Chemical Age

incorporating

PETROCHEMICALS and POLYMERS

VOL. 86 No. 2191 8 JULY 1961

INDEX TO ADVERTISERS

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

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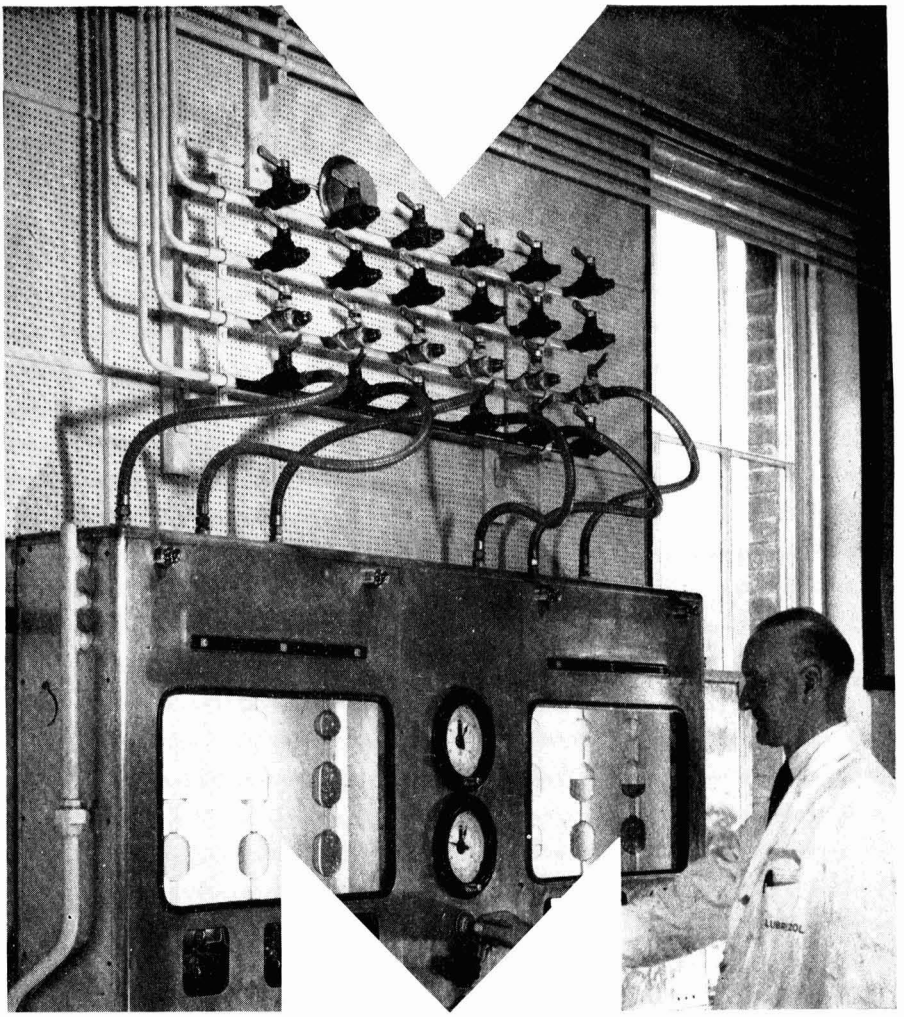

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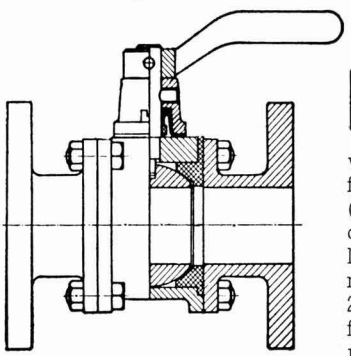

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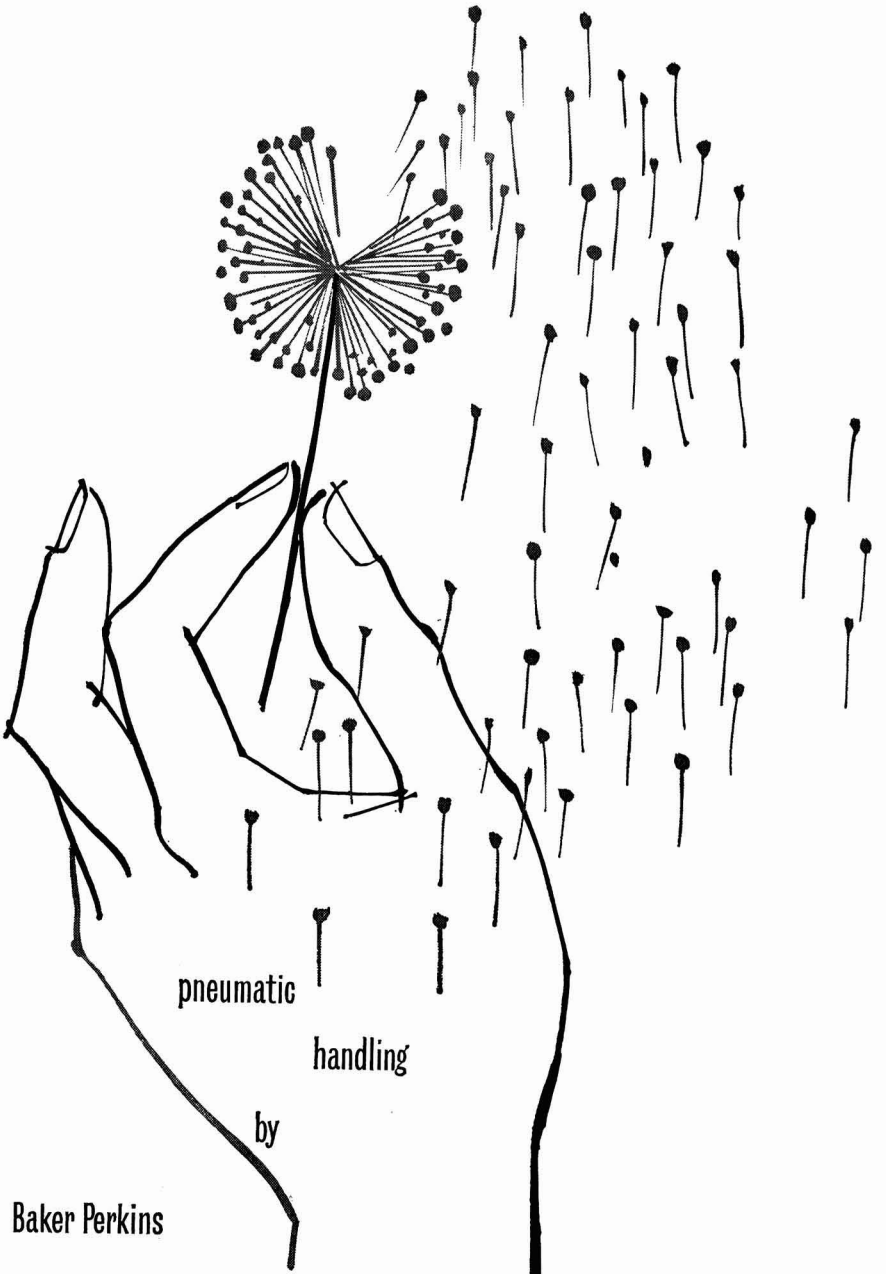

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IN THIS ISSUE

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ISOCYANATES COMPETITION

THE U.K. isocyanates position—in which mounting demand has been met by the one U.K. producer, about to go on stream with a new major facility, and increasing imports—has changed dramatically with the announcement of Du Pont's plans to set up plant in Northern Ireland to make with a multi-million lb. capacity (see page 51).

I.C.I. Dyestuffs Division's new plant at Fleetwood, now almost completed, is expected to cater for all U.K. needs for the time being. Capacity has not been announced, neither has that for the Du Pont installation, but it is felt that combined capacity is between 16,000 and 20,000 tons/year. By the time the Du Pont plant is on stream—in late 1963—demand for isocyanates should have doubled. By 1966, a four-fold expansion in demand is looked for and it is this greatly increasing interest in isocyanates that is currently attracting other potential producers.

The major outlet for isocyanates is of course in polyurethane foams and nearly 12 months ago, this journal estimated that U.K. demand for this foam material would be around 9,000 tons (C.A., 27 August, p. 311). According to trade circles this forecast appears to have been accurate. At that time the most optimistic forecasters were looking for U.K. consumption to total between 40,000 and 50,000 tons/year by 1965; a 1965 figure of 35,000-40,000 tons is now considered more realistic.

Currently most flexible foams are going into furniture, carpet underlays and cars; demand is increasing and new uses are expected to include garment linings and a semi-flexible for sound-proofing in transport. One of the major U.K. outlets for rigid foams is in refrigerators; growth is confidently looked for in the building industry. As in the U.S., it is expected that demand for rigid foams will grow faster than that for flexible material.

Although a much smaller total outlet, fast growth is expected in urethane surface coatings. By 1965 it is estimated that this usage in the U.K. will account for between 400 and 500 tons of isocyanates, but in a condensed or partially polymerised form. Urethane elastomers are also in increasing demand.

While Du Pont prepare to enter the U.K. isocyanates market, Allied Chemical, one of the three major U.S. isocyanates producers—the other is Mobay—have come on stream with a polyether plant (see p. 59). This makes Allied Chemical the first U.S. company to supply all major components for polyurethanes. Mr. Neal M. Draper, vice-president of Allied's National Aniline Division, speaking in New York last week, estimated U.S. consumption of rigid urethane foam at 12 million lb. and expects that by 1965 demand will have risen nearly tenfold to 110 million lb. Projected ultimate market for rigid urethane foam is expected to exceed 1,000 million lb., with a major portion going into residential homes. Ultimate potential for rigid urethane foam board insulation is placed at about 635 million board ft.

In 1960, total U.S. sales of flexible urethane foam amounted to about 85 million lb., expected to rise to more than 200 million lb. by 1965. Allied Chemical predict that spandex urethane elastomeric fibres will replace

(Continued on page 50)

Beecham Chairman Discloses New Penicillins, Attacks Critics of Drug Profits

SEVERAL new penicillins which "will revolutionise the antibiotic treatment of disease", at present in the final stages of evaluation, are to be marketed by the Beecham Group. This is stated by Mr. H. G. Lazell, chairman, in his annual statement, who adds that Beecham are concentrating on the development of the new penicillins by modifying the nucleus from which they have already evolved the two successful products—broxil and celbenin. Celbenin had proved to be a life-saving drug and has already been used in thousands of cases; no instances of failure have been reported.

In view of these achievements, Mr. Lazell says it is disturbing to note the growing attacks on the whole pharmaceutical industry and particularly on that section of it which serves the National Health Service. In comparison with an expenditure of £1,000 million on alcoholic drinks and of more than £1,100 million on tobacco, the cost of about £740 million for the whole N.H.S. did not seem to be an excessive charge on Britain's national resources.

Out of that £740 million, only £55 million, or 7.4% was paid to the industry in respect of all drugs. Mr. Lazell adds: "I cannot compute how much of this sum represented profit, but it is clear that if the profit was entirely eliminated the effect on the total cost of the service would be infinitesimal".

The main factor governing drug pricing policy is the need to make adequate provision for research. For one successful product hundreds are tested and rejected. If the industry is to have a sound financial basis it must be allowed to recover its research spending from the very few marketable products which emerged. British companies must maintain their research effort if they are to stay the course with the many foreign companies which are backed by huge research appropriations.

The Beecham Group raised its research spending in 1960-61 to £750,000, half of it on basic pharmaceutical research. For the first time profit overseas exceeded £2 million; that on home sales was just over £6 million. Sales of medical products accounted for £13.92 million (£11.75 million) out of a total £56.34 million. Total earnings were a record, due almost entirely to overseas business. Home trade margins fell further from 17.5 to 16.4, while those abroad rose from 11.7 to 11.8. Trading profits as a percentage of average capital employed, after dropping in 1959-60, rose from 21.3 to 21.6.

Royalties on the new penicillins "should make a useful contribution to profit in the current year"—last year was the first occasion that royalties on penicillin production had been paid to a U.K. company. The new Worthing plant has just come into production and is now manufacturing penicillins and five chemicals; the extent of the contribution to 1961 profits is still uncertain.

Food Makers Must Help Ensure Safety of Additives, Says D.S.I.R. Secretary

THE need for the co-operation of food manufacturers in ensuring that the public was protected against the toxicological dangers of food additives was stressed by Sir Harry Melville, K.C.B., secretary of the D.S.I.R., at the annual luncheon of the British Food Manufacturing Industries Research Association at the Park Lane Hotel, London, on 29 June. While strong support from the manufacturers of additives was forthcoming, he said, the food manufacturers seemed, at present, less ready to come forward. The problem of food additives was likely to increase in the future and it was better that food manufacturers should face up to the problem now.

The subject of food additives was also discussed in the presidential address of Prof. A. C. Frazer, which followed the lunch, in which he outlined the basic requirements for setting up administrative machinery for handling food additive problems. Prof. Frazer stressed the need for a 'Pharmacopoeia' or 'Codex' type of publication covering food additives. He pointed out that no such useful reference existed anywhere at present, although something on these lines was being planned in the U.S.

The luncheon, which followed the annual general meeting of the Association, was attended by some 240 members and guests, the guests including, in addition to Sir Harry Melville, Dr. A. J. Amos, president of the Society for Analytical Chemistry; Dr. H. J. T. Ellingham, secretary and registrar, Royal Institute of Chemistry; Col. F. J. Griffin, general secretary, Society of Chemical Industry; Mr. T. McLachlan, chairman of the S.C.I. Food Group; Dr. D. A. Sutton, director, British Gelatine and Glue Research Association; and other distinguished personalities.

Obituary

Mr. Alexander Milroy, managing director for over 50 years for the Milroy Chemical Co. Ltd., Glasgow, has died aged 82. He was well known in the Glasgow trade and acted as consul for Czechoslovakia for some time.

Large Expansion Forecast in I.C.I. Nylon Output

THE forecast that within the next five or six years, nylon output of I.C.I. on Tees-side could well have expanded substantially beyond the designed capacity of present plants at Billingham and Wilton was made recently by Mr. W. E. Humphreys, nylon works manager.

Changes and modifications now being made are aimed at increasing output and improving quality. When this phase is completed, the modified plants will be brought into full production as soon as possible. The effect of the current expansion on Tee-side will be greatly to raise total designed capacity and it is expected that this higher output will become fully effective during 1962.

Isocyanates in U.K.

(*Continued from page 49*)

latex rubber thread now used in stretch fabrics and that by 1965 spandex fibres may capture 10 to 12 million lb. of this market and to open up new markets because they can be produced in fine deniers.

U.S. demand for urethane finishes is expected to increase from the 1960 level of almost 2 million gall. to 11 million gall. by 1965.

In the U.S. four isocyanates producers will soon have capacity for 125 million lb., enough to satisfy demands until 1965; seven major polyether producers have capacity for between 175 to 200 million lb., also enough to meet foreseeable demands.

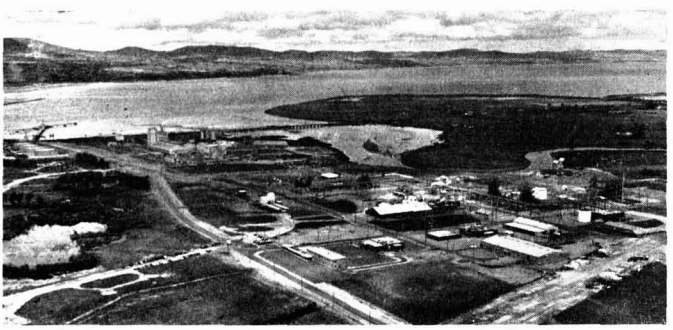
The production of toluene di-isocyanates by the phosgene route involves the loss of the chlorine content of phosgene by-product. As chlorine is just under 70% of the phosgene molecule, this is an important economic factor.

Over the years attempts have been made, particularly in the U.S., to develop a non-phosgene route to TDI. So far none of them has been commercialised, but should one be developed, the production of TDI by the phosgene route could become extremely unprofitable. It is believed that at current British prices TDI is one of the less attractive products to be made from the point of view of profitability. The scope for price reductions is probably limited. (U.K. price of TDI averages between 4s 5½d to 4s 10d a lb., compared with 75 cents/lb. in the U.S.)

It is however a high growth chemical and probably manufacturers hope to operate plant at near capacity to optimise return on capital. Since a non-phosgene route has not yet been developed commercially, manufacturers have probably three to five years' respite before this threat could become a reality, if ever the substantial technical problems are overcome.

Project News

Du Pont Will Be Britain's Second Producer of TDI



Maydown works of Du Pont Co. (United Kingdom) Ltd., showing the neoprene plant opened a year ago. This 360-acre site has been chosen for the new Hylene organic isocyanates plant. In the background is the plant of Carbide Industries Ltd.

BRITAIN'S second producer of toluene di-isocyanates will be **Du Pont Co. (United Kingdom) Ltd.**, who by late 1963 will have facilities at Maydown, Northern Ireland, for TDI and phosgene. Chlorine, toluene and nitric acid will be brought in; already Du Pont use large quantities of chlorine, shipped from Runcorn, for their neoprene plant at Maydown. No commitment has yet been made for supplies of toluene, which will probably be purchased in the U.K. if this can be done economically. Currently toluene is in tight supply.

I.C.I. Dyestuffs Division, Britain's sole current TDI producers, will shortly have on stream a major plant at Fleetwood, Lancs. Based on details of phosgene capacity at Fleetwood, it is believed that TDI capacity will be around 8,000-9,000 tons/year. Du Pont are not disclosing their capacity, nor the cost of the plant which will, it is said, represent a multi-million pound investment. Capacity, it is stated, will be of a multi-million lb. nature with plant slightly smaller than current operating units in the U.S., because the market needs are smaller. In this connection, in 1960, Du Pont and Mobay both had plants of an estimated 25 million lb. capacity each; both are slated for increases to around 40 million lb. this year. Allied Chemical's U.S. capacity should total about 25 million lb. this year.

Seen at the conference held to announce the new Hylene plant are, l. to r., Milton H. Campbell, European director of the international department of E.I. du Pont; W. H. McCoy, managing director of Du Pont (United Kingdom) Ltd.; S. W. McCune III, deputy managing director of the U.K. firm

A number of other firms are understood to be keenly interested in TDI in this country, including another U.S. company.

Du Pont have been planning this move into TDI in the U.K. for about a year and their plans have been one of the chemical industry's best kept secrets for a long time. Construction of the Maydown plant will start later this year, under the supervision of Du Pont engineers. The plant will be adjacent to the neoprene synthetic rubber plant opened by the company last year. Until the new facility is completed, Du Pont will continue to import isocyanates to European customers from their plant at Deepwater, N.J.

The new plant will produce Hylene organic isocyanates for use in both rigid and flexible urethane foams for the U.K. and for export to the European Free Trade Association, where apart from the U.K., there are no other TDI facilities, existing or announced for the future.

Main uses for flexible foams are at present for furniture and car cushioning with rigid foams finding main uses for insulation in refrigeration units, building panels and other industrial purposes. Other applications are in adhesives, liquid and solid elastomers, transparent and industrial finishes. A big development in the future is expected to be in interlining for clothing; in the U.S. about 1 million lb. of polyurethane foam was used in the clothing industry a figure that this year is estimated will jump to 2.5 million lb. and to 7 million lb. by 1965.

Peak construction force of the new plant will be about 500 persons and on completion the plant will employ some 125 people. Except for a number of supervisory and technical personnel, all hiring for both construction and operations will be done mainly in Northern Ireland.

The new plant will be the sixth production facility for Du Pont's European subsidiary and affiliated companies. In Belgium, a subsidiary operates a paint plant at Maline; in the Netherlands, work is nearing completion on a plant for Orlon acrylic fibre at Dordrecht, and construction is expected to get under way soon for a plant to process Delrin acetal resin.

New B.O.C. Plant Will Raise Nitrogen Supply to I.C.I. Wilton

● A PLANT which will increase the production capacity of nitrogen supplies to the Wilton Division of I.C.I. by 50% is to be built by **British Oxygen** at their Middlesbrough works. Costing about £500,000, the plant will have a capacity of 5,000 cu. m./hr.—equal to about 140 tons/day—of very high purity nitrogen. Site clearance has already started and the unit is expected to be running by mid-1962.

Two similar units at the Middlesbrough works are already supplying I.C.I. with nitrogen and a 200 tons/day tonnage oxygen plant serves local steelworks.

Nitrogen is used by I.C.I. in the manufacture of Terylene, nylon, titanium, Propathene, and in other oil cracking processes.

New Plant Planned for Farnell Carbons

● FOLLOWING the recent bringing into production of plant at Ditton for the production of additional types of decolorising carbon for **Farnell Carbons Ltd.**, full scale plant for manufacture of activated carbon products is in the project engineering stage. Very long delivery dates for essential equipment are stated to be causing disappointing delays.

In addition to working on its own new chemical projects, the Forestal Group development unit at Ditton is assisting the expansion of the product lines of the chemical companies recently acquired by the group. Farnell Carbons are members of the Forestal Group.

First Section of Protein Plant on Stream

● FIRST section of plant at Plymouth to make impulse process protein for **International Protein Products Ltd.**, a subsidiary of British Glues and Chemicals Ltd., is on stream. The solvent plant for the production of protein isolate is under construction and is due in production in September.

Coalite to Modernise Askern Works

● A MAJOR modernisation scheme, subject to planning approval, will increase output of the Askern Works of **Coalite and Chemical Ltd.**, by at least two-

thirds. It is hoped to start construction before the end of the year. All batteries at Bolsover and Askern are to be modernised by the end of 1963.

New building and plant for the production of solid chemicals were commissioned in January, permitting the manufacture of larger quantities of existing products and facilitating the translation of pilot plant work on new products to the commercial stage. A large new main distillation unit of the most modern design is being installed at the central refinery and it is expected that it will be commissioned in March 1962. Apart from a substantial increase in capacity to deal with greater quantities of crude coal oil as they become available, the new unit will provide operating advantages, including improved fractionation.

Kellogg Get Gulf Refinery Contract for Denmark

● THE new refinery to be built at Stignaes, Denmark, for **Gulf Eastern**, a subsidiary of Gulf Oil Corporation, will have as its main contractors, **Kellogg International Corporation**, London. The refinery will cost about $30 million and will process 1.5 million tons of crude oil a year (30,000 b.p.s.d.) from Gulf sources. It is due on stream by the end of 1962. Recently, Foster Wheeler were awarded a contract to build a refinery at Kalundborg for Tidewater Oil.

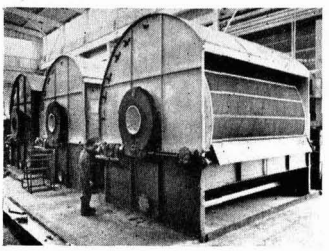
According to A/S Dansk Esso, Denmark's growth of oil consumption doubled in 1960. During the next six to seven years it is estimated that consumption will rise at the rate of 300,000 tons/year.

Instrumentation for Dragon H.T.G.C. Reactor

● CONTRACT for the design, supply and installation of the instrumentation of the Dragon high temperature gas cooled reactor being built at the Atomic Energy Establishment, Winfrith, Dorset, has been awarded to **Automatic Control Engineering Ltd.** by the U.K. Atomic Energy Authority, acting on behalf of the O.E.E.C. Dragon Project. The contract provides for the purchase of all instruments and similar equipment by competitive tendering among firms in the O.E.E.C. countries concerned with the project.

A data logging system for recording approximately 900 variables and having facilities for pre-set alarm levels and digital display will be incorporated in the instrumentation system. The contract is due for completion by December 1962.

Filters for U.S.S.R.



These rotary vacuum filters under construction at the Gateshead works of Eimco (Great Britain) Ltd. form part of a £140,000 export order for the U.S.S.R. As mentioned last week, Eimco are supplying the filtration equipment for two beet sugar factories in the Ukraine

I.C.I. to Build Factories in Nigeria

● Two plants with a capital investment of approximately £500,000 are to be built by **Imperial Chemical Industries Ltd.**, in Western Nigeria to manufacture paints and plant protection products. On successful conclusion of negotiations with the Western Region authorities the plants will be built on a site at the Ikeja Industrial Estate outside Lagos.

The paints factory will manufacture I.C.I.'s Dulux and Pentalite and it will be designed so that the output can be expanded and the range of products extended to meet the country's rising standard of living.

A plant to manufacture and pack products of the I.C.I. subsidiary, **Plant Protection Ltd.**, of importance to the cocoa industry, will operate on the same site. These will include Gammalin 20 for capsid control and Perenox to prevent black pod disease.

This will be I.C.I.'s first manufacturing venture in Nigeria, where **I.C.I. (Export) Ltd.** were recently set up as a merchandising organisation. I.C.I. (Export) will act as the managing agents for the new project.

Cyanamid's New Melamine Plant on Stream

● THE new melamine crystal plant of **Cyanamid of Great Britain Ltd.** at Gosport, Hants, is now on stream. The plant was designed and constructed under the supervision of the company's own project engineering team. Built in a little less than a year it is Cyanamid's first general chemicals production unit in the U.K. Its annual output is expected to be about 3,000 tons, which will considerably increase U.K. production of melamine crystal. The starting material for the process is dicyandiamide which will be supplied by the Welland plant of Cyanamid of Canada near Niagara.

The major use of melamine crystal is in the manufacture of laminates and moulding powders. Another significant use is for resins in the paint, textile and paper industries.

European Firms Tender for Peruvian Fertiliser Contract

● THE Peruvian Ministry of Development and Public Works has received bids for the installation and financing of a fertiliser plant in Cuzco, including the installation of a second unit for the hydro-electric plant at Machu Picchu, from General Electric of Spain, the Uhde consortium of Western Germany, Panelide Peruana, **Humphreys and Glasgow** of Britain, Ensa Paris, and Unión Metalúrgica, a German group headed by Badische Anilin.

M.T.D. Benzole Plant Goes into 'Mothballs'

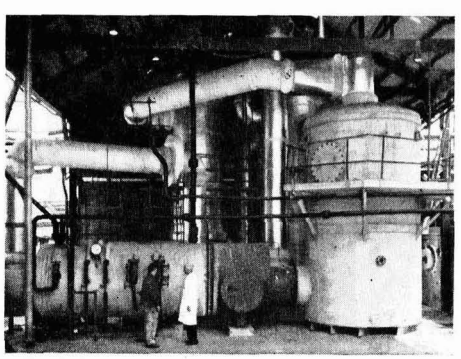
● LACK of sufficient raw materials is stated to have been the reason for closing down a crude benzole refining unit at the Oldbury works of **Midland Tar Distillers Ltd.** The unit is being 'cocooned' pending the day when suitable work will be found for it.

Erected in 1940/41 for the essential wartime production of pure toluene from gas works crude benzole, the unit originally handled about 7 million gall./year of feedstock, but in recent years the supply of crude benzole for refining has fallen to very low levels.

Lodge-Cottrell Precipitators for Steel Furnaces

● LODGE-COTTRELL LTD. will be supplying Dorman Long with a further five precipitators for Lackenby steel plant oxygen-blown open hearth steel furnaces, making a total of six furnaces to be supplied with precipitators at a contract value of approximately £440,000.

New Contact Acid Plant for Berk



The new contact process sulphuric acid plant recently commissioned at Stratford (London) by F. W. Berk and Co. Ltd., will give a considerable increase over previous production. The plant, which incorporates a modern fire tube boiler and a four-pass converter, is operating at high efficiency. The plant layout is extremely compact. Design was carried out jointly by F. W. Berk and Simon-Carves Ltd.

Soviet Exhibition in London Features New Materials and New Technology

SOVIET-DEVELOPED polycarbonate and polyformaldehyde are being shown at the Soviet Exhibition which is being held at Earls Court, London, from 7 July to 29 July. The exhibition is open daily, except Sundays, from 10 a.m. to 10 p.m. Admission is 3s 6d for adults and 1s 9d for children.

Among the polymeric exhibits is a small transistor radio set with a cabinet in polycarbonate, described as a recent discovery of Soviet chemists. It is also stated that polyformaldehyde was obtained for the first time in the U.S.S.R.

Also to be seen in the chemistry exhibit is a model of the Sumgaint plant in Azerbaijan where synthetic rubber is produced. Tyres made with this material are now said to be good for 60,000 km. instead of 35,000-40,000 km.

Among other exhibits in this section are new Soviet methods of obtaining urea, fertiliser and cattle feeding stuffs, with an original process for the production of aniline by using highly reactive catalysts which are claimed to be "superior to all specimens known in the world". An 8-metre working model of the appatite plant in the Kola Peninsular gives some idea of the methods of mining and processing apatite used in the U.S.S.R.

Sulphur Plant Model

A feature of the display is a model of the Rozdolsky sulphur plant in the Ukraine for mining and processing sulphur. The dressing mill of this plant and a model of the sulphur melting installation are demonstrated. A special technological chart, which switches on every three to five minutes, reproduces visually the whole process from the mining of ore to the finished product.

Chemical equipment and apparatus of original Soviet design are shown in the same section.

In the oil and gas section, visitors will be shown modern equipment, instruments, control and operating apparatus with means for the mechanisation and automation of production processes. In addition to demonstrations of oil drilling, visitors can see a model of mechanised gas pipeline laying, a working model of the control system of oil pipelines, control instruments in tube welding and protection of lines against corrosion.

In the agricultural section, methods and results of the use of antibiotics for prophylaxis and treatment of animal diseases is being featured.

In the Science Section, visitors can learn of achievements in the chemistry of polyorganosiloxanes and their industrial application; polyvinyl compounds in medicine; organophosphoric compounds in agriculture; new methods of synthesising useful products; the structure of organic and complex compounds; and instruments for electronic paramagnetic and nuclear quadripole resonance.

Other exhibits to be shown by the U.S.S.R. Academy of Sciences are developments in automation; high-pressure physics; atomic energy; ultrasonics; and biology.

More than 300 Soviet citizens are working at the exhibition and specialists are on duty at the stands to answer questions concerning exhibits and progress made in the particular branches of Soviet economy and science. Questions relating to exports and imports will be answered by the personnel of the Commercial Group, comprising high-ranking staff members of the U.S.S.R. Trade Delegation in Britain of the Soviet foreign trade associations, etc. This group is headed by A. G. Tikhonov, deputy head of the U.S.S. Trade Delegation. Another party of seven, led by S. S. Malov, chief of the First Export Department of the U.S.S.R. Ministry of Foreign Trade, will aid the commercial group. All have the authority to establish contacts, conduct negotiations and sign contracts with British firms.

An exhibition guide describes the exhibits, the Soviet foreign trade associations and the commodities they buy and sell.

Voluntary Ban on Use of Aldrin, Dieldrin and Heptachlor

A VOLUNTARY ban on the use of aldrin, dieldrin and heptachlor for the dressing of spring-sown cereals is the result of the survey carried out by the Ministry of Agriculture, Fisheries and Food on the reported cases of deaths of birds and predators from poisoning through treated seed.

The report of the survey was discussed at a meeting of interested organisations held on 29 June. The organisations taking part included the Association of British Manufacturers of Agricultural Chemicals, the Royal Society for the Protection of Birds, the Agricultural Research Council and the National Farmers Union. The report shows that the widespread occurrence of deaths has been confined to springtime and that the main trouble could be obviated by not using dressings containing aldrin, dieldrin and heptachlor for spring sowings.

It has been agreed that as from 1 January, 1962 these dressings will not be used at all for spring-sown grain, and they will only be used for dressing autumn and winter wheat where there is a real danger of attack from wheat bulb fly.

These arrangements reported to Parliament by the Minister on 3 July, will operate under the terms of the Notification of Pesticides Scheme and will not involve regulations.

It has also been agreed that the Ministry should continue its survey and that a further meeting should be held during June of next year to see how the arrangements have worked.

At the meeting held on 29 June, manufacturers of seed dressings agreed to advise on the proper use of their dressings in order to safeguard wild life and to supply merchants with appropriate labels to use on sacks of dressed grain.

One of the companies who market aldrin and dieldrin in the U.K., Shell Chemical, have already issued a statement welcoming the agreement that has been reached on the new recommendations. The aldrin and dieldrin marketed by Shell is produced by Royal Dutch/Shell in Holland.

The U.K. is the first country to actually reach an agreement of this kind, although comments on the increasing numbers of deaths to wild life in Scandinavia and Northern France are beginning to appear in the Press of those countries.

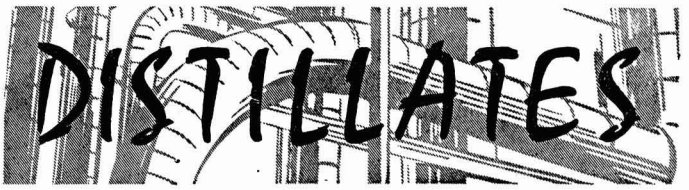
The alternative to using these three chemicals in seed dressing is BHC. It appears that the advantages of using aldrin, dieldrin and heptachlor rather than BHC in spring-sown grain are doubtful. The relative costs are not a factor since they are small compared to the cost of the grain itself and, in fact, merchants often treat seed automatically at no extra cost. Aldrin, dieldrin and heptachlor are however more effective for the control of wheat bulb fly in winter-sown grain.

This agreement to ban aldrin, dieldrin and heptachlor on spring-sown grain is not the same as the voluntary agreement on the non-use of arsenites (see CHEMICAL AGE, 6 February 1960). In that case chemical manufacturers agreed to withdraw supplies. There are no producers of aldrin, dieldrin and heptachlor, or the alternative BHC, in the U.K. All supplies are imported.

Milk Technical Committee Considers Antibiotics

Among subjects being considered by the Milk and Milk Products Technical Advisory Committee is the incidence of antibiotics, notably penicillin, in milk. The committee's 1960 report to the Minister of Agriculture has been published this week, and copies are obtainable from the joint secretaries of the committee at Great Westminster House, Horseferry Road, London, S.W.1

A bulletin for commercial users and manufacturers of milk powder, prepared by the committee, has been presented to the Ministers along with the report. A further announcement will be made when it is published.



THE British pharmaceutical industry has long-since been the 'Aunt Sally' of the politicians. The Tory Government's plans to centralise purchasing of certain drugs, if extended, can only lead to a progressive slow-down of research and development and the vitiation of the British drug industry. This policy should be reversed before it does irreparable harm to a vital sector of the chemical industry.

On top of this, the Labour Party now threatens some form of public ownership should it come to power again. In its recently issued statement on domestic policy, there is the usual claptrap and misstatements of fact that the pharmaceutical industry has to put up with from the politicos. The statement refers to "clear evidence of waste and profiteering under the N.H.S." "Why," it is added, "should we not protect the taxpayer by arranging that it should meet its requirements increasingly from public enterprise—either through new, publicly owned undertakings, or by the acquisition of existing ones?"

It is time the politicians stopped trying to make pharmaceutical producers the scapegoats for the inefficiency of the hospital service and the incompetence of the Health Ministry.

WHY is it that chemical plant manufacturers and chemical plant users can achieve amicable co-operation in joint projects—as Marchon Products and Constructors John Brown are doing in Russia, for instance—and in research, as in the work being done by the joint technical committees set up by the A.B.C.M. and B.C.P.M.A., yet cannot see eye to eye on such matters as prices and delivery dates? Or can only more co-operation and amalgamation between plant manufacturers themselves provide the answer? Arguments about late deliveries of chemical plant rage backwards and forward and the impartial observer may well echo the sentiments of Omàr Khayyàm:

Myself when young did eagerly frequent
Doctor and saint, and heard great argument
About it and about, but evermore
Came out by the same door where in I went.

Whether the recent Institution of Chemical Engineers discussion on delivery dates—reported on page 55—has shown the participants any other door is yet to be seen. "But," as the poet also said, "one thing is certain—that time flies!" Now or never, the industry must get to grips with this problem of giving the customer not only what he wants but when he wants it. It would be an admirable thing if, just as the chemical industry has shown the rest of industry the way to increase exports, the chemical plant industry could show other machinery and equipment manufacturers how to trim delivery times, and so scotch the growing notion abroad that to order British is a 'never-never' system.

SURROUNDED as I am by the imperialist-expansionist-deviationist influences of capitalist reactionaries, it is refreshing to light on this inspiring little story published in last week's *Soviet News* by the grace of a *Tass* correspondent in Toyko:

> In the past few weeks hundreds of Japanese mothers have literally besieged the Ministries of Health and Social Insurance demanding that Soviet vaccine be imported immediately. "Why ask the countries of America and Western Europe to export vaccine, when it is clear to everyone that only the Soviet Union can export it in large quantities," they argued.

The scene: The Ministry of Health, Tokyo. Harassed Ministry officials, pleading, gesticulating, are surrounded by an angry horde of Japanese women, carrying armfuls of babies, other children clutching at their skirts. They are just ordinary Japanese housewives, but well versed in the latest technological developments and in world economic statistics. Courteously but despairingly, the officials try to placate them. Outside, an even larger crowd of Japanese mothers wave banners as they chant in unison "We want Soviet vaccine!" Stamping their feet impatiently, these proud representatives of Japanese motherhood . . .

But no, my humble pen is not equal to this poignant drama; I must leave readers to imagine it, if they can.

THE major oil companies expect that one result of Britain's entry to the Common Market would be a steep cut in retail prices of paraffin, as a result of direct competition with Italy's fast expanding oil industry.

This is hardly surprising in view of the relatively cheap cost of oil and natural gas to Italian consumers. Although the price of natural gas varies with each contract, depending mainly on quantities bought and the season in which it is sold, as suppliers tend to charge less in slack months to encourage consumption, the following is a good indication of average prices:

Gas supplied as fuel—about 10.75 lire/cu. m. Gas supplied as feedstock for chemical producers—about 6.75 lire/cu. m.

In southern Italy, the price for chemical usage averages at about 5 lire/cu. m. to encourage the building of industrial plants in the area. What with tax and customs duty exemptions, plus the opportunity for foreign investors to re-export capital and to take profits out of the country, there is now a big incentive to build in this part of Italy.

MY Italian correspondent tells me that he went on a recent Press visit to pharmaceutical factories in Milan and Turin and was much impressed by the progress made in this sector of Italian industry. For some fellow journalists this was their first tour of modern drug factories, where full use is made of developments in hygiene to ensure production under sterile conditions.

"Looks like a science fiction setting" said one Italian journalist and more than one pair of eyes strove to penetrate the goggles worn by white-clad workers to see if they really did belong to one of the fairer sex.

The visit was organised by the newly created Italian Drug Industry Association (Pharmindustria) in co-operation with three of its leading members—Farmitalia, Carlo Erba and Lepetit. In a later issue of CHEMICAL AGE, the plants of these companies will be described in greater detail and later on hope to give readers a comprehensive survey of the Italian drug industry which has made such great strides in recent years.

THE fluid bed technique for the production of ethylene from petroleum, which has been operated without a hitch in a big plant by B.A.S.F. at Ludwigshafen for 18 months, has proved a significant and unexpectedly successful step forward in the development of petroleum cracking. It enables any crude oil to be worked in one continuous process and without previous treatment. This process, I learn, even 'digests' crude oils and mineral oil residue containing a high proportion of sulphur, in fact, even the heaviest topped crudes.

The yields in low-molecular olefins, particularly in ethylene, are stated to be excellent. The fluid bed principle was discovered by the B.A.S.F. chemist Dr. Fritz Winkler as early as 1921 and after years of research, a company team finally succeeded in adapting it to the extraction and preparation of olefins.

The first production unit, consisting of two reactors of 59 sq. ft. roasting surface each, was commissioned in the summer of 1959. The present plant has an annual throughput of 200,000 tons of crude and produces 80,000 tons of of ethylene.

Alembic

THOSE CHEMICAL PLANT DELIVERY DATES

Equipment Users and Manufacturers Exchange Viewpoints in I.Chem.E. Discussion

WHAT is the real reason for late deliveries of chemical plant and equipment? Has the engineering industry expanded sufficiently to keep pace with the rapidly expanding chemical industry? Does the trouble lie in complacency among middle and top management? Are chemical equipment users unreasonable in their choice of designs and materials?

These and many other possible influences were the subject of lively discussion by chemical plant contractors, equipment and instrument manufacturers and equipment users at a meeting of the North Western Branch of the Institution of Chemical Engineers in Manchester on 27 June. Nine speakers contributed prepared talks in an informal discussion of the topic 'Delivery difficulties in relation to chemical plant equipment', some points from the debate being as follows.

Mr. W. H. Jones (A.P.V. Co. Ltd.) observed that delays in deliveries were a very complex problem and that both equipment users and suppliers knew from long experience that it was not solved by pin-pointing one basic cause—it was a combination of many factors which in the post-war years seemed to have become inherent in the handling of plant installation. It was not confined alone to the chemical field, and had in fact earned British industry, as a whole, a bad reputation in the export markets.

Mr. Jones said his own company, which was concerned with equipment supply both as a fabricator and a contractor, had battled with this problem for the last 10 years. He suggested taking a look at the manner in which equipment contracts were usually introduced to the supplier at the outset of a project. Even before pencil was put to paper, or material orders issued, so many—far too many—contracts were late before they started, and nothing short of a major exercise at the expense of other work could bring about a complete delivery at the time required. In many instances, he suggested, this was in part due to over-optimistic planning.

Mr. F. H. Cox (Constructors John Brown Ltd.) believed that "it would appear that almost any change, however minor, is sometimes seized upon by suppliers as a reason for extending delivery time". Discussing stainless steel, there was a modern tendency among designers to select material without considering as fully as they might alternative materials which might prove equally satisfactory.

Mr. V. J. Osola (Lankro Chemicals Ltd.) noted that for many customers the maintenance of the delivery promise was every bit as important as, and often more important than, invoicing at the correct price. This being the case, suppliers should take the utmost care to determine what delivery date to quote at the outset, he said.

Mr. F. E. Varlow (managing director, Audco Ltd.) declared: "For many years now the rate of capital investment in the chemical industry has been high and sustained, the industry as a whole has consistently expanded, at twice the rate of the rest of British manufacturing industry, and one hears that the steel industry and much of the engineering industry is fully aware of the potentials of business in the ever-growing chemical industry."

Expansion 'Shyness'

Mr. G. P. Balfour (managing director, Stockdale Engineering Ltd.) declared that he was sure they had all tried to buy some small item they thought on somebody's shelf and it had turned out to be on six weeks' delivery. Six weeks could be disastrous to a delivery promise as well as six months. He believed that this problem sprang from caution in management towards expansion which was prevalent in this country. "I think there are a great number of managements, I certainly know one management, a stainless steel manufacturer, which holds down capacity quite consciously and deliberately. They don't want to expand to the point where the market is very competitive and where they can't sell their products. They have never been in the position when the fluctuations of trade have really seriously indulged within the last 15 years."

In most of the other major manufacturing countries the common items of engineering components and also the raw materials were on the shelf everywhere, distributed throughout the country, and were available virtually on 24 hours' notice, he claimed.

Mr. D. I. Robertson (managing director, J. R. McKellar (Alloys) Ltd.) suggested that users and manufacturers of equipment could well consider the possibility of carrying stocks. For instance, producers of pumps and valves and associated equipment surely had some idea of their potential requirements, if not for a year at least for six months, and yet they religiously stuck to ordering in ones and twos.

From **Mr. J. N. Ross** (Enamelled Metal Products Ltd.) came a plea that customers should consider using their standard stock as opposed to units built specially to their requirements. "Like most other companies, we prefer to manufacture and process in batches, and this is most readily done by placing large bulk contracts on the various departments against stock, and requisitioning these for different contracts. It also ensures that if a breakdown is experienced in the field, that replacement parts are more readily obtained."

Only too often did they run up against a customer who thought in terms of a plain carbon steel pressure vessel and expected a similar design to be duplicated in glassed steel.

Mr. D. J. A. Mansell (Worthington Simpson Ltd.) supported previous speakers who had declared that it really was essential that the pump suppliers should really be given all the necessary basic information, so that the pump could be correctly supplied.

Mr. A. H. Isaac (Foxboro-Yoxall Ltd.) contrasted the healthy state of the delivery position of the instrument industry today compared with 10 years ago. He felt that many people did not appreciate that over the past four years deliveries were down to as many weeks.

He urged, however, that information on what was required should be given as soon as possible in the development of the project.

Discussion ranged over many points, some questions that were raised being:

Would not a reduction in tariffs on imported chemical plant be advantageous in that it would enable British chemical manufacturers to have a wider choice of equipment? Would not Britain's entry into the Common Market prove a good thing in this respect?

Again, were British banks as co-operative as, say, Continental banks? A Continental bank, it was said, would willingly advance capital against a large secured contract from a reputable firm, to enable stock to be laid in, whereas British banks did not seem anxious to give advances against stock.

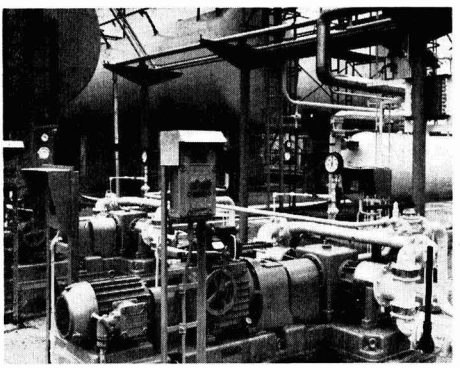
Post-graduate Training in Chemical Engineering

The Institution of Chemical Engineers have issued a new pamphlet entitled 'Scheme for a post-graduate course in chemical engineering', in which a schedule of subjects is set out to indicate the nature and relative importance of the various sections which enter into a course. Copies of the pamphlet are available on written application to the Institution at 16 Belgrave Square, London S.W.1.

Industrial Chemistry Congress

The 33rd Congrès International de Chimie Industrielle is to be held in Bordeaux, France, from 28 September to 8 October next. Organisers are the Société de Chimie Industrielle, of Paris. The congress is to be phased with a European chemical industry conference entitled Journées Européennes de Génie Chimique and to be staged at Toulouse from 28-30 September.

SPECIAL FEED PUMPS HANDLE BUTANE AT WESTFIELD LURGI GASIFICATION PLANT



Pump installation at the Lurgi gasification plant, Westfield, Fife

A KEY factor in the production of gas by the Lurgi process at the Scottish Gas Board's gasification plant at Westfield, Scotland (described in CHEMICAL AGE, 3 June, p. 893) is the adjustment of the calorific value of the gas to the statutory minimum before it is pumped to the grid main. The adjustment is made by adding small quantities of butane to the gas, the amount being regulated by a calorific valve controller. The design of a suitable butane feed pump presented considerable technical difficulties and the task was largely entrusted to Metering Pumps Ltd. of 21 The Mall, Ealing, London W.5.

The pumps take butane from a storage tank which is held at ambient temperature; the butane is allowed to boil, finding its own pressure corresponding to the ambient temperature. The pumps operate with differential pressures of up to 317 p.s.i.g. (equal to 1,140 ft. head) and with specific gravities ranging from 0.5 to 0.6 and pumping temperatures from −18 to +35°C. They are fully and automatically controlled by a pneumatic air signal from the calorific value controller.

The pumps are based on the company's Metricon pump type 'W', but the extensive modifications that were eventually made make the pumps at the Westfield plant virtually unique. They are of duplex design, with greatly enlarged suction entry and full bore valves to minimise the N.P.S.H. requirement; the suction valves were specially designed for lightness. The pump drive is through a Carter steplessly variable gear box, and the gear box is in turn controlled by a Gordon air cylinder.

Two pumps are installed at present, one being a standby, but when the scheme is completed, three pumps will be employed, two working continuously to deal with double the present gas output, the third being a standby.

Polyvinyl Alcohol in Cancer Research

THE possibility of polyvinyl alcohol sponge, used subcutaneously by surgeons for the repair of deformities, possessing carcinogenic activity, is being investigated at the Royal Cancer Hospital, according to the 1960 Annual Report of the British Empire Cancer Campaign.

Although the investigators are not aware of any incidences of malignancy resulting from this practice, they have succeeded in inducing palpable tumours in rats by implanting squares of sponge over 5 mm. thick under the skin. The thickness of the sponge seems to be an important factor, but the reason for this is not clear. From the examination of a polyvinyl alcohol sponge removed from a young girl, it was discovered that the immediate reaction to an implanted sponge seems to be similar in both man and rat. The question of its more remote effect cannot be answered without further observations, both experimental and clinical. In the meantime it is suggested that surgeons should use sheets as thin as possible, and remove them as soon as their purpose has been served.

Another series of experiments to investigate the effect of implanting other apparently inert plastics in rats has been started at Birmingham. So far tumours have been produced in 11 rats but the mechanism is not understood.

The organic chemistry department of the University of Adelaide has studied the formation of polycyclic carcinogenic hydrocarbons by pyrolysis. Vinyl cyclohexane, a dimeride of butadiene, gives a tar in which 38 compounds, including carcinogens, have been identified.

Letter to the Editor

Import Duty on Synthetic Methanol

SIR,—On page 884 of your issue of 3 June you comment upon the reduction of import duty on synthetic methanol. This reduction is not, in fact, limited to imports from the E.F.T.A. as stated by you, but covers all imports of methanol from whatever country of origin.

We have referred for confirmation of this to the Treasury Press release dated 26 May which was somewhat confusing, and it is this confusion no doubt which has caused the error in your report.

Yours, etc.,
R. I. LEWIS,
Assistant Secretary.
CIBA (A.R.L.) Ltd.,
Duxford,
Cambridge.

Coalite Chairman on Hydrocarbon Oil Tax

DISAPPOINTMENT that the tax on heavy hydrocarbon oils, re-introduced in the Budget, is being applied to indigenous material, was registered by Commander Colin Buist, chairman of Coalite and Chemical Products Ltd., in his annual statement. He says that when this tax was previously in operation, coal-based products were excluded.

"Unfortunately, the definition of heavy hydrocarbon oils is resulting in a tax being charged on certain materials, in our case timber preservation creosote and flotation oils, that are not sold for burning. A most disconcerting feature is that certain competitive materials of different type and origin are not taxable."

New Titanium Oxide Process Submitted for Australian Patent

Laporte Titanium Ltd. have submitted an improved process for the manufacture of titanium oxide for Australian patent.

The process consists of passing any tetrahalide vapour (except fluoride) together with an excess of oxygen through a fluidised bed at 750-1,500°F. The tetrahalide is oxidised to the dioxide. A part of this titanium dioxide remains in the bed while the rest is carried out with the gas stream.

Aluminium chloride is incorporated into the gas stream. The excess oxygen passing through the bed is sufficient to convert aluminium chloride to oxide.

Associated Ethyl Change Name to Octel

From 1 July, the Associated Ethyl Co. Ltd. have changed their name to 'The Associated Octel Co. Ltd.' Octel is the brand name under which the company has sold its main products for some years. Associated Octel, with head office at 20 Berkeley Square, London W.1, have plants at Ellesmere Port and Northwich, Ches.; Amlwch, Anglesey; and Hayle, Cornwall; and an engine laboratory at Bletchley, Bucks.

JAPANESE GROUPS PLAN TWO LARGE PETROCHEMICAL COMPLEXES AT NAGOYA

AS the Mitsubishi Oil Co. come on stream with a new oil refinery at Mizushima, West Japan, that is described as Japan's largest chemical plant, two of the country's largest groups announce plans for vast petrochemical plants at Nagoya. First off the mark were the consortium of three Mitsui companies—Mitsui Chemical, Toyo Koatsu and General Bussan; their plants submitted for approval were quickly followed by those of Nippon Petrochemicals Co., whose parent company is Nippon Sekiyu Co.

Under the Mitsui 100,000 million yen scheme, Bussan would construct a 100 b.p.s.d. refinery for completion within three-four years. Mitsui Chemical and Toyo Koatsu would produce urea, ammonium sulphate, vinyl chloride, acrylonitrile, polypropylene, dodecylbenzene, polybutadiene, and styrene monomer from naphtha and ethylene from Bussan and coke oven gas from Tokai Iron and Steel.

Mitsui are seeking another large site in the same area that is also the subject of bids on the part of Sumitomo and other companies.

Nippon Sekiyu have applied for land at Nagoya for an oil refinery and in conjunction with this Nippon Petrochemicals plan to produce 150,000 tons/year of ethylene and 1 million tons of other heavy organics.

Refinery Planned

Opening of the Mitsubishi refinery marks completion of the first stage of construction. To date the refinery is equipped with a crude oil desalting unit—for the removal, by electrical means, of salt contained in the crude oil—with a daily capacity of 6,360 kilolitres; a normal pressure distillation unit of similar capacity in which the desalted crude oil is heated and cracked into gasoline, kerosine, light and heavy oils; a vacuum unit for the separation, by distillation, of the light and heavy oil fractions (3,180 kl./day); and a Merox unit in which the gasoline is freed from impurities by catalysts and treatment with caustic soda at the rate of 320 kl./day.

Scheduled to be completed not later than September of this year are two desulphurising units—one employing hydrogen to eliminate sulphur in the kerosine and light oil (1,140 kl./day) and the other for processing the straight gasoline fraction derived from the normal pressure distillation equipment into high octane petrol by means of platinum catalysts (570 kl./day).

The next state of development, due to be completed by October 1962, provides for expansion of these facilities and the inception of the production of petrochemicals. It is intended to install a catalytic cracker for the distillation of gas oil into high-octane petrol, a gas recovery unit to recover and liquefy gas produced at the various refining stages, a further desulphurising unit, equipment to absorb and separate hydrogen sulphide contained in waste gas by solvent extraction, equipment for the oxidation of this hydrogen sulphide into pure sulphur and, finally, a hydrogen generator to provide the hydrogen required for isolation of sulphuretted hydrogen from the waste gases.

The company is planning to increase its refining capacity when the demand warrants it. The present refining capacity of 6,300 kl./day of crude oil is ultimately expected to reach 35,000 kl./day. (Japan's total refining capacity in 1960 amounted to 100,000 kl./day.)

The refinery is situated at Mizushima, in the western part of Japan, on the shores of the Seto Inland Sea, where harbour facilities are excellent. Sufficient land is available to permit both the expansion of the existing plant and the addition of petrochemical facilities, water and electric power are abundant, the climate is mild, and where the plant stands halfway between the industrial complexes of Hanshin and North Kyushu.

The following table shows the plans of the Mitsui and Nippon Petrochemical groups as submitted to the Ministry of International Trade and Industry:

	Mitsui	Nippon
	'000 Tonnes	
Urea	49	—
By-prod. amm. sulphate	45	—
Methanol	4	30
Polyacetal	5	10
Formalin	—	20
Vinyl choride	28	50
Neoprene	—	10
Acetylene	—	3
Acrylonitrile	9	20
Polythene	40	50
Ethanol	—	20
Higher alcohols	12.8	20
Plasticisers	10	—
Acetic acid	—	20
Ethylene oxide	8.5	—
Ethylene glycol	15	13
Polypropylene	20	30
Polypropylene glycol	5	10
Glycerine	5	10
Acetone	7.8	30
Dodecyl benzene	30	—
Propylene trimer	3.6	—
Aryl alcohol & N-propanol	—	5
Poly-4-methyl pentene-2	—	20
Polybutadiene	20	30
Polybutylene	10	—
Polybutene, polybutene I	—	35
Isoprene	20	4.5
Butyl rubber	7	—
Methacrylate resin	—	20
MEK	—	10
Maleic anhydride	—	10
DCPD	—	8.9
Styrene monomer	30	—
Polystyrene	—	30
TDI	7.2	—
Polyurethane	—	10
ABS resin	—	10
Alkyl benzene	—	30
Caprolactam	—	30
Polycarbonate	—	20
MXD-6	—	20
Xylene resin	—	10
Terephthalic acid	21	30
Phthalic anhydride	2.8	20
Petroleum resin	11	—
Solvent naphtha	19	—
Caustic soda	45.1	—

Eurochemic Fuel Reprocessing Plant at Mol Due on Stream in 1963

PLANT of Eurochemic Co. at Mol, Belgium, for the chemical reprocessing of irradiated fuel will be constructed by Saint-Gobain Nucléaire, France; Nohab, Sweden; Belchim, Belgium; Montecatini, Italy; Argtu, Germany; Comprimo, Netherlands; and Noratom, Norway. Capacity will be 350 kg/day for natural uranium elements, or 200-250 kg/day for enrichments up to about 5%.

Two main objects of the plant are experimental studies of reprocessing problems which will arise on an industrial scale within the next 10 to 15 years, and, in the meantime, reprocessing of fuel from European reactors. Site development is already in hand and construction will start in the late autumn, with the plant scheduled to be operational in the second half of 1963.

Plant specifications show that to gain maximum experience the plant has been designed to accept a wide range of fuels—uranium metal, alloys of uranium and molybdenum or aluminium, and uranium oxide. Acceptable cannings will be: aluminium, magnesium, zirconium, Zircaloy, stainless steel. Chemical decanning will take place in the dissolvers of which there will be two, one for fuel elements of up to 1.6% enrichment and another for higher enrichment.

A first co-decontamination and partition cycle by TBP extraction in pulsed columns, will be followed by a second cycle for uranium purification and a final purification by silica gel.

Heat Transfer Properties of Santowax 'R'

THE heat transfer and other physical properties of Santowax 'R' are presented in convenient graphical and tabular form in a report, AAEW—M118, published by the Reactor Development Division of the Atomic Energy Establishment, Winfrith (H.M.S.O., 7s). Santowax 'R' is a refined commercial mixture of the three terphenyl isomers and is made by Monsanto Chemicals Ltd. in the U.K. and by Monsanto Chemical Co. in the U.S.

In the report, values are given for specific heat, density, dynamic viscosity, dynamic and kinematic viscosities, thermal conductivity and other properties, the data having been obtained by new experimental measurements, by calculations or from the published literature. The investigations had particular reference to Santowax 'R' as a coolant for nuclear reactors.

Boost for D.S.M. Profit in Year of Expanding Chemical Output

IN a year of record turnover, up 3.4%, and trading balance, up 33%, Staatsmijnen in Limburg (Dutch State Mines) report mounting outputs for all their main chemical products. Nitrogen output in 1960 totalled 229,000 tons, an increase of 6% on 1959, from which about 955,000 tons of fertilisers were produced, compared with 942,000 tons. This increase was achieved mainly by rationalisation of production units.

A substantial contribution came from the methane cracking plants which were put into operation towards the end of 1959. The additional nitrogen produced was mainly processed into urea, production of which rose by more than 20%, from 68,000 tons to 82,000 tons. Plans for a further expansion of urea capacity are now being realised.

The proceeds from sales of plastics and organics, rose by about 50%. Phthalic anhydride capacity has now been doubled to 5,000 tons/year. Production and sales of caprolactam rose by some 50%, about 35% of production being exported. Capacity of the caprolactam plant was doubled at the end of 1960. A joint Staatsmijnen-Dow Chemical project will produce 25,000 tons/year of phenol on a site in the Botlek area of Rotterdam.

Capacity for high pressure polythene has just been raised to 25,000 tons/year and a plant is in hand to make 10,000 tons/year of low pressure polythene using the Ziegler process. An oil cracker designed to produce 25,000 tons/year ethylene is under construction. Construction has been started on a plant to produce 25,000 tons/year of 40% formaldehyde solution.

An extension to plant for the production of pure naphthalene has started operation. Production of contact sulphuric acid and sulphur dioxide has been raised 50%; these two products are now used mainly for the production of caprolactam. A third sulphur combustion installation has been put into production.

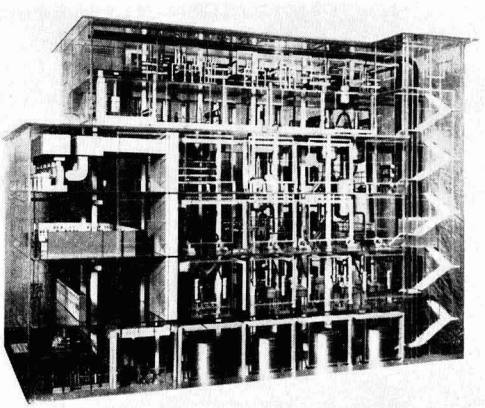
Turnover last year totalled F.1,094 million (F.1,058 million), while turnover excluding internal sales amounted to F.700 million, a 7.4% rise on 1959. Trading balance totalled F.93.5 million (F.68.5 million), representing 8.5% of total turnover and 13.4% of external sales.

Sales from fertilisers represented F.158 million (F.154 million), while those of plastics and other chemicals totalled F.103 million (F.76 million).

Tunisia Suspends Import Duty on Sulphuric Acid

Tunisia has temporarily suspended customs duties on the import of sulphuric acid.

Model of Krupp DMT Plant for U.S.S.R.



Model of a plant for the manufacture of dimethyl terephthalate (DMT) built in the U.S.S.R. by Fried. Krupp of Essen, W. Germany, as part of a DM30 million contract, received in 1957, concerned with polyester fibre production. Connected with this plant are two others, also supplied by Krupp, at different locations, Plant 1 producing the *p*-xylene used in Plant 2 (illustrated) for making DMT, and Plant 3 converting DMT to polyester fibre. All three plants are now in operation. Plant 2 started work in May 1960 and was handed over to the Soviet operators at the end of September 1960. Situated at Stalinogorsk, some 250 km. south of Moscow, Plant 2 involved the installation of 285 items of machinery and equipment, 93 pumps and 151 electric motors

Refined Nickel Price Up 10%

AN increase of £60/ton in the base price for refined nickel, bringing the price to £660/ton, has been announced by the International Nickel Company (Mond) Ltd., U.K. subsidiary of the International Company of Canada Ltd. Appropriate increases are being introduced for other countries, and new prices are being announced for other forms of primary nickel.

Inco (Canada) point out that since the last rise in the nickel price on 6 December 1956, the company has absorbed mounting costs of all kinds, and that these have greatly exceeded the benefits of efficiencies and increases in productivity brought about by the company's process research and more efficient capital installations.

Following the International Nickel announcement, both Sherritt Gordon Mines and Falconbridge Nickel Mines have signified similar price advances for nickel.

Courtaulds Pulp Subsidiary Set up in Swaziland

A NEW subsidiary of Courtaulds Ltd., the Springwood Cellulose Co. Ltd., has been formed in agreement with the Colonial Development Corporation to sell the unbleached sulphate pulp produced by the Usutu Pulp Co. Ltd., Swaziland. Springwood will also be responsible for selling that part of the Usutu output which is to be bleached in the U.K. at Courtaulds' Aber Works in North Wales.

The directors of the Springwood Cellulose Co. Ltd. are M. R. Parker (chairman), J. Addison (managing director), F. C. Aldred and T. E. Pennie. Sales headquarters are at 22 Hanover Square, London W.1 (MAYfair 8000). The Technical Service Group is based at 345 Foleshill Road, Coventry (Coventry 88771).

O.G.S. Chemists Produce Fertilisers from Soils

USEFUL phosphatic fertilisers can be obtained from phosphatic soils from Fiji and the Solomon Islands, recent investigations in the Mineral Resources Division of the Overseas Geological Surveys have shown. Mineralogical and X-ray examinations of samples of Fiji soils along with chemical analysis and treatment, revealed that the soils consisted largely of crandallite and could be used as fertilisers after heating at 500-550°C. At this temperature the crandallite was found to be decomposed and the citrate-soluble P_2O_5 content of the samples was increased from about 3.5 to about 10.5%. Phosphatic soils from the Solomon Islands were shown to be similar in composition and to respond in much the same way to heat treatment.

This and other chemical laboratory work on minerals and ores is discussed in the 'Annual report of the Overseas Geological Surveys 1959-60' (H.M.S.O., 4s).

Overseas News

ALLIED CHEMICAL FIRST U.S. COMPANY TO SUPPLY ALL MAJOR URETHANE MATERIALS

WITH completion of a new 20 million lb./year polyether plant at Baton Rouge, La., Allied Chemical Corporation, have become the first U.S. company to supply all major materials for the booming urethane industry. Their So'vay Process Division is making polyethers which will be marketed by National Aniline Division along with its di-isocyanates. Plastics Division produces polyesters and General Chemical Division manufacturers fluorocarbon blowing agents. In addition Barrett Division, has been authorised to build a plant to make commercial quantities of rigid urethane foam for construction applications.

The new Solvay plant will make propylene oxide-based polyethers by a new and improved process based on a unique reactor design developed during four years of research, process development and field testing. Polyethers are the largest single component of urethane foam and are a major factor in determining foam properties and quality.

In polyethers, seven major U.S. producers have an immediate capacity to make 175 to 200 million lb. enough to satisfy all foreseeable future needs. In isocyanates, four producers will soon have capacity to manufacture 125 million lb. enough to meet all foreseeable demands until 1965.

Actol polyethers will be available in the U.K. through Kingsley and Keith (Chemicals) Ltd., Rex House, 38 King William Street, London E.C.4, who also handle Allied Chemical's isocyanates. (See also leading article, p. 49.)

S.D.-designed Adipic Acid Plant for Rohm and Haas

Scientific Design will design and build an adipic acid plant—the first to use their liquid phase oxidation of cyclohexane—for Rohm and Haas at Louisville, Ky. Capacity will be about 20 million lb./year and when on stream in the second half of 1962, U.S. adipic capacity will be around 420 million lb./year.

Hooker, U.S., Expand Chemical and Fertiliser Operations

First phase of the four-step electrolytic cell expansion at the Niagara Falls, U.S., plant of Hooker Chemical Corporation will be put into production by 1 August. This new mercury-type cell installation will produce chlorine and caustic potash, both large volume products. Also at Niagara, facilities are now in operation for the production of octyl mercaptan, sold as an intermediate, and Thiodan broad-range insecticide (Thiodan is a registered trade mark of Farbwerke Hoechst, Food Machinery and Chemical being U.S. licensee). At Jeffersonville, Ind., the Phosphorus Division's facilities for recovering phosphorus from by-product Ferrophos are completed and capacity operation is anticipated in July. The recovered phosphorus is converted to sodium phosphate.

Schenectady Varnish to Build Phenol Plant

Schenectady Varnish Co., who in the U.K. are associated with Midland Tar Distillers Ltd., in Schenectady-Midland, are to build a phenol plant at Rotterdam Junction, N.J. Schenectady state that this new development—their first venture into basic materials—will strengthen their position in the production of synthetic resins.

AviSun Cut Price of Polypropylene Film

AviSun have cut the price of their polypropylene film by between 6 and 9 cents/lb. to 64 cents/lb. for all gauges in quantities of 500 lb. and upwards.

New, Simpler Uranium Process from Japan

A short cut in the refining of uranium metal has been announced by the Atomic Fuel Corporation of Japan. The new method is claimed to be cheaper and faster than the conventional way of refining by 11 stages which include the making of yellow cake from the ore. The Tokai refining plant of the corporation finds that the metallic uranium can be obtained by a direct refining technique which involves the use of an amine. The innovation is reported to have a further advantage in that the apparatus is much simpler and less bulky than that commonly used.

Sincat to Expand in Sicily

Sincat's plants at Priolo Gargallo, Sicily, are being expanded and will shortly have capacity for up to 800,000 tonnes/year of fertiliser. New plants planned, using feedstock from a thermal cracker, will produce ethylene and propylene, LPG, gasoline and fuel oil. Currently, Sincat employ about 3,000 a work persons.

Interhandel Will Fight U.S. Sale of G.A.F.

The Swiss holding company Internationale Industrie- und Handelsbeteiligungen AG (Interhandel), of Basle, has issued a statement with regard to Bills presented to the U.S. Congress aimed at the retention by the U.S. of property confiscated during the last war as belonging to enemy aliens. It is again being attempted, states the company, to find a legal basis for the selling of the U.S.-based chemical producer General Aniline and Film Corporation despite the pending court case in which the Swiss holding company claims an interest.

Interhandel would contest as unconstitutional any passing of a law permitting this in the U.S. and, it is stated, if this should be unsuccessful, it would be necessary for the Swiss Government to lay the case before the International Court of Justice in The Hague and plead for a delay of sale until completion of the legal proceedings.

Stanvac Petrochemicals Plants for Bombay

Proposals of Stanvac to build ethylene, butadiene and aromatics plants at the site of Bombay refinery have been approved by the Indian Government.

Polymer Award Sarnia Expansion Contracts

Catalytic Construction of Canada will handle engineering, design, procurement and construction of the polybutadiene plant planned by Polymer Corporation at Sarnia, Ont. Fluor Corporation of Canada will handle engineering, procurement and construction of a new butadiene extraction unit at Sarnia. Polymer state that this new unit is needed to match more closely the increased output of the butylene dehydrogenation plant recently achieved as a result of process modifications and to provide additional butadiene necessary to keep pace with the steady gain in output of GRS rubber.

New Pharmaceutical Plant for Pisa

Guidotti Co. have inaugurated in the new industrial area of Pisa a new plant for the production of amino acids and other materials which the company will utilise for the manufacture of pharmaceuticals at its other Pisa plants.

Aminoil to Have 20% Stake in Rhodesian Refinery

Following the agreement between American Independent Oil Co. and Shell on a joint-venture £13 m. oil refinery in Rhodesia (C.A., 24 June, p. 1040) it has been revealed that Aminoil's participation will be "up to 20%". The extent of Shell's participation is not revealed. Details are now being worked out, in conjunction with the Federal Government, on the implementation of the refinery scheme.

Beryllium Concentration Process Demonstrated in U.S.

Successful concentration of domestic beryllium ores by a flotation process, utilising chemical reagents developed by E. Van Dornick, a vice-president of Beryllium Resources Inc., Beverly Hills, Calif., U.S., was announced by the company recently when the process was demonstrated using Topaz ore (primarily bertrandite) at the pilot plant in Los Angeles. The process is claimed to be economical for other beryllium minerals as well.

A full-scale concentration plant will be built by Beryllium Resources near Delta, Utah, and should be completed on or about the end of 1961. Shortly after this, the company will construct mills in other parts of the world. The company is in varying stages of negotiations with Mexico, the Union of South Africa, Mozambique, Brazil, Argentina and Rhodesia.

Japan May Seek Imports of Titanium Oxide

Hit by a long-term strike at Ishihara Sangyo, who have been producing 3,000 tons/month of titanium oxide, or 80% of total Japanese output of anatase and 60% of rutile, consumers have been considering the question of imports. Many consuming industries have had to suspend their operations. It is generally considered that imported rutile material would sell at 100,000 yen/ton higher than the domestic price.

Lurgi to Build BP Aromatics Plant at Dinslaken

A further announcement about the aromatic chemicals plant to be built at Dinslaken, West Germany, as a joint venture of British Petroleum and Standard Oil Co. of California reveals that construction of the plant will be by Lurgi Gesellschaft für Mineralöltechnik mbH. and that completion is scheduled for mid-1962. Feedstock will come from the nearby Deutsche BP oil refinery and production will begin with 14,000 tonnes/year of *p*-xylene.

As stated in CHEMICAL AGE, 15 October 1960, page 623, the project is part of a plan to construct two aromatics plants, one at Dinslaken and the other at the BP refinery, Isle of Grain, Kent, at a total cost of some £7 million. In connection with the Dinslaken project, a consortium known as Deutsche BP und California was recently formed by BP Benzin und Petroleum AG, PB's Hamburg subsidiary, and Caifornia Chemical GmbH, German subsidiary of Standard Oil of California.

Work Started on Oil Pipeline from Genoa

Mr. E. Mattei, chairman of E.N.I., the Italian State-owned oil corporation, has inaugurated the work on a 1,000 km. pipeline to be built between Genoa and Switzerland and Germany, and Northern Italy. The pipeline, the biggest in Europe, is expected to be completed by the end of 1963. It will carry between 12 and 18 million tons of crude and fuel oil to refineries to be built at Aigle, Switzerland, and at Inglostadt and Bietighein, near Stuttgart.

Third Phase of Cary P.V.C. Expansion Planned

A new 150 million lb. a year polyvinyl chloride plant is to be built by Cary Chemicals of the U.S. This is the third phase of the company's $14 million polyvinyl chloride expansion programme. Cary already have a 50 million lb. a year plant at Flemington and a 36 million lb. plant at East Brunswick. The site for the new plant is not yet chosen.

With the completion of the new plant, Cary expect to be the third largest producers of polyvinyl chloride in the U.S. They predict that U.S. markets for the chemical will reach 1,500 million lb. in the next five years.

The vinyl chloride monomer will be supplied by Tenneco Chemical when their plant near Houston, Tex., is completed. Tenneco are investing in Cary through the purchase of $7 million of debentures. Cary will acquire part ownership of Tenneco's new petroleum complex.

Kuhlmann Link with Japan for Higher Alcohols

Ets. Kuhlmann, Paris, have licensed their higher alcohols know-how to Nissan Chemical of Japan. Plans include the production of 10,000 tonnes/year of tridecanol, starting from propylene dimer, via the oxo route.

Fluorinated Vinyl Chloride Fibre for France

Daiwa Spinning Co., Osaka, have licensed their know-how on the production of fluorinated vinyl chloride fibre to Soc. Rhovyl, France, a subsidiary of Rhone Poulenc.

New Sulphur-processing Plant for Sicily

Italian Sulphur Board (Ente Zolfi Italiani) and the local authorities have agreed the setting up of a plant to process and purify sulphur at Licata, Sicily. Initial capacity has been scheduled at 100 tonnes a day.

Levy Proposed on W. German Crude Oil

A Bill now before the West German Parliament proposes a 4% levy on crude oil—an increase of about 15s 4d/ton. This has resulted in the postponement of the formation of the company that was to have built the pipeline from Karlsruhe to Strasbourg and Marseilles. The new levy will not apply to imported oil.

Uranium By-products for Petrochemical Industry

A metallurgical uranium plant has been set up in Poland. By-products occurring in the production process are stated to be suitable for use in the petrochemical industry, in the production of synthetic rubber and in the manufacture of dyestuffs.

Bayer Insecticide Plant in El Salvador

Up to 1,000,000 litres of liquid insecticide will be the annual capacity of a new plant just opened by Bayer de El Salvador S.A. The company is owned 50% by the Leverkusen, West Germany, chemical producer Farbenfabriken Bayer AG, and 50% by Salvadorian financial interests. The plant will export to neighbouring countries as well as supplying local markets.

Monochloroacetic Acid in Tight Supply in Japan

With increasing demand for CMC, a shortage of monochloroacetic acid is likely soon in Japan. Shin-etsu Chemical Co., Osaka, are using Dow of Switzerland know-how for a 470 tons/year cellulose derivatives plant, which is due on stream later this year. By 1966 capacity will be raised to 2,500 tons/year.

Q. and Q. in Germany

Quickfit and Quartz Ltd., Stone, Staffs, manufacturers of interchangeable laboratory glassware, have formed a German subsidiary company, Quickfit Laborglas GmbH., which will have its headquarters at Wiesbaden.

New Badger-CFR Extraction Process Yields Low-cost, High-purity Isobutylene

A NEW extraction process which is said to yield low cost, high purity isobutylene has been developed by Compagnie Francaise de Raffinage in conjunction with the U.S. company, Badger Mfg., and their European subsidiaries. The process is being licensed by C.F.R. and is available through Badger.

The process is a countercurrent liquid phase solvent extraction which uses a low cost solvent highly selective to isobutylene. Normally isobutylene is extracted from the C_4 stream by sulphuric acid. The solvent used is not revealed but, according to Badger, the process will provide a 10 to 15% lower capital investment and operating costs than those of the conventional method.

The process details are described in a recent issue of *Chem. and Engg. News*. The raw feed is mixed with the solvent in a reactor. The extraction usually takes place in two stages under pressures just sufficient to keep the materials liquid. The extract containing the isobutylene is flashed to atmospheric pressure and then fed to the regenerator. The solvent is recovered directly in a stripper, and the isobutylene gas is scrubbed, compressed and purified before being sent to storage.

Another advantage of the process, says Badger, is that the residual C_4's do not need redistilling. The regenerated extraction solvent is recovered as stripping tower bottoms, cooled and recycled to the reactor also without redistillation. Only small amounts of polymer are formed and, since it is 100% dimer, it can be used directly.

Feeds containing a high proportion of butadiene can also be processed by this method. In one test, feed containing 35% butadiene produced isobutylene of 99.4% purity. The yield of isobutylene was 86% and recovery of butadiene was 98%.

PEOPLE in the news

● **Mr. M. J. Smith, M.A.,** overseas trade director of Evans Medical Ltd., Speke, Liverpool, is to be director of this year's Oxford University Business School. This course which lasts throughout July, is being held at Pembroke College and the syllabus consists largely of a study of the contemporary economic situation coupled with economic theory. It will also include various aspects of business management and among the visiting speakers, are many leading industrialists.

● **Prof. A. C. Frazer** was re-elected president of the British Food Manufacturing Industries Research Association at the annual general meeting. Lt.-Col. G. R. Harding, D.S.O., M.B.E., and Lord Tweedsmuir, O.B.E., were re-elected vice-presidents.

● **Sir Harry Pilkington,** 56-year-old chairman of Pilkington Brothers Ltd., is in St. Helens Hospital suffering from an infection he contracted overseas about three months ago. He is stated to be making good progress.

● **Mr. A. V. Billinghame** and **Mr. P. J. March** have been appointed directors of Shell Chemical Co. Ltd. with effect from 1 July. Mr. Billinghame joined Shell in 1942, and was closely associated with Shell's entry to the chemical business in the U.K. at that time, and its subsequent development. During the post-war years he was actively engaged in the international sphere, being particularly concerned with the development of export

P. J. March **A. V. Billinghame**

markets. He will continue to hold the position of Regional Co-ordinator III (U.K., Central and South America) with Shell International Chemical Co. Mr. March joined Shell in 1949, and after a period with the former Chemical Industry Administration of Shell Petroleum, transferred to Shell Chemical Co. on his appointment as manager of Egham Technical Service Laboratories in 1955. Two years later he moved to head office as marketing manager, industrial chemicals; last year he was appointed general manager of the newly formed Industrial Chemicals Division, one of the three integrated product divisions into which Shell Chemical has now been divided, and will continue to serve the company in this appointment.

● **Dr. H. J. Phelps** has been appointed consultant to Maxam Power Ltd. and Goodyear Pumps Ltd., both companies of the Holman Group. During the war he served with Economic Intelligence and was later deputy controller in the Department of Military Government dealing with chemical industry in the British Zone of Germany. In 1946 he joined Les Usines de Melle, French manufacturers of chemicals and chemical plant and was concerned with their operations in the Sterling Area. In 1956 he was appointed technical adviser to the Board of De La Rue to whom he will continue to act as an independent consultant. He is also a director of Ets. Wyns-Bristol S.A., Belgian manufacturers of paints and printing inks.

● Three new appointments to the board of directors of Midland Silicones Ltd., are: **Mr. A. K. Simcox,** general sales manager, who now becomes sales director; **Mr. J. S. Hughes,** manager of the process and product development department, who now becomes development director; and **Mr. H. N. Fenn**—a director of Dow Corning Silicones Ltd., U.S., with whom Midland Silicones are closely associated.

● **Dr. F. A. Robinson,** at present research director of Allen and Hanburys Ltd., has accepted the appointment of executive chairman of Crookes Laboratories Ltd. Dr. Robinson, who is honorary treasurer and former chairman of the Biochemical Society and a vice-president of the Institute of Chemists, will take up his new duties at the beginning of September. Following the acquisition of Crookes by Arthur Guinness Sons and Co. Ltd. and Phillips Electrical Industries Ltd. last November, the office of chairman was temporarily filled by **Mr. N. B. Smiley,** joint managing director of Arthur Guinness Sons and Co. (Park Royal) Ltd.

● **Mr. P. R. Falkner,** lecturer in chemistry, Nottingham and District Technical College, has been appointed senior lecturer in analytical chemistry.

● On 1 July, **Dr. C. B. Davies,** head of the Oil Products Development Division of Shell International Petroleum Ltd. took up an appointment as manager of the Thornton Research Centre, Shell Research Ltd., Chester.

● **Mr. A. H. Pashley,** commercial general manager of Whiffen and Sons Ltd., Loughborough, Leics, has been appointed vice-chairman of the company.

● **Mr. Henry Kremer,** founder and former chairman and managing director of Microcell Ltd., is no longer a director of the parent company, B.T.R. Industries Ltd.

● **Mr. C. F. Kearton,** deputy chairman, has resigned from the board of Pinchin, Johnson and Associates, of the Courtaulds Group. The following appointments have been made from 1 July: **Mr. W. T. Branscombe,** who has been appointed deputy chairman, relinquishes his position as managing director; **Mr. W. Daroux** becomes managing director; **Mr. G. F. Ingham Clark,** commercial director, and **Mr. W. S. Kerr** joins the board as sales director.

● **Mr. James J. Trexel,** domestic sales manager (elastomers) of the Du Pont Co. (United Kingdom) Ltd., 76 Jermyn Street, London, S.W.1, has been appointed sales manager for isocyanates, which will be a separate product line in the sales department. As stated in 'Project News,' Du Pont are to set up plant to make TDI at Maydown, Northern Ireland. **Mr. George B. Oks,** an elastomers sales representative since 1958, has been appointed sales supervisor (elastomers).

● **Dr. J. F. Goodman** has been appointed head of the basic research department of Thomas Hedley and Co. Ltd. The department forms part of the research division in Newcastle upon Tyne. Dr. Goodman joined Hedley as research chemist in 1957 and in 1960 became head of the physical and analytical group in the basic research department.

● **Mr. R. D. Smart** has been appointed a director of Allen and Hanburys Ltd., one of the Glaxo Group.

● In agreement with the board of directors of the company, **Mr. T. D. O'Keeffe,** vice-president and European manager, has severed his connection with Roger Williams Technical and Economic Services Inc.

● Administrators of the Sir George Beilby Memorial Fund, representing the Royal Institute of Chemistry, Society of Chemical Industry and Institute of Metals, have made awards for 1961—each consisting of the newly instituted gold medal with a prize of 100 guineas—to: **Dr. Constantin Edeleanu,** in recognition of his work on the corrosion of metals and alloys, with special reference to the development of the potentiostat technique and its applications to the study of practical problems, and on the characteristics of corrosion reactions in fused salts; and to **Professor Jack Nutting,** in recognition of his work in physical metallurgy, especially in the application of the electron microscope to the study of the relationship between microstructure and mechanical properties of metals and alloys and to the investigation of phase changes and dislocation interactions.

● **Mr. D. Rider** has retired from the Board of Woodall-Duckham Ltd.

Commercial News

- Forestal Land Expanding in Organics
- I.C.I. Add Cash to Bid for Settle Limes
- Continuing Decline for Whessoe Profits
- Du Pont Expect Record Sales in 1961

Forestal Land

Purchase of Kaylene (Chemicals) Ltd., just concluded, would provide a most effective base for the expansion of Forestal Land, Timber and Railways Co. Ltd. into organic chemicals, in which their Ditton development unit is already actively engaged. This was stated by Sir Gerard d'Erlanger, chairman, in his annual report.

Satisfactory progress has been made in test marketing the first new chemical products emerging from a recently completed unit for Farnell Carbons Ltd. which produces decolorising carbon (see also 'Project News').

I.C.I.—Settle Limes

The offer by Imperial Chemical Industries for the £600,000 capital of Settle Limes, quarry owners, is one £1 I.C.I. ordinary plus 3s 6d. cash for every seven 5s Settle Limes' shares. The directors of Settle Limes recommend acceptance of the offer, and announce that a final dividend of 6% will be paid making 9% (same) for the year to 31 July 1961. Accepting holders will also receive interim and final dividends on the I.C.I. stock for 1961. It was previously announced (C.A., 3 June, p. 884) that an offer was contemplated on the basis of one I.C.I. for seven Settle Limes' shares, but there was no cash element. Total value of the offer is £1.26 m., or 10s 6d per Settle Lime share.

Whessoe Ltd.

Intense competition at home and overseas means that most orders still have to be taken with a very bare margin, states Mr. C. M. Spielman, chairman of Whessoe Ltd. He adds that it must be expected that for the time being profits will continue to decline. However, when the full benefits of the reorganisation and expansion policy are realised, there will be a resumption of an upward trend.

A new heavy welding shop will enable Whessoe to make pressure vessels and other heavy and difficult welded plant for which growing markets are foreseen. This shop will be in production in August. A second stress relieving furnace, one of the largest in Europe, will release existing space, enabling the company to expand still further the production of heat exchangers.

Du Pont

Estimates issued from New York last week state that turnover of E. I. Du Pont de Nemours, Wilmington, who have the biggest sales of any chemical company in the world, will be of some $550 million in the second quarter of this year ($513 million). Although sales over the first half of this year are down on 1960 levels, those over the second half are expected to be so high that total 1961 turnover will surpass the record level of $2,143 million for 1960. It is, however, doubtful whether profit will be up on the 1960 figure.

Australian Utah

The building of petrochemical plants is to be the main task of a company formed in Melbourne by the U.S. construction concern Utah Construction and Mining Co. Name of the new firm is Australian Utah Construction Pty. Australian holdings will be possible by the purchase of shares.

Francaise des Petroles

Compagnie Française des Pétroles, the French oil company with petrochemical interests, have recommended for last year an unchanged gross dividend of Fr.6 per share of Fr.50 nominal value on an increased capital of Fr.383,817,000 (Fr.365,540,000). Net profit for the year was Fr.104,200,000 (Fr.102,700,000).

Hooker

In its six months' statement to shareholders, Hooker Chemical Corporation reports sales totalling $73 million for the period ended 31 May 1961, or 2.7% lower than sales of $75 million for the corresponding six months of 1960. Net income for the period was $5.7 million ($6.39 million) or 76 (86) cents/share.

While income was lower for the 1961 period compared to 1960, second quarter earnings and sales improved over the first quarter. Material improvement, however, did not come until the latter part of the second quarter. They expect this to continue with an improved rate during the second half-year over the like period of 1960.

Petrolifera Italiana

Societa' Petrolifera Italiana announce a 1960 net profit of Lire 51 million. The refinery processed 91,000 tonnes of crude oil and 29,000 tonnes of other products in 1960, while the output of the petrolchemical section totalled over 22,000 tonnes.

Refinery capacity will be increased from the present 200,000 to 500,000 tonnes and during the year plants for the production of new types of solvents will be added.

Pfizer

Chas. Pfizer and Co., U.S., stated that over the first half of the current year net profit will be about 10% above that recorded for the first 1960 half-year. Net profit was then 78 cents/share.

Schering AG

Schering AG, West Berlin, announce that over last year they and their German and foreign fully owned subsidiaries raised combined turnover by 20% over the 1959 figure to DM210,800,000; this included turnover increases over the year of 15% for pharmaceuticals, of 16% for plant protection compounds and of 35% for electrochemicals. Versamide production by the industrial chemicals subsidiary at Bergkamen, West Germany, is expected to be ceased in spring of next year despite a turnover doubling in this field over 1960. Dividend will be 15% (14%). The company, which last year spent DM11,900,000 on research, increased the share of exports in total sales from 51% to 53%.

NEW COMPANIES

FILTRONA DEVELOPMENT LTD. Cap. £1,000 in £1 shares. Objects: To conduct, promote and develop resarch and experimental work of all kinds in connection with the textile, fibre, fabric, chemical, plastic, paper, pulp, wood and tobacco industries, etc. Directors are: Ernest G. Beaumont and Francis R. Davenport.

P. F. HOLT LTD. Cap. £100. To promote all forms of research in chemistry, physics and scientific matters, etc. Subscribers: P. F. (university lecturer) and Muriel Holt. Reg. office: Buntings, Ridge Drive, Basildon Park, Berks.

OIL INVENTIONS (MIDLANDS) LTD. Cap. £1,000. Consulting, analytical and manufacturing chemists, oil technologists, blenders, refiners, distillers, purifiers, filterers, extractors and reclaimers, etc. Directors: E. J. and P. F. Lownes. Reg. office: 42 Stoney Lane, Bloxwich, Walsall.

INCREASES OF CAPITAL

J. A. RADLEY (LABORATORIES) LTD., 23A Queen Victoria Street, Reading. Increased by £4,900 beyond the registered capital of £100.

C. RAMON AND CO. LTD., manufacturers of and dealers in chemicals, etc., 29 Museum Street, London W.C.1. Increased by £4,000 beyond the registered capital of £1,000.

H. E. STRINGER LTD., manufacturers of and dealers in chemicals, etc., 42 Avenue Chambers, London W.C.1. Increased by £14,900 beyond the registered capital of £100.

Pfizer Hypochlorite has 121% Available Chloride

In last week's issue of CHEMICAL AGE the available chlorine figure of the new lithium hypochlorite produced by Pfizer Ltd., was given as 12%. This should have read 121%.

TRADE NOTES

Polybutadiene for Greeff

R. W. Greeff and Co. Ltd., 31-45 Gresham Street, London E.C.2, are now marketing development quantities of *cis*-1,4 polybutadiene made by Phillips Chemical Co., U.S. U.K. delivered price is about 2s 7.2d/lb.

High Pressure Gas Meters

High pressure industrial gas meters are the subject of an illustrated four-page leaflet available from Parkinson Cowan Gas Meters, Terminal House, 52 Grosvenor Gardens, London S.W.1. As well as describing and illustrating the construction of the B1200 and B2000 high pressure meters, the leaflet provides useful performance curves, dimension diagrams and abridged specifications.

New Silicone Resin

A new silicone resin for impregnating cement-bonded asbestos board has been introduced by Midland Silicones Ltd., 68 Knightsbridge, London S.W.1. The resin, known as DP 2728, is supplied as a low viscosity solution in toluene. It is claimed that asbestos board treated with the resin will retain good electrical insulating properties for long periods of time even in conditions of 100% relative humidity, whereas under similar conditions untreated board will show a serious loss of insulation resistance.

Computer Staff

Senior Staff Consultants Ltd., 7 Cork Street, London W.1, have formed a special department to deal exclusively with the recruitment and appointment of staff for all aspects of computer work. To assist them in this project they have retained the services of Computer Consultants Ltd., and have taken over the specialist staff appointment service previously run by this company.

Q.V.F. in London

Q.V.F. Ltd., glass chemical plant manufacturers, of Duke Street, Fenton, Stoke-on-Trent, have opened an office in London, primarily as a contact and communications centre. Address is 55 New Bond Street, London W.1 (telephone: Mayfair 0346).

Telcon Epoxy Powders

Epoxy powders are one of the newer fields to which particular attention is being devoted by Telcon Plastics Ltd., a member of the British Insulated Callender's Cables group. The coating obtained by epoxy resin powders has all the outstanding protective qualities of epoxies as applied by well-proved techniques. Among the advantages conveyed by fluidised bed powder coating as a method of application are speed and low wastage. The ideal dip-coating medium combines toughness, good appearance, a high degree of chemical resistance, good electrical insulating properties, and the ability to withstand very high temperatures. Thermoplastics fulfil most of these requirements, but for resistance to really high temperatures it is necessary to consider thermo-setting materials, and it is in this direction that the most interesting achievements may be anticipated.

Electrical Precipitators

Principles of electrical precipitation, and their application to dust control problems in industry, are explained in publication No. 87 from W. C. Holmes and Co. Ltd., P.O. Box B7, Turnbridge, Huddersfield. Examples of typical installations in various types of works are given.

Turner Brothers Materials

Turner Brothers Asbestos Co. Ltd., Rochdale, Lancs, have issued two new publications covering the products they supply for moulding and reinforcing plastics. Booklet SA6 deals with Durestos, resinated asbestos moulding materials, describing the use of these materials for high-pressure, low-pressure and no-pressure moulding techniques, together with details on machining moulded components. In the other booklet, D6, the properties of Duraglas glass fibre reinforcements are described, with details of woven fabrics, tapes, chemically and mechanically bound mat, woven roving, roving, chopped roving, flock and webbing.

Pumping Data

Under the above title, a new 24-page booklet includes useful explanations of pumping terms and discusses pumping requirements generally as well as providing graphical data for practical use. The booklet begins with a section on the properties of liquids, going on to discuss quantities, heads and pressures; the flow of liquids in pipes; and pump installation and accessories. The booklet is issued by Megator Pumps and Compressors Ltd., 43 Berkeley Square, London W.1.

Flooring Finish

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Production of Ethylene Glycol by the Radiolyses of Methanol

RADIOLYSIS of methanol has been the subject of several investigations in recent years. Various types of radiation have been employed and it has been found that the major radiolytic products are hydrogen, carbon monoxide, methane, formaldehyde and ethylene glycol. In view of the relative prices of ethylene glycol and methanol, any method for converting methanol to ethylene glycol is worth consideration.

The Hercules Powder Co. have taken out patents in several countries on a 'process for the synthesis of organic chemicals wherein the effects of the fissioning of atomic nuclei are used to produce organic molecular fragments which then combine to produce the desired products'. Insufficient details are given in the patent to enable the calculation of G-values, and in addition it is impossible to determine the relative proportions of the product formed by the fission fragments and by the fast neutron and gamma reactant radiations. It was in order to obtain this information that a series of investigations were carried out by the Chemistry Division of the Atomic Energy Research Establishment at Harwell (AERE-R-3625, obtainable from H.M. Stationery Office).

It was concluded that the liquid phase radiolysis at 100°C of methanol with fission fragments would be an uneconomic process for the large-scale manufacture of glycol but that the (n + γ) radiolysis of liquid methanol may become attractive if some means could be found to increase the yield of ethylene glycol by a factor of three.

Market Reports

HOLIDAY SHUT-DOWNS AFFECT TRADE

MANCHESTER Generally steady price conditions have been maintained with existing contracts being drawn against satisfactorily in most sections, the deliveries to some industrial areas in Lancashire and the West Riding have been temporarily suspended in consequence of holiday shut-downs. Fresh business during the week on both home and shipping accounts has been on a moderate scale. In the market for the fertiliser materials buying interest has already been attracted to the compounds.

SCOTLAND There has been the usual steady flow of demands with little change generally in market conditions. Quantities have been more or less maintained at steady levels although some increases can be reported from the textile industries. As was expected conditions have been much quieter in regard to agricultural chemicals. Prices for the most part have continued firm.

The export market continues fairly good and there is still a reasonable volume of varied enquiries being received.

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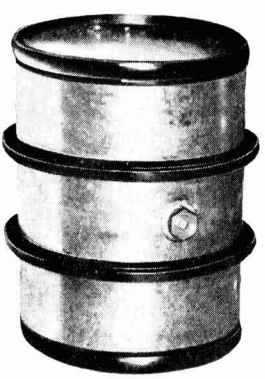

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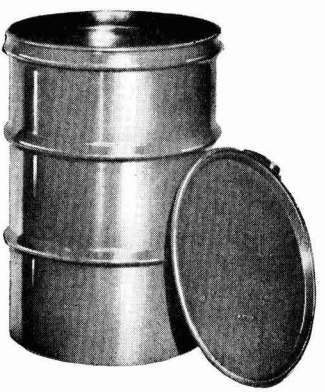

AP191

NEW PATENTS

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

ACCEPTANCES

Open to public inspection 2 August

Antibiotic and a process for its production. Takeda Pharmaceutical Industries Ltd. **873 893**

Epoxide compositions. Union Carbide Corp. **874 245**

Process for the preparation of artificial adsorbent zeolites. Carbonisation et Charbons Actifs. **873 883**

Polymerisation. Goodrich Co., B. F. **874 168**

Processes for binding particulate solid materials and binders for use in such processes. Unilever Ltd. **874 117**

Chlorofluoro hydrocarbons. Imperial Chemical Industries Ltd. **874 099**

Chloral derivative. British Drug Houses Ltd. **874 246**

Method of preparing itaconic acid. Montecatini Soc. Generale per l'Industria Mineraria E Chimica. **874 353**

Iodinated benzoic acid derivatives and methods of preparing such derivatives. Mallinckrodt Chemical Works. **873 888**

Esters of vitamin A. Pfizer & Co. Inc., Chas. **873 229**

Derivatives of antibiotics having a basic reaction, and a process for their preparation. Soc. Industrielle pour la Fabrication des Antibiotiques. **874 028**

Azo dyestuffs of the phthalocyanine series. Cassella Farbwerke Mainkur AG. **874 355**

Isoquinoline phthalides and their process of preparation. Jeanson, M. **873 935**

Ammonia stills. Royston, D. B. **873 890**

Aralkylbenzmorphan derivatives. Smith Kline & French Laboratories. **873 925**

Method of combating nematodes. Farbenfabriken Bayer AG. **873 927**

1-Methyl-1-(1-Phenyl-2-propyl)-hydrazine Abbott Laboratories. **874 198**

Process for the production of N-sulphanyl-N'-butyl urea. Boehringer & Soehne GmbH, C. F. **874 070**

3-Acyloxy-3-aryl pyrrolidines. Mead Johnson & Co. **874 216**

Process for the production of insoluble azo dyestuffs on shaped articles made from aromatic polyesters. Farbenfabriken Bayer AG. **874 118**

Expandable thermoplastic polymers. Shell Internationalle Research Maatschappij N.V. **874 144**

Process for preparing nitro derivatives of chloro-substituted ethylenes. Knapsack-Griesheim AG. **874 337**

Method for polymerising mono-olefinic compounds. Asahi Kasei Kogyo Kabushiki Kaisha. **873 945**

Steroid derivatives and a process for their manufacture. Schering AG. [Addition to 850 447.] **874 322**

Method for producing polyamide moulding material and moulded objects manufactured therefrom. Onderzoekingsinstituut Research N.V. **874 340**

Process for the preparation of cobaltamine compounds. Hoffmann-La Roche & Co. AG, F. **874 219**

Suspension polymerisation process. Shell Research Ltd. **873 948**

Process for preparing and purifying warfarin sodium. Wisconsin Alumni Research Foundation. **874 149**

Pigment monoazo dyestuff lakes. Farbenfabriken Bayer AG. **874 220**

Organosilicon compounds and processes for their production. Union Carbide Corp. **874 150**

Production of ammonium sulphate. Simon-Carves Ltd. **874 061**

Process for the production of alphaamino-beta-hydroxy-carboxylic acids. Farbenfabriken Bayer AG. **874 152**

Process for the production of chlorobromomethanes. Soc. Chimica Dell'Aniene S.p.A. **874 062**

Method of combating slime-forming micro-organisms in industrial water. Shell Internationalle Research Maatschappij N.V. **874 064, 873 951**

Process for the continuous production of polyhydric alcohols. Farbenfabriken Bayer AG. **873 971**

Flame retardant polyolefin mixtures. Chemische Werke Hüls AG. **874 096**

Polyethylene-styrene reaction products and in processes for their production. Grace & Co., W. R. **874 057**

Triazaindolizine derivatives. Ilford Ltd. [Divided out of 874 204.] **874 205**

Modification of rubbery copolymers. Monsanto Chemical Co. [Divided out of and Addition to 874 075.] **874 076**

Open to public inspection 10 August

Stilbene-triazole optical whitening agents. Hickson & Welch Ltd. **874 611**

Composition having repelling properties. Chapman, J. W. **874 565**

Catalytic reforming of petroleum hydrocarbons. British Petroleum Co. Ltd., Moy, J. A. E., White, P. T., and Cuddington, K. S. **874 612**

Drawing process for polyethylene terephthalate filaments. Imperial Chemical Industries Ltd. **874 652**

Reinforced polyester-fibre laminates and moulding compositions. Svenska Oljeslageri AB **874 759**

Monoazo-dyestuffs containing a halogenated triazine nucleus and process for their manufacture. Ciba Ltd. **874 544**

Weather resistance of unsaturated halogen-containing polyester resins. Hooker Chemical Corp. **874 546**

Removal of a metal halide from gaseous mixture containing same. Columbia—Southern Chemical Corp. **874 548**

Mono-azo-dyestuffs containing halo-triazinyl-amino residues and their manufacture and use. Ciba Ltd. **874 545**

Process for the production of a porous body of polypropylene. Ruhrchemie AG. **874 761**

Flame-proofing coating compositions. Farbwerke Hoechst AG. **874 762**

Stabilisation of trichloroethylene and stabilising agent therefor. Sicedison S.p.A. **874 491**

Thermoplastic compositions. Montecatini. **874 549**

Process for the manufacture of cyclopentanophrenanthrene derivatives. Syntex S.A. **874 396**

Anti-foaming fatty acid ester-ethers. Imperial Chemical Industries Ltd., Batty, J. W., Pearson, C. F., and Sandall, M. **874 550**

Esterification of terephthalic acid. Bergswerksverband GmbH. **874 436**

Organo manganese pentacarbonyl compounds. Ethyl Corp. **874 618**

Manufacture of cellular polyurethane products. Imperial Chemical Industries Ltd., and Lord, F. W. **874 766**

Purification of titanium tetrachloride. Columbia—Southern Chemical Corp. **874 551**

Zinc salts of mixed dialkyl dithiophosphoric acids and lubricating compositions containing them. American Cyanamid Co. **874 747**

Process for the manufacture of carbon tetrachloride. Farbwerke Hoechst AG. **874 552**

Polyepoxide-amine compositions. Farbenfabriken Bayer AG. **874 759**

Production of alkyl aryl compounds. British Petroleum Co. Ltd., Hale, J. G., White, P. T., and Porter, F. W. **874 555**

Manufacture of polymeric materials. Imperial Chemical Industries Ltd. **874 430**

Therapeutic compositions and the manufacture thereof. Upjohn Co. **874 586**

Hardenable epoxide resinous compositions. Bakelite Ltd. **874 754**

Manufacture of azodicarbonamide. National Polychemicals, Inc. **874 587**

Benzinimidazoles. Ciba Ltd. **874 588**

Production and recovery of polymers. Celanese Corp. of America. **874 802**

Heat-exchangers for the transfer of heat from hot gases to a water circulating system. Hunt & Moscrop Ltd. **874 738**

Method for blending resinous polymers. American Cyanamid Co. **874 805**

Process for the manufacture of chlorine dioxide. Farbwerke Hoechst AG. **874 589**

Reserpic acid esters and process for their manufacture. Ciba Ltd. [Addition to 744 290.] **874 590**

Metal salts of organic dithiophosphates and lubricating compositions containing them. Esso Research & Engineering Co. **874 877**

Process for the manufacture of diakyl, di-haloalkyl and di-alkoxyalkyl dichlorovinyl phosphates. Ciba Ltd. **874 556**

Graphite compositions and processes. United States Atomic Energy Commission. **874 592**

Dyestuffs. Ilford Ltd. **874 809**

Production of acrylonitrile and methacrylonitrile. Distillers Co. Ltd. **874 593**

Rutile pigments of photochemical stability. National Lead Co. **874 511**

Catalytic reforming of petroleum hydrocarbons. British Petroleum Co. Ltd., Moy, J. A. E., White, P. T. and Cuddington, K.S. [Divided out of 874 612.] **874 613**

Preparation of boron trichloride. Dow Chemical Co. **874 557**

Process for the manufacture of hydroperoxides from terpene hydrocarbons. Bergwerksgesellschaft Hibernia AG. **874 603**

Process for preparing silica-alumina catalyst. American Cyanamid Co. **874 506**

Coating of materials. Union Carbide Corp. **874 463**

Organo-borane polymers. Esso Research & Engineering Co. **874 558**

Process for the production of polymeric sheet material. Imperial Chemical Industries Ltd. **874 881**

Organopolysiloxane resins. Midland Silicones Ltd. **874 559**

Process for the manufacture of compounds of the carbazole series and salts thereof. Hoffmann-La Roche & Co. AG, F. **874 560**

Production of azathiacyclohexane-4,4-dioxide and derivatives thereof. Badische Anilin- & Soda-Fabrik AG. **874 519**

Process for the production of vinyl chloride. Distillers Co. Ltd. **874 561**

Unsaturated aldehydes. Usines Chimiques Rhone-Poulenc Soc. Des. **874 438**

Process for purifying adipic acid. Lonza Electric and Chemical Works Ltd. **874 407**

Amphetamine barbiturates and compositions thereof. Miles Laboratories Inc. **874 520**

Method for isomerising olefins. Esso Research & Engineering Co. **874 507**

Production of petroleum coke. Shell Internationale Research Maatschappij N.V. **874 439**

Preparation of petroleum coke. Shell Internationale Research Maatschappij N.V. **874 440**

Process for the production of foam materials containing urethane groups. Farbenfabriken Bayer AG. **874 859**

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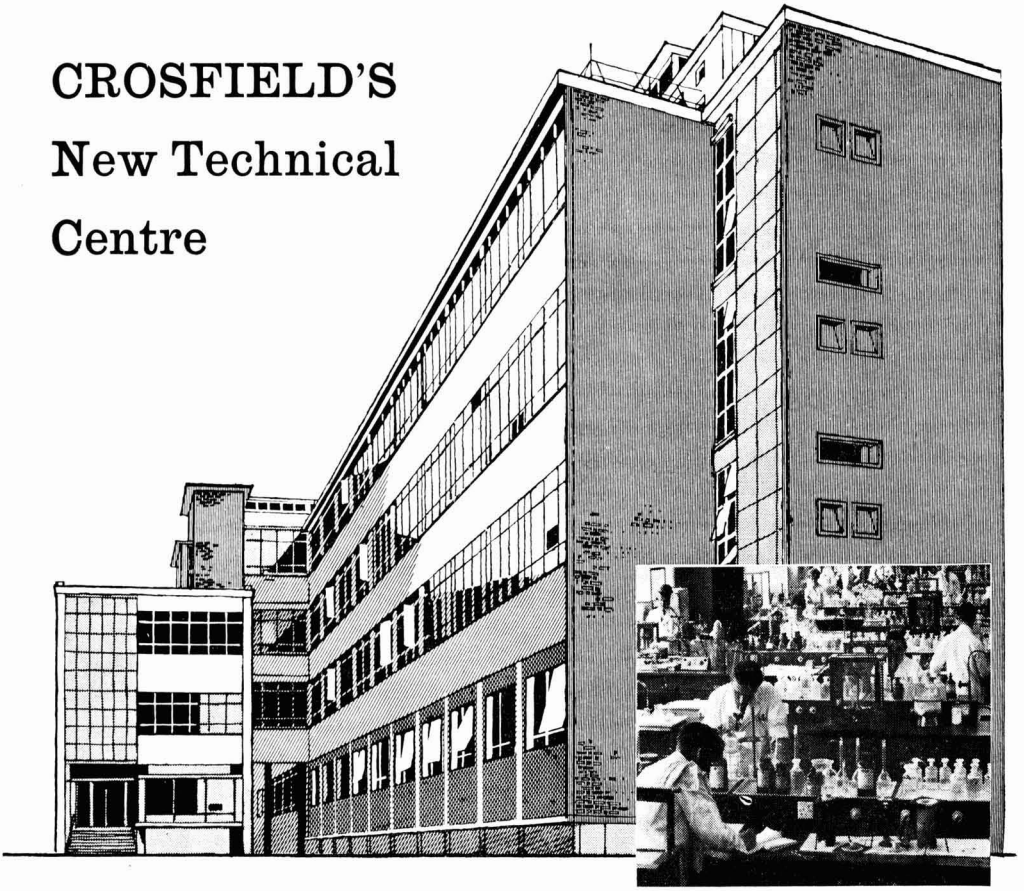

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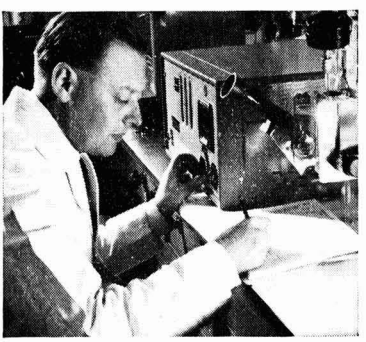

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Continued from page 70

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