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VOL. 85 No. 2187

10 JUNE 1961

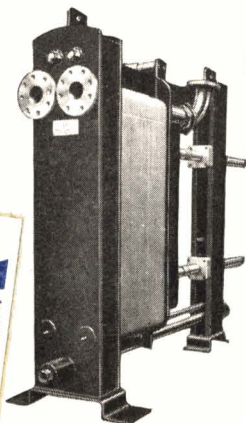


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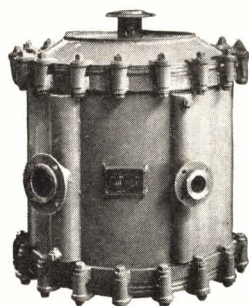
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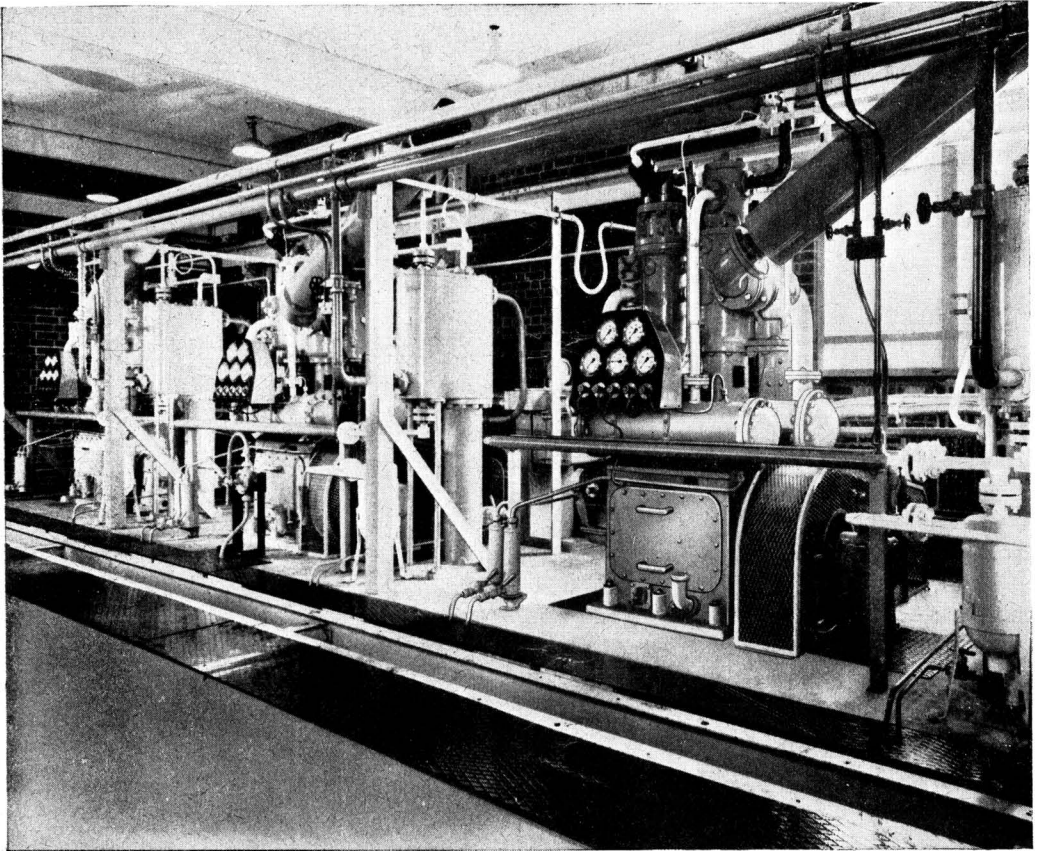


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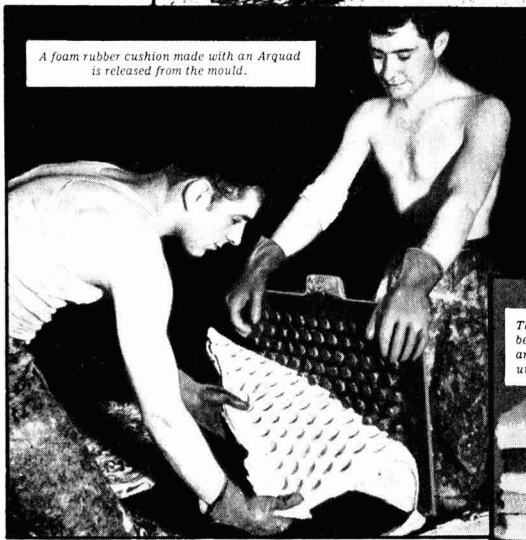
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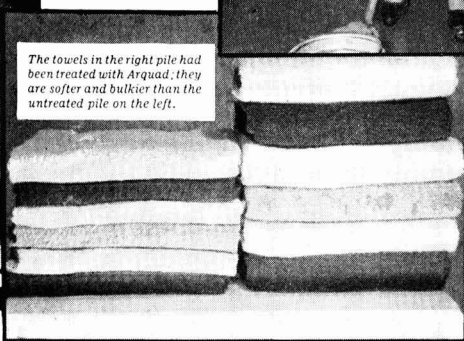
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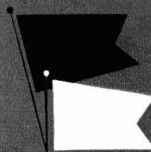
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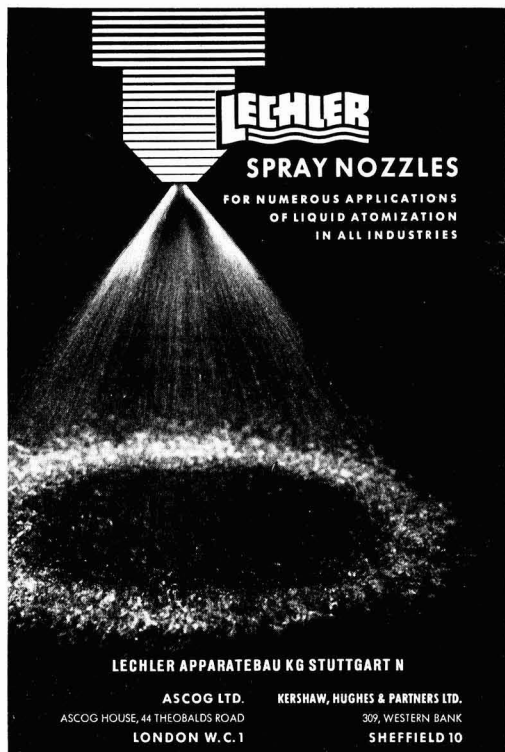
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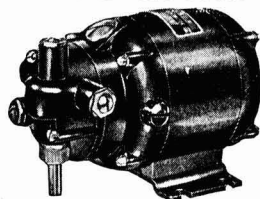
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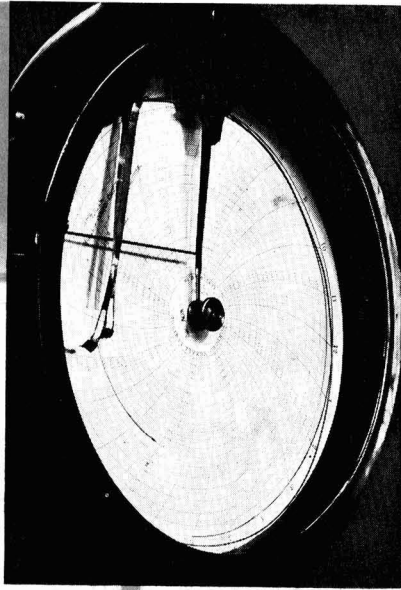
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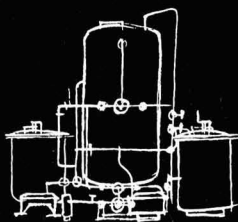
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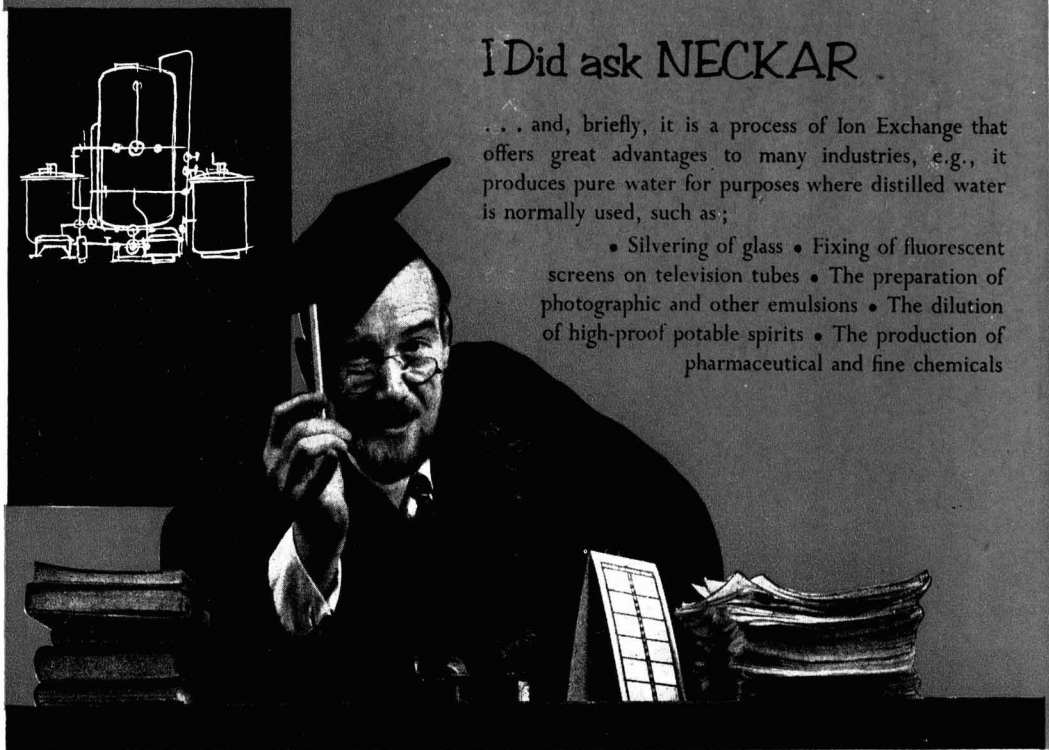
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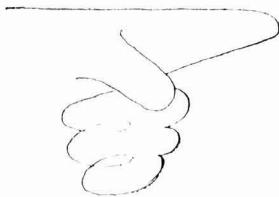
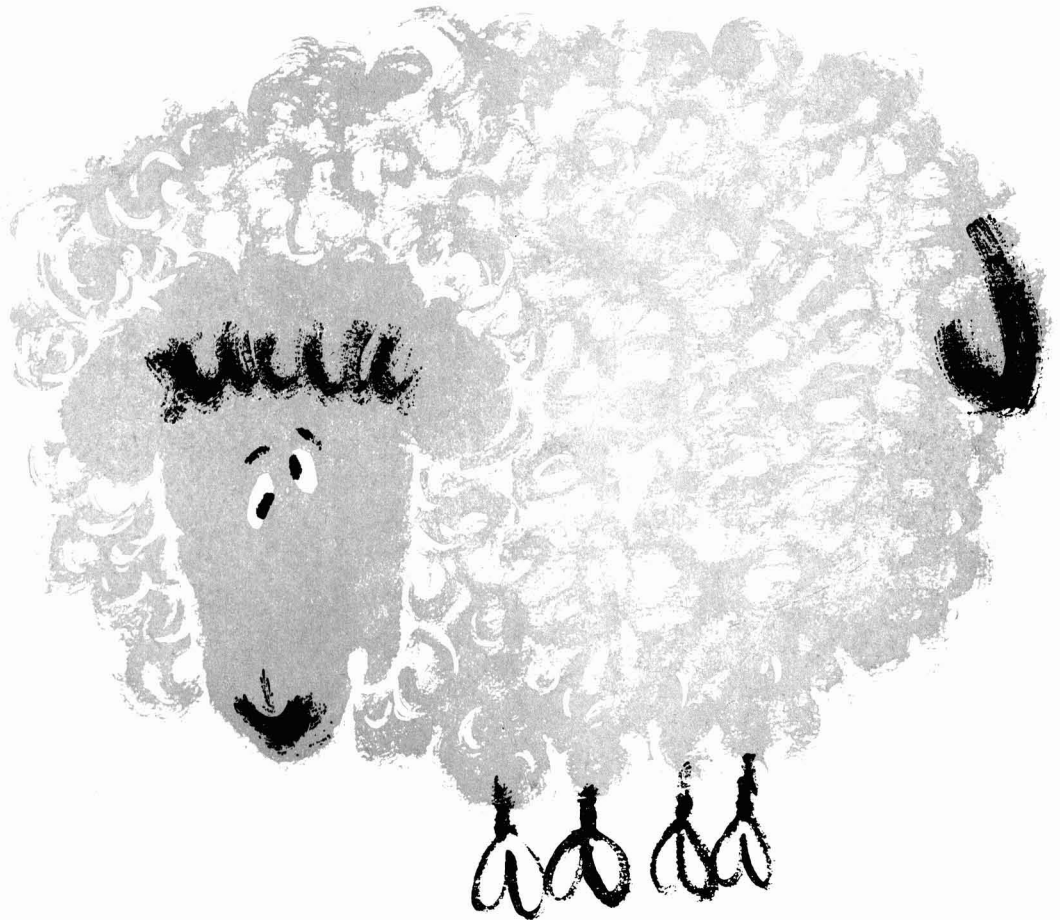
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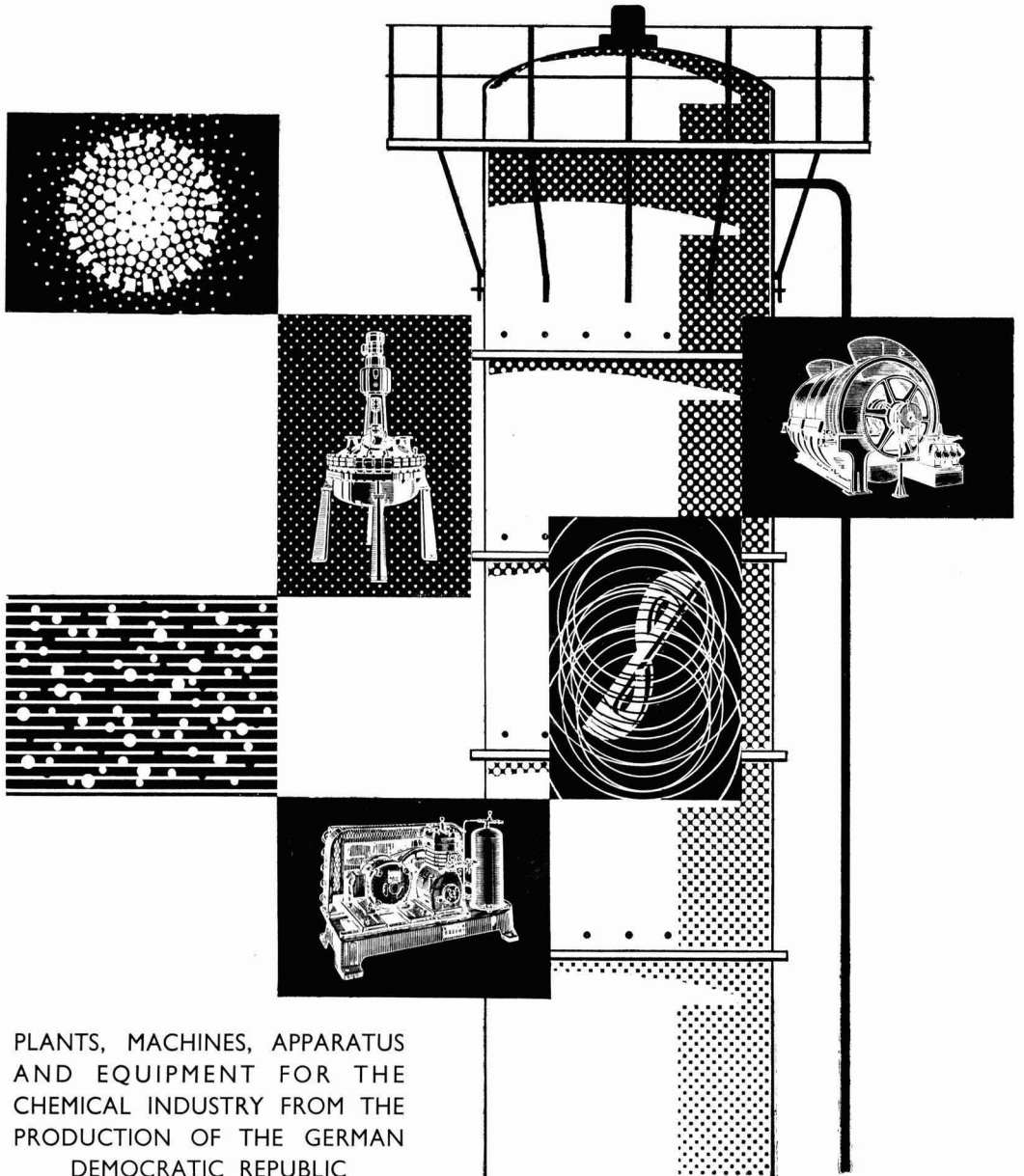
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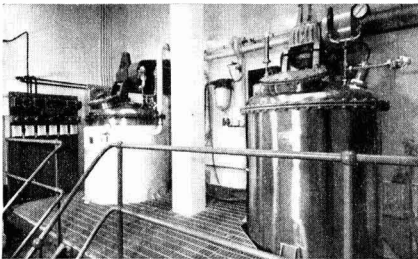
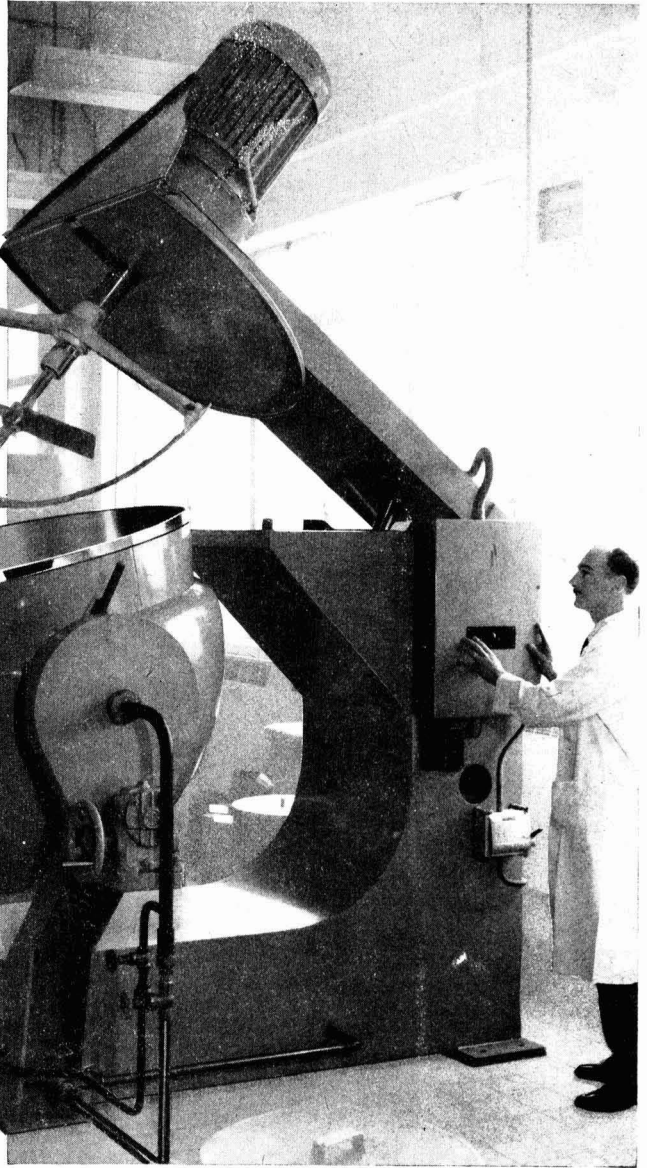
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[Central 3954-5]**IN THIS ISSUE**

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**BOUVERIE HOUSE · 154 FLEET STREET · LONDON · EC4****CHEMICALS IN HOLLAND**

IN contrast to the spectacular and dynamic growth of Italy's organic chemical industry—which to many has appeared to have little direction and which has been the subject of a recent CHEMICAL AGE survey—the oil-based organics industry of the Netherlands appears to have been developed in a much more orderly and planned fashion. This contrast might be due to variations in national characteristics, but is more probably due to the lack in Holland of the intense competition that at first sight seems almost suicidal in Italy.

The Netherlands chemical producers are masters of the export trade and stand top of the European league table, exporting some 53% of their chemical production, compared with Italy—at the bottom of the table—with 10%. The Netherlands, the country which pioneered the industry in Europe, is Europe's fifth largest producer of chemicals of petroleum with production in 1959 of around 140,000 tons, compared with West Germany, 600,000 tons the U.K., just under 600,000 tons, and France and Italy with 200,000 tons each.

Between 1955 and 1959, Holland's production of petrochemicals rose by nearly 275% and the indications are that this high growth rate will be well maintained in the coming years.

Pacemakers in Holland have been the Royal Dutch/Shell chemical interests. Some way behind and based respectively on salt and coal deposits have come the Koninklijke Nederlandse Soda Industrie and Staatsmijnen in Limburg. Both these companies have been expanding enormously in recent years and the latter, although based on coal mining operations, is now in the course of switching ethylene production from coke-oven gases to steam cracking of naphtha. Merger details of two of the larger Dutch companies are contained in p. 954.

The international spotlight has been focused on the industry in Holland with two events that took place last week. Firstly, because of the annual meeting of the Overseas Section, Society of Chemical Industry—a meeting that continues to attract the heads of chemical companies throughout Europe as well as Europe's most prominent chemical market researchers. Three of the papers, presented by top chemical executives and a member of the Common Market administration, pinpointed developments in petrochemicals and plastics in Europe. Secondly, there was an event which significantly pinpointed the growing overseas interest in Rotterdam as a chemical site—the opening of Dow Chemical's latex facility at Botlek.

The Rotterdam area has attracted many investment operations by foreign oil and chemical concerns, including Caltex, Esso, Cyanamid, Du Pont, Columbian Carbon, Cabot Carbon, etc. To these and many other companies interested in the area must be added the planned facilities of Imperial Chemical Industries Ltd., who with their £100 million plant units, will have a chemical complex at Rotterdam comparable to that of Royal Dutch/Shell.

The reason is not hard to seek. Now the world's second largest port, Rotterdam will in a relatively short time exceed even New York in the volume of tonnage handled. Europoort is not only a major seaport it is

(Continued on p. 924)

First U.K. Moves in Nylon-6

COURTAULDS AND I.C.I. REVEAL THEIR CAPROLACTAM PLANS

NYLON-6, the caprolactam-based nylon polymer, will make its debut in the U.K. on a major scale. Both Imperial Chemical Industries and Courtauld's have this week announced plans for the construction of large-scale caprolactam and nylon-6 plants.

Courtauld's Ltd., who last year acquired the production rights of the new Snia Viscosa caprolactam process (see CHEMICAL AGE, 30 July 1960, p. 164) are to build a plant based on the process for the production of 10,000 tons a year of caprolactam. From this, some 20 million lb. of nylon-6 can be made (1.1 lb. of caprolactam produces 1 lb. of nylon-6) or about one-third of the present British nylon capacity.

The I.C.I. announcement of proposed caprolactam and nylon-6 plants is the result of an agreement recently concluded between I.C.I. and the Swiss company, Emser Werke A.G./Inventa A.G., whereby I.C.I. have acquired rights to the technical information and patents relating to the new Emser/Inventa process for the manufacture of nylon-6 and caprolactam. The raw material on which production is based and the nature of the process is not revealed.

I.C.I. Construction

I.C.I. design work is well advanced and construction of plants will begin shortly. Production will begin early in 1963, as announced by I.C.I. on 1 July, 1960. Caprolactam will be made initially in a plant with a capacity of 15,000 tons a year costing £10 million, which is to be erected at I.C.I.'s Severnside site and will be available for general sale. A large-scale plant will also be built for nylon-6 polymer. Substantial quantities of caprolactam and nylon-6 polymer for industry will be available shortly for world market development.

The Snia Viscosa process for the production of caprolactam is a very elegant method which at the moment—without knowing details of the Swiss process—is the most economic so far discovered. It is based on toluene which is oxidised to benzoic acid which, in turn, is hydrogenated, using chlorine-free palladium or platinum black as a catalyst, to yield hexahydrobenzoic acid. This is converted to caprolactam in a one-step process using nitroso-sulphuric acid. The site of the Courtauld's plant has not been decided upon, but toluene will be available at the new petrochemical plant under construction at Spondon near Derby. This will obviously influence the choice of the site.

Nylon production in the U.K. has up to now been exclusively of the 66 variety. Nylon-6, which has slightly different pro-

perties from nylon-66, has extensive outlets both in textiles and in the plastics industry. I.C.I. are not proposing to exploit the fibre market. The principal future for their nylon-6 polymer will be in the plastics industry, while Courtauld's presumably will be more interested in textile applications.

I.C.I. hopes of obtaining a U.S.S.R. caprolactam process (see CHEMICAL AGE, 10 December, 1960, p. 987) appear not to

U.K. Plastics Materials Sales Up, But Production Lower in First Quarter

NET sales of U.K. manufactured plastics materials rose to 143,400 tons in the first three months of 1961, according to the Board of Trade. This was an increase of 1,900 tons on the figure for the final period of 1960, and was some 3% below the record level reached a year earlier. Manufacturers' stocks at the end of March rose only slightly on the end-December figure to a total of 104,400 tons, which is in sharp contrast to the general trend last year, when stocks went up steeply.

The B.o.T. estimates that production during the quarter was about 5% below that of both the previous quarter and the first quarter of last year. Direct exports of plastics materials improved considerably to reach 47,800 tons during

the first quarter—about one-third of sales. This was a rise of well over 7,000 tons on the final period of 1960, and represents an improvement of nearly 3% on a year earlier.

At the same time imports fell by about 3,500 tons to a total of 19,500 tons—13% below that for the first quarter last year. However, home consumption of plastics materials, together with home consumption of those materials produced in the U.K., appears to have been considerably lower in the first quarter of this year than in the previous quarter and the corresponding period of 1960.

Sales of polystyrene increased from 10,900 tons to 12,300 tons between the end-1960 and first 1961 quarters.

have materialised. I.C.I. say that negotiations with the Russians on the question of a caprolactam licence were not actually in progress. Announcement that I.C.I. were looking in that direction came at the time of the chairman's visit to the Soviet Union and caprolactam was stated to be one of the processes in which I.C.I. were interested.

Nylon-6 has been gaining ground in preference to nylon-66. Already the leading nylon polymer in Europe, it is also gaining rapidly in the U.S. since its commercial introduction in 1954. It is interesting to note, however, that the nylon plant which will be built in U.S.S.R. by Vickers-Armstrongs (see CHEMICAL AGE last week, p. 885) is for the 66 polymer, although the Russians had previously appeared to favour the 6 polymer.

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B.O.T. to Review Chemical Import Duties

A LARGE number of temporary exemptions from import duties of goods (mainly chemicals) is under review by the Board of Trade. The duties concerned are classified under the headings 28, 29, 30, 38, 51, 58, 70, 81, 85 and 90 of the Customs and Excise Tariff and are due to expire on 1 October 1961. The Board proposes to recommend that these temporary exemptions should be continued for a further period of 15 months to 1 January 1963, unless requests are received from U.K. manufacturers, or from U.K. agents of Commonwealth producers, that they will be in a position to meet a substantial proportion of the U.K. demand by an interim date, or the applicants for exemption notify that they do not wish the exemption to be continued.

Requests for the termination of exemptions should reach the Board of Trade, Tariff and Import Duty Policy Division, Horse Guards Avenue, London S.W.1, by 8 July. It is important that details of the tariff heading and the definition should be given in any communication.

Chemicals in Holland

(Continued from p. 923)

also at the mouth of a waterway system that stretches down into the industrial heart of Europe. In addition, it sees the start of Europe's first major oil pipeline that stretches south to Cologne.

These are powerful reasons for the attraction of foreign capital to Rotterdam. Overseas chemical interests, too, are likely to look with interest at the large-scale deposits of natural gas recently located in the north-east of Holland.

There is no doubt therefore that the Netherlands chemical industry will in future play an increasingly important part in the European Common Market.

Obituary

Mr. William Longley, managing director of the Blandola Co. Ltd., chemical manufacturers, of Bridgmont, Whaley Bridge, Derbyshire, has died aged 85.

Project News

U.K. Chemical Concern Plans Six Factories in Mexico

PLANS to build a chain of factories in Mexico are being laid by a U.K. chemical concern whose identity is not revealed. The Mexican Government is expected to consider the proposal, according to Mexico's Minister for Agriculture and Commerce, Sr. Raol Salinas, when he paid a visit to the U.K. recently as head of a Government-sponsored trade mission.

Apart from the ambitious programme of petroleum and petrochemical projects being carried out by **Petroleos Mexicanos (Pemex)**, for which U.K. firms are supplying a good deal of equipment and know-how, a number of interesting chemical, plastics and fertiliser projects are being planned in Mexico, many with foreign, particularly U.S., capital (see C.A., 10 December 1960, p. 998). A joint Mexican venture to produce tetraethyl lead was recently announced by Pemex and E.J. du Pont de Nemours.

Big Orders from Moscow Trade Fair

● AMONG big orders booked at the Moscow Trade Fair is £30,000 worth of plastics extrusion machines sold by **R. H. Windsor** and a further £16,000 worth on the books.

One of the most expensive single exhibits, the Panellit 609 industrial information and computing system of **Elliott-Automation** was sold at £65,000. The Russians have also asked for additional equipment which will bring the total to close on £100,000.

Air Products Awarded Tonnage Oxygen Contract

● A CONTRACT has been awarded to **Air Products Ltd.** for the supply of 125 tons of oxygen a day to Shelton Iron and Steel Ltd. over a period of 15 years. The oxygen will be used in two 45-ton

Kaldo converters which supply a steel mill producing 300,000 tons a year of a range of joists and sections.

The oxygen for Shelton will be generated from a plant owned and operated by Air Products at Stoke-on-Trent. The plant has a capacity of 200 tons a day; the surplus 75 tons a day, together with nitrogen, will be supplied to industrial users in the Midland area. The plant is designed so that its capacity can be increased easily to meet increasing demand.

In addition to the plant at Stoke-on-Trent, units for tonnage oxygen are under construction at Cardiff (100 tons a day) and Ebbw Vale (200 tons a day) both to be completed in 1962. Already in operation is a plant at Fawley producing 12 tons a day of nitrogen and 12 tons a day of oxygen.

Air Products Ltd. is a wholly-owned subsidiary of the U.S. company, Air Products Inc., and has been established in the U.K. for 4 years.

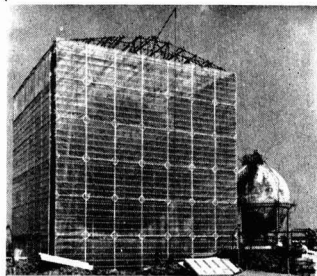
Gasholder Contract

● CONTRACT for a Wiggins dry seal gasholder of 900,000 cu. ft. capacity has been received by the General Contracts Division of the **Power-Gas Corporation Ltd.** (a member of the Davy-Ashmore Group). The holder is for the Bognor Regis gasholder station of the **Southern Gas Board**, where it will replace a 500,000 cu. ft. three-lift spiral gasholder built in 1911. To fit on the old foundations, the new gasholder has had to be specially designed; it is 196 ft. in dia. by 130 ft. high.

Monk and Co. Win £85,000 Contract for New I.C.I. Works

● A CONTRACT, valued at £85,000, has been awarded to **A. Monk and Co.** for the civil engineering and building work for new plant buildings, offices and

PLASTICS SHELTER



To give weather protection to men erecting a butadiene storage sphere for I.C.I. Heavy Organic Chemicals Division at Wilton, Whessoe Ltd., the Darlington engineers, constructed this shelter. Each panel consists of heavyweight Visqueen polythene building sheet made by British Visqueen Ltd. and is attached to a light timber frame measuring 9 ft. by 7 ft. 6 in. This in turn is secured to the scaffolding round the sphere. A complete side of the shelter measures about 50 ft. wide by 60 ft. high. The structure also serves to isolate sparks caused by electric welding of the prefabricated sections of the sphere, and to allow day work to continue without the need for artificial illumination, unlike conventional tarpaulin sheeting. Photo: I.C.I.

laboratories at the Blackley works of I.C.I.'s Dyestuffs Division. The whole of the project for the building and civil engineering works will be controlled by **Matthew Hall and Co.**

Water Treatment Contract to Gleeson

● A WATER treatment plant for the City of Cardiff valued at £277,000 is among the contracts recently awarded to **M. J. Gleeson (Contractors)**. The order is scheduled for completion by December 1962.

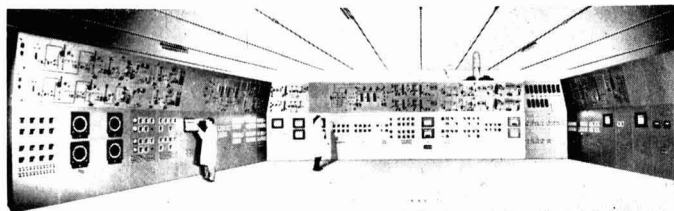
Boots/Ketjen Talks on Potassium Permanganate

It is reported that Boots Pure Drug Co. are involved in negotiations with the Dutch firm, Koninklijke Zwavelzuur-fabrieken NV v/h Ketjen NV connected with the production and sale of potassium permanganate. Boots say that no agreement has yet been signed.

Ketjen have announced that they will stop production of permanganate in the course of the current year. The Ketjen plant has been operating with poor financial results, according to the Dutch firm. A large part of the capacity of the plant is captive and is used for the manufacture of saccharine.

Boots have manufactured potassium permanganate for some time. There is a big demand in the U.K. for this powerful oxidising agent.

Automation for Russian Chemical Plant



Destined for a £2 m. Soviet chemical works being built by Vickers-Armstrongs, this 100 ft. instrumentation panel is part of £200,000 worth of automation equipment made at the Newhouse, Lanarkshire, works of Honeywell Controls Ltd. There will be nearly 200 closed loops for controlling temperature, pressure, flow, liquid level and other quantities. It will be installed by Honeywell engineers. The main contract was placed by **Techmashimport** in 1959



★ PRACTICALLY simultaneous, the announcements of Courtaulds and I.C.I. (see p. 924) that production plans for nylon-6 polymer and its intermediate caprolactam are well underway, still leave speculation as to who will actually be first off the mark. Courtaulds have not announced a start-up date and all I.C.I. has said is that their's will be early in 1963.

As I stated earlier (CHEMICAL AGE, 15 October 1960, p. 622), lion's share of the market must go to the company first off the mark, although I.C.I. have announced that they intend to concentrate on the plastics industry which will leave the fibre market open to Courtaulds. British Nylon Spinners—jointly owned by I.C.I. and Courtaulds—will have an assured source of nylon-6 polymer. Yarn made from nylon-6 has the advantage that it retains slight traces of caprolactam which results in dye acceptance, a softer 'hand' and a decrease in the amount of static generated during spinning. The other U.K. nylon spinners, British Enka, have their own source of nylon-6 polymer.

Despite rumours on the Continent that I.C.I. have purchased the East German Leuna caprolactam process, I gather that the method has no connection with either East Germany or the Soviet Union. As stated on p. 924 it was purchased from the Swiss company Emser/Inventa; it is not stated whether starting material is benzene or toluene.

★ REMARK made by Dr. H. Hoog at the S.C.I. Overseas Section annual meeting last week that it is nonsense to use the word 'petrochemicals' prompts me to write in its defence. The word is 100% better than the more laboured 'petroleum chemicals', 'petroleum-based chemicals', 'chemicals derived from petroleum', etc. There is an unavoidable tendency on the part of the layman to think of 'petrochemicals' as being something quite different from chemicals produced from coal—but this would apply whatever term was used. Perhaps this dislike of 'petrochemicals' is the reason why the Shell hierarchy have gradually stopped referring to the company they acquired a few years ago—Petrochemicals Ltd.

The Overseas Section meeting continues to attract Europe's top chemical market research specialists as well as directors of Continental and British chemical firms. This is doubtless due to the efforts of a hard-working honorary secretary, a director-studded committee and a continuing high standard of papers.

Many will miss the popular honorary

secretary, Freddie Braybrook, who resigned before the meeting on taking up a management position with Shell Italiana in Genoa. His successor, Mr. Paul Armstrong of the D.C.L. Chemical Division, is equally well known in the overseas chemical circles.

★ ALTHOUGH there were few pharmaceutical men at the S.C.I. Overseas Section meeting a paper that dealt mainly with hormones received the loudest ovation. Those who know Professor Dr. M. Tausk, chairman of the management of N.V. Organon and a professor of endocrinology, will know why. Presented with verve and vigour, this paper had the attention of the audience right from the start.

Professor Tausk began with a slide showing a quotation from Moliere's *La Malade Imaginaire*. This was the answer that a medical student gave in doggerel latin to every question—

"Clysterium donare,
Postea seignare
Ensuita purgare".

This is Tausk's suggestion for a modern alternative—

"Antibioticum donare
Deinde tranquillizare
Et hormones injectare".

★ WHILE in the Netherlands, I took the opportunity of taking part in a unique Press visit of European trade and technical journalists to the new Rotterdam styrene-butadiene latex plant of Nederlandsche Dow Maatschappij. For the occasion, Dow Chemical persuaded Rotterdam's newest luxury hotel—the Savoy on Hoogstraat—to open its doors a few days before the scheduled official opening. As it was I was taken up in a lift in which an electrician was still working, along a corridor which was still being painted and into a bedroom in which the cement in the tiled bathroom was barely dry.

This was symbolic of the fantastic growth to be seen everywhere in Rotterdam—in vast new office blocks, in new port installations, and in new chemical plants under construction at various sites in the port area. That the visit was organised by a major U.S. chemical producer was a symbol of the faith of foreign investors in Europoort.

Their Dutch latex plant is the first on stream of a series of new European facilities that Dow have under construction in Greece, Italy, France and elsewhere in Rotterdam (a joint phenol plant planned with Dutch State Mines). Dow can also claim considerable credit for having been successful with their efforts to take part

in the building of Spain's first petrochemical and plastics industry.

One aspect of the new latex plant that intrigues visitors is a large Alphenhorn type of escape chute designed to remove operatives with the speed of a helter-skelter in the event of any run-away reaction. This can clearly be seen in the picture on p. 927.

★ AN edict that was passed in West Berlin recently required restaurants to list all chemicals contained in each dish on the menu. This, not surprisingly, proved unenforceable; patrons would otherwise have found themselves trying to decipher chemical handbooks identifying each pinch of spice in the gravy and even the familiar salt cellar would have scared them away if it had been boldly marked 'NaCl'. In the U.S., the law regulating food safety was amended in 1958 to include a provision that "No additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal." The phenomenal amount of laboratory testing that would have to be carried out under this law, even if chemists were certain which substances were carcinogenic, can be imagined.

These examples were cited by Dr. Robert H. White-Stevens, of American Cyanamid Co., in an amusing address to the Newspaper Food Editors' conference in New York City recently, to show some of the absurdities of legislation against chemicals in food engineered by organised "food faddists".

Dr. White-Stevens pointed out that the world-wide population explosion poses a grave menace and to combat hunger will need all the resources of modern technology in supplying fertilisers and insecticides to ensure an adequate food supply.

★ THERE ought to be more occasions like the Commonwealth Technical Training Week, held 29 May-4 June, when industry opens its doors to the public, especially parents and school-leavers, to show them the sort of work it is doing and how it trains its younger members. It is particularly necessary because of the need for a steady flow of new blood into industry and technology, and because industrial developments and events get such scant attention in the popular press.

The whole show, inaugurated by the Duke of Edinburgh and organised by local authorities with central administration by the City and Guilds of London Institute, seems to have been a rousing success, with crowds of keen youngsters eagerly inspecting factories, laboratories and exhibitions.

As active as any were the chemical firms who took part, such as the Distillers Co., who staged exhibitions at their factories and research stations, and gave out information on careers in the chemical, biological and plastics industries.

Alembic

DOW S.B. LATEX PLANT ON STREAM

Rotterdam Unit First of Many New Dow Plants on Continent

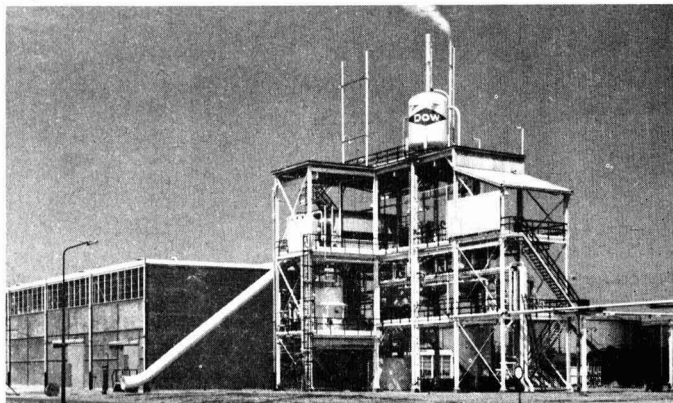
THE first of a series of new Dow-owned or Dow-associated plants in Europe has now come on stream in the Botlek area of Rotterdam for the production of styrene-butadiene latices. This new manufacturing plant of Nederlandsche Dow Maatschappij N.V., constructed by N.V. Badger in under 18 months using mainly Dutch labour and materials, was built at a cost of slightly less than \$2 million.

The plant units, which can easily be doubled-up, have sufficient capacity—the actual figure is not disclosed—to serve the whole of Western Europe, including Scandinavia. The facilities have their own shipping berth and currently imported Dow styrene monomer is being used, although some raw materials used originate in the Common Market. Representing a high investment per employee, the plant has a total labour force of 25 and incorporates its own control and technical service laboratories.

Production is currently scheduled for a range of latices for the paper and paint industries, including low-odour products. Next product due to be made at Rotterdam is Dow latex 630, described as a "breakthrough in the development of low-cost styrene-butadiene polymers". Markedly different from previous copolymers, its property improvements result from polymerisation techniques and recipes developed by Dow research in the U.S. Its use in starch blends without the need for protective colloid has given the material quick acceptance, for it eliminates the prestabilisation step in formulation.

Monomer-handling facilities on the new plant are of the open construction type and contain two 15,000 litre reactors; unreacted monomer is removed by steam. These reactors are set high off the ground so that latex can be drawn by gravity into the adjacent latex finishing building, where the product is first stabilised. The latex polymers are held in adjusting tanks until completion of analysis by the control laboratory and are then filtered through open baskets of 100 mesh. A total of 14 70 cu.m. storage tanks are housed under cover to avoid any danger of freezing in winter, for latex contains 50% water. The plant utilises stainless steel pipelines and glass-lined reactor vessels—specialised equipment developed by Dow was imported from the U.S., the remainder having been purchased locally.

Nearby is the plant of N.V. Staatsmijnen-Dow Fenol (jointly owned by



Latex production unit of the new plant of Nederlandsche Dow Maatschappij, at the Rotterdam Europoort. The Alpenhorn-like tube is an emergency exit for operating personnel

Dow Chemie AG and Staatsmijnen in Limburg) for the production of phenol; this is expected to start production in the summer of this year. Other European subsidiary operations of Dow Chemical Co. are the production of metallic yarns by Dobeekmun Europa N.V. at Amsterdam, by Dow Chemical Co. (U.K.) in Britain and by Soc. de Produits Chimiques Dow S.A., at St. Etienne, France; at King's Lynn, Dow Agrochemicals, 74% owned by Dow, produce agricultural chemicals; at Rome, Pitman-Moore, S.p.A., produce pharmaceuticals.

Two new subsidiaries are building polystyrene plants—Dow Chimica Italiana S.p.A., a 16,000 tonnes/year unit at Leghorn, and Dow Hellenic Chemical Industry Ltd. at Lavrion.

Associated developments include the production of polystyrene by Distrene Ltd. (owned 45% by Dow and 55% by Distillers), the production of chemicals and plastics by Plasticchimie S.A. at Ribecourt, France (49% Dow Chemie AG and 51% Pechiney); and production of

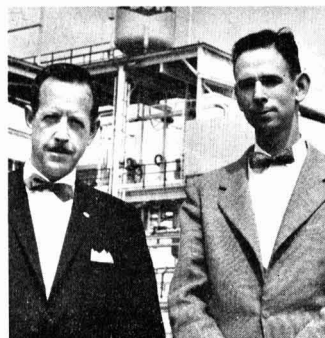
thorium, cerium compounds, etc., by Thorium Ltd. at Widnes (jointly owned by Dow Chemie AG and Rio Tinto Co. Ltd.). In addition, Dow Chemical have been successful in securing Government approval for their 50% company Dow-Unquinesa S.A. of Bilbao, which will produce chemicals and plastics.

The new Rotterdam plant is Dow's sixth styrene-butadiene latex unit and the second to start production this year. The others are in the U.S. and Canada. Rotterdam's first-class port system and transportation facilities made the area an ideal location for Dow, who in the U.S. pioneered the use of water-borne chemical tankers.

At a conference last week of European trade and technical journals, Mr. Colin Robertson, manager of Nederlandsche Dow Maatschappij, spoke of the formation by Dow Chemical International Ltd. S.A. of five new field sales offices in London, Frankfurt, Brussels, Milan and Zurich. The company's European organisation existed to develop markets for products which would be made in Europe, products "for which Dow are basic and for which we are a major supplier to the world".

Basic industrial chemicals for which the company was the initial developer of new and low-cost processes included phenol, styrene and butadiene—later came the first introduction to the paint industry of Dow-developed styrene-butadiene latex.

Mr. Carpenter said that their new plant was neither Europe's largest nor its first. The justification for building the new plant lay in the fact that it was Dow's philosophy of international operation that they produced only where their products could make a unique contribution to the economy of an area. Dow latices had been used on an increasing scale and in-Europe production meant that they were now closer to their cus-



Colin W. Robertson (left), manager of all Dow manufacturing and terminal operations in Rotterdam, and M. C. Carpenter, manager of coatings technical service for the new plant

tomers. The real significance of the new plant, he added, was that Dow were in Europe as producers of latexes rather than as marketers of latexes produced in other countries.

Mr. H. W. Haskell, manager of European coatings products sales for Dow Chemical International, Zurich, said that the largest use for synthetic latexes was in the production of paints, which had been revolutionised by the use of latex. The second largest use was in the replacement of casein and starch used as binders in coated printing paper and boxboard for decorative packaging. Third biggest outlet was in the textile industry, in tufted carpeting where it could be used alone or blended with natural rubber latex as an adhesive to lock the tufts.

One of the most interesting specialised

applications was in the modification of portland cements. Addition of latex imparts amazing flexibility and adhesion, new properties that give cement important practical and economic advantages. Big uses are seen here, particularly in the laying and repairing of cement floors, bridge deck surfaces, etc.

Mr. M. C. Carpenter, manager of coatings technical service at Rotterdam, spoke about liaison with the company's customers and believed that the company's growth and that of users was today most dependent on the continued expansion of latex applications and the supplying of new, special grades of latexes for those uses. Staff at the Rotterdam laboratories would have the continuing opportunity of refresher training by working for short periods at the headquarters technical service facilities in Midland, Mich.

Japanese Production Plans for Synthetic Fibre Raw Materials Announced

FIGURES for plant capacity increases in connection with the manufacture of synthetic fibre raw materials have been announced by MITI of Japan. These include increases in plant capacity or new plants for polyvinyl alcohol, acrylonitrile, polypropylene, and terephthalic acid to be built during this and next year. Of these, polypropylene is an entirely new enterprise. New polyvinyl alcohol plants are being undertaken by Kurashiki Rayon, Denki Kagaku, Dainippon Spinning, Nippon Gosei and Mitsubishi Chemical.

Acrylonitrile is mainly manufactured by the Sohio process and the acrylonitrile plants to be constructed will be mostly of this type, but Japan Gas-Chemical are planning an acrylonitrile plant which will use the Knapsack process and Mitsui Petrochemical are awaiting official approval of their own plans.

Company	Capacity (tonnes)	Date
Polyvinyl alcohol		
NipponGosei	28/day	present
"	30/day	Oct. 1961
Kurashiki		
Rayon	85/day	present
"	17.5/day	July 1961
"	40/day	May 1962
Shin-etsu ..	280/mnth.	present
Denki		
Kagaku	15/day	Oct. 1961
"	20/day	Sept. 1962
Mizushima		
Combinate	1,000/mnth.	Autumn 1962
Acrylonitrile		
Nitto ..	160/mnth.	present
"	65/day	March 1962
Sumitomo ..	1,000/mnth.	present
Mitsubishi ..	30/day	present
Toyo Koatsu	5/day	present
"	25/day	Jan. 1963
Asahi Kasei	15/day	Feb. 1962
"	30/day	March 1962
"	45/day	April 1965

Mitsui ..	30/day	Dec. 1962
Japan Gas-Chemical		
	550/mnth.	

Terephthalic acid

Kawasaki		
"	Kasei	550/mnth. present
"		700/mnth. June 1961
Mitsui ..		60/day present
"		1,000/day 1962/63
Maruzen ..		30/day present
"		50/day Sept. 1961

Polypropylene

Mitsubishi ..	10,000/year	June 1962
Mitsui ..	10,000/year	Jan. 1962
Sumitomo ..	10,000/year	June 1963
Tokuyama		
Soda	20,000/year	Dec. 1962
Shin Nippon	13,000/year	Sept. 1962

Sea Transport of Explosives

Section 1 of the Report on the Carriage of Dangerous Goods and Explosives in Ships (the 'Blue book') contains certain recommendations on this subject and for the benefit of those who do not require the complete report is published separately under the title 'Rules for the packing, stowage and labelling of explosives for carriage by sea'. A new edition is available from H.M. Stationery Office, price 5s. The new edition contains amendments which were included in Amendment Lists Nos. 1-4.

International Plastics Terminology

A session on multi-lingual plastics dictionaries and word-lists is to be held in one of the conference rooms of Europlastica 61, Floraliapaleis, Ghent, on 19 June. Mr. J. B. A. Nijssen, organising secretary of the applied Linguistics Foundation, will report on a similar session that was held in Utrecht (Netherlands) on 22 October, and an informal discussion will follow. Prospective participants are requested to write to Mr. Nijssen at P.O. Box 6050, The Hague-West, Holland.

Iraq Wants Basic Chemicals and Plastics Monomer Plants

A REPORT on the recent British Trade and Industries Mission of businessmen and industrialists to Iraq was published on 2 June. It reveals that there is plenty of scope for U.K. businessmen in Iraq's programme of industrialisation and development. Some of this is being carried out with the help of Russia and other European countries but this amounts to only a fraction of the expansion envisaged.

Among major Government requirements are plants for the production of caustic soda, polyvinyl chloride, polythene, rayon spun fibre. In the industrial field, the Iraqis particularly want equipment, technical process and training facilities. Private capital is welcome but it is useful mainly in encouraging local private capital to participate.

Of some interest to British firms interested in taking part in Iraq's industry are the special facilities in the form of loans by the Industrial bank, exemption from customs duty on raw and semi-manufactured materials, and tax concessions offered by the Iraq Government to companies wishing to set up new industries.

Imported Methane Awaits Ministry Decision

FOLLOWING the reaching of an agreement by the Gas Council, Conch International Methane and the French authorities responsible for the development of the Hassi R'Mel gas field in the Sahara on the terms of a contract under which liquid methane could be supplied from North Africa to the U.K. (C.A., 3 June, p. 884), the Gas Council has forwarded particulars of the scheme to the Ministry of Power for consideration by the Minister. The scheme provides for the importation of approximately 350 million therms (say, 700,000 tons) of liquid methane a year from Port Arzew, near Oran, to Canvey Island and for its onward transmission in the first instance to the North Western, East Midlands, West Midlands, Eastern, North Thames, South Eastern and Southern Gas Boards.

Two ships, each with a capacity of 11,000 tons of liquid methane, would transport the gas. They would be built in British shipyards.

Synthetic Rubber Usage Greater than for Natural

For the first time under conditions of peace more synthetic rubber was consumed last year than natural rubber in the free world. This was stated recently by Mr. W. Anderson, chairman of the Rubber Growers' Association, who said that synthetic rubber producers had now succeeded in using their product in some heavy duty tyres, one of the last preserves of natural rubber. Mr. Anderson added that natural rubber producers must raise productivity and bring down the cost of production.

S.C.I. OVERSEAS MEETING IN HOLLAND



At the reception held in Hotel Wittebrug, l. to r.: Harold P. Hodge (Esso Petroleum) and Mrs. Hodge, Professor G. A. C. Vlugter, (Professor of Chemical Technology, Delft University), Dr. Basil de V. Walden (Hooker Chemical Corporation) Dr. J. T. McCombie (Distillers Company) Dr. Max Riemersma (Hercules Powder and A.K.U.) and Mrs. McCombie

Visits Made to Pernis, Naarden and Dutch States Mines

MORE than 80 members of the Society of Chemical Industry, 50 of them from the U.K., attended the annual meeting of the Overseas Section held at Scheveningen, Netherlands, on 30 and 31 May. They heard papers from leading European chemical experts on petroleum-based chemicals, chemicals and the Common Market, European plastics and industrial pharmaceutical research.

All these papers covered current trends and recent developments. Topics covered included Europe's growing dependence on oil as a starting material for chemicals, the downward trend of monomer prices, the discovery of large natural gas deposits in North-East Holland and the effects of a European trade merger on the chemical industry.

In addition, visits were made to the Pernis refinery and chemical plants of Shell Nederland Chemische Fabrieken, to Chemische Fabriek, producers of glycerine, Naarden, and by plane to the Dutch State Mines at Heerlen.

The Society's annual dinner was held at the Hotel Wittebrug, Scheveningen, on 30 May, with Lord Fleck, S.C.I. president, in the chair. Mr. J. W. de Pous, Dutch Minister of Economic Affairs, proposed the toast of the S.C.I. and of the Overseas Section, to which Lord Fleck responded and proposed the toast of the guests. Sir Andrew Noble, British Ambassador, replied for the guests. Dr. E. L. Streatfield, chairman of the Overseas Section, also spoke at the dinner.

On the following evening, members and guests were entertained at a cock-

tail party and buffet held in the historic Rolzaal at the Binnenhof, The Hague. Hosts were the Koninklijke Nederlandse Chemische Vereniging and the Nederlandse Vereniging voor de Chemische Industrie.

Natural Gas Finds May Bring New Chemical Plants to North Holland

THAT the future of the Netherlands chemical industry was likely to see new facilities based on the large natural gas deposits located in the north-east was a point made by Dr. H. Hoog, manufacturing chemicals co-ordinator of Bataafse Internationale Chemie Maatschappij, in his paper on 'Some aspects of the European chemical industry based on petroleum raw materials.'

Dr. Hoog was introduced by Sir Robert Robinson, a director of the Shell Chemical Co. and a former S.C.I. president, who described him as the world's foremost expert on petroleum-based chemicals.

Entirely new chemical plant locations could be expected in the Netherlands, in that part of the country where at present there was only a soda ash industry. In the north of Holland, existing salt deposits were large enough to satisfy the world's needs for centuries; now the opening up of natural gas fields would bring new chemical industries to that area.

A large oil field had been discovered

The papers which are summarised below were presented as follows: 'Some aspects of the European chemical industry based on petroleum as a raw material,' by Dr. H. Hoog (manufacturing chemicals co-ordinator for Bataafse Internationale Chemie Maatschappij); 'The Six and their Influence on the future of the European chemical industry,' by Mr. C. Hemmer (European Economic Commission, Brussels); 'Recent developments in the European plastics industry' by Dr. R. Gath (a deputy director of Badische Anilin und-Soda Fabrik); and 'Some trends in industrial pharmaceutical research,' by Professor Dr. M. Tausk, chairman of management, N.V. Organon.

in western Holland. Dr. Hoog mentioned that there was already a trend to site refineries away from seaboard to inland centres. He instanced Cologne, Frankfurt, Strasbourg. Large pipeline networks were being developed to implement this policy and already the Rotterdam-Cologne pipeline had been working for some time. In turn, these new inland refineries would also attract new chemical facilities.

Something like 80% of all organic chemicals produced in the U.S. were now based on petroleum. The comparable percentage for Europe was around 30, or the figure for the U.S. some 15 years ago. Average annual growth rate for the production of petroleum-derived organics was 35%, compared with 14% in the U.S.

In the traditional coal countries—notably Germany, but also France and Holland—it was the well established organic chemical producers who had realised that today oil was the preferred starting material. It was, however, maintained Dr. Hoog, nonsense to talk of



L. to r.: Mrs. and Dr. J. W. Barrett (Monsanto Chemicals Ltd.), Mrs. Hayhurst, N. G. W. Luitsz (Bataafse Internationale Chemie Maatschappij) and H. Hayhurst (British Transport Commission)

'petrochemicals'—for the chemicals produced were the same, whether produced by coal or oil. The only difference lay in the economic and processing advantages offered by oil, which was an abundantly cheap and readily available raw material.

Today, two-thirds of all organic chemicals produced from oil were manufactured by traditional chemical companies. The remaining one-third was shared by the oil companies and other concerns that had moved into chemicals.

Dr. Hoog thought that a fundamental problem facing the world's petroleum and chemical industries was that of countries wishing to develop petrochemical industries which had little or no existing chemical production. Unless there were very special circumstances, such a course must be strongly resisted. It was impossible to have an economically viable petrochemicals industry without a chemical industry, which was still its own best customer. A contrary trend would be disastrous.

Giving some statistics relating to basic materials used in West Germany in 1959, Dr. Hoog said it was significant that the percentage of aliphatic and aromatic chemicals produced from oil and natural gas—in Europe's most traditional coal-producing country—had increased to 40%, or double the figure of 10 years previously.

BASIC MATERIALS USED IN GERMANY IN 1959

Products	'000 tons	Percentage obtained from	
		Coal	Oil and Natural Gas
Carbon monoxide	365.3	71	29
Acetylene	247.3	68	32
Ethylene	164.8	20	80
Propylene	81.0	0.2	99.8
Butylene	23.4	—	100
Butadiene	34.3	—	100
C ₄ and higher aliphatics	41.6	12	88

As a good example of a coal-based chemicals producer switching to oil, Dr. Hoog pointed out that the Dutch State Mines were about to commission a naphtha cracker. Initially, D.S.M. had obtained ethylene for their polythene operation from coke-oven gases. They had to turn to oil to make sufficient ethylene to be able to extend polythene capacity to a worthwhile figure.

This concern had in a relatively short period built up a large chemical business and with a production of 600 tonnes a

day of nitrogen were the second largest producers in Europe. Netherlands production of nitrogen now totalled 500,000 tonnes/year of which about half was exported. Between 15% and 20% of Holland's nitrogen and ammonia was derived from oil. Water-gas generators were in the process of being scrapped and water gas was to be produced by the high-temperature reforming of natural gas.

One of the big problems was the present-day pattern of ethylene production in Europe. Dr. Hoog asked "How do you obtain ethylene in Europe in a

cheap way?" In the U.S. large quantities of natural gas were available, often containing C₂ and C₃ streams. This was a relatively cheap process with very few by-products. That raw material, however, was not available generally in Europe, where the usual starting material was light hydrocarbons. Under suitable conditions, these could be steam-cracked to give, say, a 20-25% yield of ethylene. Conversion of ethane could bring this up to 30%. There was a big by-product problem and there was practically no case of a naphtha cracker not being associated in some way with an oil refinery, for the gasoline fraction had to be disposed of. That was why a naphtha cracker had a built-in urge to integrate downwards. There had to be a profitable outlet for the 60% yield of propylene, for butylenes, etc. Because of the problem of disposing of these by-products, the cost price of ethylene was entirely fictitious.

Discussing the differences between oil and chemical operations, he mentioned that there was a time when chemical companies were completely secret. But the chemical industry had seen the way in which the oil industry worked in this respect, particularly in regard to licensing, and it was true to say that much of the former secrecy had now disappeared.

Six and Seven Merger Would Lead To More Rational Investment Policy

THREE effects of a merger between the European Economic Community and the European Free Trade Association were described by Mr. C. Hemmer, of the E.E.C. administration, in his paper at the S.C.I. Overseas Section meeting on 'The Six and their influence on the future of the European chemical industry'. Mr. Hemmer was introduced by Professor Otto Horn, a director of Farbwerke Hoechst.

The first result of such a merger would bring increased competition. Secondly, the movement of co-operation that existed in the Common Market would largely extend to the U.K., while, thirdly,

there would no longer be a need for companies to set up plants in the C.M. for the only reason of getting behind the C.M. tariff wall. Subsidiary plants would still be set up, but the only basis for them would be location, transport and raw materials.

U.S. investors would no longer need to set up branches both in the U.K. and the C.M. Their decisions on locations would no longer be influenced by artificial devices such as tariffs. This would lead to a more rational investment policy and a better use of the total capital available for investment in Europe.

At present, the E.E.C.-E.F.T.A. problem seemed closer to solution than ever before. The British determination to join the C.M. either as a full member or as an associate member seemed certain and the sooner the U.K. joined the better for the solution of the various problems. In this respect, Mr. Hemmer mentioned that the work of trying to harmonise different national regulations on drugs would be greatly simplified if U.K. interests could be taken into account at this stage.

It was proposed to set up a European Pharmacopoeia and to take into consideration the structure of the British Pharmacopoeia. Thus, the E.E.C. was striving to leave the door open for Britain.

Under the Common Market, by the end of 1961, the internal tariff will have been reduced by 40%, and possibly even by 50%. The external tariff was only moderately protectionist and there was the recent 20% cut negotiated under G.A.T.T. Quotas would disappear by the



F. H. Braybrook (Shell Italiana and former hon. secretary of the Overseas Section), left, with Lord Fleck (S.C.I. president)

end of this year and in fact the only quotas now existing were some imposed by Belgium on antibiotics. Here Mr. Hemmer pointed out that differences in national laws restricted the free flow of drugs. The abolition of those restrictions could only be affected by harmonising the various national regulations, but under the Treaty of Rome, member governments could continue their regulations so far as imports of drugs were concerned.

Both the U.K. and the U.S. were active in investing in the C.M. area. In 1958, 1959 and 1960 some 520 U.S. investment operations out of 681 made in Europe were made in the European Economic Community and 149 were made in chemicals. More than half were registered in the period August to December 1960. No less than 60 U.S. companies had branch establishments or financial arrangements with local companies in Belgium.

There was a tendency towards higher concentration and greater productivity in the Common Market. In 1959 E.E.C. chemical production was valued at \$10,866 million (\$9,713 million in 1958), with a labour force of 918,000. For E.F.T.A., chemical production was valued at \$5,831 million in 1959 (\$5,159 million in 1958) with a labour force of 512,000, while in the U.S. production in 1959 was valued at \$25,749 million (\$23,219 million), with a labour force of 848,000.

Thus, the Common Market had a rate of productivity of \$11,837, compared with \$11,388 in the E.F.T.A. area and \$30,464 in the U.S. The creation of an even larger European market by the merger of the two trading blocs would very probably mean that in a very short time the European productivity figure would move much closer to that of the U.S.

Research Spending

Mr. Hemmer gave some figures showing the dependence of the world's chemical industry on research and development. The figure of \$678 million spent by the U.S. chemical industry on research in 1958 was likely to be increased to \$752 million a year until 1962. The Belgian chemical industry spent B.Fr.600 million on research in 1959, or 2.4% of total turnover. Expenditures of the three big West German producers in 1958 exceeded DM300 million, while in France the chemical industry spent Fr.15,000 million in 1958, or between 4 and 5% of turnover.

Asked by Mr. C. E. Hollis (Distillers Company Ltd.) for his views on whether serious over-production would be a factor to fear in a larger European market, Mr. Hemmer said that the possibilities of absorbing over-capacity through the expansion of consumption were much greater in a unified Europe than in a number of national markets.

Answering a question on patents, Mr. Hemmer declared that this was a highly technical and complex subject. At present, the E.E.C. was trying to reach some kind of European patent.

J. B. Green, left, and Dr. R. N. Lacey, centre, of British Petroleum with H. W. Stern, Soc. Française des Petroles B.P.



Europe's Big Plastics Growth Rate Will Bring More Price Cuts

WITH rapid increases in the production of plastics materials, prices in Europe have followed the trend in the U.S., where they have fallen since 1955 by 55% for p.v.c., by 36% for standard polystyrene, by 35% for high pressure polythene and by 40% for low-pressure polythene. This point was made by Dr. Rudolf Gath, a deputy director of Badische Anilin- und Soda-Fabrik, responsible for the development of technical applications of plastics, in his paper at Scheveningen on 'Recent developments in the European plastics industry'.

Following Dr. Gath's paper, prices were quoted in the discussion period for the monomer starting materials for these products. Dr. Gath was introduced by Mr. N. G. W. Luitsz (Bataafse Internationale Chemie Maatschappij), who spoke of the link that existed between Royal Dutch/Shell and B.A.S.F., through Rheinische Olefinwerke.

Dr. Gath stressed the growing importance in Western Europe of production of p.v.c., polystyrene and polyolefins. Total share of these three groups in West European plastics production had increased from 22% in 1951 to 30% in 1955 and to 40% in 1960. In 1950, European production of p.v.c. totalled 55,000 tonnes, rising to 550,000 tonnes in 1960; polystyrene at 10,000 tonnes in 1950 rose to 200,000 in 1960, while polyolefins had shown the most spectacular rise, from 3,000 tonnes in 1950 to 320,000 tonnes in 1960.

Production of plastics would continue to rise substantially in the coming years and prices would follow their present downward trend. Dr. Gath suggested that there was a relation between growth rates of different plastics materials and the ease or otherwise of producing the corresponding monomers.

Of the three groups already mentioned, production of vinyl chloride monomer presented the most difficulties. Styrene monomer involved simpler processes, but the production of ethylene and propylene, by-products of the oil industry, involved no chemical processes. Basically the three groups required a minimum of chemical processing.

The recent development of plastics in Europe had been characterised by a number of distinct features which Dr. Gath listed as:

1. Marked increase in production, coupled with price cuts.
2. A big extension of applications, a process that will continue.
3. Development of larger and more efficient plastics machinery.
4. Ever-increasing use of monomeric starting materials that need little chemical processing.
5. Developing partnership between chemical concerns and oil companies.
6. Extension of oil firms to include production of plastics and chemicals.
7. Conversion of crude oil as completely as possible to chemical products by traditional chemical producers, who are not interested in refinery operations.
8. Investment in Common Market by U.S. plastics firms.

Plastics had now reached a turning point in their development; previously they had been regarded as chemicals, but now certain major plastics materials were becoming considered as 'werkstoffe', or basic materials of industry. This trend would continue as production grew, prices dropped and applications extended.

In the discussion period Dr. H. Hoog (Bataafse Internationale Chemie Maatschappij) quoted current prices for three of the most important monomers. Although it was difficult to arrive at a realistic price for ethylene, Dr. Hoog thought that a figure of £50/tonne would be a fair average; styrene was currently quoted at £100/tonne, but this might shortly move down to £95; vinyl chloride was not, however, sufficiently more expensive to explain the trends of the p.v.c. growth curve in the terms suggested by Dr. Gath. Vinyl chloride was currently quoted at around £100/tonne.

Dr. Hoog said that vinyl chloride producers required more and more chlorine and made an ever increasing quantity of caustic, for which there was a market

limit—this limit was not yet reflected in the price of vinyl chloride.

Dr. Gath felt that price was important to the extent of about 60-70%, when comparing p.v.c. with polythene. It must be remembered that p.v.c. had interesting properties which had led to its use in the production of pipes. P.v.c. was now quoted in the range of Pf.50/kg.

Asked if he was concerned about mounting over-capacity for some plastics materials, Dr. Gath declared that now that plastics were looked on as basic raw materials for industry, production must keep ahead of demand, for poten-

tial users could not be interested in a new material unless it was readily available. It was essential that capacity be ahead of demand—over-capacity was vital.

Dr. Gath compared events in the plastics industry with what had happened earlier in steel; he felt that coming years would see a trend towards supplying finished forms of plastics instead of granules. In another direction he thought that in future fertiliser manufacturers—large potential users of plastics packages—would have bag blowing machinery near their filling plant.

Viruses May be Next Target in Industrial Drug Research

THE pharmaceutical industry's desire to make profits was in no way incompatible with the service that manufacturers gave to the medical profession in its fight against sickness and disease. This was stated by Professor Dr. M. Tausk, chairman of the management of N.V. Organon, in his paper at the S.C.I. Overseas Section annual meeting on 'Trends in industrial pharmaceutical research' (see also 'Distillates', p. 926).

He referred to the belief of many that the next enemy after bacteria to receive the attention of the research chemist would be the viruses. However, nobody seemed to have a good lead in this work, although many compounds were currently being screened. The battle against viruses was still being fought through the activation of anti-bodies.

Professor Tausk dealt at some length with his own field of research—hormones, tracing their development from aldosterone, produced by adrenal glands

and the starting materials for steroids. Industrial steroid research was not only concerned with making up deficiencies in the human body; this could not possibly account for the world's annual production of hormones. He discussed cortisone, prednisone, testosterone (in the U.S. 60% of 3 million individual doses were given to women), progesterone and the synthesis of hormones, which was widening the industry's horizons. Pituitary hormones, including polypeptides, ACTH, etc., were new hormone-like substances, developed through research.

The speaker was thanked for his fascinating lecture by Mr. E. L. Streatfield, chairman of the Overseas Section, and in the discussion period Sir Robert Robinson spoke of the inter-connection of academic and technological research in this field. This showed how industry by casting its bread on unknown waters had achieved a very good return.

U.K.-U.S. Research on Containers at New Hants Laboratories

NEW research laboratories which will be jointly operated by Metal Containers Ltd., London, and the Inland Steel Container Co., U.S., were officially opened at Passfield, Hants, on 2 June. The opening ceremony was performed by Mr. John F. Smith, Jr., president of Inland Steel Co., parent organisation of the U.S. containers firm.

With six factories in the U.K., Metal Containers Ltd. and its subsidiary and associated companies claim to be the U.K.'s largest producers of steel drums, fibre drums, plastic containers, stainless steel barrels and accessories. The Metal Containers Group is part of the International Van Leer Group, Holland. The Inland Steel Container Co. operates five container plants in the U.S. and is among the largest American steel container and drum manufacturers. The common interests of Metal Containers and Inland Steel Container have led to an agreement for the exchange of know-how and joint development of processes and products in the container field. This led to setting up of the Passfield laboratories.

The buildings are mainly of one-storey

construction and the laboratory block covers physics, analytical chemistry, organic chemistry and physical chemistry.

The research programme covers a wide field of subjects initially directed to improvements to containers and the development of new packages, research into such subjects as properties of steel surfaces and improvements thereto, the adhesion of coating films—into the field of polymers and co-polymers, fibre materials, adhesives, etc., are expected to lead to improved containers in plastic and fibre materials, and new steel/plastic and fibre/plastic packaging systems and the manufacture thereof.

New Technical Service Laboratory for Laporte Titanium

The technical service department of Laporte Titanium Ltd. has moved to new premises at 28 Milton Road, Harpenden, Herts, as from 1 June. The laboratory has been newly furnished and equipped and is set in sufficient grounds to provide a site for an additional exposure station for testing the Company's products.

Fall in Oil Industry Purchases of Chemicals

ORDERS for bulk chemicals, catalysts, barytes, etc., placed in the U.K. by oil companies during January-March 1961 reached a value of £7,576,845 compared with £8,264,672 in the same period of 1960, according to figures issued by the Council of British Manufacturers of Petroleum Equipment. Under the heading of Laboratory equipment and chemicals including hospital and medical supplies, orders reached a figure of £334,186 (£466,035).

Other figures given in the statement include those for specialised equipment for oil refineries, etc. (not including pumps and valves), £2,183,227 (£946,500); tubulars, pipe fittings and valves (ferrous and non-ferrous), £2,383,074 (£3,008,462); pumps (excluding slush, oilwell and kerbside), £410,786 (£476,191).

Association of Finland with E.F.T.A. Implemented

THE European Free Trade Association (Finland) Order, 1961 implementing the agreement recently signed between Finland and the E.F.T.A. countries (see CHEMICAL AGE, 8 April 1961, p. 584) has been published. The Order makes provision for Finland to be treated as part of the E.F.T.A. area for the purposes of imports to the U.K. From 1 July, when the Order comes into operation, Finnish goods will on importation into the U.K. be treated for tariff purposes in the same way as the goods of the E.F.T.A. countries, i.e. the rates of duty will be 70% of the basic rate.

D.S.I.R. Grant to Plastics' Research Association

The Department of Scientific and Industrial Research has agreed to grant the recently formed Rubber and Plastics Research Association of Great Britain up to £77,000, provided the industry itself raises £120,000 in each of the three years 1961, 1962 and 1963.

New laboratories are at present being built at the Association's headquarters at Shawbury, near Shrewsbury. When the building is completed—in about 18 months—work will begin on the practical problems of process productivity and technological development. There is no suggestion of entering the field of polymerisation.

New Fabrication Shop for Henry Balfour

A heavy fabrication shop, 300 ft. long by 80 ft. span, is to be built by Henry Balfour and Co. Ltd. at Mountfleurie, Leven, Fife, on a new 25-acre site adjacent to their research and development centre. The new shop is scheduled to go into production in June 1962.

In addition to this extension, Balfours have recently installed a new 1,000-ton press capable of handling dished ends of 10 ft. diam. up to 3 in. thick.

New Latex Coatings for Masonry

DISCOVERY of new chemical materials and recent technological advances promise more effective and durable paints, particularly for use on stucco, masonry and asbestos shingles, the Goodyear Tyre organisation report in a paper, 'Solution and latex coatings for masonry', presented at a meeting of the Organic Coatings and Plastic Chemistry Division of the American Chemical Society. The paper pointed out that many masonry paint problems, such as resistance to moisture and alkalis, have been solved and the trend is to development of paint materials with superior ultra-violet light resistance that can be applied over new or previously painted surfaces.

Durability of masonry paint depends to a great extent on the ultra-violet light absorption of the vehicle or binder which holds all the paint ingredients together and the concentration of the pigmentation or colouring agent. Colouring agents above the critical pigment volume promote chalking, while low pigmentation does not give sufficient ultra-violet light absorption.

Continuous testing programmes have resulted in development of different chemicals that show evidence of improved ultra-violet light resistance. Among the most promising of these is a styrene acrylate solution resin that should allow production of paints with greater durability and less fade and chalking that can be used over previously painted surfaces without a special primer.

Visit to Switzerland for Geigy U.K. Personnel

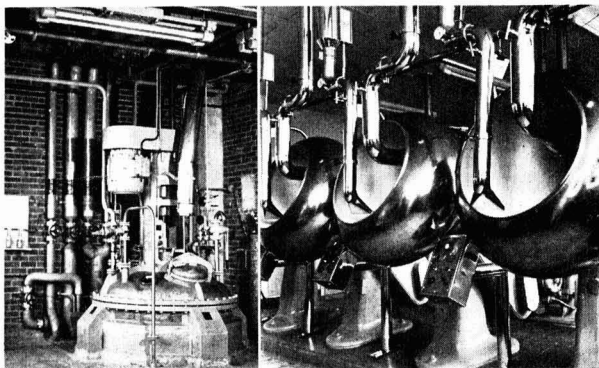
On 8 June some 30 Geigy employees, all of whom have been with the firm for 25 years or longer, left London by air for a long week-end in Switzerland, where they were the guests of the management of the parent company, J. R. Geigy A.G., Basle. The party included personnel from the Geigy Co. Ltd., Ashburton Chemical Works Ltd., Geigy Pharmaceutical Co. Ltd. and James Anderson & Co. (Colours) Ltd.

The party inspected the new office building and also the Geigy works in and near Basle. They commenced at Rosenthal, where the firm has its pharmaceutical compounding and packaging departments, colouristic department, dye warehouses and a new steam unit, and went on to Schweizerhalle, the manufacturing works for textile and general chemicals, pesticides, pharmaceuticals and dyestuffs.

Symposium on Carbohydrate Chemistry

An international symposium on carbohydrate chemistry, sponsored by the Chemical Society in association with the University of Birmingham, will be held in Birmingham during the period 10-20 July 1962. Further particulars will be sent, when available, to those who apply to the General Secretary, The Chemical Society, Burlington House, London W.1.

LORD SWINTON OPENS NEW £2.5 MILLION BRITISH H.Q. FOR SANDOZ AT LEEDS



At the Sandoz factory, Horsforth: left, a typical reaction vessel in the chemical manufacturing building and, right, tablet coating machines in the pharmaceutical building

THE Jubilee year of the English company of the Sandoz Group, the first overseas company of the Swiss company to be formed, was marked by the opening of the new £2½ million British headquarters at Horsforth, Leeds, by Lord Swinton on 2 June.

The opening of the headquarters is the culmination of 50 years' progress of the English company which was established at Bradford in 1911. The new headquarters have concentrated the various manufacturing, service and service activities previously spread over the country.

The chemical plant at Horsford is supplementary to the Bradford plant and all chemical manufacturing will eventually be concentrated at Horsforth. The four storey chemical manufacturing building is of such a height that the reaction vessels can be arranged in groups one above the other, so that the top floor is used as loading platform and working by gravity from vessel to vessel through the various operations until, on the ground floor, the finished products can be run off into packages and despatched through two loading bays.

Structurally the building is arranged so that it is easy to exchange reaction vessels and other equipment, allowing flexibility in the future manufacturing programme and facilitating the repair and maintenance of the plant.

The manufacturing capacity is 6,000 tons a year of a variety of products, such as wetting agents, penetrating agents, detergents, fat liquors for the leather trade and optical brightening agents.

The main function of the chemical laboratories is to provide technical service to customers, but other duties cover investigations into improved application techniques, the examination of new products and of competitive brands and analytical work.

Among the equipment installed are instruments for assessing the wearing and crease-resistant qualities of fabrics and for determining water-proofing efficiency. There is also equipment for the application of resin finishes to fabrics.

Pay Rises to Boots' Laboratory Workers

Boots Pure Drug Co. Ltd. have awarded wage increases to 474 laboratory assistants and technicians in Nottingham and Beeston. The increases range from 5s to 14s 6d a week; for the majority this will mean an extra 12s 6d a week from 22 May. At the beginning of April, Boots announced an increase from 10s to 15s a week in 'qualifications' payment for laboratory assistants and easier movement into the technician grades.

Anti-static Boot

A new type of boot, capable of dispelling static build-up, should be of particular interest to such industries as petroleum, chemical explosives, etc., where extra safety against highly inflammable materials is required. It is oil-resistant and has longer wearing soles than normal footwear.

The boot was demonstrated on the stand of Thos. W. Ward Ltd., Albion Works, Sheffield, at the recent R.O.S.P.A. Exhibition at Scarborough.

Zone-refined Germanium

The announcement of Johnson Matthey and Co., in connection with developments in their work on germanium (see CHEMICAL AGE, 20 May, p. 816) stated that 500Ω-cm. n-type germanium is now available. This should have read 50Ω-cm. n-type germanium.

In Parliament

Research on Toxic Chemicals Costing £20,000 a Year

ASKED in the Commons whether he was satisfied with the pace at which investigations were being conducted as to the possibility of danger arising from the use of toxic chemicals for agricultural purposes, and when he now expected the report of the study group to be completed, the Minister of Agriculture, Mr. Christopher Soames, replied that much research was being done into the effects of toxic chemicals on human and animal life and on crops. Before any chemical was cleared for use in agriculture, thorough investigations were carried out on it. The Research Study Group was set up to see what further research might be necessary into the effects of those chemicals. Its report was expected this summer.

Mrs. J. Butler (Lab., Wood Green) asked the Minister what research he was at present undertaking into the desirability or otherwise of using dieldrin, aldrin and heptachlor in dressings for spring-grown grain; and what restrictions he intended to put upon the use of those chemicals in agriculture. Mr. Soames replied that he shared the concern felt about the reported casualties to wild life from certain seed dressings. Research work had established the value of dieldrin, aldrin and heptachlor in the control of serious insect pests such as wireworm and wheat bulb-fly. Present research was directed at studying their effects on wild life and their long-term effects on the general soil fauna. A nation-wide survey of reported cases of *unusual deaths among birds* was being carried out this spring. Decisions on whether restrictions were necessary on the use of those chemicals would be taken when the results of the survey, including analytical evidence, were known and had been reviewed at a meeting later this month with all interested organisations including the bird preservation societies.

In the Lords, Lord Shackleton asked the Government how many scientists were directly engaged in research, and what was the total expenditure, on the side effects, especially long-term ones, of the use of toxic and other chemicals on all kinds of wild life in the fields: (a) by Government Departments and Research Councils; (b) by manufacturers of those chemicals. Viscount Hailsham replied that research on the effect of toxic chemicals on wild life was at present carried out by the Ministry of Agriculture, the Nature Conservancy and the Laboratory of the Government Chemist. Nine scientists were engaged directly in the work, at an annual cost of about £20,000. In addition, a substantial amount of related work was undertaken in the programme of the Agricultural Research Council. He understood that manufac-

turers of the chemicals were also carrying out research on the problem, but he had no details of the staff and the expenditure involved.

Mr. Iremonger asked the Minister of Agriculture, Fisheries and Food what steps he is taking to expedite the findings of his Research Study Group on the use of toxic sprays and seed dressings, which are causing destruction of the wild bird life in the County of Essex.

In a written answer, Mr. Soames replied that the Research Study Group was primarily concerned with the long-term needs for research into the effects of toxic chemicals used in agriculture. The results of the surveys of wild life casualties carried out this season, including the analytical evidence, are to be reviewed at a meeting with all the interests concerned later this month, following which decisions will be taken on what further action may be needed to cut down the risks to wild life. It is, therefore, not necessary for this purpose to await the Report of the Research Study Group, which is expected later this month.

Weed Control Techniques Demonstrated

How weeds could be controlled efficiently and economically for purposes of amenity or reduction of hazards such as fire was demonstrated at a conference organised by Disinfestation Ltd. (a member of the Rentokil Group) in London last week. Representatives of local authorities, British Railways, British Waterways, oil companies, wharfers and other industries were entertained at the Pest Advisory Centre, 16 Dover Street, London W.1, when there was an exhibition of photographs, equipment and chemicals staged jointly by Disinfestation Ltd. and Chipman Chemical Co. Ltd.

Examples of successful weed control included a 'kerb revealment' treatment on a trunk road; treating growth above underground petrol storage tanks; treatment of electricity sub-station compounds; and treatment of areas round airport taxi-track and landing lights where grass could not be cut by mechanical means.

Mr. S. Goss of Disinfestation Limited described how special mobile spraying units, such as long wheel based diesel Land Rovers carrying a 175-gall. tank, rear hose reel for hand spraying, and front mounted adjustable boom sprayer, had been specially designed by the company. Mr. R. Howarth of Chipman Chemical explained the range and use of his company's products, which include Atlacide, Atlavar, Telvar, Chlorea and Monax granules.

More Chemicals Join List Under Farm Approval Scheme

THE following additional products have been approved under the Agricultural Chemicals Approval Scheme.

INSECTICIDES: Aldrin emulsions and miscible liquids Profarma Aldrin 30%—Profarma Ltd.; Azinphos-methyl (an organo-phosphorus insecticide and acaricide for the control of codling and tortrix moth caterpillars and fruit tree red spider mite). Emulsions and miscible liquids: Gusathion—Baywood Chemicals Ltd., Gusathion—Plant Protection Ltd.; gamma-BHC (Lindane) emulsions and miscible liquids Gamalin 20—Plant Protection Ltd.; DDT emulsions and miscible liquids Atlas DDT 25% emulsifiable concentrate—Atlas Preservative Co. Ltd., DDT concentrate M & B—May and Baker Ltd.; DDT-gamma-BHC (Lindane) emulsions and miscible liquids BHC/Dinoseb (DNBP) amine salt sprays Profarma DNBP(amine)-Profarma Ltd.; DNOC herbicide sprays Longmate's 50 dinitro-o-cresol paste—E. C. Longmate Ltd.

FUNGICIDES: Copper/Maneb (a combined copper/dithiocarbamate fungicide for use on potatoes to control late blight) Wettable powders: New Blitane—Fisons Pest Control Ltd.; Maneb wetttable powders Bugges Maneb 65% wetttable powder—Bugge's Insecticides Ltd.

HERBICIDES: 2,4-DB (a translocated

herbicide related to 2,4-D for the control of broad-leaved weeds and cereals under-sown with grass or and clovers or lucerne) Sodium salt sprays: Vigon-4B—Vitax Ltd.; Dalpon sodium salt sprays Shell Dalapon—Shell Chemical Co. Ltd.; Dinoseb (DNBP) amine salt sprays Profarma DNBP(amine)—Profarma Ltd.; DNOC herbicide sprays Longmate's 50 dinitro-o-cresol paste—E. C. Longmate Ltd.

Cosmetic Science Congress

Second congress of the International Federation of Societies of Cosmetic Chemists, organised by the Society of Cosmetic Chemists, will take place in London from 2 to 5 July 1962. Themes will be biological aspects and physical chemistry. Anyone wishing to submit a paper describing original work is requested to contact the hon. organiser, Mr. A. Herzka, Pressurised Packaging Consultants Ltd., Ashbourne House, Alberon Gardens, London N.W.11.

Obituary

Herr Oswald Rösler, vice-chairman of Farbenfabriken Bayer AG, of Leverkusen, West Germany, and a director of Salzdetfurth AG, West Germany, has died at the age of 73.

PREVIEW OF THE ACHEMA

Wealth of Chemical Technology Developments on Show at Frankfurt

With Europe moving towards closer economic integration, leading to increased exchange of scientific and technological ideas, there will be more interest than ever shown in this year's Achema Exhibition and Congress at Frankfurt-am-Main, West Germany, 9-17 June. Organised by the Deutsche Gesellschaft für Chemisches Apparatewesen E.V. (Dechema) in connection with the European Convention of Chemical Engineering, the Achema this year promises to be the greatest concentration of new developments in chemical plant, laboratory apparatus, instrumentation and related equipment yet seen. The following preview summarises a selection of the exhibits

Argon Chromatograph

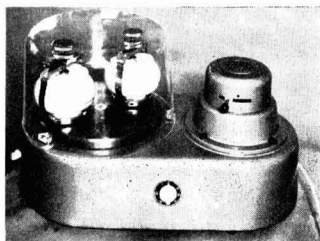
Feature of the display of **W. G. Pye and Co. Ltd.**, Granta Works, York Street, Cambridge, will be an industrial version of the Pye argon chromatograph, already in successful use in several chemical plants in the U.K. This new equipment, which is suitable for use in hazardous locations, is completely automatic and will operate for long periods without any attention. Typical applications are the percentage analysis of mixed hydrocarbons; the detection of trace impurities in air, oxygen or industrial gases, and the monitoring of critical components in a process stream. (Hall 1, A17)

Rare Metals

With three stands at Achema is the Hanau, West Germany, firm of **W. C. Heraeus GmbH**. Apart from the rare metals tantalum, niobium and zirconium, this firm now introduces europium, of which it is the first European producer in compact form and large quantities. Among other novelties are the following: platinised titanium electrodes for chlorine-alkali electrolysis; tantalum centrifugal pumps—the first in Europe—developed in conjunction with Klein, Schanzlin & Becker, of Frankenthal, W. Germany; a hot-cold cabinet for laboratory purposes of 180 litres capacity and for temperatures between 0 and 70°C; a laboratory high-temperature furnace for heats of up to 1,600°C; a new drawer-form pump stand for building into laboratory tables; an improved cold cathode ionisation vacuum-meter for a range 10^{-2} to 10^{-6} Torr; and many other items. (Hall 1, D1-3, E1-3, Hall 1A, D1-3, E1-3, Hall 2)

Flow and Level Recorders

Flow, current and level measuring units are the exhibits of the West German firm **Turbo-Werk Köln Fritz Hammelrath**, Postfach, Hospelstrasse 44, Cologne-Ehrenfeld. The items on show include the Nova flow recorder for the exact measurement of large quantities of liquids, particularly such as are extremely dirty or contaminated, the Contra flow recorder (first shown at Achema 1958)



A. Fritsch show this laboratory planetary mill with absolute rotation of the grinding bowls (see p. 941)

in an improved form, the newly-developed Prima current recorder with magnetic recording fittings and the new Mira level measurer—a further development of the firm's existing Menkar model—for the control of liquid level in open or closed containers. (Hall 1, D4, E4)

Plastics Coatings

Plastics may be applied to both ferrous and non-ferrous metals in the same way as lacquers by spraying, electrostatic spraying, dipping, rolling, pouring and in other ways by a method developed by **Schramm Lack- und Farbenfabriken AG**, Postfach 38, Offenbach/Main.

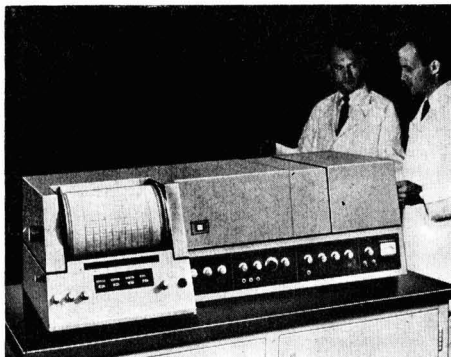
Known as the Polisint process, this patent-applied-for method is used for the reduction of a large range of plastics to a suitable form to be sintered. A selection of Polisint plastics preparations are exhibited in Hall 1B of the Achema. (Hall 1, H10-11)

Measurement and Control

A large range of measuring and control apparatus, including several new developments, is shown by **Hartmann und Braun AG**, Gräfrasse 97, Frankfurt-on-Main W.13. Among the introductions to the company's programme are: a plant pH-meter for immediate installation or construction within a standardised housing 288 mm. by 240 mm. by 270 mm.; a new model in the Caldos gas analyser range incorporating a Wheatstone bridge, a glass measuring chamber, thermostat fittings and of unit construction; new pH immersion and flow units, the latter of V4A; and a new doubly-protected Schering's bridge for direct reading of tan-delta values of from 0.00002 to 5. (Hall 1, H10-11)

Condensate Conduits

The specialist West German armature producer **Rifox Spezialarmaturen GmbH**, Postschliessfach 30 45, Bremen 11, exhibits a whole range of condensate conduits under the trade designations Rifoflot, Rifobi, Rifodyn and Rifojet.



Perkin-Elmer model 125 infra-red grating spectrophotometer (p. 937)

Of these, the first is a float conduit for saturated steam, superheated steam, compressed air and such compressed gases as ammonia, diphenyl and frigene and fitted with corrosion-proof and non-denting float, Rifobi with a bi-steel fitting and for use with steam, preferably saturated steam, Rifodyn, a thermodynamic unit with poppet valve for the water drainage of steam areas or, in special form, for the dewatering of compressed air and Rifojet, a jet conduit for use in steam plants and with particularly high efficiency when steam is the heat-bearer. (Hall 1A, A15)

Chemical Pumps and Mixers

Among the Swiss exhibitors at the Frankfurt exhibition is the chemical pump and mixer producer **W. Wirth**, Hardstrasse 94, Basle 20. This firm has on show plunger pumps, centrifugal pumps and a range of mixers including slow-turning stirrers, fast-turning stirrers and turbine mixer pumps. Designed specially for the emptying of tanks and barrels is the KW12 barrel-and-tank pump working to the immersion principle. Made wholly of quality rust-proof and acid-proof steel, with 18% Cr, 8 Ni, and 2.5 Mo content, and with voltages of 220, 115, 42 and 36, the pump is suitable for use with virtually any kind of liquid. (Hall 1A, A17)

Alloys and Armatures

Sakaphen plastic alloys and Saka armatures are to be seen on the stand of their maker, **Säureschutz Rheintruh GmbH**, Bottroper Strasse 275, Postfach 620, Gladbeck i.W. The armatures on show are resistant against acids, lyes, hydrocarbons, solvents and mixtures of these substances and, with metal and plastic components, can stand temperatures of up to 130°C. Of the plastic combinations in the company's range a particularly durable material of recent development is to be seen under the name of Säkaphol; for use in the production of pump components and armatures (including the Säka range), this has high resistance to those substances handled by Säka armatures and even against high-temperature bleaching lye. (Hall 1A, A49)

High Vacuum

A novelty in the field of vacuum pumps that is being shown on the stand of **Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten**, Balzers, Principality of Liechtenstein, is an oil rotary pump fitted with an ions baffle permitting the attainment of hydrocarbon-free high vacuums inferior to 5×10^{-4} mm. Hg. They are also showing new oil diffusion pumps of a very concise construction with highly efficient oil baffles, also pumping units ready for connection and a series of ultra-high vacuum valves. Complete installations include an ultra-high vacuum evaporation plant in a single wall heatable execution, a universal high vacuum melting and sintering plant and a special evaporation plant for electron microscopic preparations which responds to up-to-date exigencies.

Transparent, electricity conducting and high temperature resistant coatings on glass and plastics are another feature of this stand. (Hall 1A, F3-4, G3-4)

Mixer Drives

Stageless alteration of mixer velocity is permitted by the mixer drive type DsIG of **Oswald Forst GmbH**, Schützenstrasse 160, Solingen, West Germany. The velocity may be altered either with the mixer in motion or at rest and either by means of a manual adjusting wheel or, if required, via electrically-powered remote control; such regulation is the result of the alteration of the capacity of the oil pump and oil motor which form, together with the single or triple cog gearing, the mixer power unit. At request the vertical unit can be fitted with automatic velocity adjustment dependent on load. Among other exhibits of the same firm is a newly-developed mixer drive for laboratory purposes, no details of which are as yet available. (Hall 1B, C10, D10)

Pipe Cleaning Jet

Pipe lines with diameters of 15 mm. upwards can be rationally cleaned by means of the high pressure water jet process developed by **Oskar Maasberg**, Unterstrasse 22, Duisburg, and shown on the company's stand. The high pressure pump, Atümat, draws water from tanks, etc., or is fed from the water supply mains and forces this water at a pressure of about 60 to 80 atm. into a high pressure hose to which is attached by a screw connection a special jet (of various sizes). The latter draws itself and the hose automatically into pipe lines or channels up to a distance of about 120 m. The jet unrolls the hose from a reel and takes it for the above distance into the pipe. When the hose is pulled back (mechanically or by hand) the jet of high pressure water cleans the interior

of the pipe line and removes the loosened encrustations.

Good results have been obtained with the Atümat for cleaning pipe lines and heat exchangers in the chemical and petrochemical industries. If a spray pistol is screwed to the high pressure hose instead of a pipe cleaning jet, the Atümat can be used for the rapid cleaning of bottles, autoclaves, sieves etc. It can also be used, in conjunction with a special tank cleaning plant, for storage and transport tanks. (Hall 1B, J5, K5)

Steam Generators

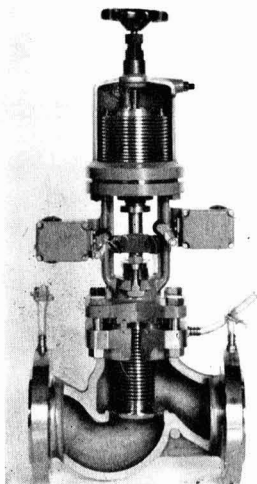
Sabel und Scheurer GmbH, Oberursel bei Frankfurt-on-Main, has on show a range of steam generators, hourly capacities of which vary from 150 to 7,520 kg. The generator range, which consists of oil-fired units, includes a high-performance, high-speed model producing 150-1,000 kg. of steam per hour according to type and available in portable form, whose heating-up period is given as only a few minutes. Powering varies from 1 h.p. for the smallest unit of the above-mentioned model—the model is used for the production of high-pressure steam—to as much as 500 h.p. for the high-pressure steam and hot water boiler with the highest capacity. The highest-capacity Sabel and Scheurer models have an efficiency of up to 85%. (Hall 1B, G7)

High-accuracy Measurement

Dilation recording exactitude depends virtually solely on the register instrument in an improved dilatometer model developed and exhibited by **Linseis Prüfgeräteeinrichtung KG**, Gerhart-Hauptmann-Weg 9, Selb. The unit on show has an exactness degree of 1°/00. Also new are the company's thermo-balances, including a vacuum thermo-balance for vacua of up to 10^{-4} , a torsion unit with which it is possible to measure such minimal torsions as the solidity loss of porcelain mass at 950°C and 1,250°C, an electronic unit for the testing of dry tensile strength with fewer components than formerly but costing approximately the same as former mechanical testers, and a combined testing unit for the determination of compression strength, tensile strength and bending strength. (Hall 1 (Empore) 15)

Laboratory Photography

Several new items of photographic equipment for the chemist are introduced by **Robot-Foto GmbH**, Aachener Strasse 21, Düsseldorf. These include (1) a photographic tube for oscillographs with a screen image diam. of up to 118 mm. and incorporating illumination fitment with stagelessly adjustable light brightness, manual functional key, tripping magnet of 12 or 24 volts D.C. and capacity of 400 photographs when fitted with dark-slide for a 10-m. film and electric motor, as well as (2) a new photographic register unit for oscillography, short-exposure and target photography with film shutter adjustable freely between 24 mm. by 24 mm. and 24 mm. by 1 mm. Robot also has on show new electro-mechanical impulse timers and control units for technical-scientific



One of the valves being shown by Klein, Schlanzler und Becker AG (K.S.B.)

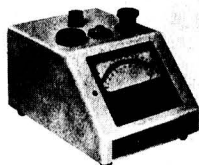
photography, a wire-less remote tripping device and a 'reading' projector whereby 35-mm. film may be enlarged ninefold on to a special 21 cm. by 21 cm. screen.

Infra-red Spectrophotometer

A new high performance infra-red grating spectrophotometer has been developed by **Bodenseewerk Perkin-Elmer and Co. GmbH**, Ueberlingen/Bodensee, W. Germany. It is claimed to be the first commercially available infra-red instrument which automatically scans the complete wavelength range from 1 to 25 microns, and the only instrument which permits such automatic and continuous recording of spectra without change of components (such as monochromator, gratings or prism). The instrument will be shown on the company's stand along with other new developments in spectrophotometry, spectrometry, polarimetry and gas chromatography by this company and its associate companies in the U.S. and U.K. (Hall 1 (Empore), 23-25)

Ultra-violet Colorimeter

One of the totally new developments on show at Frankfurt is an ultra-violet colorimeter exhibited by **Dr. Bruno Lange**, Hermannstrasse 14/18, Berlin-Zehlendorf. Of simple construction, this photometer permits work in the ultra-violet sphere at some 250 mm.; such work has hitherto been possible only

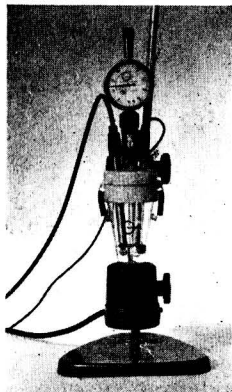


Ultra-violet colorimeter of Dr. Bruno Lange

with ultra-violet spectro photometers costing between 10 and 20 times more than the Lange unit. A further development of the firm's spectro photometer, also displayed, has a range of from 200 to 1,000 nm. extendable to 20,000 nm. by simple prism alteration. Other novelties on the Lange stand are an improved flame photometer working either with coal-gas, propane, acetylene or benzene gas and capable of sensitive calcium measurement when fed with coal-gas, as well as new micro-capillary photometers, photo-conductive cells and smoke recorders. (Hall 1 (Empore), 32, 33)

Graphite Ware

New graphite types and improved versions of the company's special products Ecebon and Cecobon are exhibited by **C. Conradt**, Postfach 480, Nuremberg 2. In addition to new, denser graphites, the firm has on show the two special products mentioned above with improved corrosion resistance and specially-impregnated graphite plates, whose recent development reduces graphite chemical wear in electrolysis processes. The company also produces graphite and



Titration apparatus shown by Dr. W. Ingold, K.G.

carbon moulds and other graphite, carbon and silicon carbide for industry, some of which are on show. (Hall 2, B18-19, C18-19)

Plastics and Ceramics Equipment

Particularly striking in Hall 2 of the exhibition is a container of some 30,000 litres capacity, 6.5 metres high and 2.4 m. diam., made of glass fibre-fortified polyester. This towers over the stand of its maker **Deutsche Steinzeugwarenfabrik für Kanalisation und Chemische Industrie**, Postfach 7, Mannheim-Friedrichs-feld, which apart from such plastic containers is a specialist producer of technical porcelain and earthenware. A new development, also on show, is the FP chemical pump with fully-exchangeable components (including the hydraulic heads) and housing, lid and centrifugal wheel of either earthenware, refined steel, silicon casting or other materials. A selection of valves and cocks of earthenware and technical porcelain are also exhibited. (Hall 2, E17-18)

Filtration

Seitz-Werke GmbH, Bad Kreuznach, features exhibits from its comprehensive filter manufacturing programme for the chemical and pharmaceutical industries, including a recently developed pressure filter, Dikon, which is particularly suitable for the field of radioactivity and nuclear technology. This filter plant is operated from a remote control desk provided with safety locking devices to meet the demand for minimum exposure to radiation of the single operator and to ensure absence of contamination. In the Dikon Gr.60/2 which is on view, all parts which come into contact with liquid are made of alloy steel capable of being decontaminated. It has an effective filtering surface of 2 sq. m. and a maximum space available for filter cakes of 100 l. The maximum rated working pressure is 6 atm. This new development also represents a multi-purpose filtration plant and has many possible applications, ranging from ultra-fine filtration with reverse flow washing to the production of sub-

stances which can either be washed and dried or redissolved to give solutions.

The Seitz-Werke exhibits also include the single layer filter, in which the pressure container and filter are combined in a similar manner to that in a suction filter. This is being used primarily in cases where small batches are being handled, as in preparative chemistry, pilot plants and in the production of costly solid substances (up to 150 kg) under sterile conditions in pharmaceutical processes. (Hall 3, B9-10, C9-10)

Pumps for Corrosives

The **Deutsche Steinzeugwarenfabrik**, Metzgerstrasse 50, Mannheim-Friedrichs-feld, whose experience in the construction of pumps extends over many decades, have developed a new range of corrosion proof pumps which will replace their MS range. The hydraulic head is interchangeable. Pump housing, lid and impeller can be supplied in stoneware, stainless steel, cast silicon according to customers' choice and all these parts may be freely interchanged so that it will be possible for a stainless steel impeller to run in a stoneware pump.

The range of performance has been geometrically constructed and the capacities and delivery heads for the various impellers and pump sizes increase evenly. Far reaching standardisation has reduced drastically the number of pump sizes, and the same pedestals, bearings and other parts are used for a number of sizes. This simplifies manufacture and reduces stocking of spare parts. The new pumps are fitted with gland or mechanical seal according to customers' choice. (Hall 2, E17-18).

Solid-liquid Separation

The manufacturing programme of **Krauss-Maffei-Imperial GmbH**, Tannenweg 4, Munchen-Obermenzing, mainly stresses mechanical and thermal solid/liquid separation. Of particular interest is the demonstration of the newly developed pan type and disc type press filters and immersion filters. The press filters are used if a very dry solids cake is required; the cake is pressed by means of a press stamp at a pressure of up to 20 atm. after previous vacuum filtration. The pan type press filter allows for a thorough washing of the solids. The disk type offers the advantage of arranging the filter surface in a small area. The immersion filter permits a very good washing of the filter cake which is completely covered with liquid. The washing period is independent of the filtration period.

Continuously working centrifuges are displayed, e.g. a special multi-stage pusher centrifuge and an oscillating centrifuge. Drying equipment is also featured. (Hall 3, B13-14, C13-14)

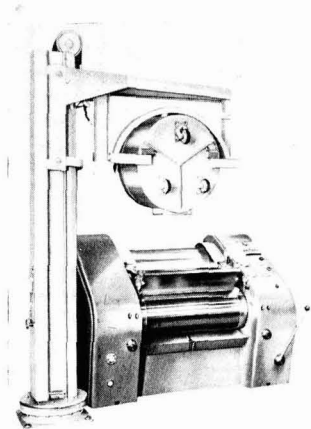
Heat Exchanger

A spiral heat exchanger working to the Rosenblad system is shown for the first time in titanium at Achema. Producers are **Roca Apparatebau GmbH**, Kölner Landstrasse 332, Düren, who will show the exchanger in operation. Also

exhibited by Roca are a plate heat exchanger—shown as a transparent model to demonstrate flow—and a lamina heat exchanger, both of which also work to the Rosenblad system. The latter, some 325 sq. m. in size, incorporates a constructional novelty in the introduction of special cams to reinforce the individual lamina sheets; the improved exchanger, suitable both for gas or liquids, thus develops increased turbulence, resulting in better heat flow and a smaller necessary heat exchanger area. (Hall 3, E12)

Chemical and Dyestuffs Machinery

An expanded production programme of machinery for the dye and chemicals industry is exhibited at Achema by **F. B. Lehmann Maschinenfabrik GmbH.**, Postfach 71, Aalen (Württ.). For the dyestuffs industry are the company's electro-hydraulic roller machines, in which mixing and trituration are combined in one operating unit and which need almost no minding, while other Lehmann electro-hydraulic units handle



F. B. Lehmann electro-hydraulic roller machine with feeding unit

manpower-saving conveyor work for rolling mills. Also on show are triple-rolled laboratory machines, mixers, a range of mills and fully-automatic machines for paint packaging. (Hall 3, D20-22)

Centrifugal Evaporator

Suitable for reactions, concentration, distillation, dehydration, deodorising, pasteurisation, heating and the cooling of various organic and inorganic chemicals is the Kontro-system centrifugal evaporator. This unit, covered by U.S. patent, is on view on the stand of **Samesreuther und Co. GmbH.**, Butzbach/Hessen, West Germany. The evaporator may be mounted vertically or horizontally as required. Also exhibited are a Sastra pipe-arm jet mixer without stuffing gland, the jets being fed via the hollow arms by a centrifugal pump, and a Samtro vortex thrust drier with range of capacities of from 0.2 to 2.5 cu. m. and suitable particularly for the drying of

products which must retain a certain particle size or crystalline form. (Hall 3, F12-13, G11-12)

High-temperature Material

Sinter corundum, a new operating material developed by **Dr. C. Otto and Comp. GmbH.**, Postfach 393/394, Bochum, is among exhibits on that company's stand. With temperature resistance of up to 1,700°C and excellent mechanical properties, it is suitable for filler use in cracking, isomerisation, polymerisation, hydration, dehydration, desulphurisation and other plants and for the production of superheated steam. Also exhibited is a model of a prussic acid plant working to a process developed by Otto and the German chemical producer Süddeutsche Kalkstickstoffwerke AG, a new vortex current furnace, a Poddelniak extractor and models and slides of other products. (Hall 3, F14, G13)

Rectification and Heating

The West German **Müller-Schuss KG** group of companies is represented at Achema by its subsidiary **Werk Bertram Müller GmbH.**, Austrasse 34, Schliessfach 285, Weidenau (Sieg). This concern has on show a rotation column suitable for rectification under absolute pressures of from approx. 1–20 Torr and operation with a total pressure loss of only ± 1 mm. Hg. Also exhibited is a high-temperature heating plant with special temperature control and used in processes for the 300°C production of synthetic fibres with a heat accuracy of $\pm 0.5^\circ\text{C}$, as well as other equipment for the chemical and allied industries. (Hall 3, F21-22, G20-21)

Vacuum Dryers

Haas Vakuum-Technik GmbH of Remscheid-Lennep, are manufacturers of vacuum dryers of all kinds and also build single and double drum dryers operating under atmospheric pressure, cooling drums, drying and impregnating plants. They show at the Achema a vacuum agitator dryer of medium size which has been applied to the drying of plastics materials. Further equipment manufactured for the plastic industry includes the vacuum tumbler dryers especially applicable to drying chips of polyamides in the synthetic fibre industry and vacuum drying cabinets for the application of these chips in plastic die-casting works. (Hall 3, F24, G23)

Separating and Grinding

Machines for screening, centrifuging, pulverising and kindred operations on the industrial and laboratory scale are shown by **Siebtechnik GmbH.**, Platanenallee 46, Mülheim, Ruhr. Exhibits include the Vibration batch-type vibrating mill, claimed to be suitable for both wet and dry grinding, and the new Conturbex IV fine centrifugal which is designed for uninterrupted passage of the feed material through the machine and features a worm of exclusive design as a regulating device. (Hall 3, F27-28, G26-27)

Liquid Filters

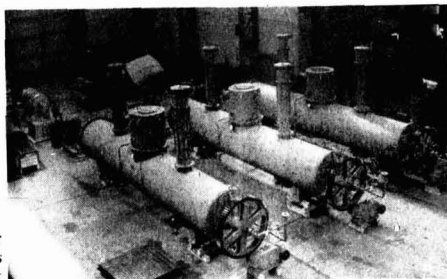
Patented filter constructions working to the folding principle for the fine filtration of all types of liquids are exhibited by their maker, **Fritz Scheibler**, Friedrich-Ebert-Strasse 187, Wuppertal-Elberfeld. As well as standard models and improved forms, the firm has on show modern filters for the handling of large quantities of residue. Further, newly-developed filter fittings made of plastics and operating semi-automatically are demonstrated on two working models on the Scheibler stand. The models concerned are of transparent Plexiglas to enable the study of the filters' activity. (Hall 3, H5-6, J5-6)

Porcelain Pumps

Centrifugal acid pumps made of hard porcelain in a range of types and sizes and with capacities of from 1 to 90 cu. m./hr. are exhibited by their manufacturer **Schütze AG**, Ludwigshafen a. Rh.-Oggersheim, West Germany. All components of the pumps coming into contact with the pumped substance are of porcelain, outer casing being of cast iron. The same firm also has on show heat exchangers of unit construction, with the advantage of an outer diameter of only 1,050 mm, a heat exchanger area of 15 sq. m. and a height of 3,850 mm. This is delivered in cast iron or in cast iron enamelled. (Hall 3, H14, J14)

Waste Water Filtration

The adaptation of filter presses to the large-scale purification of waste water has hitherto been hampered because, owing to the large quantities involved, it is necessary to have a large filtration surface—up to 300 sq. m.—and to achieve nearly fully automatic operation. Aimed at a solution of this problem was the experimental plant exhibited by **Ritter-**

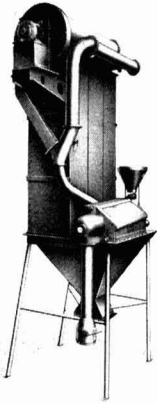


Three vacuum dryers for polythene, seen in the works of Haas Vakuum-Technik

haus und Blecher, Postschliessfach 593, Wuppertal-Barmen, at the 1958 Achema. This plant has been developed further and is stated to have given excellent results. Information on this plant will be available at the company's stand. (Hall 3, K25, L24)

Size Reduction

Latest development of **Alpine AG**, Gögginger Lansr. 66, Augsburg, is the Duoplex classifying impact mill, on show for the first time. This sieveless hammer mill combines grinding and classifying

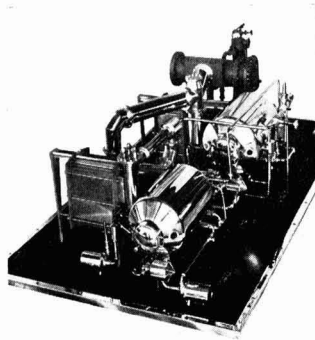


Air jet sieve by Alpine AG

action with continuously variable control of fineness in the end product. Also on show is the continuously functioning air jet sieve 32/100 combined with an automatic filler. This sieving apparatus can process materials that are difficult to handle, such as those that have a tendency to stick, agglomerate, etc. A further exhibit will be the Kolloplex impact stud mill, type Z, which features a novel arrangement of grinding studs, widened mill housing, and fully detachable gear casing. (Hall 3, K7-9, L6-8)

Chemical Engineering

The Chemical Engineering Division of the **A.P.V. Co. Ltd.**, Manor Royal, Crawley, Sussex, well known in the field of distillation, present details of some of the projects completed by them during recent years. Among these are a number of highly successful benzole refineries and alcohol distilleries. Also shown is plant which has been supplied to the chemical and pharmaceutical industries. Illustrated are the latest chemical engineering techniques, including the use of models, as applied to the carbonisation and fermentation industries. Among process plants designed by the A.P.V. Chemical Engineering Division utilising their own specialised techniques, are batch and continuous refineries for crude benzole, tar acids, tar bases and naphthalene rich oils; plant for the separation of aromatics from certain cracked naphtha sidestreams; distillation plant for the separation and/or concentration of certain hydrocarbon fractions, chemicals, alcohols, etc.; alcohol distilleries; solvent recovery and extraction plants.



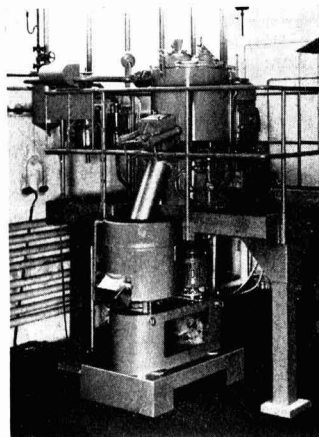
Model of APV plate evaporator

Main contractor's services, particularly geared to the economical handling of the small to medium sized projects, as well as certain individual items of plant and equipment, are also offered.

Part of the A.P.V. stand is occupied by the company's Industrial Engineering Department, principally to present the A.P.V. plate evaporator which was shown at the 1958 Achema for the first time; it has now become fairly established for the concentration of a wide range of products and has proved particularly successful with heat sensitive liquids owing to its low heat contact period. This part of the stand also illustrates some of the high grade fabrication work undertaken by this company in aluminium and stainless steel. This includes the aluminium core shell of the nuclear research reactor for the Jülich Research Station in North Rhine Westfalia. (Hall 3, O23-P23)

Mixing by Vacuum

A vacuum fluid mixer of new design is exhibited by its manufacturers, **Henschel-Werke GmbH.**, Postfach 786, Kassel 2. This unit, bearing the designation FM 150 D/h, is a heatable mixer fitted with complementary vacuum fitting, the result of Henschel research in



Henschel's vacuum mixer type FM 150

the field of material degassing. The Henschel mixer range, of which one 6-litre non-vacuum unit and one 50-litre non-vacuum unit are also displayed, may be fitted up as fully-automatic, programme-controlled units. Also on show are the Prodex 41/2 extruder, built under licence from the Prodex Corporation, Fords, New Jersey, U.S.A., and the oil or gas fired quick-speed steam generator Type HK 1000 with fully-automatic operation. (Hall 3, M14-16, N13-15)

Sieves

A large range of sieves, meshes and other items for the chemical industry are displayed by **Haver and Boecker**, Oelde/Westf., Postfach 163, West Germany. The display includes four electromagnetic fine, round and laboratory sieves, one of them—the Finessa EMSF extra-fine sieve—being a new development for the single-decker treatment of particularly difficult materials and in which the sieve mesh only oscillates. Patented, as is the laboratory sieve included in the above-mentioned group, is an electro-magnetic sample-taker manufactured by Haver and Boecker under the designation EMP; this enables the continuous sample-taking for analysing purposes from silos and chutes. All electro-magnetic items exhibited by the firm are for 220 volts. (Hall 3, M23-24, N22-23)

Spray Nozzles

New types of spray nozzles will be featured by **Lechler Apparatebau KG**, Kronenstrasse 50, Stuttgart-N, who, besides the established types of hollow-cone, full cone and flat jet spray nozzles, have been developing a full cone spiral sprayer SZ with 120° dispersion angle. These nozzles are designed to provide a favourable flow and are constructed to avoid dead areas where solid matter could accumulate and interfere with the nozzle function. A very uniform throw of water through the spray cross section is achieved. (Hall 3, R5-6)

Isotope Light Source

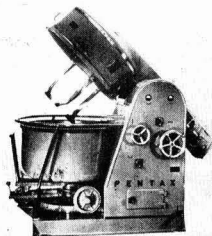
An 'isotope light source' is exhibited at the stand of the **Battelle-Institut e.V.**, Wiesbadener Strasse, Frankfurt (Main). The light emitted by this light source is obtained by exciting luminescent substances by means of the radio isotope krypton-85. The known oscillites, too, contain layers of luminescent substances; they are caused to luminesce by an incident electron ray. Electronic radiation of equal type is furthermore emitted by the radioisotope krypton-85 obtained as a by-product of the nuclear reactor; krypton-85 is used in the 'isotope light source'—similar to the oscillite—for exciting luminescent substances and thus for emitting light. Contrary to the conventional sources of light, this novel source does not affect its surroundings by thermal dissipation. The design of the 'isotope light source' exhibited prevents biological damage due to atomic radiation. The 'isotope light source' exhibited was developed by Battelle-Institut

in Frankfurt, in cooperation with the sponsor, Trilux-Lenze KG, Neheim-Hüsten, Westfalen.

In addition, a particle size spectrometer will be shown resulting from the research work performed by the Physics Division. (Hall 3, S1)

Mixers and Stirrers

High-performance mixers and stirring units are the items displayed by the Kassel-Wilhelmshöhe, West Germany, firm of **Pentax Maschinen- und Apparatebau Ernst A. Reiffen**. New in the range on show is a multi-frequency liquefier for the continuous production of emulsions and dispersions, the initiation of



Pentax MKB.500 mixer

reactions and the continuous homogenising and dyeing of viscose thread; this unit is available in types covering a capacity range of from 200 to 7,500 litres per hour. Other new developments include Novax circular stream mixers for the production of fine dispersions and emulsions and produced in 4-litre and up to 75-litre sizes for laboratory and factory work respectively. Pentax also shows a mix-knead unit with operating capacity of up to 400 litres, multi-frequency stirrers of a range varying from laboratory size to 10,000 litre capacity and a counter-current mixer with up to 140 litres capacity. (Hall 3, O21, P21)

Industrial Gases

Specialist knowledge of the technology of inert gases is demonstrated on the stand of **J. F. Mahler, Fritz-Müller-Strasse 96, Esslingen/Neckar**. Exhibits include gas generators for the production of inert gas, nitrogen, carbon dioxide, hydrogen, etc., as well as gas purification plants and drying plants for gas and air. Of special interest for chemical processes are the controlled-atmosphere generators available in manually controlled, semi-automatic and automatic versions. (Hall 4, A15)

Continuous Centrifuging

Braunschweigische Maschinenbauanstalt AG, Postfach 295, Braunschweig, exhibits a new continuous centrifugal, the characteristics of which are stated to be low height, non-oscillation, arrangement without special foundations, multistage centrifugation, maximum centrifugal force, low current consumption without load peaks, and operation without operators. All working processes are

effected automatically in connection with a fully automatic feeding device. For the maintenance of a station comprising up to 20 centrifugals only one operative per shift is necessary. (Hall 4, C4-C5)

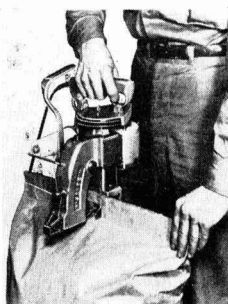
Solvent Recovery

For well over 30 years **Sutcliffe, Speakman & Co. Ltd.**, of Leigh, Lanes, have been combining their engineering skill with their special knowledge of active carbon (which they make themselves) in designing and manufacturing plants for the recovery of solvents used in industrial processes. Displayed on their stand are two different types of equipment. Both are completely packaged units but one is a double adsorber plant while the other is their continuous adsorber unit. The double adsorber unit has been designed to handle 6,000 cu. m./hr. of air and to recover a mixture of M.E.K. and toluene at the rate of 45 litres/hr. An interesting complementary feature to this exhibit is the accompanying process flow sheet indicating how the water is removed from the recovered condensate mixture and the M.E.K. and toluene are separated.

The continuous solvent recovery plant on show is the smallest unit of this type which is manufactured, but even this will handle 6,000 cu. m./hr. of solvent-laden air and recover up to 100 litres of solvent per hour. Its overall size is 245 cm. x 245 cm. x 265 cm. high and within this space, but quite easily accessible, are the fan, air-filter, air heat-exchanger, rotary adsorber and driving mechanism, condenser, solvent decanter, inter-connecting pipework and even a vacuum cleaning system for the air filter. Plants of this design, capable of handling up to 35,000 cu. m./hr. of solvent-laden air and recovering up to 700 litres/hr. of solvent, have been manufactured and installed as completely packaged units. (Hall 4, E10-1f)

Weighing and Packaging

Weighing and packaging equipment for the chemical-pharmaceutical industry is to be seen on the stand of **Vollenda-Werk**, Munich-Aubing. Apart from the Fischbein bag closer for the handling of bags at a rate of 30 ft./min.—a product of Dave Fischbein Co., 2720 30th Avenue South, Minneapolis 6, Minn.,



Hand-operated bag sealing machine (Vollenda-Werk)

U.S.A., and Cie. Fischbein S.A., rue de Serbie 39, Brussels 6, Belgium—this German company also exhibits its own weighing, bagging and sacking units. These include the VU III valve filler for the filling, weighing and packing of chemicals, fertilisers, etc., in a single process and the Modell 60 Vollenda for accuracy weighing with a special patent feed funnel obviating the collection in the inflow of foreign bodies. (Hall 5, A5-6)

Homogeniser

A homogeniser for the paper and chemical industries is on show on the stand of **Maschinenfabrik Wilhelm Hett**, Kleinheubach/Main. The homogeniser, with a recommended velocity of 1,500 r.p.m., is installed in an enclosed pipe system with a pump for the handling of material suspension. The geometrical form of the segments is such that small foreign bodies—even pieces of iron as large as a paper clip—normally lead to no damage of the operating discs. Hett also exhibits its metal-tube filling and sealing unit for packaging purposes in the chemical, cosmetic, pharmaceutical and other industries. With an hourly capacity of up to 10,000 tubes, the machine can handle unit fillings of from 13.5 cm³ to 196 cm³. (Hall 5, C8)

Packaging Machines

Specialists in the manufacture of packaging, wrapping, and labelling machines for many years, **Verpackungs-Automaten GmbH.**, Oberbiller Alee 253/261, Düsseldorf, are building fully automatic high speed machines for dealing with long runs as well as simpler machines for medium sized and smaller factories. Some examples of their range of machinery, demonstrated at the Achema include the fully automatic cartoning machine Model 653, suitable for handling tablet tubes, small bottles, vials, small tubes, etc. Output has been increased up to 100 packages per minute. This machine can be combined with labelling machines as well as with tube filling machines of different manufacture. Also on show is the new combined semi-automatic Cellophane wrapping machine, Model 646/647, consisting of one or two packing tables and one end folding device which are provided on a frame. The machine is suitable for the wrapping of boxes and packages of rectangular and square shape in heat sealing Cellophane, with or without tear strip. (Hall 5, D6, E6)

Tablet Machine

The Manesty Layerpress Rotary Tablet Machine is an entirely new machine specially designed for the production of high quality two- and three-layer tablets. It can be used for producing normal tablets, two-layer or three-layer tablets without removing or replacing feed frames, hoppers or cams. Manesty 'B' types punches and dies are used.

Clean separation between each layer is achieved by the pre-compression units which have built-in overload protection

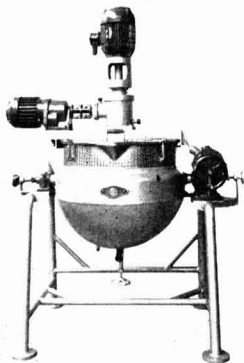
and separate controls for both thickness and pressure of layer, the final pressure being taken through large diameter adjustable upper and lower pressure rolls coupled by the patented overload mechanism. Accurate control of weight is maintained by the three patented rotary feeders in conjunction with the micrometer adjustments for depth of fill. An overspill feature on all three layers ejects excess powder back into the feeder, thus keeping the diaphragm free from powder and preventing granules intermixing.

Ejection of single and double layers for weight checking can be made without stopping the machine or powder entering the die, when passing under subsequent feeders.

The machine is displayed by **Manesty Machines Ltd.**, Evans Road, Speke, Liverpool. (Hall 5, F6)

Turbo-emulsifier

The multiple-movement turbo-emulsifier TE 3 displayed by **Pressindustria s.r.l.**, Via Settembrini 11, Milan, Italy, performs the separate functions of emulsifier and homogeniser, a special feature being its ability to handle product in a thick or even viscous state. The counter-rotating blades perform the dual function of ensuring a thorough mix and



Novel mixing unit displayed by Pressindustria

keeping the walls of the vessel free. The special arrangement by which the agitators are coupled to two electric motors makes it possible to use separately the turbo-emulsifier and slow agitating movements. (Hall 5, F7)

Automatic Labelling

A further development of its fully automatic labelling machine "JOWE-Junior" is introduced by **Johann Weiss Maschinenfabrik und Apparatebau GmbH.**, Gerichtstrasse 12/13, Berlin N.65. Labels are passed by a rotating cylinder, operating under vacuum, over adhesive containers where they are gummed fully automatically and rolled on to the package for labelling. The unit is fitted with a manometer for the regulation of pressure in the vacuum pump, a speedometer and a speed regulation handle. (Hall 5, G5)

Sack Filler

Built exclusively for the chemical industry is the valve sack filler of **Erwin Behn Verpackungsbedarf GmbH.**, Postschliessfach 71, Diessemer Strasse 59/71, Krefeld. The unit has an hourly capacity of 45-120 sacks, handling filling weights of 50 and 25 kg. An extra-sensitive beam balance with weight regulation fitment is situated in the lower part of the completely enclosed and dustproof housing. Floorspace is given as approximately 1,000 mm. by 650 mm. (Hall 5, H10)

Thermo Recording Balance

Apart from the Unimatic range of constant-load balances, which have not been shown in Germany before, **Stanton Instruments Ltd.**, 119 Oxford Street, London W.1, display for the first time ever a new type of thermo recording balance, which has been adapted to give continuous recordings of changes of weight of the substance as a function of temperature and time, where the substance is under vacuum or pressure, the range being from 10^{-4} TORR to $+700$ g./cm². (Hall 6, B10)

Glassware Techniques

A new form of universal gas torch for the manufacture of glass laboratory apparatus is exhibited under the trade name of Zenith by **Herbert Arnold**, Weilstrasse 21, Weilburg/Lahn. The unit, claimed to be practically noiseless in operation, may be used for any gas, oxygen or air pressure in gas-and-air, gas-and-oxygen or gas-air-and-oxygen techniques. The plastic flame is regulated by a single hand wheel, obviating any need to change or fit jets; the unit does not heat up and permits the use of very high temperatures for the working of hard and quartz glass. Also shown by Arnold are a fully-automatic unit for graduation by lines or rings of pipettes, thermometers, etc., and other cylinders of up to 100 cm capacity and a glass turning bench for the finishing of interchangeable standard grounds. (Hall 6, C4-5)

Laboratory Apparatus

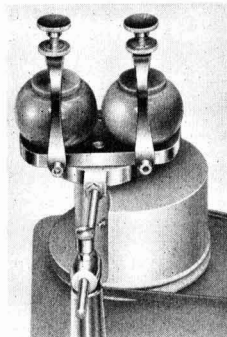
On the stand of the **Griffin and George Group**, Ealing Road, Alperton, Wembley, Middx, chromatography is well represented with demonstrations available of three completely new developments, two of which employ the gas density balance principle. Examples from the Group's metal laboratory furniture range are also shown—the two benches on display were erected on site, having been conveyed 'packed flat' from the company's works to the exhibition hall. Further examples from this range of products may also be seen on the Q.V.F. stands.

Courtauld atomic models in plastics will be on show in Europe for the first time, and precision optical engineering will be represented by measuring microscopes and cathetometers. Specialised apparatus for the glue and gelatine industries and the ceramics industry will also be shown, together with some more

general items of interest to all types of industrial and research laboratories. (Hall 6, F7)

Laboratory Grinding

A variety of laboratory grinding and pulverising developments demonstrated by **Alfred Fritsch**, Hauptstrasse 542, Idar-Oberstein 1, includes the introduction of tungsten carbide (WC + Co) grinding balls for the centrifugal ball



Bridge for two agate mixing bowls goes with Fritsch centrifugal ball mill

mills, this material having the advantages of high abrasion resistance while its specific gravity of 14.5 is claimed to guarantee rapid grinding. Interchangeable grinding bowls of laboratory porcelain, agate, tempered steel and other materials, and in various sizes and capacities, are a further feature of these mills. The Pulversiette 2 automatic universal laboratory grinder is stated to be capable of grinding automatically 75-100 cu. cm. of hard substance down to analytical fineness. A Plexiglass observation window and hood are provided. (Hall 6, D3)

Laboratory Furniture

Laboratory furniture for conventional chemical laboratories and for isotope laboratories is exhibited by **Labormöbelbau GmbH.**, Flosshafenstrasse, Kitzingen/Main. Among 'conventional' laboratory equipment on show are working tables, a weighing table and a fume cupboard; the table-tops are of tiles laid by a special process in 'Asplit CN' and cemented together with the same material, while the fume cupboard incorporates a special patent-applied-for slide window fitting obviating the need for sasheord tackle. For 'hot' laboratories is the firm's isotope closed hood, a fume cupboard with suck-out fittings within the cupboard itself and also for the removal of contaminated room air. (Hall 6, D9)

Ion Exchange

'Ion exchange in action' will be the theme on the stand of **Elga Products Ltd.**, Lane End, Bucks. Fundamentally new developments among Elga's exhibits include: decontamination of radioactive solutions; transistor and semiconductor cleansing systems; bacteria-free and sterile deionised water for pharmacy, biochemis-

try, physiology and pathology; conductivity measurement and automatic control of deionised effluents; highly deionised water without regeneration *in situ*. (Hall 6, F8)

Chemical Catalogues

L. Light and Co. Ltd., Poyle Colnbrook, Bucks, will mainly be distributing catalogue material on organic chemicals, biochemicals, enzymes and ultra pure metals and elements, as well as showing samples of their products. (Hall 6, F5)

Chemical Engineering Research

Forschungs-Gesellschaft Verfahrenstechnik e.V., Aix-la-Chapelle, Turmstrasse 46, West Germany, the founder of the Process Engineering Institute at the Technical University of Aix-la-Chapelle, has its own Achema stand. This is meant to give a picture of some of the current research work of the University Institute and call attention to the possibility of industrial research contracts. Apparatus present will deal with the investigation of liquid flow in centrifuges and in a fluidised bed, the visitor being able to vary the experimental parameters personally. Hall 6A, Ausstellungsgruppe Forschung, K16, L16, M16)

Laboratory Equipment

A micro-vacuum rotary band column of high selectivity and designed for the fine fractionation of substance quantities of from 2 to 100 cc. by an adiabatic process is among the exhibits of **Ernst Haage**, Hauskampstrasse 58, Mülheim/Ruhr. The column, whose production is based on a development of a member of the Max Planck Institute for Carbon Research, incorporates a spiral band of Teflon or V4A and works at temperatures of up to 200°C under normal pressure and vacuum, vacuum-tight sealing being guaranteed by magnetic linking of drive and operating band. Also shown by Haage are laboratory autoclaves for pressures of up to 1,000 atm. and temperatures of up to 600°C and available for the handling of aggressive substances, the Cat-a-test catalyst activity tester made to specifications of Socony Vacuum Oil Co. Inc., a gas chromatography apparatus of the type developed by Janák with an exactitude of 0.5% and able to determine 12 components in a gas mixture of 2.5 or 5 cu. m. within some 30 min., a dosing pump with capacities of from 40 cu. cm./hr. to 500 litres/hr. for liquids and from 1 litre to 3,600 litres/hr. in the case of gases, as well as other laboratory equipment. (Hall 7, A4-5)

Chromatography

Chromatographical equipment, a vacuum drying pistol, a laboratory-scale shaker, an ultra-violet radiator for the stimulation of fluorescence in analysis material in chromatography and a spray cabinet for chromatographic reaction-liquid spraying with simultaneous removal of spray mist are exhibited by **C. Desaga GmbH, Nachf. Erich Fecht**, Hauptstrasse 60, Schliessfach 407, Heidel-

berg. One item on show is a basic unit for the carrying out of a modern micro-process of adsorption chromatography for high-speed substance separation. Separation is conducted with 250 m μ layers of silica gel, aluminium oxide or infusorial earth. (Hall 7, A11)

Laboratory Pump

Shown for the first time is the type LP-A laboratory hose pump manufactured by **Dr. Fritz Sartorius GmbH.**, Rauschenwasser über Göttingen, West Germany. This can be used for the transmission of highly caustic and aggressive acids and solutions. Also exhibited are a micro-forge for the production of extra-fine micro-manipulatory apparatus, automatic dispensers for the laboratory and plant dosing and filling of small quantities of liquid, Kofler apparatus for micro-determination of fusion points, a "Starmix" unit for laboratory homogeniser and a number of thermostats. (Hall 7, A20)

Gas Chromatography

Instruments displayed by **Carlo Erba**, Via Carlo Imbonati, Milan, Italy, include the Fractovap model B and B/f general purpose laboratory gas chromatograph for research and routine work. The extra large thermostatic chamber (20 by 20 by 120 cm.) permits the mounting of U-shaped columns up to 16 m. long, spiral columns up to 50 m., as well as 25 mm. i.d. preparative columns and Dewar flasks. Various other chromatographs are shown along with the Porosimeter, constructed under licence of Dr. A. Guyer, ETH Zürich, for the determination of pore sizes and the pore size distribution of powders and catalysts by the mercury pressure method. (Hall 7, A37)

Thermostatic Equipment

Special high-temperature thermostats able to control temperatures of up to 330°C in constant operation to an accuracy of better than $\pm 0.1^\circ\text{C}$ are on the production programme of exhibitor **Messgeräte-Werk Lauda Dr. R. Wobser KG**, Schliessfach 112, Lauda/Tauber. The UK 70 M ultra-cryostat of the same firm is a fully mechanised coldness thermostat for a temperature range $+40^\circ\text{C}$ to -75°C with an accuracy of 0.02-0.05°C. Also displayed by Lauda are a table cryomat, newly developed for the range $+10$ to -35°C , a new table refrigerator of 20 litres capacity for the same temperature range as the above table cryomat, coldness thermostats with carbonic acid ice cooling for temperatures of down to -72°C and consuming approx. 1.2 kg. of ice per hour, and other thermostatic units. (Hall 7, B2, C2)

Optical Lab. Balance

Large, clear optical projection of weight reading for an accurate Torbal laboratory balance has been developed by the **Torsion Balance Co.**, Clifton, New Jersey, U.S. The new lab. balance is also insensitive to out-of-level conditions. With a 2-kg capacity it offers an optical range of 100 g. with 1-gramme scale divisions. Accuracy in the optical range



New laboratory balance seen on Torsion Balance Co. stand

is ± 0.1 g. Optical projection and dial weight loading permit fast weighing of laboratory samples with reliable accuracy. Silicone fluid damping of balance oscillations also saves time in taking accurate weight readings. New two-dial, weight-loading lab. balances that reduce weighing times by 30% are also included in the exhibit. (Hall 7, C36)

Testing of Materials

Calorimeters for both solid and liquid fuels are a speciality of **Julius Peters**, Stromstrasse 39, Berlin N.W.21, while a further line of the firm is the production of apparatus for testing oils, fuels and lubricants. One apparatus that is being shown—for gasoline—has four bombs in a novel aluminium block thermostat. To the apparatus of this range belong the evaporative capacity tester according to Noack and the apparatus for testing the vapour pressure and density of liquid power gas. For the accelerated ageing of rubber and artificial substances an apparatus is shown which is suitable for the ageing by oxygen as well as by air.

Other apparatus is being shown for the examination of powders and explosives, for determining deflagration temperatures, measuring and recording high pressures, etc. (Hall 7, B9, C9)

Filter Papers

Carl Schleicher und Schull (20b) Dassel Kr. Einbeck, will show besides the Selecta filter papers for laboratory and industrial applications, various grades which have recently been developed, including cellulose based ion-exchangers; aluminium-oxide paper and silica gel paper, and membrane foils for electrophoresis. A variety of other types of papers will also be shown. (Hall 7, B22-C22)

Laboratory Autoclaves

Laboratory autoclaves of unit construction are the speciality of exhibitor **Carl Roth**, Herrenstrasse 26/28, Karlsruhe. Of two basic types, the autoclaves may be complemented at will after purchase by the addition of manometer, thermometer, automatic controls, heating fixture, etc. Claimed to be of low price owing to long-run production, the autoclaves are all tested for compression strength at the Karlsruhe works to pressures of 200 atm. Autoclave packings are of lead for type 1 and of Teflon for type 2, but can be of any material softer than steel. (Hall 7, B23)

Dust Protection

A retention potential of 99.95% is permitted by a screw filter in new plastic filter head for the RM 6000 radio-active dust resistant breathing apparatus of **Drägerwerk Heinh. und Bernh. Dräger**, Moislinger Allee 53/55, Lübeck. Also new and also as protection against radioactive dust is the Dräger protective suit with compressed air feed or without air tube and with insulation apparatus. For actual plant use are micron filters for ventilation installations, also with a 99.95% potential and available either in standard form for temperatures up to 125°C or as special high-temperature filters for temperatures of above 100°C, as well as analysis units for the determination of carbon monoxide and hydrocarbon fume traces, for the measurement of H₂S and SO₂ in refinery gases (this developed in co-operation with Esso AG, of Hamburg) and for the measurement of hydrofluorine within a range of from 0.5 ppm. to 20 ppm. (Hall 7, B30-31, C30-31)

Organic Chemicals

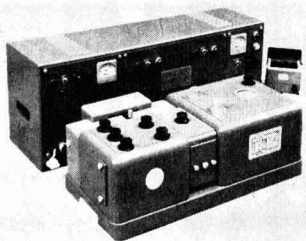
Introductions to its range of organic chemicals for synthetic and analytical purposes are featured on the stand of **Dr. Theodor Schuchardt GmbH.**, Postfach 64, Aimmillerstrasse 25, Munich 13. These additions to the firm's programme include metal acetyl acetonates and other catalysts, organic reagents for the tracing of cadmium, copper, beryllium, germanium, calcium and uranium, organic fluorine compounds, such as biochemicals as tryptamines and phosphoric acid derivatives of glucose and fructose and a number of scintillation chemicals for scintillation spectrometry. Already available as part of the Schuchardt development programme, work on which continues, are highly-purified metals and metal compounds and high purity inorganic and organic reagents for electronic purposes. The company is further currently developing a range of nuclear-pure chemicals and highly-pure chemicals for reference use in gas chromatography. (Hall 7, D4)

Teflon-coated Glass

A special process for the sintering of Teflon directly on to glass is displayed on the Frankfurt stand of **Witig Wissenschaftlich-Technische Glasgeräte GmbH.**, Bahnhofstrasse 19/27, Wertheim am Main. The process, a Federal German patent for which has been applied for, is aimed at combating the unsatisfactory grease packing of conical grindings, which leads to the contamination of product or distillate owing to the washing of the grease out of grindings and cocks by various solvents. The Teflon layer obtained is bound firmly to the glass and resistant to abrasion. (Hall 7, D40)

Spectrometer

Instruments and apparatus for chromatography, spectrophotometry, electrocolorimetry, etc., are being shown by **Jobin et Yvon**, 26 Rue Berthollet, Arcueil (Seine), France. A completely new



Jobin et Yvon are showing this absorption spectrophotometer

development is the Fabry-Perot spectrometer, conceived and designed at the request of the French Atomic Energy Commission by Prof. Jacquinot and his collaborators in the laboratories of the National Scientific Research Centre. The main purpose of the instrument is the study of high resolution emission spectroscopy in the wavelength range 0.3-2 microns. It is particularly suitable for the study of very fine structures and isotopes analysis.

The source is of the hollow cathode, liquid nitrogen cooled type; it is fed by a regulated power supply. The radiation emitted by the source is analysed by a dispersion device composed of an Erbert-Fastie type grating monochromator and a Fabry-Perot interferential monochromator. The latter can be either of the fixed thickness or of the mechanically variable thickness type; in both cases, wavelength scanning is achieved by variation of gas pressure in the air-tight housing. A photomultiplier tube is normally used as receiver; it is connected to an amplifier, the output voltage of which is applied to an electronic potentiometer type recorder. A second photomultiplier is used to check the hollow cathode source stability.

The instrument is built into three cabinets; the first one receives the optical assembly together with the source; the second one, the electronic regulated power supplies, the amplifier and the recorder; the last one, the pumping system for the source and for the Fabry-Perot housing. (Hall 7A, J13)

Densitometers

The latest version of their double-beam recording microdensitometer is on view at the stand of **Joyce, Loeb and Co. Ltd.**, A8 Princesway, Team Valley, Gateshead-on-Tyne, while the Chromoscan recording and integrating densitometer will be shown for the first time. This instrument is intended not only for paper electrophoresis, but also for starch, agar, cellulose acetate and other media which are increasingly being used, as also for some important quantitative chromatographic analyses.

The Chromocord differential colour measuring instrument offers new possibilities in colour control. This is a 4-beam instrument, in which three beams are stored electronically, after the 100%, 0%, and standard sample measurements have been made. The instrument is fitted with a 300 mm. dia. integrating sphere, which

enables it to be used for fabric, plastic materials, particularly embossed plastics, without any orientation effects affecting the answers. The instrument is also suitable for materials in powder form.

Other instruments on view will be the recording colour densitometer developed by Gevaert of Antwerp, a flying-spot microdensitometer for the automatic evaluation of Weissenberg diffraction diagrams and a range of transistorised low-voltage power supplies. (Hall 8, A4)

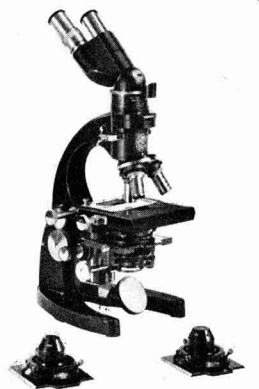
Photoelectric Devices

Evans Electro Selenium, Halstead, Essex, makers of photoelectric devices, exhibit a wide range of their instruments, meters and galvanometer units. The EEL Spectra, a photoelectric absorptiometer for colorimetric analysis, is claimed to offer both industry and medicine a new standard of performance for research and routine laboratory tests. Another exhibit is a recording flame photometer designed for the continuous monitoring of sodium in solution and extremely sensitive, giving full scale deflection with as little as 0.01 p.p.m. sodium.

The EEL chloride meter, one of the latest developments and about to go into standard production, is designed for the automatic determination of chloride in aqueous solutions, while the EEL titrator meets the demand for a simple instrument to conduct any titration involving colour change and is particularly suited to the determination of complexometric titrations, a valuable asset being its ability to provide accurate readings where the colour change representing the end point is slight. Its photoelectric technique completely eliminates the errors inherent in visual assessment. (Hall 8, A9)

Microscopes

Exhibits of **C. Baker Instruments Ltd.**, Metron Works, Purley Way, Croydon, Surrey, consist of microscopes and accessories, the new Patholette range of microscopes being of special interest. The usual rack and pinion focusing has been dispensed with and replaced by a lever and scroll mechanism claimed to be much more reliable and longer lasting.



C. Baker's interference microscope

The coarse and fine adjustment knobs are concentric and rotate on a vertical axis, which gives an unusually comfortable working position. The focusing slides are hardened ball bearing slides of very great width which gives the microscope unusual rigidity. There is a comprehensive range of accessories.

The new Microplan $\times 40$ objective will also be shown. This is an objective with a completely flat and anastigmatic field, so that the whole object appears equally sharp all over. All Baker objectives are now in spring receding mounts, to protect the lenses and the slides from damage. Baker's will also be showing their Metallette metallurgical microscope. This is an inverted instrument similar in general design conception to the biological Patholette. It has built-in lighting and a gliding mechanical stage.

The well established Series 4 research microscopes will be shown with the Trilux condenser, which enables light field, dark field and phase contrast techniques to be used without changing the condenser. The Series 4 microscope stand is also shown equipped as an interference microscope. (Hall 8, E1)

Titanium

Showing for the first time at Achema, **I.C.I. Metals Division, Kynoch Works**, Witton, Birmingham, features the varied uses of I.C.I. titanium in chemical and electro-chemical plant. This exceptionally corrosion-resistant material is extensively used for making or lining chemical vessels and for equipment ranging in size and complexity from valves, pumps and anodising jigs to heat exchangers, bleaching plant and gas scrubbing equipment. **Marston Excelsior Ltd.**, Wobaston Road, Fordhouses, Wolverhampton, an I.C.I. subsidiary company, share the Metals Division display. Marston Excelsior specialise in the fabrication of aluminium, titanium and other non-ferrous metals, stainless steel, reinforced plastic laminates and synthetic rubbers. Examples on show include a titanium heat exchanger and a titanium-lined steel vessel with solid titanium internals. Portable flexible tanks for the bulk transport of liquids and "Marex" laminated plastic industrial fans are also featured.

Products for nuclear engineering include fuel cans and other reactor components in magnesium and zirconium alloys, beryllium, niobium, hafnium and vanadium, and specialised fabricated assemblies. (Hall 9, A6-7)

Petrochemical Operations

At the Achema for the first time are the **Royal Dutch/Shell Group** companies, whose operations in the field of petroleum chemical technology are illustrated on their stand. Various aspects of research, process development, manufacturing operations, and product and applicational development will be shown. One exhibit will be the two-phase flow research apparatus used for investigating the behaviour of the simultaneous flow of gases and liquids through horizontal tubes. This is, for example, of importance in the design and operation of furnaces

and heat exchangers. The rotating disc contactor, which has been developed by Shell technologists as a tool for the separation and purification of liquid mixtures, will also be featured, as will the Electrorato, an instrument for the blending of components with a high degree of accuracy in a continuous operation.

Processes to be illustrated on the stand include the Shell Gasification Process—the gasification of any type of liquid hydrocarbons, for use in the manufacture of synthesis gas, hydrogen, town gas and reducing gas. Other processes illustrated include ethylene oxide, glycol, acetonitrile and trickle hydrodesulphurisation processes.

In the field of manufacturing operations, the Shell stand will feature developments in air and water pollution abatement, demonstrating especially a new design of oil separator and a mobile laboratory van for atmospheric control in industrial areas.

As examples of product development zinc-rich primers, at present used in shipbuilding, and Epikote resin-based flooring compounds will be shown. (Hall 9, C3-4, D3-6)

Research and Analysis Instruments

Unicam Instruments Ltd., Arbury Works, Cambridge (a member of the Pye Group) manufacture two types of instrument; a range of recording and non-recording spectrophotometers for analysis in the ultraviolet, visible and infra-red regions of the spectrum, and a selection of X-ray goniometers and powder cameras. The company are exhibiting at Achema for the fourth time in succession.

Among the exhibits will be the new SP200 Economy infra-red spectrophotometer, making its first appearance in Germany. The SP200 is a recording instrument designed to bring infra-red techniques within the reach of every analytical laboratory. A prototype instrument will be exhibited, the new flat bed recorder, which can be used as a potentiometric recorder, or as a slave recorder with the SP100 or SP200 infra-red spectrophotometers. (Hall 8, D8-9)

Automatic Analytical Instruments

Among the instruments being exhibited by **Hilger and Watts Ltd.**, 98 St. Pancras Way, Camden Road, London N.W.1, is the Fluroprint, a new automatic X-ray fluorescence vacuum spectrometer for the routine analysis of large numbers of samples in solid, liquid or powder form. Changing from one type of analysis to another is done simply by pulling out a plug-board and substituting another which covers the required programme. All elements with an atomic number higher than 12 (Mg) can be analysed, and the results are printed automatically in tabular form on a digital typewriter. Another instrument, the Polyspek-12, is a medium quartz direct-reading spectrograph which will analyse accurately up to 11 elements in almost any kind of material in about 2 min. The Ultrascan

is a recording double-beam spectrophotometer for the visible and ultra-violet region from 200 to 750 $m\mu$. Resolution is 0.1 $m\mu$ at 250 $m\mu$ and 0.2 $m\mu$ at 500 $m\mu$. It is very simple to use, and its overall accuracy is to 1% or better. Other exhibits include atomic absorption equipment, a new fluorimeter, a grating monochromator, a photoelectric microptic polarimeter, and others. (Hall 8, C4-5)

New Chemicals

New chemicals displayed by **Marchon Products Ltd.**, Whitehaven, Cumberland, include a range of aromatic sulphonates known as the Eltesol Hydrotrops. This range includes sodium xylene sulphonates, sodium toluene sulphonate, potassium xylene sulphonate and potassium toluene sulphonate, all of which are available as approximately 30% active liquids, or 93% active flakes. These materials have applications in the spray drying of heavy duty detergent powders. Marchon have also developed the manufacture of a range of Alkyl methacrylate esters which include the following: technical n-butyl methacrylate, technical beta-ethoxyethyl methacrylate, technical caprylic/caproic methacrylate, technical and high purity lauryl methacrylate, technical coconut methacrylate, technical cetyl/stearyl methacrylate.

The company state that they are prepared to consider the manufacture of other methacrylate esters which have been found stable for new or speciality applications. Marchon are also in production of various concentrations of ammonium nonyl phenol ether sulphates, which are, to some extent, available in plant quantities. These materials have special advantages in the formulation of liquid detergents. (Hall 9, A3-4)

Plastics Materials

The West German chemical fibre producer **Deutsche Rhodioceta AG**, Postfach 74, Freiburg i. Br., has on show its recently expanded programme of semi-products made of polypropylene, nylon and polycarbonate. This includes plates, blocks, pipes, tubes, profiles, castings and die-castings. Polypropylene parts are used particularly for the handling of acids and lyes at temperatures of up to 100°C, both polypropylene and nylon in machine-building and chemical plant manufacture and polycarbonate, with its good dielectric properties, for products for the electrical industry. (Hall 9, A8-9)

Measuring and Counting Apparatus

Laboratorium Prof. Dr. Berthold, Wildbad im Schwarzwald, W. Germany, show equipment for measuring, regulation and automation technique, as well as nuclear scientific equipment and packaging units. The display includes scintillation and halogen counters for isotope measuring and control in chemical plants, proportional counting tubes, large-surface flow counters for the measuring of radioactive contamination and beta-ray control units for the packaging industry. (Hall 10, A1)

U.K.A.E.A.

The **United Kingdom Atomic Energy Authority** show several aspects of their work. One section of the stand illustrates the Authority's achievement in bringing to a full industrial production scale the manufacture of natural uranium fuel elements for the British nuclear power programme and for stations exported by U.K. firms. Fuel reprocessing after its use in the reactors is described in detail.

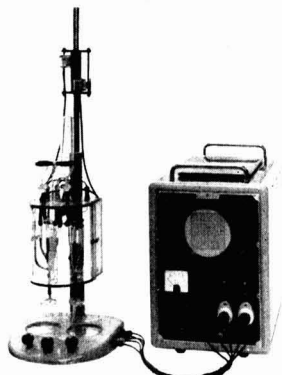
Working models of the latest prototype equipment designed for the chemical processing of uranium ores and for separating plutonium-bearing solutions from those containing fission products is on view. Much of this equipment can be used to improve yields of purities in ordinary chemical plants.

The Radioisotope Section will provide information on industrial irradiation plants, showing how they are used for the sterilisation of medical and other supplies. These use radioactive cobalt which is available in quantity from the Authority's Radio-chemical Centre at Amersham. The stand emphasises the wide range of 'labelled compounds' which the Authority can supply and gives examples of uses of newly developed bremsstrahlung sources and of tritium or its compounds.

A feature of the Patents Section of the A.E.A. stand will be a recently devised method for the recovery of anhydrous hydrofluoric acid from dilute solutions in industrial effluents. A number of instruments will be shown in operation. (Hall 10, B6-7, C6-7)

Differential Polarograph

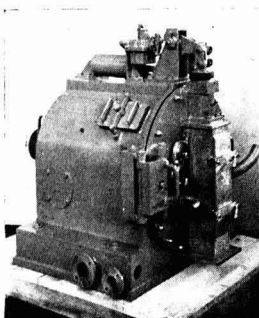
On the U.K. Atomic Energy Authority's stand, **Nash and Thompson Ltd.**, of Hook Rise, Tolworth, Surrey, will show the final prototype of their new differential cathode-ray polarograph, which is a production version of the equipment developed by H. M. Davis, H. I. Shalgosky and J. E. Seaborn, of the U.K.A.E.A. It has two identical polarographic cells, which can be used separately or together. There are synchronising devices which ensure that both mercury-drop cathodes grow and fall simul-



New polarography apparatus by Nash and Thompson

taneously in twin cell operation. The two cells are housed in an airtight Perspex chamber, through which a flow of nitrogen is maintained. Nitrogen is also bubbled through the cells themselves before a determination is carried out, to eliminate effects due to dissolved oxygen in the solution. The cells are fed through tap funnels and exhausted by vacuum suction, so that the working solutions can be removed or replenished without opening the chamber. Mercury can be drained from the cells by means of a separate tap.

The D.C.R.P. is claimed to have a greater maximum resolving power than the normal cathode-ray polarograph and to be between 7 and 10 times more sensitive in single cell operation. This is mainly due to the provision of 'base line slope compensation', whereby residual currents due to earlier reductions can be cancelled by the application of a small opposing current (maximum 0.1 mA). (Hall 10, B6-7, C6-7)



Continuous decanter DC 48 by Ateliers Robatel et Mulatier

Centrifuges

Three advanced types of centrifuges are presented by **Ateliers Robatel et Mulatier**, of 59-60 Rue Baraban, Lyon, France, within the framework of the A.G.E.C. (Alliance Francaise pour L'Exportation de Materiel de Genie Chimique). One is the EHR 500 horizontal dryer, another the continuous decanter type DC 48, particularly suited to the treatment of suspensions in solvents. The third item, on show for the first time, is a continuous unit designed for the large-scale production of easily dried crystalline products. (Hall 12)

Electrical Techniques

Coloured projector pictures of the electrical equipping of a synthetic fertiliser plant, plus a working model of a plant control system, an instruction reactor and the model of a multi-purpose research reactor are to be seen on the stand of **Siemens-Schuckertwerke AG**, Werner-von-Siemens-Strasse 50, Erlangen. Also exhibited by the same firm are a silicon rectifier group for electrolysis, a number of special-purpose silicon cells, a polyethylene-treatment unit for the applying of printer's ink or lacquers to the plastic with necessary adhesive strength and friction resistance and

several pumps, ventilators and other items. The associated company **Siemens und Halske AG**, of West Berlin and Munich, has on show a range of control, measurement and dosing apparatus. (Hall 10, B3, Pavillon Freigelände Zwischen, Hall 10 and 11)

pH Papers

A range of pH papers is to be seen in the display of **Dr. Gerh. Klotz**, Hobrechtstrasse 82, Berlin-Neukölln. These include lyphane strips (pH papers with comparison colours and printed pH numbers) with pH sensitivity of 0.5 and deliverable in 200's, lyphane rolls pH 1-6, 6-12 and 1-11 with margin indicators and a universal roll for pH ratings 0.14. (Hall 11, D6)

Testing Units

Karl Frank GmbH, Postfach 149, Edinger-Riedweg 47/53, Mannheim-Rheinau, introduces a number of new and improved testing units for the plastics, rubber, paper, textile and metal industries. These include the type 597 fusion viscosity tester for thermoplastics, for efflux registration—particularly of polythene—and incorporating a liquid thermostat working to three heat stages for a maximum of 300°C. The type 598 ozone tester for determination of rubber and plastics behaviour in ozone-content atmospheres differs from former types in obviating the need for constant attendance, ozone concentration control being fully-automatic. (Hall 11, A5)

Distillation Glassware

Fully-automatic production of distilled water of high chemical and physiological purity is permitted by a range of electrically and steam powered distillation units of varying capacity developed by **Jenaer Glaswerk Schott und Gen.**, of Mainz. Further Jenaer developments include an all-glass molecular distillation unit for a throughput of 1 litre/hr., a glass-and-plastics vessel for potentiometric titration and a whole range of Schott glass electrodes. Also on show are extraction units for the hot or cold continuous extraction of liquids or solids, plunger and rotation pumps, a new radioactive filter and other equipment for chemical and nuclear scientific use. (Hall 11, B6-7, C6-7)

Mixers

Lightnin Mixers Ltd., Poynton, Cheshire, exhibit a full range of fluid mixers ranging from laboratory models up to the largest industrial types. Vertical and side-entry models are on display, and also a cut-away section through a Lightnin hollow-shaft drive.

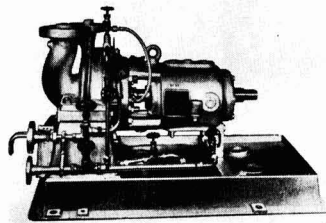
Measurement and Testing

Claimed to be the first instrument to permit high accuracy measurement of the friction resistance of surfaces is the type 317 unit made by and exhibited by **A. M. Erichsen GmbH**, Hemer-Sundwig/Westf., West Germany. The unit's accuracy range is given as $\pm 1-3\%$. Another new Erichsen development is the patented

flow-test apparatus which, apart from recording the flow-time curve as do other similar units, also records the pressure-time curve. The firm's 320 testing unit, also on show, tests the abrasion resistance of non-conducting surface protection layers on a conducting base. Another exhibit is the type 332 rotation viscometer designed particularly for problems concerned with coating consistency. (Hall 11, E1)

Pumps for Corrosives

For the handling of hydrocarbons, chemical solutions, acids, condensates and similar liquids in oil refineries, chemical and petrochemical plants and



Ruhrpumpen SVC process pump

for other purposes are the SVA/SVC pumps of the production range of **Ruhrpumpen GmbH.**, Postschliessfach 26, Witten-Annen. The single-stage vertically-divided pumps are so constructed as to permit constant operation under the most disadvantageous temperature, pressure and corrosion conditions. Stuffing gland and bearing housing are supplied water-cooled. Liquids of high temperature may be handled by the pumps, of which four—with capacities of from 30 to 215 cu. m./hr.—are on show. (Hall 16)

Rapid Granule Dryer

Granule drying which would otherwise take up from 10 to 15 hr. may be carried out within 15 to 30 min. with a new unit produced by **Robert Münster**, Hofackerstrasse 55, Muttentz/BL, Switzerland. To avoid the long drying times of the hurdle drying system, Münster has developed a unit in which air is sucked through the substance for drying instead of being passed over it, each granule thus being 'washed' by heated, dry air. As only one container is concerned in the unit, which is exhibited actually in operation on the firm's stand, feeding of the drier with 50 kg. of granules takes at the most 4 to 5 minutes. (Hall 17, A3)

Breathing Apparatus

Some 14 different types of compressed air breathing apparatus are produced by the exhibitor **Kurt Matter**, Kreis Bruchsal, Karlsdorf. A new development is in the field of ventilated protection suits for use against chlorine, ammonia, etc.; these fully air-insulated suits are supplied in colours representing the gas for which they are individually suitable. Of particular interest is a further novelty in the Matter programme—an electrical artificial respiration unit which uses an impulse current to force movement of

the breathing muscles and to stimulate circulation, the latter effect being claimed as new in the field of a.r. units. Designed for gas protection is an improved RUH 44 type breathing apparatus, whose 'lungs' are situated on the wearer's back beside the flasks and not on the mask itself, as was previously normal in Matter constructions. (Hall 18, A3)

Electric Surface Heaters

Isopad Ltd., Boreham Wood, Herts, show their electric surface heaters in co-operation with their German branch, **Isopad GmbH.**, Siegen, I.W. The exhibits include the latest developments of heating mantles for process plant, drum heaters and heating tapes as well as a full range of Isomantles for laboratories. Various examples of manual and fully automatic controls are included in the exhibits. (Hall 17, B1-2, C1-2)

Drum Dryer

Manufactured in West Germany and patented in the United Kingdom (820 247) is the drum dryer exhibited in Frankfurt by **Erich Kiefer Lufttechnische Anlagen GmbH.**, Gärtringen/Württ. This is a double-drum unit, the drums—each of 1.50 m. diam. and 1.50 m. working width—being placed one above the other. The dryer is stated to be between 700 and 800% more efficient than former dryers, the drying air being passed through and not across the product under treatment. The unit operates continuously, material being passed into it by a feed belt. (Hall 17, D4-5)

Glassware

Quickfit and Quartz Ltd., Stone, Staffs, will be exhibiting 2,500 pieces of equipment, covering their entire range of interchangeable laboratory glassware. Feature of the stand is a working laboratory in which organic preparations will be carried out, using apparatus of new and outstanding design. This includes an electrically-heated automatic water still, and a vapour-dividing fractionating head.

The Quickfit group stand, which incorporates displays by **Q.V.F. Ltd.**, chemical engineers in glass, of Fenton, Stoke-on-Trent, and **Q.V.F. Glastechnik**, Q.V.F.'s German subsidiary, covers some 4,500 sq. ft. (Friegelände, A15-18, B15-18, C13-16, D13-16)

An important new British instrument to be shown on the Quickfit Group stand is the fully automatic steady-state dis-

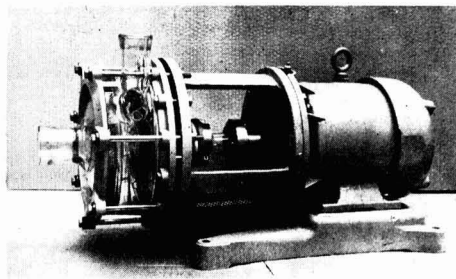
tribution machine developed by the recently established instruments division of **Quickfit and Quartz Ltd.**, Stone, Staffs. This machine, illustrated in *CHEMICAL AGE*, 20 May, page 814, is claimed to have a wide application for continuous preparation of gramme to kilogramme quantities of materials which are difficult to separate and/or labile. The machine has 100 distinct extraction cells and these are equivalent to at least 80 theoretical plates. This new technique will produce materials formerly considered inseparable. The machine will also do all the work previously carried out by the Craig system of counter-current distribution, the manufacturers state.

High-capacity Granule Dryers

A range of granule dryers with capacities of from 4 to 1,200 kg., dependent on material and moisture content, is presented by the specialist concern **Werner Glatt**, Postfach 23, Haltingen (Baden). This company has a production programme covering six normal types with motor outputs of from 0.3 to 10 h.p., as well as a newly developed unit operating fully automatically and continuously and with a capacity claimed to be above that of any other drying system currently on the market. In the case of the continuous units, air shaking of the built-in nylon filter is carried out automatically. Drying with inert gases may be carried out by the installation of the necessary fittings. (Freigelände, F21)

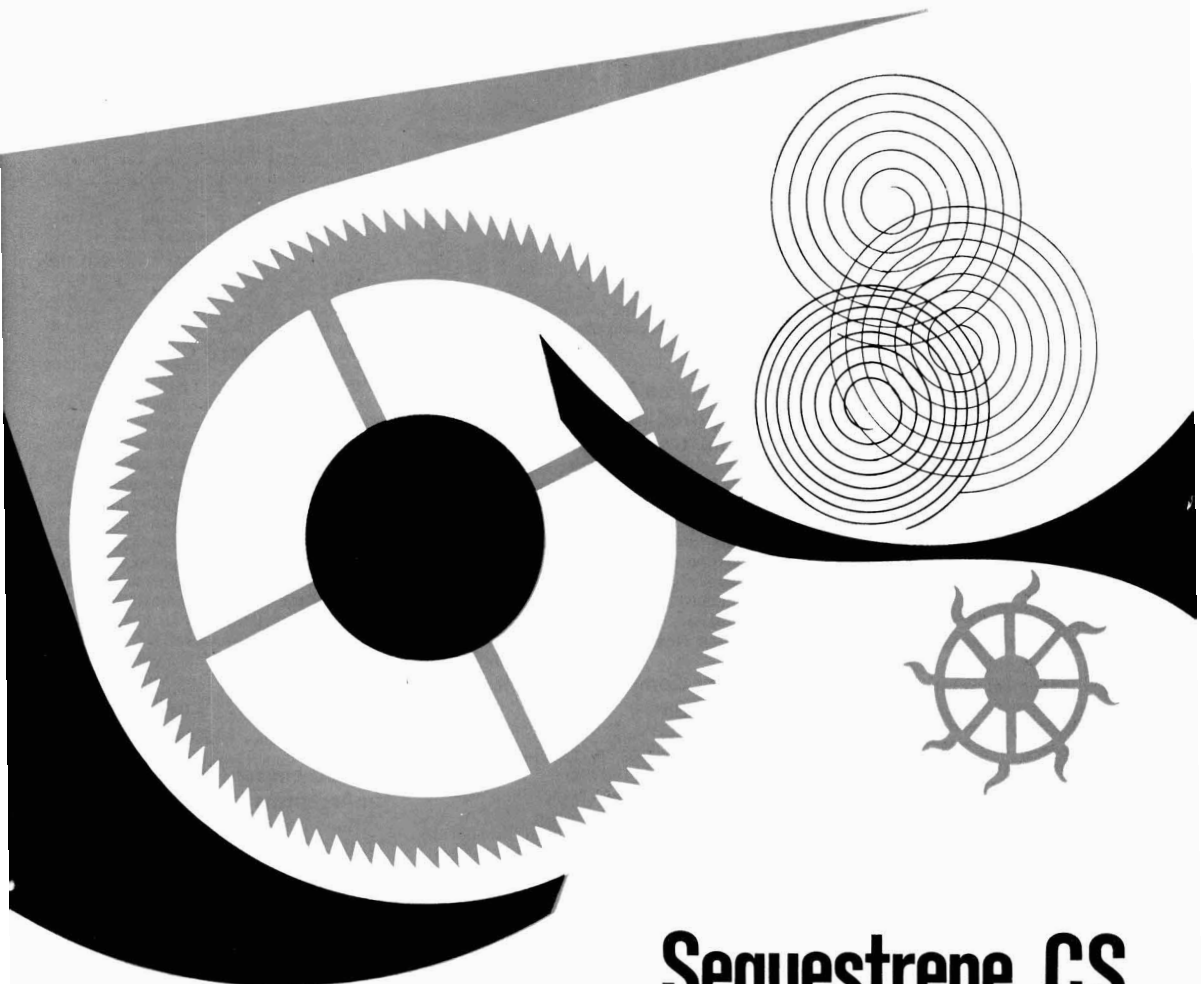
New Wet Separator

Exhibited by **Concordia Elektrizitäts-Gesellschaft-AG**, Dortmund, Münsterstrasse 231, West Germany, is 'Cycloil M,' a new wet separator for the treatment of acid spent air from pickling tanks, galvanising baths and similar units. Requiring less space than former wet separators, Cycloil M is produced in seven different sizes for air quantities of between 2,000 and 41,500 cu. m./hr. Flow resistances are low and water consumption small—the latter amounting to only about 3.5 litres per 1,000 cu. m. air throughput in normal use. For the separating off of such substances as sulphuric acid, hydrochloric acid, chrome acid, nitric acid, trichlorethylene, water-soluble oils, etc., the apparatus is manufactured in sheet steel with corrosion-resistant finish or in stainless steel, or can even be made completely (including filter mats) of plastic.



New and more compact version of the Q.V.F. Ltd. glass pump, model GPB

Chemicals for metal treatment Geigy



Sequestrene CS

for alkaline de-rusting

Sequestrene CS is a special product for alkaline de-rusting, particularly for precision and high-tensile equipment where dimensional stability and lack of embrittlement are of paramount importance. De-rusting baths based on Sequestrene CS can be electrolytically regenerated and therefore do not exhaust, losses being due to drag-out only. Sequestrene CS can be used to solubilise iron sludge in any strongly alkaline medium.

The Geigy Company Limited
Rhodes Middleton Manchester

Overseas News

DUTCH COMPANY TO BUILD 5,000 TONNE PHTHALIC ANHYDRIDE PLANT

FOLLOWING the statement on this page on 15 April that the Hook of Holland chemical producer NV Chemische Industrie Synres would probably take up phthalic anhydride manufacture, it is now stated definitely from Amsterdam that such a plant is to be built at the Synres works with an initial capacity of 5,000 tonnes/year, this to be expanded later. It is hoped that the phthalic plant will be ready for use by the end of next year, its products to go exclusively to group factories in Hook of Holland, Compiègne (France) and Barcelona. Production will be based on the processing in a fluid bed unit of naphthalene or ortho-xylene, though research on the use of ortho-xylene for this purpose has first to be completed. Supplies of raw materials are stated to have been guaranteed. Synres has just entered into a co-operation agreement with Allied Chemical Corporation, of New York.

New-Type Polythene Pipe for Canada

Du Pont of Canada have established a specification for constant pressure polythene pipe which is said to give precise dimension and predictable performance to the pipe. The company hopes to get a larger share of the estimated 40-50 million ft. of polythene pipe sold in Canada annually.

The new specification involves uses of a material made at the company's St. Clair River Works at Corunna, Ontario, exclusively, or use in pipe. Pipe, with the trade mark Sclai, will be made under licence by Canadian firms. First licensee to produce the new pipe is Page-Hersey Tubes, Ltd., Toronto.

New U.S. Sulphur Research Programme

Arrangements have been made by the Sulphur Institute, Washington, for the initiation of three research projects related to industrial uses of sulphur. These three projects are among those included in the 1961-2 research programme which was approved by the Institute's board of directors at its recent meeting in London.

The stabilisation of plasticised sulphur will be studied at the University of Munich under the direction of Dr. Max Schmidt. This study is considered to be of fundamental importance to the use of sulphur, or sulphur compounds or mixtures, in a number of practical applications.

Frau Professor Dr. Margot Becke who along with Dr. Schmidt is one of the leading authorities in the field of sulphur

chemistry, will direct a study at the University of Heidelberg on the synthesis and evaluation of nitrogen-sulphur compounds.

The use of sulphur in highway marking materials will be investigated by the Southwest Research Institute, San Antonio, Texas, under the supervision of Mr. John Dale.

These studies are being conducted under grants supplied by the Sulphur Institute.

Thompson-Hayward Chemical Acquired in U.S.

The U.S. producers of industrial and agricultural chemicals, Thompson-Hayward Chemical Co. have been taken over by the Consolidated Electronics Industries Corporation, who through their subsidiary Philips Electronics and Pharmaceutical Industries, are already chemical-pharmaceutical producers. Consolidated Electronics are an 'indirect subsidiary' of the Philips organisation of the Netherlands.

Nylon Competition In Japan

A nylon boom between the end of 1962 and 1963 is foreseen in Japan, where several companies are planning to produce nylon in competition with the existing producers. Toyo Rayon and Nippon Rayon. Prominent among the newcomers to the field are Teikoku Rayon, who will use the Snia Viscosa process of caprolactam manufacture. The first-stage plant, of 30 tons/day capacity, is expected to be completed in 1962.

Kanegafuchi Spinning plan nylon manufacture using caprolactam to be supplied from Mitsubishi Chemical Industries. Asahi Chemical because of its small-scale plan expects to undertake through-process manufacture starting from purchased ammonia. A further company, Kureha Spinning, is to tie up with Sumitomo Chemical for caprolactam manufacture.

Australia Puts Import Duty on Polythene Resins

The Australian Tariff Board has imposed a temporary duty of 3d/lb. on imported polythene resins and moulding compounds. This action is aimed at protecting Australian production by Imperial Chemical Industries of Australia and New Zealand. One exception from the new duty is high-density polythene, which is not made in Australia.

In a report recommending the duty Mr. H. Heyes, deputy chairman of the

Tariff Board, said that I.C.I.A.N.Z. had reduced its price from 44½d to 34d a pound but had still been unable to retain a sufficient share of the local market to allow profitable operations.

The main reasons submitted for the temporary duty were the increased level of imports and a rapid decline in selling prices caused by world over-production. Mr. Heyes said that the local manufacturer had a substantial disadvantage in production costs compared with those overseas.

The annual rate of sales for 1960-61 for Australian polythene indicated a fall of 17% on the previous year's figures. Present total annual demand is 13,000-14,000 tons, while annual imports are about 8,000 tons.

Union Carbide Australia are currently constructing a 30 million lb./year polythene plant at Altona, Victoria.

Diversey Acquire Canadian Chemical Firm

Heather Chemical Products Ltd., Toronto, Canada, manufacturers of industrial metal cleaners and metal finishing compounds, have been acquired by the Diversey organisation, parent company of which is the Diversey Corporation of Chicago and whose U.K. subsidiary, Diversey (U.K.) Ltd., was established three years ago to manufacture and market cleaning and sterilising products for the agricultural, food processing and handling, hotel and catering and metals industries.

With the acquisition of Heather Chemical Products, Diversey now have four plants in Canada. There are also Diversey subsidiaries in Latin America, Australia, France and Italy.

Petrochemical Investment in Argentina

The President of the Buenos Aires Stock Exchange has announced the results of an inquiry into the 1961 investment plans of 590 firms. Among the plans of 371 of these firms figures the investment of 1,125 million pesos in petrochemicals, 553 million pesos in petroleum, and 363,800,000 pesos in plastics.

Grace Urea to Cost More

W. R. Grace and Co.'s Nitrogen Products Division will raise their urea prices by an average of \$2-\$3/ton from 1 July. Mr. William J. Haude, president of the Division, said industry prices for urea had been depressed for some time and it was felt necessary to raise prices now to ensure a fair return on business.

Tall Oil Distillation Project in Holland

The Dutch chemical producer NV Chemische Fabriek Naarden has become the first European company to set up a subsidiary for the fractional distillation of tall oil. In close co-operation with Kemi Oy, of Finland, and the Union Bag-Camp Paper Corporation, of the United States, the company—Naarden-Kemi NV—is to be formed with a

capital of some 6 million florins and will build a plant on the Wormerveer, Holland, premises of the Naarden subsidiary company Jan Dekker NV. Raw material will be the by-product of the cellulose-production industry crude tall oil, supplies of which are guaranteed by the Kemi Oy, one of Finland's main cellulose concerns. Experience in the fractional distillation of the oil will come from Union Bag-Camp Paper Corporation, and the Wormerveer plant will be built on the model of the Union Bag plant in Savannah, U.S. Naarden will itself conduct further research and development work in the tall oil field.

Norsk Koksverk Plan Ammonia Plant

An ammonia plant with a capacity of 50,000 tons a year is being planned in connection with the coke plant currently being built in Nord-Rana, Norway, by the State-owned concern Norsk Koksverk.

The Norwegian Government has asked the Storting (Parliament) for authority to guarantee a loan of Kr.60 million (£3 million) needed to finance the ammonia plant. If the Storting agrees, work on the plant could begin this year and it would be completed by the second half of 1963, when the coke plant is due to go into operation.

Norsk Hydro, which uses ammonia in its fertiliser production, has concluded a 12-year contract to buy the ammonia produced by Norsk Koksverk. But Norsk Koksverk has reserved the right to use up to 15,000 tons a year for other purposes.

Pemex-Du Pont Tel Venture in Mexico

Petroleos Mexicanos and E.I. du Pont de Nemours have announced plans for a joint Mexican venture to produce, distribute and sell tetraethyl lead. The plans call for the construction of a plant with an investment of approximately 1 million pesos. Petroleos Mexicanos will own 51% and du Pont 49% of the new company. The capacity of the plant will be sufficient to meet Mexico's needs as well as for export to other Latin American countries.

At present, Mexico imports all tetraethyl lead at an annual cost of \$6 million.

Olin Plan Capital Spending of \$250 Million

Capital expenditures by Olin Mathieson Chemical Corporation for the five-year period 1959-63 should amount to \$250 million, Stanley de J. Osborne, president and chief executive officer, announced before a meeting of The Baltimore Security Analysts Society. Olin's cash flow now allows the expenditure of \$40 million to \$60 million a year on expansion or modernisation without outside financing, he noted, adding that by 1963 another \$13 million annually will be saved by elimination of special aluminium payments being made to rapidly amortise \$100 million of debt for this operation.

Programmes already under way in the chemicals field include a new chlorine-caustic plant in Charleston, Tenn., new

phosphoric acid facilities in Joliet, Ill., and increased expenditures for propylene chemistry at Olin's organics plant in Doe Run, Ky.

Mr. Osborne declined to forecast earnings for 1961, although he indicated that 1961 might well be a year in reverse of 1960 when Olin had excellent first and second quarters, but was affected by the decline in the general economy during the last six months.

Norway and Finland Join CEFIC

At a meeting in Lugano, Switzerland, of the European Chemical Associations Federation (Centre Européen des Fédérations de l'Industrie Chimique) the national chemical associations of Norway and Finland joined the international body. Membership of CEFIC, which was first formed in 1959, also includes the associations of Federal Germany, Austria, Belgium, Denmark, France, Italy, Holland, the U.K., Sweden and Switzerland.

Synthetic Rubber Plant for Japan

A new synthetic rubber plant is to be built in Japan by the Bridgestone Tire Co. Ltd. there. This follows the signing of an agreement between Bridgestone and Philips Petroleum Co., of the United States. The rubber plant will work to the Philips process and produce some 100,000 tonnes annually.

Mitsui to Double Phenol Capacity at Nagoya

Mitsui Chemical Co., Japan, have decided to double their phenol manufacturing capacity from the present 12,000 tons to 24,000 tons/year at Nagoya from the fiscal year 1962. With this capacity increase, Mitsui Chemical's yearly capacity will total 42,000 tons including the Miike plant.

Du Pont Appeal Against GMC Shares Ruling

Du Pont de Nemours and Co. have appealed to the United States Supreme Court, in New York, against the setting of a ten-year limit on the time taken for Du Pont to dispose of their holding in

the General Motors Corporation. Du Pont want the Supreme Court, who decided on the time limit on May 22, 1961, to allow the Chicago District Court to fix a limit taking all relevant considerations into account. The appeal states that the company aims at reducing the commercial damage to shareholders insofar as this is in the public interest.

Separate Chemical Fair for Belgrade

The organisers of the Belgrade Fair have stated that they plan to remove the branch 'chemical industry' from the annual international technical fair and organise it as a separate trade fair held at a separate time. Chemical industry will be part of the coming Belgrade Fair, however, to be held in the Yugoslav capital from 23 August to 2 September next. As from 1962 the technical fair will be held in the spring instead of in the late summer of every year.

Heat-resistant Conveyor Belts Produced in Holland

Conveyor belts that are resistant to continuous temperatures of up to 210°C and maximum temperature of up to 250°C are being produced by Ammeraal's Eindloze Bandweverij at Wormerveer, Holland. The belts are of woven glass yarn and coated top and bottom with silicone rubber. Applications include the transportation of hot plastics products and other high-temperature materials.

Belts are made up to 79 in. wide, 0.06-0.2 in. thick, and about 263 ft. long.

Phosphatic Fertiliser Expansion in U.S.

J. R. Simplot and Co., U.S., have begun part of a multimillion dollar expansion programme by moving the entire fertiliser plant which the firm bought recently from Anaconda Copper Co. in Anaconda, Montana, to Pocatello. The new plant is expected to be in operation at Pocatello within three months. It will give Simplot a substantial ammonium phosphate capacity and also expand the firm's phosphoric acid capacity. It is estimated that this expansion could nearly double Simplot's productive capacity.

Ion-exchange Process Separates Zirconium and Hafnium in One Step

HAFNIUM and zirconium, ordinarily very difficult to distinguish chemically, can now be separated by a single-step anion-exchange procedure developed by the U.S. National Bureau of Standards. The separation for analysis is obtained by using a strong quaternary-amine anion-exchange resin column with diluted sulphuric acid as eluting solution. After separation of a mixture containing approximately 100 mg. each of hafnium and zirconium, a spectrochemical examination showed only a few p.p.m. cross contamination.

The separation procedure was developed by J. L. Hague and L. A. Machlan of the Bureau staff as part of

a continuing programme to develop accurate methods for determining the composition of materials. In many uses hafnium and zirconium can be considered as one constituent. However, in nuclear reactors and certain other applications the difference in their nuclear properties makes it important to know the relative amounts of each present. A practical chemical procedure has not been available to determine the relative amounts of hafnium and zirconium present or to follow the commercial purification of these two elements. The procedure developed is particularly useful for the determination of zirconium in hafnium-base materials.

ORGANIC **Pfizer** ACIDS

TARTARIC ACID

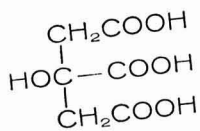
Excellent sequestant—
low toxicity—
salts widely used in
metal cleaning and plating,
textile printing and blue-printing,
plus a host of related industries.



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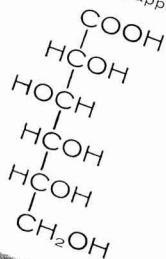


*Trade Mark

ORGANIC **Pfizer** ACIDS

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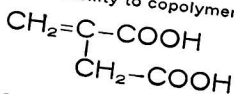
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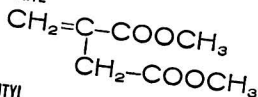
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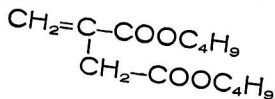


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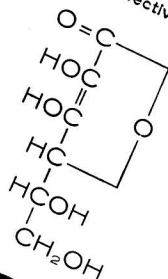
DIBUTYL



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PEOPLE in the news

● **Mr. J. F. Widman**, director and general manager, Chemicals Division of Union Carbide Ltd., will shortly be taking up a new assignment with Union Carbide International Co. and consequently will be retiring from the board of Union Carbide Ltd. **Mr. K. D. Rutter** has been appointed marketing manager, Chemicals Division of Union Carbide Ltd.

● **Mr. M. Willcocks**, who was until recently on a special assignment with Shell Refining Co.'s head office in London, has been appointed manager of Shell's refinery at Geelong, near Melbourne, Australia.

● **Mr. G. H. Greenhalgh** of the United Kingdom Atomic Energy Authority, who is a chemist, has been appointed nuclear energy attaché to the U.K. delegation to the European Communities, to succeed **Mr. D. H. Hill**, who is taking up a post with the Authority's Reactor Group.

● **Dr. J. Stafford**, in immediate charge of I.C.I. Nobel Division's silicones department at Stevenston since May 1960, has been made manager of the department.

● **Mr. A. H. Campbell**, a director of Hilger and Watts Ltd., 98 St. Pancras Way, London N.W.1 since 1951 and general manager since 1954, has been appointed joint managing director with **Mr. G. A. Whipple**.

● **Mr. R. G. Huxtable, M.B.E.**, is to be the new secretary of the Gas Council. On 1 August, **Mr. Wilfrid Bailey**, who becomes deputy chairman of the Southern Gas Board. **Mr. Huxtable** has been secretary of the South Eastern Gas Board since 1956, and was previously the Board's solicitor.

Wills

Mr. James Evan Grimditch, for many years a director of British Glues and Chemicals Ltd., and associated with Smithfield Animal Products, who died on 17 May, 1958, left £314,058 17s 7d gross, £125,111 0s 5d net (duty paid £66,219).

Mr. William James Martin, company director, late of James A. Beck and Sons Ltd., chemical manufacturers, Belfast, who died on 14 October last, left personal estate in England and Northern Ireland valued at £7,981 5s 2d (duty paid £318).

MEASUREMENT OF PENTOSANS AND CARBOXYL IN CELLULOSE

MINOR functional groups in cellulose, such as pentosans and carboxyl, influence the processing of the fibre. Because of this a number of analytical methods have been developed to measure their content. In a recent study, the U.S. National Bureau of Standards with the co-operation of laboratories in Austria, Canada, Finland, Germany and Sweden, made a survey of the principal methods used in the U.S. and abroad.

In the pentosan study, the orcinol colorimetric method used in Sweden was compared with the aniline acetate colorimetric and bromination methods used widely in the U.S. The orcinol method was found to be superior to the aniline acetate method. About five measurements of the latter method were necessary to achieve the same precision as one

measurement by the orcinol method.

The amount of carboxyl in cellulose is generally found either by determining the acid liberated upon addition of de-ashed pulp to a salt solution, or by determining the decrease in cation concentration of a salt solution by de-ashed pulp. Several different reaction procedures have been developed and a total of eight methods were used in this study.

It was found that the major source of within-laboratory variability arose from differences in the manner in which different materials responded to the technique used. The application of a linear model to the data showed that the use of a standard reference material in determining carboxyl content would materially improve inter-laboratory precision.

Rapid Method for Analysing Lacquer Solvents

A **RAPID**, specific method has been developed for the analysis of lacquer solvents and thinners. The method, which uses temperature programmed gas chromatography for the separation of solvents having a wide range of boiling points, was developed by the U.S. Department of the Army and is described in Order PB 171 033, available from the Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C., at 50 cents.

The technique employs a chromato-

grapher equipped with a temperature programmer and a dodecyl phthalate column mounted in the oven. The sample is injected and the temperature programming immediately started and continued until the analysis is complete. Relative retention time is calculated for each peak and the amount represented is determined by integration of the area under their respective peaks and corrected for difference in thermal conductivity.

Good resolution of a 15-component solvent mixture is obtained.

Market Reports

PRICE RISE FOR BP POTASSIUM PERMANGANATE

LONDON Home trade demand for industrial chemicals has been steady, with contract deliveries covering good quantities. The flow of inquiry for shipment continues to be satisfactory. Formaldehyde, hydrogen peroxide, borax and boric acid are all meeting with a fair inquiry while copper sulphate is in moderate request at the lower price of £80 10s announced as from 5 June.

Prices for the most part are maintained at late levels. The bases prices for white lead have been reduced by 50s/ton and for red lead and litharge by 60s/ton, the revised quotations operating from 1 June. The producers of permanganate of potash have announced a price increase of the B.P. grade of ¼d/lb. and the technical grade has been raised by 5s/cwt.

Demand throughout the tar products market continues fairly steady.

MANCHESTER The past week has seen little change in trading conditions on the Manchester market for chemical products. Most of the leading industrial

outlets for alkalis, plastics, industrial solvents and other lines are maintaining a steady rate of operations and this is reflected in the movement of supplies against contracts. From the point of view of fresh business there is a fair demand for prompt and early delivery, with some inquiry circulating regarding replacement contracts extending over the third quarter. The export movement is held at a reasonably satisfactory level. The price position is steady to firm pretty well throughout the range.

SCOTLAND With a background of fairly steady prices, buying in the Scottish heavy chemical market has been reasonably brisk. There was quite a good volume of demands particularly in regard to the textile industry, and in certain instances some increased quantities were involved. There are still some pockets of activity in agricultural chemicals, but these are mostly against urgent demands. There is little change to report in regard to the export market which remains at a good level.



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If you need information or advice on any chemical problem, ask Berk about it. Somewhere in the wide range of Berk literature, the answer may already exist; and if it does not, Berk experts will gladly set to work to find it. Write or telephone:



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Commercial News

Distillers

The Distillers Co. are to raise £32 m. by a rights issue. One 10s ordinary for every 10 ordinary shares held on 1 June will be offered at the price of 32s 6d per share. It is intended to declare a final dividend at the rate of 8½%, which with the 6% interim, is equivalent to 13½% on the increased capital.

This is the biggest rights issue by an industrial company since I.C.I.'s financing operation earlier this year.

Blaw Knox

Group net profit, 1960, £43,806 (£83,268) and dividend 20% (30%) as stated 18 May. Profits of construction machinery division have been inadequate for some time when related to capital employed and board have taken active steps to remedy this situation; 1961 will be a year of reorganisation, says chairman. Outlook for transmission tower and steelworks divisions "quite promising".

Elliott-Automation

An increase of 25% in net sales—£20 million compared with £16 million in 1959, is reported in the statement issued by the chairman of Elliott-Automation Ltd., Mr. R. E. F. de Trafford, O.B.E. Excluding the Rheostatic Co., which was acquired during the year, group profit of the group was £1,255,862 (£1,015,630). Including Rheostatic, net profit was £959,647 after taxation of £816,863. Proposed final dividend is 8%, making a total of 13% (9½%).

Morgan Crucible

Morgan Crucible Co. have announced a final dividend of 9%, making a total of 14%, for the year ending 2 April 1961. Group profit was £2,234,815 compared with £2,043,417 in the previous year, and profit after deductions was £1,145,795 (£1,140,929).

Simon Engineering

The 1960 accounts of Simon Engineering Ltd., which combine for the first time the results of Henry Simon (Holdings) and Simon-Carves Ltd. (the two companies merged in July 1960) show a profit before tax of £2,814,000 on a turnover of some £41 million, group net profit being £1,339,000. A final dividend of 17½%

- Distillers Raise £32 m. by Share Issue
- Elliott-Automation Net Sales Up 25%
- New Petrochemical Firm for Holland
- Linde's Turnover Increased by 12%

has been recommended, making a total for the year of 27½%.

Substantially increased orders were secured by Simon-Carves Ltd., Chemical Engineering Wiltons Ltd., Huntingdon Heberlein and Co. and other companies of the group, for chemical and other projects at home and overseas.

Petro-Synthese

A company has been formed in Amsterdam with the title of Petro-Synthese NV, a capital of Fl.500,000 and aimed at "trading in general and specifically in petroleum refinery products, mineral oil derivatives, chemicals, etc." Dr. W. H. C. Schukking holds 10 of the 50 Fl.10,000 shares and Mr. H. Poesiat a further eight.

KNZ — Ketjen

The two Dutch chemical concerns Koninklijke Nederlandsche Zoutindustrie NV, of Hengelo, and Koninklijke Zwavelzuurfabrieken NV v/h Ketjen NV are to merge. A holding company, expected to have a capital of 55 mn florins and reserves of 145 mn florins, will be formed to take over the Zoutindustrie and the Ketjen shares. Among interests of the new merged company will be the Albatros-Windmill Fertilizer concern (Ireland), Fisons Durban (South Africa), Fisons Rhodesia, International Fertilizers (Canada), Ht.-Trous Co. Ltd. (Canada), Elektrochemie Ibbenbüren (West Germany), and such Dutch firms as Ned. Soda, Albatros, Electro-Zuur, Cyanamid Ketjen, Stork Chemie, Ketjen Carbon and Titaandioxydfabriek.

Staatsmijnen

The Dutch State coal-mining and carbon chemicals producers Staatsmijnen, of Limburg, announce a profit for 1960 of gross 111,356,000 (68,494,709) florins. Of this total some 25 million florins (16.25 million) went as dividend to the State. The company reported particular expansion in the field of chemical production.

Kali-Chemie

Kali-Chemie, the West German potash and chemical enterprise controlled by the Solvay concern of Belgium, has

declared a dividend of 12% for 1960 on a capital of DM55 million against 16% previously on DM33 million capital.

The turnover totalled DM112 million against DM205 million, with exports amounting to 28% (25%).

Linde's

Gesellschaft für Linde's Eismaschinen AG, of Hüllriegelskreuth, West Germany, one of Europe's leading chemical plant producers, announces for the past year turnover up 12% on 1959 level to DM486 mn. and a recommended 1960 dividend of 18% (17%). Recommended further to the a.g.m. to be held in Munich on 20 July is a capital increase at a rate of 4:1 to a new basic capital of DM65 mn. the new shares to be issued at a level of 300% face value. A number of priority shares are further to be withdrawn and changed into holder shares.

I.C.I.A.N.Z.

From 1 July, Imperial Chemical Industries of Australia and New Zealand are taking over Commonwealth Fertilisers and Chemicals, in which they are already substantial shareholders, as a wholly owned subsidiary. They will acquire the remaining shares from Cumings Smith and Co., Mount Lyell Mining and Railway and Wischer and Co., who, together with Nobel Australasia, a subsidiary of I.C.I.A.N.Z., were the original partners in Commonwealth Fertilisers when the company was formed in 1929.

Van der Grinten

Chemische Fabriek L. van der Grinten N.V., Venlo, one of Holland's major chemical producers, announce a provisional dividend for 1960 of 20% (same) on old and 5% on new shares. Capital of the company's West German subsidiary, Van der Grinten GmbH, Mülheim/Ruhr, was raised during the financial year to DM 500,000.

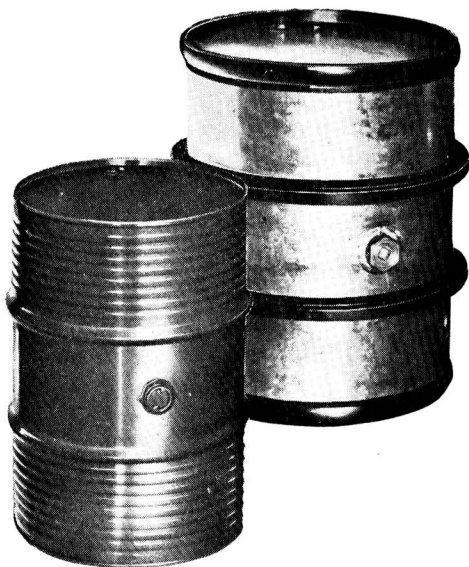
INCREASE OF CAPITAL

UNI-PHARMA LTD., 109 Kingsway, London W.C.2. Increased by £10,000 in £1 shares, beyond the registered capital of £10,000.

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NEW PATENTS

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

AMENDED SPECIFICATIONS

On Sale 5 July

Soap-synthetic bar. Hedley & Co. Ltd., T. 756 502
Preparation of titanium dioxide. British Titan Products Co. Ltd. 761 770
Solid polymers. Phillips Petroleum Co. 796 530

ACCEPTANCES

Open to public inspection 12 July

Process for the manufacture of fatty acid esters of aliphatic polyhydric alcohols and monosaccharides. Howards of Ilford Ltd. 872 507
Manufacture of combustible gas. Humphreys & Glasgow Ltd. 872 781
Chlorination processes. British Titan Products Co. Ltd. 872 865
Process for preventing or reducing scale formation in heaters for alkaline solutions. Geigy Co. Ltd. 872 440
Plant for producing an active silica sol. Candy Filter Co. Ltd. 872 738
Process for the preparation of substituted sulphonyl ureas. Chinoín Gyogyász és Vegyeszeti Termékek Gyára. 872 567
Modified synthetic condensation polymers and their production. Du Pont de Nemours & Co., E. I. 872 513
Process for the production of heterocyclic compounds. Knoll AG. 872 535
Coloured superpolyamides and the production thereof. Organico. 872 558
Polyurethanes. National Research Development Corp. 872 568
Fungicidal and/or fungistatic compositions. Smith & Nephew Ltd., T. J. 872 891
Method of concentrating aqueous hydrogen peroxide solutions. Columbia-Southern Chemical Corp. 872 925
Polyether condensates from poly-(N-methylol) compounds and polyhydric alcohols. Farbenfabriken Bayer AG. 872 523
Oxirane compounds. Scientific Design Co., Inc. 872 560
Processes for producing copolymers. Houillères du Bassin du Nord et du Pas de Calais. 872 537
Resinous dispersions. Montecatini. [Addition to 810 023.] 872 731
Process for the manufacture of dyestuffs of the triphenyl amino triphenylmethane series. Farbwerke Hoechst AG. 872 561
Aldehyde condensation products of acrylamide interpolymers. Pittsburgh Plate Glass Co. [Addition to 826 652.] 872 942
Derivatives of cyclopropane. Wellcome Foundation Ltd. 872 943
Process for naphthalene thioglycolic acids. American Cyanamid Co. 872 846
Metallo derivatives of metal carboxylates. Ethyl Corp. 872 756
Preparation of organic esters. Ethyl Corp. 872 757
Process for the production of modified N-methylol polyethers containing methylol groups. Farbenfabriken Bayer AG. 872 524
Process for the manufacture of naphthalene of hot-pressing quality. Koppers GmbH Heinrich, and Gelsenkirchener Bergwerks-AG. 872 541
Fermentative production of the antibiotics distamycin and distacyn. Soc. Farmaceutici Italia. 872 734
Corrosion and oxidation resistant surfaces of articles which are to be subjected to contact with high temperature molten material. Norton Grinding Wheel Co. Ltd. 872 445

Process for producing disazo dyestuffs insoluble in water on shaped structures of aromatic polyesters or cellulose acetate. Farbwerke Hoechst AG. 872 948
Liquid detergent compositions. Monsanto Chemical Co. 872 530
Process for the production of carboxylic acid esters. Biller, E. 872 876
Polyurethanes. National Research Development Corp. 872 569
Fungistatic compounds. Smith & Nephew Ltd., T. J. 872 892
Herbicide preparation. Farbwerke Hoechst AG. 872 926
Removal of fine particles from gases or vapours and filters therefor. Imperial Chemical Industries Ltd. [Addition to 827 214.] 872 473
Process for the preparation of secondary amino azole disulphides. Triggs, W. W. (Goodyear Tire & Rubber Co.). 872 456
Process for the manufacture of azo dyestuffs. Ciba Ltd. [Addition to 861 443.] 872 416
Synthetic resins. Röhm & Haas GmbH. 872 696
Process for dyeing cellulose textile materials. Ciba Ltd. 872 949
Antifungal compositions. Smith & Nephew Ltd., T. J. 872 893
Production of aminoplastic precondensates. Courtaulds Inc. [Addition to 796 815.] 872 656
Pigments of the phthalocyanine series and their use. Geigy AG, J. R. 872 659
Amino alkyl silicon compounds as bonding agents for polymeric coatings to metals. Union Carbide Corp. 872 929
Composition and process for bleaching fabrics. Fairweather, H. G. C. (American Cyanamid Co.). 872 553
Resistance to ultra violet light of shaped structures or organic polymers. Du Pont de Nemours & Co., E. I. 872 421
Bleaching compositions. Unilever Ltd. 872 815
Converter system for liquefied gases. British Oxygen Co. Ltd. 872 660
Apparatus for filling pressurised liquefied gas converter systems. British Oxygen Co. Ltd. 872 661
Method of and apparatus for recovering chlorinated hydrocarbons from waste waters. Wachmer-Chemie GmbH. 872 932
Water-soluble benzene-mono-azo-benzene dyestuffs and process for their manufacture. Ciba Ltd. 872 481
Apparatus and process for the production of gaseous mixtures containing hydrogen and carbon-monoxide. Bataafse Petroleum Maatschappij N.V. 872 895
Separation of organic compounds. Imperial Chemical Industries Ltd. 872 819
Steroids and the manufacture thereof. Upjohn Co. 872 483, 872 484
Coating compositions for use in sheet metal working. Imperial Chemical Industries Ltd. 872 581
3-Substituted azetidines. Lepetit S.p.A. 872 446
Phosphorus esters. Rhone-Poulenc. 872 823
Method of improving the affinity dyes of articles formed from linear, high molecular weight polymers of alpha-olefins. Montecatini. [Addition to 850 471.] 872 432
Lubricating oil compositions. Esso Research & Engineering Co. 872 899
Disinfectant compositions. Pearson Ltd., William (Barthels, W.). 872 900
Polyzao dyestuffs. Farbenfabriken Bayer AG. 872 685
Inorganic phosphorous compounds. Imperial Chemical Industries Ltd. 872 832
N-substituted trihaloacetyl-piperazines. American Cyanamid Co. 872 436
Process for preparing phosphonates. Esso Research & Engineering Co. 872 408, 872 409
Polymer coating process. Phillips Petroleum Co. 872 795
Substituted azepines and processes for their preparation. Geigy AG, J. R. 872 802
Organopolysiloxane beaten enamels for high temperatures. Rhone-Poulenc. 872 411
Process for the production of aryloxy acetic acid amides. Geigy AG, J. R. 872 669
Process for the production of condensation products. Bayer. 872 803
Process for the production of derivatives of n-fluorosulphonyl carbamic acid. Bayer. 872 670

Process for the production of peptides. Bayer. 872 414
Process for obtaining purified glutamic acid solution from beet sugar waste. Ajinomoto Co. Inc. 872 674
Steroids and the manufacture thereof. Upjohn Co. 872 806
Pyrrolo-[2,1-a]-isoindoles and process for the production thereof. Geigy AG, J. R. 872 708
Herbicide compositions. Du Pont de Nemours & Co., E. I. 872 808
Hydrogenation of carbohydrates. Atlas Powder Co. 872 809
Polymerisation process. Röhm & Haas GmbH. 872 532
1-Carbamyl-3-substituted azetidines. Lepetit S.p.A. [Divided out of 872 446.] 872 447
1-Acyl-3-substituted azetidines. Lepetit S.p.A. [Divided out of 872 446.] 872 448
1,3-Substituted azetidines. Lepetit S.p.A. [Divided out of 872 446.] 872 449
1-Hydroxyalkyl-3-substituted azetidines and their acyl derivatives. Lepetit S.p.A. [Divided out of 872 446.] 872 450
Production of graft copolymers. Du Pont de Nemours & Co., E. I. 872 515
Method for making organo-substituted tetrahydroxyborons and polymers therefrom. United States Borax & Chemical Corp. 872 769
Method for producing sodium borate of lowered iron content. United States Borax & Chemical Corp. 872 857
Polymerisation of ethylene. Grace & Co., W. R. 872 861
Method of manufacturing polyvinyl acetate. Kurashiki Rayon Kabushiki Kaisha. 872 773
Preparation of malonic acid salts. Ethyl Corp. [Divided out of 872 757.] 872 758
Polyethylene compositions and methods for their production. Grace & Co., W. R. 872 439
Production of aromatic polymers. Grace & Co., W. R. 872 505

TRADE NOTES

New I.C.I. Silicones

Some changes and additions have been made to the range of I.C.I. silicone products.

Two new methyl phenyl fluids, named DP 175 and DP 190, have been placed in the development range. The presence of the phenyl radical gives these fluids the advantage over the standard dimethyl silicone fluids for certain applications, including greater heat stability and improved compatibility with other materials. DP 175 is particularly useful for pharmaceutical and cosmetic applications while DP 190 is recommended for a high temperature lubricating grease for high temperature oil baths.

Development product DP 206 has been promoted to the full sales range as release resin R 206 and M 402, a new silicone emulsion for mould release, is now available in quantity. For general mould release applications in the rubber, plastics and metal industries, M 402 can be used in the same way as M 400 and M 401. It is, however, particularly useful where a good mould coverage is wanted, as in the manufacture of deep-trued tyres.

Zone-refined Tellurium

Zone-refined tellurium of high purity is being produced by Johnson, Matthey and Co. Ltd., 73-83 Hatton Garden, London E.C.1. The total metallic impurity content, excluding selenium, is less than 5 p.p.m. and is normally in the region of 1 p.p.m. The selenium content does not exceed 5 p.p.m. The tellurium is available as half-round bar approximately 1 in. by ½ in.

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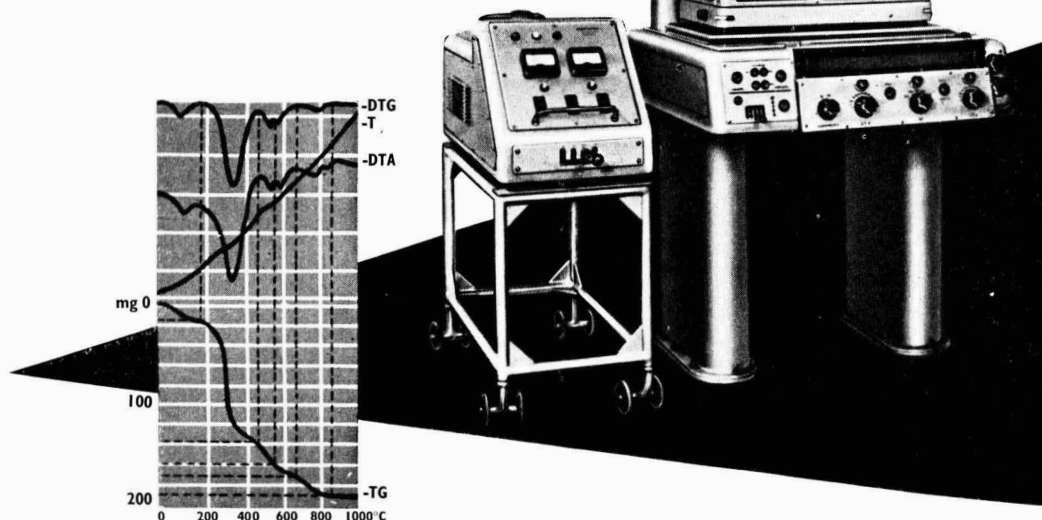
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- the composition of analytical precipitates
- the crystal structures of inorganic compounds
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- the rate of change of weight /DTG/
- the change of enthalpy /DTA/
- the change of temperature /T/ of the sample

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SINGLE ROLL CRUSHER by British Jeffrey Diamond, size 30 in. by 30 in., type 2.

INCLINED & HORIZONTAL TROUGH BELT CONVEYOR, 28 in. wide, 70 ft. 1 in. inclined, 99 ft. 9 in. horizontal.

OPEN TOP COAL BUNKER, 35 tons capacity, bolted construction, 18 ft. by 8 ft. by 11 ft. 9 in. deep.

INCLINED DRAGLINK SCRAPER CONVEYOR, 24 in. wide by 24 ft. centres.

FLEXTOTH CRUSHER, 24 in. by 20 in. by British Jeffrey Diamond.

HORIZONTAL CONVEYOR TYPE MAGNETIC TRAMP IRON REMOVER by Electromagnets Ltd.

HORIZONTAL TOT. ENC. MILD STEEL SCREW CONVEYOR, 12 in. dia., 45 ft. 5½ in. long.

VERTICAL TOT. ENC. SINGLE CHAIN & BUCKET ELEVATOR, 55 ft. 2¼ in. centres with buckets 10 in. by 6 in. by 5 in. by 5½ in.

SET OF STORAGE HOPPERS, two compartments, 80 ton and 25 ton.

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CONSTANT RATE BAND FEEDER by Avery, type 86 N2, max. rate of feed 300 c.f.h.

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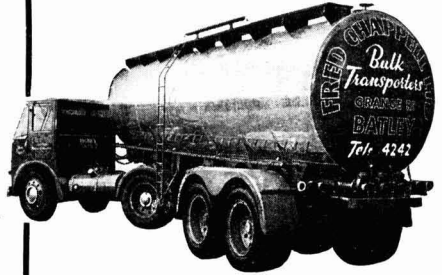
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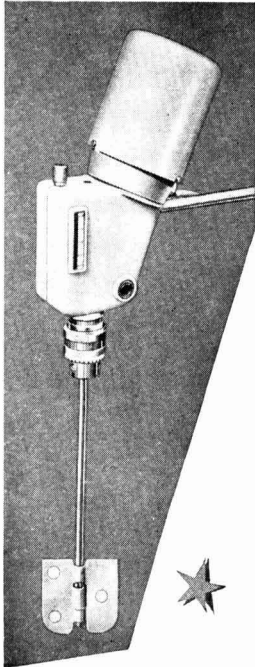
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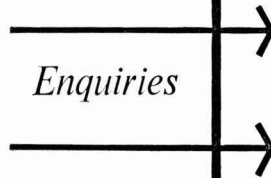
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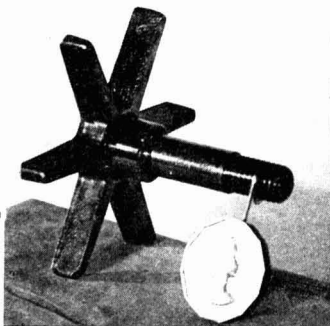
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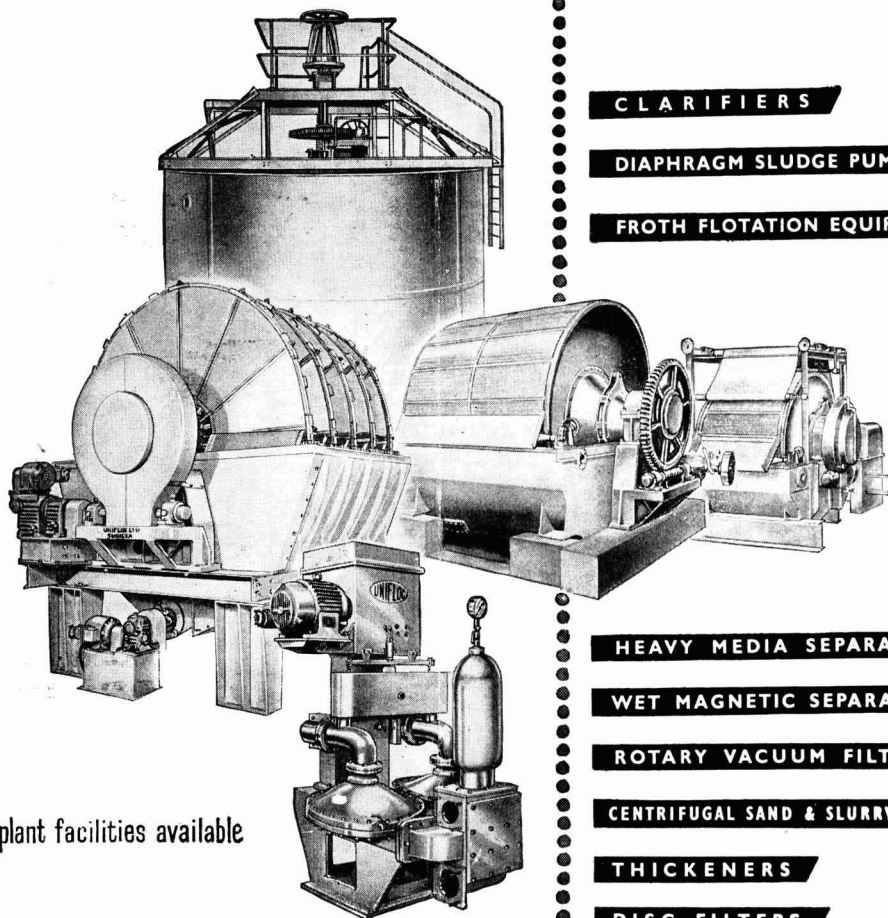
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