Use 10,000 Tons of Silica-alumina Catalyst a Year

THE free world's oil cracking capacity, already greater than 6 million barrels per day, or 1 million tons/day, would continue to expand, declared Mr. S. G. Gabriel, development manager of Joseph Crosfield and Sons Ltd., when he introduced his paper 'Silica-alumina cracking catalyst'. There was, therefore, every incentive to improve the design of catalytic crackers to provide more flexibility and to reduce costs. There was also the incentive to the catalyst producer to develop better catalysts, if necessary to tailor-make them in the light of current demands.

That challenge was, he declared, being met. Several new catalysts had been developed or were under development. Many had been pilot plant tested and in some cases commercially tested. However, much information had not been published because this work was still confidential. Davidson Chemical, American Cyanamid and National Alumina were producing new catalysts; some were mixtures of synthetic and natural.

In the U.S., installed cracking capacity probably used some 150,000 tons of catalyst a year. In the U.K., installed catalytic cracking capacity comprised five fluidised units with a nominal total of 100,000 barrels per day and one Thermofor unit with a nominal total of 10,000 barrels per day. The small catalyst demand for the latter plant, which used catalyst beads measuring $\frac{1}{8}$ in. to 3/16 in. diameter beads, was being met by a West German company (Kali-Chemie). The fluid bed units used nearly 10,000 tons/year of microspheroidal catalyst.

Crosfield's catalyst plant was brought into operation in 1952 to make, under licence from the Davidson Chemical Corporation, catalysts for the five major oil companies concerned. The Warrington plant produces 13% Al_2O_3 silica-alumina catalyst, and can also manufacture 25% Al_2O_3 silica-alumina catalyst.

Raw materials for the 13% product are: sodium silicate solution with an $SiO_2 : Na_2O$ ratio of 3.3 : 1; sulphuric acid received as 78% acid; ammonia solution received as 32-34% NH_3; and alumina hydrate (65% Al_2O_3) for making aluminium sulphate solution batchwise.

Mr. Gabriel described the manufacturing process, which those attending the symposium were able to see for themselves. He also referred to quality control, chemical analyses, physical analyses, specific surface area, pore volume, and performance analysis.

Mr. A. H. Fox, Esso Petroleum Co. Ltd., asked if CO_2, instead of sulphuric acid, would produce a better catalyst. He also asked why 13% catalyst sintered without any apparent change in operating conditions, an effect not found with the 25% product.

Mr. Gabriel said that Crosfield's were considering the CO_2 process. It was thought more economical to use CO_2, but so far as properties were concerned, there appeared to be no difference.

Pore size was important in respect of sintering and he suggested that this problem would be solved by going over to a high pore value.

A description of the works visit and manufacturing process will be published in CHEMICAL AGE next week.

I.C.I. Paper Describes Catalysts for Ammonia Synthesis Processes

ALTHOUGH much has been published on the chemistry and kinetics of catalysed reactions in the various stages of ammonia synthesis, little has appeared about the catalysts used in the processes. Object of a paper by Mr. D. J. Borgas and Mr. G. W. Bridger, I.C.I. Billingham Division, entitled 'Catalysts used in the manufacture of ammonia,' was to describe the composition, chemistry and behaviour of catalysts used on a commercial scale for the production of ammonia from hydrocarbon gases. Forty per cent of the world's ammonia is based on natural gas and refinery gases.

Desulphurisation is effected by passing the hydrocarbon gas and hydrogen over catalyst 32-2 (yellow oxide) at about 400°C. Reforming with steam to give a raw synthesis gas is carried out over catalyst 22-1 (green oxide), an activated nickel catalyst containing about 14% nickel in the reduced state. Next, secondary reforming over 22-1 permits the addition of nitrogen for ammonia synthesis, while the methane content is reduced, giving more hydrogen. CO (or shift) conversion over catalyst 15-2, brown oxide, reacts steam with CO to give more hydrogen and carbon dioxide, the gas now containing 2-3% CO and 19-20% CO_2. The gas is compressed and CO_2 removed by liquid scrubbing; the gas is further compressed and residual traces of CO_2 are removed to give a gas free from compounds containing oxygen. The CO removal-methanation step is carried out over catalyst 11-1, African oxide, a nickel oxide-chromia catalyst, which removes small quantities of CO from hydrogen by converting it to methane. This catalyst is guarded by catalyst 29-1 (peat oxide) which will also hydrogenate and remove organic sulphides, disulphides and thiophene.

Ammonia synthesis is carried out over catalyst 34-4, ebony, and the paper pointed out that most synthesis catalysts are based on either natural magnetite or synthetic magnetites, Fe_3O_4, obtained by burning iron in oxygen. To bring the catalyst into use, a reduction pressure process is employed using synthesis gas, normally at pressure. This reduction must be done slowly and with a high rate of synthesis gas passing over the catalyst to keep to a minimum the concentration of water vapour evolved in the reduction.

In the discussion period it was pointed out that the addition of magnesia reduced the sintering effect found in nickel catalysts.

Mr. Bridger referred to the development of pellets (green oxide) with holes in the middle. The firmly compressed pellets were in some cases 50% less effective because it was only the outer catalyst layers that performed a useful function.

Mr. T. Kennaway, director of research, Simon-Carves Ltd., asked how far the search for a catalyst for a particular process was systematic and how far it was a "hit-and-miss" affair.

Mr. Bridger said that catalysis was passing from an 'art' to a 'science.' When a decision was made to catalyse, the catalyst manufacturer knew where to start his search. Catalytic reactions fell broadly into various categories and the manufacturers' 'know-how' told them roughly where to look for a really effective catalyst.

The theoretical side was catching up on the practical side and, he added, "We know which half of the periodic table to start with." In a few years, that 50% might be narrowed to something like 10%.

Mr. E. W. Greensmith, chairman of the S.C.I. Chemical Engineering Group, who presided, commented that the age of alchemy had not yet passed.

Mr. W. D. Betts, Coal Tar Research Association, spoke of one method of discovering the right catalyst for a particular job. A selection of likely catalysts was made and placed in a converter; if a reaction followed, it was then possible to work through the catalysts chosen until the right one was discovered.

Answering a question by *Mr. H. D. Edwards*, Chemical Construction (G.B.) Ltd., Mr. Bridger said that I.C.I. preferred to use the harder pellet rather than the extruded product for CO conversion. The pellet could operate for up to 10 years; a dried filter cake of low physical strength had a life of about one year. The tendency on the Continent was to use the weaker, more active catalyst, while in the U.K. and the U.S. harder but slightly less active catalysts were preferred.

Vinyl Products Licences for Reichhold Companies

VINAMUL synthetic resin emulsions and Vinalak polymer solutions are to be manufactured in Austria and West Germany under licence from Vinyl Products Ltd., following agreements signed with Reichhold Chemie AG, Breitenleerstrasse 97-99, Vienna, and Reichhold Chemie AG, P.O. Box 1081, Hamburg. Austria and West Germany thus become the 15th and 16th licensees of Vinyl Products Ltd. whose materials are manufactured on all five continents.

Aromatics Growth Plus Higher Octane Ratings Mean Expansion in Platinum Reforming Catalysts

THE call for higher compression ratios and ever higher octane numbers in modern internal combustion engines has been increasing the demand for platinum reforming catalysts, declared Mr. H. Connor, technical sales consultant, Johnson Matthey and Co. Ltd., when he introduced his paper 'Platinum reforming catalysts'. By 1966, the octane number of U.S. premium fuel was expected to rise to 103.5, and it was estimated that an increase of one number in octane rating would cost the U.S. petroleum industry an additional $100 million.

Discussing newer developments, Mr. Connor expected alkylation processes to play a bigger part in the production of higher grade fuels, while the greater stress on jet fuels might make it necessary to separate branched-chain from straight-chain paraffins. Isomerisation processes would probably become more important.

He felt that the expansion in petrochemicals would be responsible for part of the growth in platinum reforming. More and more aromatics, particularly benzene, were being produced from petroleum sources and in greater purity than from coke ovens. At present the total world output of aromatics from petroleum was higher than production from coal. In the U.S. 35% of benzene was produced from petroleum, 78% of toluene, 90% of xylenes and 12% of natural phenol come from a petroleum source.

Aromatic Chemicals

There were several aromatic chemicals large-scale production of which by platinum reforming was not as well developed as it could be. Little use was made of compounds such as monocarboxylic aromatic acids, aromatic alcohols and aromatic aldehydes, compared with the utilisation of other substituted aromatic materials such as chlorobenzene, phenol and styrene. Other than for cumene production for phenol and acetone, via cumene hydroperoxide, no important use had been found for the C_9 or C_{10} aromatics from reformates.

The first platinum reforming process, platforming, accounted for over 50% of installed capacity. The newer regenerative processes, such as Ultra-forming and Powerforming were rising in importance with the increasingly severe operating conditions in catalytic reforming. Mr. Connor mentioned that the first platformer contained less than 400 oz. Troy of platinum; today many hundreds of thousands of ounces were used by the industry. In the U.S. some 30,000 oz. of platinum were lost to the petroleum industry in 1956, a figure expected to rise to 70,000 oz. by 1965.

Discussing platinum reforming, Mr. Connor stated that naphthene dehydrogenation to aromatics was still considered to be the backbone of current reforming processes for most feedstocks. Platinum reforming gave the most efficient conversion of naphthenes and paraffins to aromatics and hence displayed a superior yield-octane relationship in comparison with non-platinum catalysts.

The various reforming processes using platinum catalysts were discussed by Mr. Connor. These were platforming (Universal Oil Products); Ultraforming (Standard Oil of Indiana); Powerforming (Esso Research and Engineering); Houdriforming (Houdry Process); Sinclair-Baker reforming (Sinclair Oil and Baker Platinum) with a variation, Sovaforming (Socony - Mobil); catalytic reforming (Humble Oil); Penex-platforming (Universal Oil); Iso-Kel (M.W. Kellogg); Pentafining (Atlantic Refining Co.); Butamer (Universal Oil).

Recent studies in non-platinum catalysts, mainly carried out by Russian Soviet workers were discussed and the catalysts included rhodium and ruthenium on alumina and carbon. Other subjects discussed were catalyst activation, deactivation and regeneration; manufacture of platinum reforming catalysts; a review of recent patent literature, including that of Shell Development Co. for the impregnation of catalyst support with an aqueous solution of tetramine platinous hydroxide and promotion with aluminium fluoride or borfluoride; and recovering of platinum, vital to the economics of reforming.

The paper included 10 tables, 28 graphs and 280 references. Mr. Connor was thanked by Mr. Greensmith, who presided, for the hard work that had been put into what was a most comprehensive paper.

Difference in 'Model T' Petrol and Modern Fuel is Mainly Due to Catalysis

AT the symposium dinner, Professor C. E. H. Bawn, C.B.E., F.R.S., Grant-Brunner Professor of Inorganic and Physical Chemistry, Liverpool University, and chairman of the Liverpool Section, Society of Chemical Industry, said that today there was no gulf between the academic and the industrial chemist. The universities and colleges of technologies had a duty to produce new recruits for their customer, British industry.

Professor Bawn said that the idea of the meeting on catalysis had been put forward by Mr. J. L. Sweeten, hon. secretary of the S.C.I. Chemical Engineering Group. He also paid tribute to the work of the local organising committee under the secretaryship of Mr. J. H. Harwood, which had ensured the success of the meeting. He then introduced the guest of honour, Mr. E. leQ. Herbert, managing director of Shell Refining Co. Ltd. and president of the Royal Institute of Chemistry.

Mr. Herbert, who has spent a lifetime in the oil industry, declared that the difference in the petrol used by the 'Model T' Ford and its highly efficient modern counterpart was due almost entirely to catalysis. Three-quarters of the U.K.'s output of 9 million tons a year of aviation and motor fuel passed through one or other of the catalytic processes.

Thanks to the cheap by-product hydrogen, thanks to cobalt and molybdenum and thanks to the art of the catalyst manufacturer, the oil industry could now desulphurise down to practically nil sulphur, if it wanted to pay to go as far as that. One great challenge remained, the desulphurisation of heavy fuel oils. The industry wanted a superbly cheap process able to handle enormous quantities. However, such were the technical resources available today that he was sure a solution would be found.

Mr. Herbert quoted two elegant examples of catalysis in the petrochemicals field: one for the conversion of ethylene with air over silver to ethylene oxide and the other, organometallic catalysis which induced ethylene and propylene to grow into long chains, giving polymers that were more useful and more interesting every day in their different properties.

That the U.K. oil industry was now a major producer of sulphur was entirely due to the application of catalytic processes. (U.K. refinery output of sulphur is an estimated 55,000 tons/year—see p. 544. Ed.).

Obituary

Mr. George Archer, C.M.G., president of the Mond Nickel Co., has died in London at the age of 64. He was appointed president in July of this year, having been chairman of the company and its subsidiary, Henry Wiggin and Co. Ltd., since July 1959. He joined the board of Mond Nickel in 1948 and became sales director in 1952 and managing director in 1955.

Born in Manchester, Mr. Archer was educated at King Edward VII School, Lytham. He entered the Civil Service in 1913, served in the R.N.V.R. from 1915 to 1919 and afterwards in various Government departments, including Customs and Excise, and the Import Duties Advisory Committee. At the outbreak of war in 1939 he was transferred to the Raw Materials Department in the Ministry of Supply, and in April 1941, joined the Ministry's Mission in Washington. Soon after the formation in 1942 of the British Raw Materials Mission, he was appointed Secretary General and became Head of the Mission in 1945. He was also U.K. Secretary General of the Combined Raw Materials Board.

New Chemical Tariff Proposals Would Penalise Users, A.B.C.M. Tells Canadian Board

APPEARING before the Canadian Tariff Board which has begun its extensive study on chemical tariff rates, Mr. H. W. Vallender of the Association of British Chemical Manufacturers said that Canadian consumers would be heavily penalised by the new tariff proposals of the Canadian chemical manufacturers.

He attacked the Canadian industry's suggested list of chemicals for which it proposes duty-free or low-duty tariff treatment as being of a class not made in Canada. For most of the chemicals, with some other exceptions, the Canadian industry committee proposes rates of 15% for British and Commonwealth imports and 20% for other imports.

Mr. Vallender said the list of proposed exceptions omitted a long list of chemicals now given low tariff treatments as being of a kind not made in Canada. Under the Canadian industry's proposals, he said, consumers would be heavily penalised in having to pay duty on a wide range of chemicals not currently made in Canada.

British Proposal

The British industry's proposal was that duty-free or low-duty tariff treatment be given chemicals only if the Canadian industry make them in quantities sufficient to meet a substantial proportion of Canadian requirements.

Some of Mr. Vallender's suggestions were described by Mr. Eric Hehner, counsel for the Canadian chemical industrial committee as "a good Canadian tariff for the British chemical industry."

The Canadian Tariff Board review is expected to take nearly two years.

The Canadian industry has opened its case to have a blanket rate of tariff duties applied—with some exception—to chemical imports.

The industry committee says the rates of 15 and 20% are the ones applied to a substantial number of Canadian-made chemicals under an existing tariff item covering goods for which special exceptions are not made in the tariff. Committee spokesman, Mr. J. A. Davis, Toronto, told the Tariff Board that about 35% of chemicals used in Canada received tariff protection under that item.

The industry proposes 47 exceptions to this blanket rate of protection for Canadian-made chemicals. For some, such as sulphur, it proposes continuation of present duty-free treatment. On five of the 47 exceptions it proposes rates higher than 15 and 20%.

The industry committee is also urging adoption of the principle that duty-free or low-duty tariff treatment of chemicals not manufactured in Canada be automatically increased to the 15 and 20% as soon as the chemicals attain "made in Canada" status. It proposes a list of 50 chemicals not now made in Canada which should be treated in this way.

It is also proposing deletion of most of the existing "end-use" tariff provisions under which chemicals imported for specific uses are granted tariff exemption. Its proposals to the tariff board would continue this "end-use" provision only for fertilisers and agricultural chemicals.

Committee counsel, Mr. Hehner, of Ottawa, arguing for acceptance of the blanket rates of 15 and 20% as a starting point in the board's study, suggested that it would be an impossible chore for the board to study each chemical individually. He conceded this was an arbitrary method. The industry committee felt the rates of 15 and 20% should apply unless the board's study showed the rate should be different. There were thousands of individual chemicals which the board would not be able to study specifically.

B.P.F. Publish Code of Practice for P.T.F.E. Coatings

ALTHOUGH polytetrafluoroethylene is still used mainly in the solid form, aqueous dispersions of p.t.f.e. are "coming up fairly rapidly," Mr. Finlay Walls, vice-president of the British Plastics Federation, said at a reception held in London last Monday to mark the publication of the Federation's new 'Code of Practice for the Application of Aqueous Dispersions of Polytetrafluoroethylene to Metals, Ceramics and Glass'. This is based on the work of the B.P.F. technical committee on fluorocarbons; intended primarily for the p.t.f.e. coating industry, it also acts as a guide for buyers of coated articles.

One point made is that, although only molten alkali metals and fluorine at high pressures and temperatures will attack p.t.f.e. itself, p.t.f.e. coatings cannot be guaranteed to give protection against chemical attack on a substrate, because they cannot be built up to sufficient thickness to eliminate microporosity. Coatings 0.002-0.009 in. thick will give a limited measure of protection, but the protection afforded by a p.t.f.e. coating in any specific application should be ascertained by a prior test.

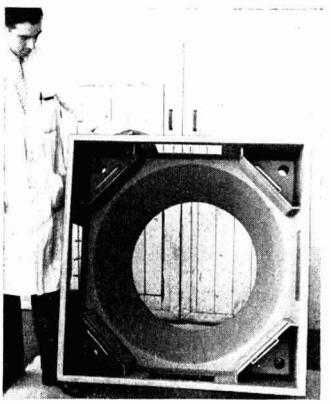
Four grades of p.t.f.e. coatings are normally available, having thicknesses of 0.0002-0.0004 in., 0.0005-0.001 in., 0.001-0.002 in. and 0.002-0.009 in., respectively. The impracticability of building up coatings thicker than this appears to be the limiting factor where anti-corrosive applications are concerned, but p.t.f.e. coatings are in wide and increasing demand for 'non-stick' applications in the food, confectionery and baking industries, as well as in the electrical industry.

At first sight, p.t.f.e. coatings are costly —an arbitrary figure for a coating of 0.002 in. would be £1/sq. ft., although the cost will be determined very largely by the surface preparation necessary. However, it is claimed that, in the specialised applications for which they have been found most suitable, p.t.f.e. coatings have enabled spectacular cost savings to be made.

Current progress in p.t.f.e. coatings was reviewed at the reception by Mr. E. M. Elliott (I.C.I.), who explained that there are two coating systems in general use. In one, a coat of priming dispersion is applied to a prepared surface and dried and sintered. When the work has returned to room temperature, the priming coat is followed by a clear or coloured finish, which in turn, is dried and sintered. Further coats of finish may be applied if thicker coatings are required. This system should be used when a p.t.f.e. coat of the best mechanical, electrical and chemical properties is required.

The other system employs a one-coat finish which combines the functions of primer and finish in one operation. This system is usually quite satisfactory for non-stick applications.

Copies of the new code of practice are available from the British Plastics Federation, 47/48 Piccadilly, London W.1, price 2s.



This stainless steel hopper, used in the refining of precious metals, has been sprayed with a 0.002 in. coating of p.t.f.e. to prevent build-up of the contents and to facilitate cleaning

PFAUDLER'S NEW CERMET IS HIGH-STRENGTH AND RESISTS HOT CORROSIVE CONDITIONS

A NEW range of ceramic-metal composites, announced by Enamelled Metal Products Corporation (1953) Ltd., Leven, Fife, are claimed to combine structural strength and resistance to impact damage with a remarkable resistance to attack in hot corrosive environments. Enamelled Metal Products, who manufacture Pfaudler glassed steel equipment, do not anticipate that Nucerite, as the new material is called, will replace any of their current corrosion resistant materials, but rather that it will expand the scope of applications for which they can furnish suitable materials of construction.

Pfaudler engineers report that in one of its formulations, the new material has resisted attack by corrosive vapours at 1,300°F, and it is expected that even this temperature will be exceeded by several hundred degrees. In aqueous environments it is stated that the resistance of Nucerite to corrosion is superior to most metals.

Physical Tests

In the laboratory, the product contact surface of Nucerite is claimed to have withstood 9 ft.-lb. of point impact force, and, in a tensile strength test, to have withstood more stress without permanent deformation than did mild steel. It showed a 300% to 400% increase in resistance to damage by thermal shock over existing glassed metals—ΔT of 1,200°F, while the resistance to abrasion was 400% greater than that of laboratory glass. Heat transfer was six to ten times better than other ceramic materials that would be used in high temperature corrosive services. As evidence of its high temperature stability, Nucerite is said to have protected molybdenum from oxidation at 1,600°F in an oxy-acetylene flame.

According to Pfaudler, Nucerite is chemically bonded to steel and to heat resistant metals such as Inconel and Hastelloy in the same manner as their existing glasses. Because of the nature of some anticipated applications, it is probable that certain reactive metals, such as tantalum, niobium (columbium) and molybdenum — which maintain strength at elevated temperatures—will also serve as base metals.

Company experts report that the unique characteristics of Nucerite are the result of closely controlled nucleation and crystallisation within certain ceramic formulations. Agents are used which act as centres of nucleation during a heat treating cycle which follows application of the ceramic components to the base metal. The carefully controlled nucleation and crystallisation result in a ceramic structure characterised by a large number of very small crystals. This structure imparts unique physical and chemical properties to the material.

During the development period, heat exchanger tubing and a number of small reaction vessels were coated and satisfactorily tested. The company emphasises, however, that these results were obtained and confirmed in carefully controlled laboratory and field tests and that it will take substantial and additional work to transform Nucerite from the development stage to full scale production. At present, it plans an extended evaluation period of selected field testing to be followed by the establishment of production facilities in the Leven factory and associated overseas factories.

More Kenya Pyrethrum for Japan

GREATER imports of pyrethrum from Kenya are expected to result from Japan's increased production of insecticides. This increase of production is to meet the growing requirements in Japan, traditionally a pyrethrum producer, of public health authorities and also the growing demand in the Far East and South East Asia. Japanese manufacturers are well placed to take advantage of openings in the South East Asia market.

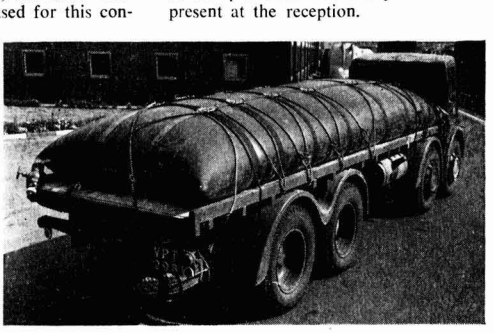
There is a particular demand in Japan and nearby countries for mosquito coils. These are spiral coils of combustible material containing pyrethrum, which are lighted and slowly burn killing or repelling mosquitoes and other flying insects. The manufacture and export of these coils is also increasing. Before the second world war, Japan was the world's main source of pyrethrum. There is little indication that Japan will return to its pre-war pyrethrum production level.

Flexible Container Cuts I.C.I.'s Iso-octanol Transport Costs

BIG savings in transport costs have been achieved by I.C.I. Heavy Organic Chemicals Division by the use, for the first time, of a flexible Portolite tank to transport, by road, a consignment of iso-octanol—one of the I.C.I. range of carbonylation alcohols, used in the manufacture of DIOP (di-iso-octyl phthalate) general-purpose plasticiser for p.v.c. Some 2,000 gall. (over 7 tons) of iso-octanol were carried to a U.K. customer from the division's works at Billingham, Co. Durham, involving a round trip of several hundred miles.

The Portolite tank was filled on the deck of the flat-bottomed lorry in a normal manner, and was then lashed down with ropes; no built-up sides were required. When full, the container measured some 23 ft. in length and 8 ft. in width, with a height of 2 ft. 6 in. However, for the return journey it was possible to roll the empty container to take up only about 3 ft. of the lorry's deck, leaving 20 ft. free for other purposes and effecting considerable economies in transport costs.

Portolite flexible tanks are made by Marston Excelsior Ltd., an I.C.I. subsidiary. The container used for this consignment had an interior lining of rayon-reinforced butyl rubber which, being inert to iso-octanol, ensured that the product arrived at the customer's works in the same condition of high purity as when it left Billingham.



Portolite flexible container, with 2,000 gall. of I.C.I. iso-octanol, starts its journey from Billingham

Alginate Publication on Textile Uses

ALGINATE INDUSTRIES LTD., of London, introduced a new form of sales promotion to the textile printing trade in Manchester on 22 September. The occasion was the publication of the firm's 'Manutex in Textile Printing, with Patterns'.

The company is one of the largest producers of alginate in the world. Manutex is a British-made chemical obtained from seaweed and widely used in the textile printing industry.

The new publication contains actual patterns of prints which have been made by users of Manutex, and they come from all over the world. Dyestuff manufacturers and printers who have co-operated in the production of the patterns were present at the reception.

Letter to the Editor

Kestner's Role as Largest Plant Makers in Plastics

SIR,—We have read with great interest in your edition of 27 August the announcement concerning the joint agreement between Matthew and Yates Ltd., and Turner and Brown Ltd., from which we have noted that these companies are combining to produce a wide range of plastics chemical plant.

We notice, however, the reference to the organisation producing "what is described as the largest plastics chemical plant in the United Kingdom" and we feel that we must make comment on this claim.

My company have been the leading manufacturers of chemical plant in plastics for the last 30 years in the United Kingdom, our range being very well known in the chemical and allied industries. We have, for example, manufactured several plastics tanks of about 90 ft. in length and to date the biggest plastics moulding we have produced weighs 7½ tons. We have a very large range of Keebush plastics which are our own basic development, but in addition, of course, we work in most of the well known plastics of proprietary origin.

Our chemical engineering service relating to these plastics is also very extensive indeed and we feel that some clarification of the claim made in your announcement regarding Matthew and Yates Ltd., and Turner and Brown Ltd., would be of interest to your readers.

Yours, etc.,

G. H. BLACK

Joint Managing Director

Kestner Evaporator and Engineering Company Limited.

London S.W.1.

Stereo-regular Rubbers Expected to Help Stabilise Natural Rubber Prices

CONSUMPTION this year is estimated by the International Rubber Study Group as likely to total some 1,770,000 tons of synthetic rubber and about 2,070,000 tons of the natural product, apart from usage in non-member countries. World production of synthetic rubber in member countries is put at 1,940,000 tons in 1960 and that of natural rubber at 2,055,000 tons. Some 160,000 tons of natural rubber are expected to be delivered from government stockpiles.

Increasing production of the new stereo-regular synthetic rubbers will, in the long run, it is thought exercise an important stabilising influence on natural rubber prices at competitive levels. (The estimate that U.K. synthetic rubber production would rise from an early-1960 figure of 90,000 tons/year to something like 200,000 tons/year in the next few years was made in CHEMICAL AGE, 17 September, p. 419.)

The recently formed International Institute of Synthetic Rubber Producers, which last week elected Mr. T. C. Cubbage (Phillips Chemical Co., U.S.) and Mr. J. T. Black (Polymer Corporation, Canada) as president and vice-president respectively, includes as member-firms the International Synthetic Rubber Co. Ltd., Hythe; Shell International Chemical, London; and Chemische Werke Hüls.

Whitby Natural Gas Wells Inaugurated

AN installation that will supply Whitby, Yorks, with town's gas derived from two natural gas wells at Grosmont and Aislaby, six miles away, was officially inaugurated by the Minister of Power recently. The two wells, both over 4,000 ft. deep, are together capable of providing some 4.5 million cu. ft./day of gas, consisting mainly of methane. Gas from the well heads is transmitted directly to the Whitby works of the North Eastern Gas Board through some six miles of 3 in. steel main. Reforming is carried out in a P.G. Hercules plant employing a nickel catalyst, following removal of sulphur, which is carried out in the oxide purifiers previously used for coal gas purification.

A feature of the plant is the odorising equipment, installed to satisfy the requirement that gas supplied to the town should have a distinct odour. Tetrahydrothiophen is used as the odorant. Experimentally two methods of introduction are being used; one using an electrically driven micro-pump on the inlet holder supply, the other being of the vapour pick-up type on the outlet holder supply.

A typical analysis of the final gas is 5.4% CO_2, 7.3% CO, 34.4% H_2, 35.1% CH_4, 0.8% C_nH_m, 17% N_2.

The gas was first found in 1938 by the B.P. Exploration Co. (then the d'Arcy Exploration Co.). At that time no commercial outlet existed for it and the wells were sealed off for eventual future use. In 1952 B.P. entered into partnership with I.C.I. to develop the gas deposits. I.C.I hoped to find methane in sufficient quantity to justify the laying of a pipeline to the company's factories on Teesside, about 30 miles away, principally for chemical requirements. This hope was not fulfilled, but the North Eastern Gas Board agreed to buy the gas from B.P. and I.C.I.

Chemicals and Food from Wood for Discussion at F.A.O. Tokyo Meeting

THE second meeting of the Food and Agriculture Organisation working party on wood hydrolysis is being held in Tokyo, 10-15 October, with the specific purpose of assessing the present state of development of the most promising processes, outlining the need for further research work, and planning future activities of the working party. This second meeting is being held just prior to the F.A.O./E.C.A.F.E. (Economic Commission for Asia and the Far East) Far East Conference on Pulp and Paper (Tokyo, 17-31 October). It is being held in Tokyo at the invitation of the Japanese Government under the sponsorship of the Japanese wood and chemical processing industries. This national interest stems from the fact that there are plans for several wood hydrolysis plants to be erected in Japan, using three different processes

Papers to be presented at the meeting will include several on present status of development of the wood hydrolysis industry throughtout the world, current research in wood hydrolysis, supply of raw materials, and various aspects of recent process development—concentrated hydrochloric acid process, concentrated sulphuric acid process, and anhydrous hydrochloric acid process.

In addition, other presentations will cover such topics as: utilisation and demand of sugars and other products of wood hydrolysis for organic synthesis; amino acid fermentation from xylose; development of a process for furfural production; the lignin residue and its utilisation, including liquefaction by high pressure hydrogenation.

Kellogg Show Film on 'Procurement'

THE careful planning and timing necessary in 'procurement'—that complicated sequence of operations that bridges the gap between design and construction of a major plant—are well illustrated in a film, entitled 'Procurement', which was recently shown in London by Kellogg International Corporation, a subsidiary of the M.W. Kellogg Co., New York.

The film deals in particular with the procurement of materials and equipment for the new 100,000 b.p.s.d. refinery of BP Benzin und Petroleum A.G. at Dinslaken, in the Ruhr Valley, for which Kellogg were called in to give technical advice and assistance by the BP Benzin parent company, British Petroleum Co., London. The film shows the work involved in expediting and co-ordinating deliveries and the consultations between the technical staff of both clients and contractors. It also shows various stages in the actual construction of the refinery, which is currently on stream and producing a wide variety of petroleum products.

SCIENTIFIC RUSSIAN WITHOUT TEARS

Part I — The Alphabet (Continued)

By Professor J. W. Perry

RUSSIAN has so many letters similar to our own or Greek that alphabet difficulties are often overestimated. The four letters of the word врун (vrun—'liar') are perhaps the most troublesome. With these under control, there is no danger of confusing реактор for an expression of over-enthusiasm for Marxism, or anything else. (Obviously, 'reaktor'—or 'reactor', if you prefer.) Nor would нерв be confused for Moscow jive-talk. (Obviously, 'nerv'—or 'nerve' as we usually spell it.)

So now let's look at the remaining third of the Russian alphabet—the letters unlike ours or Greek.

There are six vowels (и, й, ы, ю, э, я) and ё (often printed e) which are best learned by remembering the following relationships:

Hard Vowels				*Soft Vowels*		
А	а	—a as in *f*a*r*	→	Я	я	—ya as in *y*a*rd*
Э	э	—e as in *e*rror	→	Е	е	—(accented) ye as in *ye*s
О	о	—o as in f*o*re	→	Ё	ё	—yo as in *yo*kel
У	у	—'oo' as in b*oo*k	→	Ю	ю	—yu as in *yu*le
Note also:						
Ы	ы	—i as in br*i*ck, qu*i*ck	→	И	и	—i as in mach*i*ne
				Й	й	—i as in o*i*l

In certain sets of endings, soft vowels may replace hard vowels (as indicated by the arrows) and vice versa. The letter э does not occur in endings and is not subject to such replacement.

Two other letters indicate pronunciation. They are the soft sign ь, and the hard sign ъ (the latter used much more extensively before the spelling reform carried out by the Soviets). Examples of hard and soft consonants are the following:

Hard Consonants	*Soft Consonants*
н — n as in *n*et	нь — ny sound in ca*ny*on
п — p as in *p*oor	пь — py sound in pure ('*py*ure')
в — v as in *v*ent	вь — vy sound in view ('*vy*oo')

Finally, there are the hissing sounds or fricatives, to use a term some linguists prefer:

Ж	ж	-zh as in	Жуков	(Zhukov)
З	з	-z as in	Зелинский	(Zelinskiĭ) [z as in zone]
Ц	ц	-ts as in	Царь	(Tsar)
Ч	ч	-ch as in	Чайковский	(Chaĭkovskiĭ)
Ш	ш	-sh as in	Ворошилов	(Voroshilov)
Щ	щ	-shch as in	Хрущев	(Khrushchev) [shch as in Ashchurch]

Next, let's take a look at how these letters are used in spelling various scientific and technical terms.

амин	amin	amine
амнезия	amneziya	amnesia
асфальт	asfal't	asphalt
ацетат	atsetat	acetate
аэроплан	aeroplan	aeroplane
бронза	bronza	bronze
вискозиметр	viskozimetr	viscosimeter
газ	gaz	gas
дистиллят	distillyat	distillate
журнал	zhurnal	journal
импульс	impul's	impulse
коррозия	korroziya	corrosion
коэффициент	koeffitsient	coefficient
лаборатория	laboratoriya	laboratory
малярия	malyariya	malaria
машина	mashina	machine
механизм	mekhanizm	mechanism
нихром	nikhrom	'Nichrome'
парашют	parashyut	parachute
поташ	potash	potash
психология	psikhologiya	psychology
результат	rezul'tat	result
силикат	silikat	silicate
токсикология	toksikologiya	toxicology
физика	fizika	physics
хлорид	khlorid	chloride
цинк	tsink	zinc
Чарльс	Charl's	Charles
школа	shkola	school
электролизёр	elektrolizyor	electrolyzer
энтропия	entropiya	entropy
Юта	Yuta	Utah

The Russianising of the international terminology of science and technology occasionally encounters problems. For example, the sound usually denoted in English or German by 'h' as in 'heptane' or 'Heptan' has no exact Russian counterpart and 'h' often is represented by г. Thus we have:

алкоголь	alkogol'	alcohol
альдегид	al'degid	aldehyde
ангидрид	angidrid	anhydride
галоид	galoid	halide
гелий	geliĭ	helium
гептан	geptan	heptane
гидрат	gidrat	hydrate
гомолог	gomolog	homolog
гормон	gormon	hormone

Less commonly, the Russians tend to drop their h's:

ангар	angar	hangar
история	istoriya	history

The English 'th' sound is usually represented by т, rarely by ф or з as in the following examples:

антразен	antrazen	anthracene
арифметика	arifmetika	arithmetic
катод	katod	cathode
логарифм	logarifm	logarithm
математика	matematika	mathematics
метан	metan	methane
метод	metod	method
Резерфорд	Rezerford	Rutherford
теория	teoriya	theory
термометр	termometr	thermometer
физиотерапия	fizioterapiya	physiotherapy
этан	etan	ethane
этанол	etanol	ethanol

Additional instances of Russian spelling that may be a bit confusing are the following:

English	*Russian*	
qu	кв	(occasionally x)
au	ав	(occasionally ay)
eu	ев-эв	(occasionally ей or ey)
x	кс	
w	в	

Thus we have:

автомобиль	avtomobil'	automobile
боксит	boksit	bauxite
Вильсон	Vil'son	Wilson
Европа	Evropa	Europe
квадрупол	kvadrupol	quadripole
кварц	kvarts	quartz
ксенон	ksenon	xenon
ликвидация	likvidatsiya	liquidation
максвелл	maksvell	maxwell
нейтрон	neĭtron	neutron
пауза	pauza	pause
псевдо-	psevdo-	pseudo-
таутомер	tautomer	tautomer
хинин	khinin	quinine
хинолин	khinolin	quinoline
эвтектика	evtektika	eutectic
эквивалент	ekvivalent	equivalent

Now and then, a close relationship to German and French words becomes evident:

Russian	*German*	*French*	*English*
азот		azote	nitrogen
аммиак	Ammoniak		ammonia
бетон	Beton	béton	concrete (noun)
библиотека	Bibliothek	bibliothèque	library
бор	Bor	bore	boron
дроссель	Drossel		throttle, choke
иод	Jod	iode	iodine
картофель	Kartoffel		potato
линза	Linse		lens
массикот		massicot	litharge
масштаб	Massstab		scale
район		rayon	region
редактор	Redaktor	rédacteur	editor
тигель	Tiegel		crucible
фабрика	Fabrik	fabrique	manufacturing plant
хирургия	Chirurgie	chirurgie	surgery
цель	Ziel		goal, purpose, target
шайба	Scheibe		flat plate; washer
эмаль	Email	émail	enamel
этап		étape	phase, stage

The phonetic rendering of a few foreign words and names into Russian sometimes is not immediately obvious. For example:

плацдарм	platsdarm	place d'armes
Пти	Pti	Petit
Эру	Eru	Héroult
Юз	Yuz	Hughes

But these are collectors items—more amusing than troublesome.

Chemists and Metallurgists Must Co-operate on Supersonic Flight Problems

THE possibility of travelling up to 10 times the speed of sound and making non-stop flights to, say Australia, a reality, an achievement not beyond the realms of possibility from an aeronautical point of view, will depend on chemists being able to provide materials to withstand the extreme conditions that would be encountered. That chemists and metallurgists must get together with the engineers was stressed by Mr. M. B. Morgan, deputy controller of aircraft (research and development) in the Ministry of Aviation, at the symposium dinner of the Plastics and Polymer Group, Society of Chemical Industry, held at 'The Londoner' hotel on 22 September.

Mr. Morgan said that engineers had been very conservative in the past; it took time to overcome the teething troubles of a new material and, having just begun to feel at home with it, he found there was yet another available and the procedure began again. This, he thought, explained why plastics had had such an up-hill fight, but engineers now realised that they need chemists more than ever before.

The symposium on 'High temperature resistance and degradation of polymers' was held in London from 21 to 23 September, when papers were read on a variety of subjects concerning both organic and inorganic polymers. In proposing the toast to the guests, Mr. C. E. Hollis, past chairman of the Plastics and Polymer Group, said that they were proud of the fact that the symposium had attracted over 100 overseas delegates.

Imports from China

Of the current quota for imports of chemicals (subject to type) of £250,000, a balance of £146,000 has yet to be taken up. Of the pharmaceuticals (subject to type) quota of £150,000, £59,000 is still available. In a notice to importers, the Board of Trade states that quota levels in 1961 will not be less than the 1960 levels.

Shell Contest for Designs in Polyolefins

WINNERS of the £1,000 plastics design competition sponsored by Shell Chemical Co. Ltd., received their prizes from Mr. David Radford, chairman of the British Plastics Federation, at a ceremony at the 'Time and Life' Building, London W.1, on Monday.

The competition's main purpose was to stimulate design interest in the new polyolefin plastics materials shortly to be produced by Shell Chemical in the U.K. The 395 entries ranged from a canoe to a complete wardrobe; from skis to litter baskets. First prize of £500 was awarded to Mr. Frank Watkins, of Fulham, London S.W.6, for his design of a lobster pot to be made in polypropylene or high-density polythene instead of traditional materials. Other prizewinning ideas were for a wheelbarrow in high-density polythene and a pair of washing tongs for moulding in polypropylene.

Judges included Mr. N. A. Iliff, managing director, Shell Chemical, and Mr. V. N. Luke, commercial manager of the Plastics and Rubbers Division.

Overseas News

CARBIDE/ACETYLENE PROJECT FOR NEW MONSANTO-SPANISH VENTURE

A NEW Spanish company, Monsanto Iberica S.A., has been formed by Monsanto Overseas S.A., a wholly owned subsidiary of Monsanto Chemical Co., U.S., and Aiscondel S.A. of Barcelona. The new company is one of the first to be created under a recently enacted Spanish law which governs foreign investments and permits equity of up to 50% by foreign companies. Previously, foreign equities were generally limited to a maximum of 25%.

This new venture in Spain is already in production having acquired an Aiscondel subsidiary plant near Barcelona which produces plasticisers, stabilisers and lauroyl peroxide for the plastics processing industry.

The new company also will begin construction immediately of a plant at Monzon, Spain, to manufacture calcium carbide, acetylene and acetylene derivatives. The plant is expected to commence initial operation the second half of 1961.

This is the third joint overseas venture involving Monsanto to be announced in recent months. In late May, Monsanto Chemicals (Australia) Ltd. joined with another Australian firm to form Australian Fluorine Chemicals Pty. Ltd. The establishment of Monsanto Belgium S.A. by the parent company and a European partner, was also announced at that time.

Monsanto Overseas holds a minority interest in another Spanish firm, Etino-Quimica S.A., a producer of caustic soda, chlorine, polystyrene and vinyl chloride monomer and polymer.

Rumania Installs New Sodium Products Works

A new, 150,000 tons/year integrated works at Govora, with immediate possibilities of a two-fold increase in capacity, and a new electrolytic soda plant, to be partially commissioned this year within the Borzesti petrochemical complex, will add to Rumania's output of sodium products, which are now exported to some 15 countries as compared with only six in 1950.

At present, sodium products marketed by the 'Chimimport' State export organisation include solid caustic soda, soda ash, sodium silicate and sodium bicarbonate.

Union Miniere Deny Uranium Sale Report

A denial of press reports that the company had recently been concerned in negotiations or agreements for the sale of uranium has been issued by the Union Minière du Haut Katanga in Brussels. Union Minière state that their only uranium mine, at Shinkolobwe, in the Katanga province of Central Africa, was closed in April because the uranium seams were exhausted. Some uranium ore is still in stock and will be treated in the concentration plant at the mine.

Shinkolobwe was the principal source of uranium for the U.S. during the war, but uranium production is a secondary activity of Union Minière, whose main concern is with copper and cobalt.

Resorb Solvent Recovery System for Dow Phenol Plant in Canada

Canadian Bechtel Ltd. have awarded Barnebey-Cheney Co., Columbus, Ohio, the contract for the solvent recovery Resorb equipment included as a part of the new phenol plant being constructed for Dow Chemical of Canada Ltd. near Vancouver, British Columbia. Resorb is Barnebey-Cheney's system of in-place regenerative activated carbon adsorption.

Brine Electrolysis Chlorine for Austrian Phenol Project

As the first stage of a phenol project the Austrian chemical producers Alpine Chemische AG. have brought into operation a brine electrolysis plant at Kufstein. This will produce chlorine, sodium lye and hypochlorite as intermediates for the planned phenol production, to begin at a later date.

Four Japanese Firms Plan Polypropylene Production

According to an announcement made by the Japanese Ministry of Finance, four Japanese interests are planning the production of polypropylene under Montecatini and Avisun licences. These are given as the Mitsui group, Mitsubishi group, the New Japan Nitrogenous Fertilisers Co. and possibly the Sumitomo group. The first two companies have already signed a licence agreement with Montecatini and the New Japan concern plans to sign a technical aid pact with the Avisun Corporation.

Lummus Get $20 m. SunOlin Ethylene Contract

Engineering and construction contracts for a $20 million ethylene and ethylene oxide plant adjacent to the Sun Oil Co. refinery at Marcus Hook, Pa., have been awarded by SunOlin Chemical Co. to the Lummus Co. The new plant, scheduled for completion late in 1961, will have a capacity of 225 million lb./year of ethylene and 55 million lb./year of ethylene oxide. With its related facilities it will also produce 12 million cu. ft./day of high-purity hydrogen and up to 1 million cu. ft./day of carbon monoxide.

Included in the expansion programme is a multiple pipeline system that will cross the Delaware River to New Jersey. This will enable quick delivery of petrochemical raw materials and intermediates to existing companies and others that might set up operations in the area.

Most of the new production is scheduled for major chemical companies in the area. The remainder will be used in the manufacture of products marketed through existing sales outlets of Sun Oil Co. and Olin Mathieson Chemical Corporation, joint owners of SunOlin. Raw materials for the new facilities will be supplied by the adjacent refinery of Sun Oil Co., at Marcus Hook. The new plant will be adjacent to SunOlin's present urea plant.

The new ethylene plant will use a process designed by the Lummus Co., and the ethylene oxide will be made by the Shell Development Co. process.

Chemico to Build 350 Tons/Day Ammonia Plant in Florida

Contract for a multi-million dollar ammonia plant which will feature an ammonia synthesis converter claimed to have the largest single designed capacity in the world, has been awarded Chemical Construction Corporation, New York. The plant is being designed and constructed by Chemico for U.S. Phosphoric Products, in Tampa, Florida. Using natural gas as a raw material, will have a capacity of 350 tons/day. Engineering has already begun on the project, using the Chemico ammonia process in what is essentially a single train of equipment.

The process steps include, in addition to gas reforming, CO_2 removal by a combination of potassium carbamate scrubbing and MEA clean-up. Methanation will provide final purification prior to the ammonia synthesis operation. In addition, the product ammonia will be stored in a Chemico designed atmospheric storage system.

Target date for the completion of the plant is late 1961.

This project brings the total number of Chemico designed ammonia plants to 75, and is the 14th ammonia plant to be built by Chemico since 1958.

Sacor (Portugal) to Expand Refinery Operations

Expansion of their petroleum refinery near Lisbon is planned by Socidedade Anonima Concessionaria da Refinagio de Petroleos en Portugal, and a contract to build catalytic cracking and other facilities has been awarded to Hydrocarbon Research Inc., New York, who constructed the existing 24,000 bbl./day refinery. The new additions, scheduled for completion early next year, will increase production of liquefied propane and butane.

70,000 kW Phosphorus Furnace for Knapsack

The Farbwerke Hoechst AG subsidiary, Knapsack-Griesheim AG, of Knapsack, West Germany, are to introduce a large new phosphorus furnace late next year or early in 1962. The company, which is the only producer of elemental phosphorous in the country, at present produces 40,000 tonnes of raw phosphorous annually with two furnaces.

Largest of these, with a capacity of 50,000 kW, is said to be the biggest and most modern in the world. Even bigger than this will be the new furnace, which will have a capacity of 70,000 kW.

Japanese Insecticide Plant for India

The Kueha Chemical Industry Co. Ltd., Japan, have signed a contract with India worth some Yen 65,000,000 for the delivery and erection of a chemical plant for the production of insecticides. The plant, which will take some 10 months to erect, will have an annual capacity of 1,500 tonnes.

Pechiney Plan P.V.C. Plant in Argentina

Péchiney of France have sought permission of the Argentine Ministry of Trade to invest additional sums in their Argentine subsidiary, Industrias Patagonicas. The investments, of N.F.600,000, plus SwF.46,000, would permit the start of p.v.c. production at the company's plant, which at present produces calcium chloride and sodium.

Algerian Natural Gas Pipeline Project Gets Approval

Approval has at last been given by the French Government to the long-planned laying of a natural gas pipeline from Hassi R'Mel in the Sahara to Arzew on the Mediterranean coast of western Algeria. The line will be a total 320 miles in length, and with a pipe diameter of 60 cm. for the first 262 miles and 50 cm. thereafter, will be capable of an hourly throughput of 400,000 c.m. The transport of the gas will be carried out by the semi-State company Société de Transport du Gaz Naturel d'Hassi R'Mel à Arzew. In the Arzew area itself large-scale plants are planned for the liquefying and chemical preparation of the gas. A large port is also to be built there.

Germans to Participate in Jordan Fertiliser Project ?

General secretary of the Jordanian Development Bureau, Dr. Hazem Nusseibeh, has stated that he hopes for the participation of West German interests in a company planned to be set up for the building of a new synthetic fertilisers plant in the Jordan. Capital of the proposed company would be of some 2 million dinars (£2 million).

Dow AGFO Polythene Plant in Japan

A proposal has been placed before the Japanese Government by Asahi-Dow Ltd., an associated company of the Dow Chemical Company, for the construction of a polythene plant at Kawaski, Japan. According to the proposal, the new plan would use the high pressure polythene process developed by AG fur Olefinpolymerisaction (AGFO process).

Principal licensor of the AGFO process, Scientific Design Company Inc., New York, N.Y., recently concluded a contract authorising Dow's Swiss subsidiary, Dow Chemie AG, to use the AGFO process for high pressure polythene in several countries on a non-exclusive basis for the benefit of their manufacturing subsidiaries and associated companies. In the case of Japan, however, S.D. agreed that the licence be granted exclusively to Asahi-Dow.

Since the proposal also includes the use of Dow techniques in the fields of polythene manufacture and fabrication, Asahi-Dow have been able to present a fully integrated proposal to the Japanese Government.

Fertiliser Price Reductions Alarm Producers in Italy

The recently reduced prices of chemical fertilisers by the Italian Government are alarming producers and in a recent interview, Count Carlo Faina, president of Montecatini, stated that he does not feel that new processes used in the production of chemical fertilisers justify any cuts in prices and expressed an opinion that the prices of chemical fertilisers in Italy are the lowest in the world. This opinion is shared by the Italian Chemical Industry Association.

The association feels that Italian producers of fertilisers have already made enough sacrifices during the past years and that if Italian farmers need help, this should be given by means of grants or rebates shouldered by the whole community and not just by fertiliser manufacturers.

Production of Orlon in Italy Denied

In connection with a recent report to the effect that a company at Ragusa, Sicily, would shortly start the production of Orlon using a polymerisation of synthetic resin process, the information service of the Bank of Sicily has stated that E.I. Du Pont de Nemours deny having granted their Orlon patent to any Italian company.

New Erco Fertiliser Plant Will Meet Canadian Demand and Give Export Surplus

FERTILISER materials made in Canada will be sold in large quantities in the U.S. as a result of a new agreement between Electric Reduction Co. of Canada Ltd. (Erco), an Albright and Wilson subsidiary, and International Minerals and Chemical Corporation, Skokie, Ill.

Electric Reduction Co. are building a $12 million plant at Port Maitland, Ontario, for production of triple superphosphate, phosphatic fertiliser solution, and industrial phosphates. Production is expected to begin next March. Erco have agreed with International Minerals and Chemical that the Canadian products will be distributed in the U.S. by the American company. Canada's total annual consumption of triple superphosphate—about 50,000 tons—is now imported from the U.S. The new Port Maitland plant will be able to supply all the Canadian market and about 5% of the U.S. market

Raw materials are phosphate rock, imported from Florida, and sulphuric acid, which will be produced at Port Maitland at a plant adjacent to that of Electric Reduction. I.M.C. are major producers of phosphate rock in the U.S. and the agreement is that the Canadian firm will buy I.M.C.'s phosphate rock as a raw material. I.M.C. make triple superphosphate and phosphatic fertiliser solution in large quantities in the Southern States.

No tariffs are laid on phosphate rock coming into Canada or on export of the two products to the U.S.

U.S. Increases Sulphur Exports to Commonwealth Countries, Brazil

PRODUCTION of sulphur in all its forms in the U.S. totalled 6.17 million tons in 1959—a slight increase over the 1958 figure (6.14 million long tons) but well below the 7 million tons of 1957 and the 7.8 million of 1956. These figures are based on reports by producers to the Bureau of Mines, U.S. Department of the Interior. It is noted that the U.S. supply of sulphur in 1959 was augmented by 632,000 tons of Frasch sulphur and 37,025 tons of recovered sulphur from stockpiles.

Sulphur exports from the U.S. increased in 1959, the major importing countries, in order of volume, being Canada, the U.K., Brazil, India and Australia. According to the report, the U.K. itself produced an estimated 55,000 long tons of sulphur from refinery gases, compared with 49,561 in 1958, while U.K. production of pyrites is placed at 3,000 long tons in gross weight, having a sulphur content of 1,000 long tons, these figures being the same as for 1958.

Sulphur consumption in the U.S. reached a new record, the apparent total being 5,917,100 long tons of all forms compared with 5,262,800 in 1958. This was despite a lessening of the demand by a strike-bound steel industry, which normally uses 7%. As shown by a 12% increase in the apparent consumption, the loss in the steel industry was more than offset by higher demand by other large industries for fertilisers, chemicals, pulp and paper, pigments and rayon. Considerable improvement was also noted in the world markets for sulphur, consumption reaching a record 16 million tons.

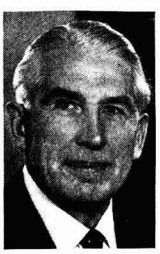
PEOPLE in the news

● **Mr. W. C. Johnson, M.B.E., F.R.I.C.,** technical director of Hopkin and Williams Ltd., is making a tour of Africa during which he will give lectures to the local branches of various scientific associations and learned societies on 'The manufacture and control of laboratory reagents', 'Recent advances in organic reagents for analysis', and 'Complexometric titration of metals with EDTA and the new metal indicators'. Mr. Johnson left London Airport on 24 September for Uganda and Tanganyika, and will visit Kampala and Nairobi. From there he will be stopping in towns in Northern and Southern Rhodesia, and will leave for Johannesburg on 23 October, returning to London on 28 October.

● **Mr. J. M. Mitchell,** president of Alcoa International Inc., and **Mr. M. J. S. Clapham,** chairman of I.C.I. Metals Division, have been appointed directors of Almin Ltd. **Mr. W. Brining, Mr. J. M. Graham,** directors of Almin Ltd., **Mr. J. M. Mitchell** and **Mr. S. W. Weysom,** deputy treasurer of I.C.I., have been appointed directors of the Imperial Aluminium Co. Ltd.

● **Dr. G. Jones,** of the Rowett Research Institute, Bucksburn, Aberdeen, has been appointed to hold the Sophie Fricke Royal Society Research Fellowship in the Rockefeller Institute for the academic year 1960-1961. Dr. Jones will leave the U.K. in October for the Rockefeller Institute, where he will be working on the fractionation and characterisation of leaf proteins.

● **Mr. Alfred Ratcliffe, M.I.Mech.E., M.I.C.E.,** has been appointed a director of Metals Division, Imperial Chemical Industries Ltd., and a joint managing



A. Ratcliffe

W. Robson

director of Marston Excelsior Ltd., an I.C.I. subsidiary, where he succeeds **Mr. W. Robson, M.I.Mech.E.,** who retired on 30 September. Mr. Ratcliffe, who is 58, has for the past nine years been production director, and latterly also engineering director, of I.C.I. Salt Division. He joined Buxton Lime Firms Ltd. (now part of I.C.I. Alkali Division) in 1929, where he was concerned with the mechanisation of the limestone quarries. In 1950 he joined I.C.I. Salt Division as deputy chief engineer and the following year was appointed a director. Mr. Robson joined the engineering department of Billingham Division in 1927 and for six years from 1934 was manager of the division's central services section. He subsequently served the company in a number of important posts and in 1952 joined the board of Metals Division.

● **Mr. M. W. Vincent, B.Sc., A.R.I.C.,** has been appointed technical sales manager of Blaw Knox Chemical Engineering Co. Ltd. From 1955 until 1960 he was head of the process laboratories of Sharples Centrifuges Ltd., and, before that, development chemist with Murgatroyd's Salt and Chemical Co. Ltd.

● Kellogg International Corporation announce that **Mr. J. E. Lytle,** who has hitherto functioned as both deputy to the vice-president—contract operations and director of engineering, will turn over the latter function to **Mr. J. M. Wentworth,** who is at present chief project manager. **Mr. F. J. King** will be promoted to chief project manager.

● **Mr. A. L. Kennedy,** works manager at the Triangle Valve Co. Ltd., Wigan, Lancs, for the past 12 years, has now been appointed works director.

● **Professor W. T. Astbury** will give the ninth Procter memorial lecture of the Society of Leather Trades' Chemists on Friday this week at the annual conference in Leeds, 21 years after he gave the first Procter lecture in 1939.

● **Mr. J. Davidson Pratt, C.B.E.,** formerly chairman of the Association of British Chemical Manufacturers' Association, is retiring as chairman of the British Road Tar Association, 9 Harley Street, London W.1, on 30 September. Communications for Mr. Pratt in his personal capacity should be addressed to him at 138 Earls Court Road, London W.8.

● **Mr. W. M. H. Stevens, A.M.I.Mech.E.,** has been appointed deputy chairman and joint managing director of Firth Cleveland Pumps Ltd., Premier Works, Earl Shilton, Leicester, a member of the Firth Cleveland Group. Mr. Stevens was formerly the technical director of Bowser International Ltd. **Mr. R. W. Hill** continues as joint managing director and will control sales activities from the Firth Cleveland Group headquarters, Stornoway House, Cleveland Row, London.

● **Mr. E. L. Harrison,** sales director of Quickfit and Quartz Ltd., left the U.K. last week on a three-months sales tour of the U.S., Canada, Venezuela, Colombia, Brazil, the Argentine, Chile, Mexico, New Zealand, Australia, the Philippines, Japan, Hong Kong, Thailand, Burma, India, Ceylon and Pakistan.

● **Mr. J. S. Ridges** has joined the board of R. D. Nicol and Co. Ltd., manufacturers of lubricants, a member of the Staveley Coal and Iron group.

● **Mr. L. M. T. Castle** and **Mr. N. C. Macdiarmid,** directors of Stewarts and Lloyds Ltd., have joined the board of the Staveley Iron and Chemical Co. Ltd., which was recently acquired by S. and L.

Dr. H. M. Stanley, controller of the new D.C.L. Development Division. See last week, p. 514

● **Dr. J. Manning,** products technical manager of I.C.I. Billingham Division, is to retire on 30 November. He will be succeeded by **Dr. W. L. Bedwell,** former deputy products works manager, who is now in the division's technical department.

● **Mr. S. A. Horobin** has been appointed home sales director of Anchor Chemical Co. Ltd., Manchester.

Atom Worker Killed by Acid and Vapour

IF an Atomic Energy Authority maintenance fitter had been wearing the proper protective clothing, he would not have been killed by acid and vapour which spurted out of a pipe he was investigating. This was stated at the inquest on Sidney Blower, 57, held at Blackpool on 22 September by Dr. A. O. Bruce, pathologist. A verdict of misadventure was recorded.

Mr. Blower died in hospital from gassing and acid burns suffered at the U.K. Atomic Energy Authority factory at Salwick, near Preston. Giving evidence Mr. Thomas Traynor said that Mr. Blower went to the job without first obtaining a clearance certificate and full protective clothing. The process supervisor, Mr. George Keen, reported that the fitter should have had full protective clothing, including a respirator, had he (Keen) received the certificate.

Commercial News

- B.O.C.'s £12.27 Million Rights Issue
- Terylene Royalty Payments Up for C.P.A.
- Dutch-German Company to Make Chlorine
- Big Rise in I.C.I. Half-year Income

Ashe Chemical Ltd.

Directors of Ashe Chemical Ltd. have declared an interim dividend of 5% (same).

British Oxygen

A rights offer to raise about £12.27 million is being made to shareholders by the British Oxygen Co., terms being one 5s ordinary share for every five held on 15 September at a price of 18s. The issue will not be underwritten. The purpose of this rights issue is to help compensate for the company's anticipated increase in capital expenditure to £40 million, from £28 million announced last March. Increased expenditure is needed for extra production capacity, especially to fulfil orders for the steel industry for plants to produce oxygen and other industrial gases.

Group trading profit for the year is estimated at £9.4 million before tax and a final dividend of 10% is to be recommended, making a total of 16% for the year (last year, 14%). This rate is expected to be maintained on the increased capital

Calico Printers

The Calico Printers' Association Ltd. announce a group profit (after all charges including tax) of £1,865,528 for the year to 30 June (£232,431).

Net royalty income from Terylene and other patents, after deducting tax, amounted to £853,700, which was about twice the net income from this source in 1958/59. The additional revenue was derived from substantial increases in the sales of Terylene by I.C.I. and in sales of polyester fibres made abroad by I.C.I.'s sub-licensees. Revenue from the foreign patents contributed over 50% of the total royalty income.

Gas Purification

Gas Purification and Chemical Co. Ltd. have acquired the £45,000 issued share capital of Precision Plastics and a 77% holding in Plyglass Ltd. Remaining Plyglass shares are to be purchased at a price of 10s. per share.

I.C.I. Group Increase

I.C.I. group income before tax for the first half of 1960 was £50,935,000, a 49% increase on the first half 1959 figure of £33,966,000, after depreciation of £17,853,000 (£15,593,000). Group income after tax of £23,335,000 (£13,943,000) was £27,600,000, 37.8% higher than in January-June 1959 (£20,023,000). Group income after tax applicable to I.C.I. was 38.8% higher at £26,048,000 (£18,762,000). An interim dividend of 1s 3d per £1 unit (9d) is announced; it was stated earlier in the year that the disparity between interims and final would be reduced. Last year, I.C.I. paid a total of 2s 3d per unit.

Group home and export sales totalled £288 million, 15% higher than last year's figure of £250 million. The increase in the volume of home sales is mainly due to the progressive increase in the level of industrial activity in 1959 and the early part of 1960. In the first half of 1960, home selling prices of I.C.I.'s main products were on average 2% lower than in the first half of 1959. The f.o.b. value of I.C.I. exports from the U.K. in the first half of 1960 was £47.3 million, 14.5% higher than the £41.3 million of the first half of 1959 and 2.3% above the £46.2 million recorded in the second half of 1959.

Most of the company's plants were operating at high outputs, generally close to full capacity in the first half of 1960. I.C.I. are to repay the £20 million 4% unsecured loan stock maturing at 31 December 1960 from existing cash resources.

Thomas Hedley and Co.

Operating profits of Thomas Hedley and Co., subsidiary of Procter and Gamble, reached a record £4,460,992 in the year ended 30 June (£3,397,952). Two important factors leading to the increase in profits have again this year been the improvements in the efficiency of operations and a higher turnover. After tax of £2,234,802 (£1,560,985), net profits were 21% higher at £2,226,190. Dividends absorb £1,536,938 (£1,220,455). The directors state that they have succeeded in holding the value of exports at last year's record figure of about £3 million.

Powell Duffryn Ltd.

In his annual report Sir Henry Wilson Smith, chairman of Powell Duffryn Ltd., said that turnover and profit of Powell Duffryn Carbon Products on the manufacture of heat exchangers and other chemical equipment in graphite improved considerably and, despite keen competition, the forward order position was satisfactory.

AB Astra

The Swedish pharmaceutical concern, AB Astra, owners of the Watford firm of C. J. Hewlett and Son Ltd., as well as 12 subsidiaries in Sweden and subsidiaries in the U.S., Canada, Australia, the Argentine, Norway, Denmark, Finland and Germany, announce a net turnover of Kr.161,200,000 (Kr.132,500,000) for 1959. Net profit was Kr.4,100,000 (Kr.3,700,000). Dividend of 10% (same) will be paid on increased capital.

Elektro-Chemie Ibbenbüren

The West German coal-mining and ferrous metals concern Preussische Bergwerk- und Hütten-AG, of Hanover, and the Dutch chemical company N.V. Koninklijke Nederlandsche Zoutindustrie, of Hengelo, have set up a joint German chemical subsidiary under the name of Elektro-Chemie Ibbenbüren GmbH. The company, which is registered in Ibbenbüren, Westphalia, has a share capital of DM10 million, of which each parent company will hold half. Elektro-Chemie will produce chlorine, sodium lye, caustic soda, bleaching lye and nitric acid from salts supplied by the Zoutindustrie plants at Hengelo and Delfzijl and with power from the German parent's power station at Ibbenbüren.

Dow Chimica

Dow Chimica Italiana S.p.A., Via S. Damiano 2, Milan, have decided to increase their capital from Lire 120 million to Lire 450 million.

Rustenburg Platinum

Rustenburg platinum mines report a net profit for the year ended 31 August of £2,423,000 (£2,973,347). Final dividend is 34s 9d, making 49s 9d (26s 3d). Although platinum sales were about the same, higher revenue came from increased prices and increased sales of by-product metals. A new reduction plant was commissioned during the year.

N.V. Zoutchemie Botlek

The Dutch chemical concern Koninklijke Nederlandsche Zoutindustrie announces the formation of a new subsidiary under the name of N.V. Zoutchemie Botlek with a capital of Fl5 million. The company's aims are the production of and trade in chemical products and participation in and leading of other companies. The company's name suggests that a plant will be built in the new Botlek port area of Rotterdam.

NEW COMPANIES

COMMERCIAL PLASTICS (INTERNATIONAL) LTD. Cap. £100. To manufacture, process, convert, conduct research and development and deal in plastics, synthetic resins, synthetic fibres and textiles, chemicals, etc. Directors: J. Pomeraniec and R. E. Lynam. Reg. office: Willington Quay, Wallsend-on-Tyne, Northumberland.

UNIVERSAL EXPLORATION GROUP LTD. Cap. £100. Objects: to acquire from H. J. Holford certain patent rights in connection with the exploration and development of chemical processes and compounds, etc. Directors: E. H. Potter, H. V. Revell and H. J. Holford. Reg. office: 52-54 High Holborn, London W.C.1.

BRITISH CHEMICAL PRICES

GENERAL CHEMICALS

Acetic Acid. D/d in ret. barrels (tech. acid barrels free); in glass carboys, £8; demijohns, £12 extra. 80% tech., 10 tons, £97; 80% pure, 10 tons, £103; commercial glacial, 10 tons, £106.

Acetic Anhydride. Ton lots d/d, £128.

Alum. Ground, f.o.r., about £25.
MANCHESTER: Ground, £25.

Aluminium Sulphate. Ex-works, d/d, £15 10s to £18.
MANCHESTER: £16 to £18.

Ammonia, Anhydrous. Per lb., 1s 9d-2s 3d.

Ammonium Chloride. Per ton lot, in non-ret. pack, £33 2s 6d.

Ammonium Nitrate. D/d, 4-ton lots, £37 10s.

Ammonium Persulphate. Per cwt., in 1-cwt. lots, d/d, £6 13s 6d; per ton, in min. 1-ton lots, d/d, £123 10s.

Ammonium Phosphate. MAP., £106 per ton; DAP, £100 10s., per ton, d/d.

Antimony Sulphide. Per lb., d/d UK in min. 1-ton lots; crimson, 5s 6d d/d to 6s; golden, 3s 9d d/d per lb. to 5s 2d d/d.

Arsenic. Ex-store, £45 to £50.

Barium Carbonate. Precip., d/d, 5-ton lots or more, bag packing, £37 10s per ton.

Barium Chloride. 2-ton lots, £45.

Barium Sulphate [Dry Blanc Fixe]. Precip. 2-ton lots, d/d, £39.

Bleaching Powder. Ret. casks, c.p. station, in 4-ton lots. £30 7s 6d.

Borax. Ton lots, in hessian sacks, c.p. Tech. anhydrous, £70; gran., £47; crystal, £50 10s; powder, £51 10s; extra fine powder, £52 10s; BP, gran., £56; crystal, £59 10s; powder, £60 10s; extra fine powder, £61 10s. Most grades in 6-ply paper bags, £1 less.

Boric Acid. Ton lots, in hessian sacks, c.p. Comm., gran., £78; crystal, £87; powder, £84 10s; extra fine powder, £86 10s; BP gran., £91; crystal, £99; powder, £96 10s; extra fine powder, £98 10s. Most grades in 6-ply paper bags, £1 less.

Calcium Chloride. Ton lots, in non-ret. pack; solid and flake, about £15.

Chlorine, Liquid. In ret. 16-17 cwt. drums d/d in 3-drum lots, £41.

Chromic Acid. Less 2½%, d/d UK, in 1-ton lots, per lb., 2s 2¾d.

Chromium Sulphate, Basic. Crystals, d/d, per lb., 8½d; per ton, £79 6s 8d.

Citric Acid. In kegs, 1-4 cwt. lots, per cwt., £11; 5-19 cwt. lots, per cwt., £10 16s; 1 ton lots, per cwt, £10 15s; packed in paper bags, 1-4 cwt. lots, per cwt., £10 12s; 5-19 cwt. lots, per cwt., £10 8s; 1 ton lots, per cwt., £10 7s.

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

Copper Carbonate. Per lb., 3s 2d.

Copper Sulphate. £80 10s. per ton less 2% f.o.b. Liverpool.

Cream of Tartar. 100%, per cwt., about £11 12s.

Formaldehyde. In casks, d/d, £40.

Formic Acid. 85%, in 4-ton lots, c.p., £91.

Glycerine. Chem. pure, double distilled 1.2627 s.g., per cwt., in 5-cwt. drums for annual purchases of over 5-ton lots and under 25 tons, £12 1s 6d. Refined technical grade industrial, 5s per cwt. less than chem. pure.

Hydrochloric Acid. Spot, per carboy, d/d (according to purity, strength and locality), about 12s.

Hydrofluoric Acid. 60%, per lb., about 1s 2d.

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

Iodine. Resublimed BP, under 1 cwt., per lb., 11s; for 1-cwt. lots, per lb., 10s 6d.

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

All prices per ton unless otherwise stated

Iodoform. Under 1 cwt., per lb., £1 2s 4d for 1-cwt. lots, per lb., £1 1s 8d, 5 cwt., per lb., 21s 1d, crystals, 3s more.

Lactic Acid. C.P., d/d, 44% by wt., per lb., 13d; 50% by wt., 14¼d; 80% by wt., 23d; dark tech., ex-works, 44% by wt., per lb., 9d; 1-ton lots, ex-works, usual container terms.

Lead Acetate. White, about £154.

Lead Nitrate. 1-ton lots, about £135.

Lead, Red. Basic prices: 15-cwt. drum lots, Genuine dry red, £104 5s per ton; orange lead £116 5s per ton; Ground in oil: red, £125, orange, £137.

Lead, White, Basic prices: in 5-cwt. drums, per ton for 2 ton lots, Dry English £116 15s; Ground in oil, £136.

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

Litharge. In 5-cwt. drum lots, £116 5s per ton.

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

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

Magnesium Chloride. Solid (ex-wharf), £17 10s.

Magnesium Oxide. Light, comm., d/d, under 1-ton lots, £245.

Magnesium Sulphate. Crystals, £16.

Mercuric Chloride. Tech. powder, per lb., for 1-ton lots, £1 0s 3d; 5-cwt. lots, in 28-lb. parcels, £1 0s 9d; 1-cwt. lots, £1 1s.

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

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

Nitric Acid. 80° Tw., £35 2s.

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

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

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

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

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

Potassium Dichromate. Gran., per lb., in 5-cwt. to 1-ton lots, d/d UK, 1s 2¼d.

Potassium Iodide. BP, under 1 cwt, per lb., 7s 6d., per lb for 1-cwt lots, 7s 3d.

Potassium Nitrate. 4-ton lots, in non-ret. pack, c.p., £63 10s.

Potassium Permanganate. BP, 1-cwt. lots, per lb., 1s 11¾d; 3-cwt. lots, per lb., 1s 11¼d; 5-cwt. lots, per lb., 1s 10¾d; 1-ton lots, per lb., 1s 10½d; 5-ton lots, per lb., 1s 10d. Tech., 1-ton lots in 1-cwt. drums, per cwt., £9 18s; 5-cwt. in 1-cwt. drums, per cwt., £10; 1-cwt. lots, £10 9s.

Salammoniac. Ton lot, in non-ret. pack, £47 10s.

Salicylic Acid. MANCHESTER: Tech., d/d, per lb., 2s 6d, cwt. lots.

Soda Ash. 58% ex-depot or d/d, London station, 1-ton lots, about £16 11s 6d.

Sodium Acetate. Comm. crystals, d/d, £75 8s.

Soda, Caustic. Solid 76/77%; spot, d/d 1-ton lots, £33 16s 6d.

Sodium Bicarbonate. Ton lot, in non-ret. pack, £12 10s.

Sodium Bisulphite. Powder, 60/62%, d/d 2-ton lots for home trade, £46 2s 6d.

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

Sodium Chlorate. 1-cwt. drums, c.p. station, in 4-ton lots, about £80 per ton.

Sodium Cyanide. 96/98%, ton lot in 1-cwt. drums, £126.

Sodium Dichromate. Gran. Crystals per lb., 1s. Net d/d UK, anhydrous, per lb., 1s 1¾d. Net del. d/d UK, 5-cwt. to 1-ton lots.

Sodium Fluoride. D/d, 1-ton lots and over, per cwt., £5; 1-cwt. lots, per cwt., £5 10s.

Sodium Hyposulphite. Pea crystals, £38; comm., 1-ton lots, c.p., £34 15s.

Sodium Iodide. BP, under 56 lb. per lb., 10s; 56 lb. and over, 9s 9d.

Sodium Metaphosphate [Calgon]. Flaked, paper sacks, £136.

Sodium Metasilicate. (Spot prices) D/d UK in 1-ton lots, 1-cwt. free paper bags, £29.

Sodium Nitrate. Chilean refined gran. over 98%, 6-ton lots, d/d c.p., per ton, £29.

Sodium Nitrite. 4-ton lots, £32.

Sodium Perborate. (10% available oxygen) in 1-cwt. free kegs, 1-ton lots, £129 10s; in 1-cwt. lots, £139 5s.

Sodium Percarbonate. 12½% available oxygen, in 1-cwt. kegs, £170 15s.

Sodium Phosphate. D/d, ton lots: di-sodium, crystalline, £40 10s, anhydrous, £89; tri-sodium, crystalline, £39 10s, anhydrous, £87.

Sodium Silicate. (Spot prices) 75-84° Tw. Lancs and Ches., 6-ton lots, d/d station in loaned drums, £12 10s; Dorset, Somerset and Devon, per ton extra, £3 5s; Scotland and S. Wales, extra, £2 17s 6d. Elsewhere in England, not Cornwall, extra, £1.

Sodium Sulphate [Desiccated Glauber's Salt]. D/d in bags, about £19.

Sodium Sulphate [Glauber's Salt]. D/d, up to £14.

Sodium Sulphate [Salt Cake]. Unground, d/d station in bulk, £10.
MANCHESTER: d/d station, £10 10s.

Sodium Sulphide. Solid, 60/62%, spot, d/d, in drums in 1-ton lots, £36 2s 6d; broken, d/d, in drums in 1-ton lots, £37 2s 6d.

Sodium Sulphite. Anhydrous, £71 10s; comm., d/d station in bags, £27-£28 10s.

Sulphur. 4 tons or more, ground, according to fineness, £20-£22.

Sulphuric Acid. Net, naked at works, 168° Tw. according to quality, £9 15s.—£11 7s 6d per ton; 140° Tw., arsenic free, £8 2s 6d; 140° Tw., arsenious, £7 17s 6d.

Tartaric Acid. Per cwt.: 10 cwt. or more, in kegs, 300s; in bags, 292s per cwt.

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

Zinc Oxide. Per ton: white seal, £107 10s; green seal, £105 10s; red seal, £102 10s

SOLVENTS AND PLASTICISERS

Acetone. All d/d. In 5-gal. drums, £124; in 10-gal. drums, £114; in 40-45 gal. drums, under 1 ton, £89; 1-5 tons, £84; 5-10 tons, £82; 10 tons and up, £80; in 500-gal. tank wagons, £79. In bulk minimum 2,500 gal. £75 per ton.

Butyl Acetate BSS. 10-ton lots, £165.

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

***sec*-Butyl Alcohol.** All d/d. In 5-gal. drums, £168; in 10-gal. drums, £158; in 40-45

gal. drums, under 1 ton, £133; 1-5 tons £130; 5-10 tons, £129; 10 tons and up, £128; in 400-gal. tank wagons, £125.

tert-**Butyl Alcohol.** 5-gal. drums, £195 10s; 40/45-gal. drums: 1 ton, £175 10s; 1-5 tons, £174 10s; 5-10 tons, £173 10s; 10 tons and up, £172 10s.

Diacetone Alcohol. Small lots: 5-gal. drums, £185; 10-gal. drums, £175. 40/45-gal. drums: under 1 ton, £148; 1-5 tons, £147; 5-10 tons, £146; 10 tons and over, £145, in 400-gal. tank wagons, £142.

Dibutyl Phthalate. In drums, 10 tons, d/d per ton, £203; 45-gal. 1-4 drums, £209.

Diethyl Phthalate. In drums, 10 tons, per ton, £187 10s; 45-gal. 1-4 drums, £193 10s.

Dimethyl Phthalate. In drums, 10 tons, per ton, d/d, £179; 45-gal. 1-4 drums, £185.

Dioctyl Phthalate. In drums, 10 tons, d/d, per ton, £276; 45-gal. 1-4 drums, £282.

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

Ethyl Acetate. 10-ton lots, d/d, £137.

Ethyl Alcohol Fermentation grade (PBF 66 o.p.). Over 300,000 p. gal., 3s 10¼d; d/d in tankers, 2,500- 10,000 p. gal. per p. gal., 4s 0¾d. D/d in 40/45-gal. drums, p.p.g. extra, 2d.
Absolute alcohol (74.5 o.p.), p.p.g. extra, 2d.

Methanol. Pure synthetic, d/d, £40.

Methylated Spirit. Industrial 66° o.p.: 500-gal. and up, d/d in tankers, per gal., 5s 7½d; 100-499 gal. in drums, d/d per gal., 6s 0¾d-6s 2¼d. Pyridinised 66° o.p.: 500 gal. and up, in tankers, d/d, per gal., 5s 11d; 100-499 gal. in drums, d/d, per gal., 6s 4d-6s 6d.

Methyl Ethyl Ketone. All d/d. in 40/45-gal. drums, under 1 ton, £143 10s; 1-5 tons, £138 10s; 5-10 tons, £136 10s; 10 tons and up, £143; in 400-gal. tank wagons, £134 10s.

Methyl *iso*Butyl Carbinol. All d/d. In 5-gal. drums, £203; in 10-gal. drums, £193; 40-45 gal. drums, less than 1 ton, £168; 1-9 tons, £165; 10 tons and over, £163; in 400-gal. tank wagons, £160.

Methyl *iso*Butyl Ketone. All d/d. In 5-gal. drums, £209; in 10-gal. drums, £199; in 40/45-gal. drums, under 1 ton, £174; 1-5 tons, £171; 5-10 tons, £170; 10 tons and up, £169; in 400-gal. tank wagons, £166.

***iso*Propyl Acetate.** 10 tons, d/d, 45-gal. drums £132.

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

RUBBER CHEMICALS

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

Carbon Black. GPF: Ex-store, Swansea. Min. 3-ton lots, one delivery, 6¾d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 7d. per lb.; ex-store, Manchester, London and Glasgow, 7¾d per lb. HAF: ex-store, Swansea; Min. 3-ton lots, one delivery, 7¾d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 8d per lb. Ex-store Manchester, London and Glasgow, 8¾d per lb. ISAF: Min. 3-ton lots in one delivery, 9¾d per lb., min. 1-ton lots and up to 3-tons in one delivery, 10d per lb. Ex-store Swansea, Ex-store Manchester, London and Glasgow, 10¾d per lb.

Carbon Tetrachloride. Ton lots, £83 15s.

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

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

Mineral Black. £7 10s-£10.

Sulphur Chloride. British, about £50.

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

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

COAL TAR PRODUCTS

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

Carbolic Acid. Crystals, min. price, d/d bulk, per lb., 1s 4¼d; 40/50-gal. ret. drums extra, per lb., ¼d.

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

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

Naphtha. Solvent, 90/160°, per gal., 5s 3d. heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 4s 1d. Drums extra; higher prices for smaller lots.

Naphthalene. Crude, 4-ton lots, in buyers' bags, nominal, according to m.p.: £22-£30; hot pressed, bulk, ex-works, £40; refined crystals, d/d min. 4-ton lots, £65-£68.

Pitch. Medium, soft, home trade, f.o.r. suppliers' works, £10 10s; export trade, f.o.b. suppliers' port, about £12.

Pyridine. 90/160, per gal., 16s 6d about.

Toluol. Pure, per gal., 5s 9d; 90's, d/d, 2,000 gal. in bulk, per gal., 5s 1d. MANCHESTER: Pure, naked, per gal., 5s 6d.

Xylole. According to grade, in 1,000-gal. lots, d/d London area in bulk, per gal., 5s 8d-5s 9d.

INTERMEDIATES AND DYES
(Prices Normal)

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

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

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

Dichloraniline. Per lb., 4s 6d.

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

Dinitrotoluene. Drums extra. SP 15°C., per lb., 2s 1¼d; SP 26°C., per lb., 1s 5d; SP 33°C., per lb., 1s 2¼d; SP 66/68°C., per lb., 2s 1d.

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

Nitrobenzene. Spot, 90 gal. drums (drums extra), 1-ton lots, d/d, per lb., 10d.

Nitroanphthalene. Per lb., 2s 5¼d.

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

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

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

1961 Oil and Colour Chemists' Exhibition

The thirteenth exhibition of the Oil and Colour Chemists Association will be held at both the old and the new halls of the Royal Horticultural Society, London S.W.1, on 6-9 March 1961. The purpose of the exhibition is to provide a focus for the technical display of advances in raw materials, plant and equipment for use in the paint, printing ink and allied industries. There will be exhibits from many countries, both in Europe and the Commonwealth.

Market Reports

New Business Reported for Industrial Chemicals

LONDON Demand for industrial chemicals generally, against contracts, has been sustained, and most sections of the market have experienced a fair weight of new business including a steady flow of enquiry for export. Prices for the most part are steady. There has been little change in the position of the routine soda products, and potash chemicals continue to attract attention. A fair amount of activity has been reported in hydrogen peroxide, formaldehyde, borax and boric acid, while fertiliser demand is quietly steady.

A ready outlet for available supplies characterises the position in the coal tar products section with crude and refined tar, cresylic acid and creosote oil in good request.

MANCHESTER Bleaching materials and other textile chemicals are going steadily into consumption, mainly against contract commitments, and other leading industrial users are also maintaining a satisfactory demand for the soda and ammonia products and for a wide range of miscellaneous chemicals. Prices generally are well maintained, and a fair number of fresh enquiries have been in circulation.

SCOTLAND The general trend of business during the past week from most sections of industry has been fully maintained at a fairly active level. Demands have again covered quite a full range of industrial chemicals, although the bulk have been for immediate requirements. A reasonable volume for forward delivery have been placed. On the whole prices have remained firm.

DIARY DATES

TUESDAY 4 OCTOBER

Plastics Inst.—London: Wellcome Building, Euston Rd., N.W.1, 6.30 p.m. 'Application of plastics by fluidised bed techniques,' by D. Sharp.

WEDNESDAY 5 OCTOBER

R.I.C.—Cambridge: Technological Research Station, Spillers Ltd., Station Rd., 7.30 p.m. 'Adhesion & adhesives', by Dr. N. A. de Bruyne.

S.A.C.—London: C. S. Burlington Hse., Piccadilly, W.1, 7 p.m. 'Paper chromotography of some organotin compounds', by D. Williams and Dr. J. W. Price; 'A procedure for determining molar extinction coefficient of metal dithizonates', by Dr. H. M. N. H. Irving & R. S. Ramakrishna; 'Spectrophotometric determination of microgram amounts of calcium', by J. W. R. Kerr.

THURSDAY 6 OCTOBER

R.I.C.—Croydon: Technical College, Fairfield, 6 p.m. Film-show.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6.15 p.m. 'Chemistry of the cell surface', by Prof. A. A. Eddy.

FRIDAY 7 OCTOBER

O.C.C.A. with Soc. Dyers & Colourists.—London: R. S., Burlington Hse., Piccadilly, W.1, 6 p.m. 'Science in industry', by Prof. C. F. Carter.

Plastics Inst.—Manchester: Textile Inst., 10, Blackfriars St., 6.45 p.m. 'Reinforced plastics', by K. Rothwell.

S.C.I.—Glasgow: Royal College of Science and Technology, (Room 24), 6 p.m. 6th Castner Memorial Lecture: 'The fusion electrolysis of titanium' by Dr. W. J. Knoll.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6.30 p.m. 'Some recent developments in heterocyclic chemistry,' by Prof. D. H. Hey.

NEW PATENTS

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

AMENDED SPECIFICATIONS

On Sale 26 October

Cellulose ethers. Dow Chemical Co. **812 510**
Germicidal polyamino ethers alcohols. Givaudan and Cie, S.A., L. **821 622**
Dimethyltertiary butyl acetyl indane. Firmenich Et Cie. **822 116**

ACCEPTANCES

Open to public inspection 26 October

Indole derivatives. Soc. des Usines Chimiques Rhone-Poulenc. **852 450**
Process for halogenating polymers and products so produced. Phillips Petroleum Co. **852 569**
Liquid seed dressing compositions. Shell Research Ltd. **852 610**
Process for polymerising vinyl compounds. Union Carbide Corp. **852 611**
Irradiation of polymers. United States Rubber Co. **852 613**
Thiazolidine, salts and compositions thereof. Ciba Ltd. **852 087**
Polymer drying process and apparatus. Phillips Petroleum Co. **852 525**
Process for production of polyamides in spheroidal form from cyclic lactams. Farbenfabriken Bayer AG. **852 306**
Pulp production using non-ionic surfactants. Canadian Aniline & Extract C. **852 678**
Refining of silicon in a ferrosilicon material. Kolflaath, J. A. **852 710**
Resins comprising polyesters modified by dextran and a mono ethylenically unsaturated monomer. Commonwealth Engineering Co. of Ohio. **852 308**
Stabilisation of hydrogen peroxide. So. de Products Chimiques et de Synthese. **852 102**
Treating synthetic fibres with acetylenic glycols. Dow Chemical Co. **852 402**
Deashing polymers with diacetone alcohol. Esso Research & Engineering Co. [Addition to 804 082.] **852 403**
Preparation of dihaloborines. American Potash & Chemical Corp. **852 312**
Production of butadiene polymers. Phillips Petroleum Co. **852 313**
Process for purification of acrylonitrile. Farbenfabriken Bayer AG. **852 622**
Multi-cell stack for the electrodialysis of electrolyte solutions. Israel, Prime Minister of, and Ments, M. V. **852 272**
Process for protecting magnesium and alloys from oxidation. Commissariat a l'Energie Atomique. **852 238**
Method of manufacture of phosphate fertilisers in granular form. Dungemittel Technik AG. **852 720**
Separation of organic bases. Distillers Co. Ltd. [Divided out of 852 129.] **852 130**
Method of producing barium hydroxide containing substantially no water of crystallisation. Kali-Chemie AG. **852 180**
Polymerisation of isoprene. Shell Internationale Research Maatschappij N.V. **852 627 & 852 804**
Polymerisation of olefinic compounds. Solvic, S.A. **852 240**
Metal-containing monoazo dyestuffs. Farbenfabriken Bayer AG. **852 262**
Isoprene polymers. Phillips Petroleum Co. [Divided out of 31 589/56.] **852 277**
6-Methyl steroid compounds. British Drug Houses Ltd. [Divided out of 852 683.] **852 684**
Butadiene monoxide. Columbia-Southern Chemical Corp. [Divided out of 846 534.] **852 097**
Process for preparation of esters. Goodrich Co., B. F. [Divided out of 851 600.] **852 110**

Open to public inspection 2 November

Bismuth hydroxide method for recovering plutonium. Faris, B. F. **853 311**
Process for the polymerisation of olefines. Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius & Brüning. **853 309**
Dimerisation of olefines. Imperial Chemical Industries Ltd. **853 187**
Process for the manufacture of unsaturated polyesters and copolymers thereof. Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius & Brüning. **852 886**
Method for the purification of polyolefines, prepared according to the method of Ziegler. Bergwerksgesellschaft Hibernia AG. **853 294**
Cyclopentanophenanthrene derivatives and process for the preparation thereof. Syntex S.A. **853 291**
Benzoic acid amides and a process for their manufacture. Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius & Brüning. **853 295**
Process for the manufacture of aliphatic fluorine compounds. Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius & Brüning. **853 297**
Vulcanisable silicone rubber stock. Wacker-Chemie GmbH. **852 820**
Polymerisation process. Polymer Corporation Ltd. **852 823**
Cyclopentanophenanthrene derivatives and processes for the production thereof. Syntex S.A. **853 292**
Preparation of polypeptides from alpha-amino acids. Chemstrand Corporation. **852 914**
Production of ethylidene esters and vinyl esters. Celanese Corporation of America. **853 059**
Manufacture of leuco sulphuric acid esters of vat dyestuffs of the anthraquinone series. Farbwerke Hoechst Aktiengesellschaft Vorm. Meister, Lucius & Brüning. **853 264**
Process for the manufacture of gypsum. Hori, S., and Murakami, K. **852 825**
1,3-Butylene glycol. Celanese Corporation of America. **853 266**
Cyclopentanophenanthrene derivatives and process for the production thereof. Syntex S.A. **853 271**
Manufacture of 1-aminoindanes. Schering AG. **852 735**
Photochemical chlorination process. Hooker Chemical Corporation. **853 143**
Radiation polymerisation of unsaturated nitrogen compounds. Esso Research & Engineering Co. **852 831**
Phosphors. General Electric Co. Ltd. **852 737**
Treatment of common salt. Imperial Chemical Industries Ltd. **853 316**
Process for the suspension polymerisation of vinylidene aromatic compounds. Monsanto Chemical Co. **853 318**
Merocyanine dye, processes of preparing it and photographic emulsions containing it. Kodak Ltd. [Addition to 783 021]. **852 955**
Catalysts for the production of linear high-molecular-weight polymers of alpha-olefins and process for the polymerisation of alpha-olefins with these catalysts. Montecatini. **852 956**
Process for the treatment of polyamides. Courtaulds Ltd. **853 330**
Polymerisation of propylene. Du Pont De Nemours & Co., E. I. **853 127**
N:N-dimethylcarbanilides and N:N-diallylcarbanilides. Merck & Co. Inc. **853 228**
Sequestering composition comprising polyhydroxy carboxylic acids and process of making same. Union Starch & Refining Co. Inc. **852 958**
Polymerisation of ethylene and catalysts therefor. Montecatini. **853 229**
Dehydration of aqueous systems containing fatty and non-fatty solids. Greenfield, C. **852 747**
Method and apparatus for separation and recovery of filter acid and catalyst used in polymerisation of olefins. Phillips Petroleum Co. **852 837**
Polytetrafluoroethylene granular powder. Du Pont De Nemours & Co., E. I. **853 338**
Process for the production of shaped parts of plasticised polyolefins. Ruhrchemie AG. **853 194**
Pyrimidines and the manufacture thereof. Wellcome Foundation Ltd. **853 176**
Polyamide manufacturing process. Imperial Chemical Industries Ltd. **853 354**
Preparation of fluorine-containing polymeric materials by the catalytic polymerisation of fluorine-containing unsaturated compounds; and the resulting polymeric materials. Petrochemicals Ltd. **853 355**
Contact with acid chlorate solutions. Deutsche Gold- und Silber-Scheideanstalt Vorm. Roessler. [Addition to 817 615.] **852 900**
Method for liquefaction of natural gas. Constock Liquid Methane Corporation. **852 844**
Sulphation process. Unilever Ltd. **852,968**
Preparation of pentaborane. Olin Mathieson Chemical Corporation. **852 930**
Water-soluble dyestuffs containing thiocyanotriazinylamino groups. Imperial Chemical Industries Ltd. **852 911**
Process for the production of alkylated boranes. National Research Development Corporation. **853 063**
Rubber antidegradants. Monsanto Chemicals Ltd. **852 932**
Method of adhering butyl rubber to highly unsaturated rubbers. United States Rubber Co. **853 215**
6-Methyl steroid compounds. British Drug Houses Ltd. **852 847**
Processes involving reactions with lithium methylene and magnesium methylene. Petrochemicals Ltd. **582 933**
Production of ammonium pentaborate and boric oxide. Olin Mathieson Chemical Corporation. **853 066**
Vinyl chloride polymer compositions. Bakelite Ltd. **853 321**
Production of alkyl-substituted cyclohexenones. Distillers Co. Ltd. **852 935**
Carbamic acid esters. Olin Mathieson Chemical Corporation. **853,322**
Process for the separation of nickel from solutions containing cobalt and nickel salts. Soc. D'Electro-Chimie, D'Electrometallurgie Et Des Acieries Electriques D'Ugine. **853 323**
Process and apparatus for polymerisation of fluid monomers. Phillips Petroleum Co. **853 324**
Polyacrylonitrile. Stockholms Superfosfat Fabriks A.B. **852 936**
Process and apparatus for potentiometrically measuring and reducing chromate ions in aqueous solution. Deutsche Gold- Und Silberscheideanstalt Vorm. Roessler. **853 326**
Polyester amides. Monsanto Canada Ltd. **853 003**
Phosphors. Derby Luminescents Ltd. **853 006**
Method of preparing high molecular weight linear hydrocarbon polymers. Esso Research & Engineering Co. **853 010**
Polymers containing phosphorus. Imperial Chemical Industries Ltd. **853 008**
1:6-dimethyl aromatic steroids and the preparation thereof. British Drug Houses Ltd. **853 012**
Monoazo dye stuffs containing triazole rings. Farbenfabriken Bayer A.G. **853 013**
Purification of hydrocarbon solvents and use of same in polymerisation reactions. Phillips Petroleum Co. **853 014**
Ozonolysis anthracenephenanthrene mixtures. Koppers Co. Inc. **853 112**
Process for the manufacture of metallised azo dyestuffs. Imperial Chemical Industries Ltd. **853 172**
3-Isopropylphenyl N-methylcarbamate and insecticidal compositions containing same. Union Carbide Corporation. **852 920**
Polymerisation. Monsanto Chemicals Ltd. **852 921**
Recovery of the tetrachlorides of tin, titanium and silicon. Fabriques De Products Chimiques De Shann Et De Mulhouse. **853 115**
Substituted piperidines and their preparation. Sterling Drug Inc. **853 116**
Quaternary salts of C-vinyl-pyridine polymers and photographic films rendered antistatic therewith. Kodak Ltd. **852 923**
Production of *m*-sulphoisophthalic acid. Du Pont De Nemours & Co., E. I. **853 156**
Method of purifying solid high molecular weight polymers of alpha-olefins. Montecatini. **852 929**
Phosphoric and thiophosphoric acid ester amides and the production thereof. Asta-Werke Aktiengesellschaft Chemische Fabrik. [Addition to 812 651.] **853 044**
Condensed polycyclic aromatic hydrocarbons and chloro-derivatives thereof. Union Carbide Corporation. **852 981**
Isoindolone dyes and their use. Geigy, AG., J. R. **853 237**
Lubricating compositions containing phosphoric acid salts. Esso Research & Engineering Co. **852 983**
Process for the production of boro-hydrocarbon compounds. Farbenfabriken Bayer AG. **852 985**
Expeller for the treatment of polymers. Petrochemicals Ltd. **853 087**
Diazotype materials. Kalle & Co. AG. **853 020**

TRADE NOTES

Laboratory Equipment Centre

A new Scottish warehouse, sales and servicing centre and offices, built at a cost of £50,000, have been opened at Breview Place, Nerston, East Kilbride, E. Lanark, by Griffin and George Ltd., laboratory equipment manufacturers. The 14,000 sq. ft. of new premises will unite the two former Scottish centres at Edinburgh and Glasgow.

Acheson Greases and Compounds

A booklet containing an up-to-date list of Gredag greases and compounds has just been published by Acheson Colloids Ltd., P.O. Box No. 12, Prince Rock, Plymouth, Devon. The grades listed are arranged in seven sections dealing in turn with calcium, sodium and lithium soap base; bentone base; mixed base and special compounds; glassworking lubricants; and metalworking lubricants. Included in the standard range described in the booklet are a number of greases incorporating molybdenum disulphide, introduced in recent years to augment the established group of graphited greases.

Borax in Scotland

As a result of internal reorganisation Joseph Townsend Ltd., an associated company in Scotland of Borax Consolidated Ltd., will cease to trade on 30 September. On that date a branch office of Borax Consolidated will be established at 176 Bath Street, Glasgow, C.2 (Douglas 3338), with Mrs. H. McLaren as manager. Local stocks will still be held in Scotland, and customers will probably find it convenient to send orders to the new office rather than London head office.

Change of Address

On 1 April 1961, as part of the Group reorganisation, the Crucible Department of The Morgan Crucible Co. Ltd. will become a wholly-owned subsidiary company. It will be called Morganite Crucible Ltd. and will operate from Norton, near Worcester, where the Suprex factory is situated. From Monday, 5 October 1960, any communication for the sales or technical departments should be addressed to The Morgan Crucible Co. Ltd., Norton Works, Worcester (Worcester 26691; Telex 33191). The demonstration and test foundry will remain at Battersea.

Robac Rubber Accelerators

A new edition of 'Introduction and general information' broadsheet on the Robac range of rubber accelerator is available from Robinson Brothers Ltd., Ryders Green, West Bromwich. The broadsheet is arranged so that it can be pinned to a wall for easy reference.

Hilger Equipment

The April edition of the Hilger Journal, published by Hilger and Watts Ltd., 98 St. Pancras Way, London N.W.1, describes the Hilger Fluroprint, a new automatic X-ray fluorescence spectrometer developed to analyse materials rapidly in a flexible routine.

Also described is the Ebert spectrograph now made by Hilger and Watts under licence from the Jarrell-Ash Co. of the U.S.

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