Chemical Age

incorporating
PETROCHEMICALS and POLYMERS

10 March 1962. Vol. 87. No. 2226

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

INDEX TO ADVERTISERS

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

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Producers and processors from all sections of the chemical and plastics industries throughout the world are exhibiting at the Hannover Fair – this outstanding event highlighting the past achievements and future prospects of these industries on an international level.

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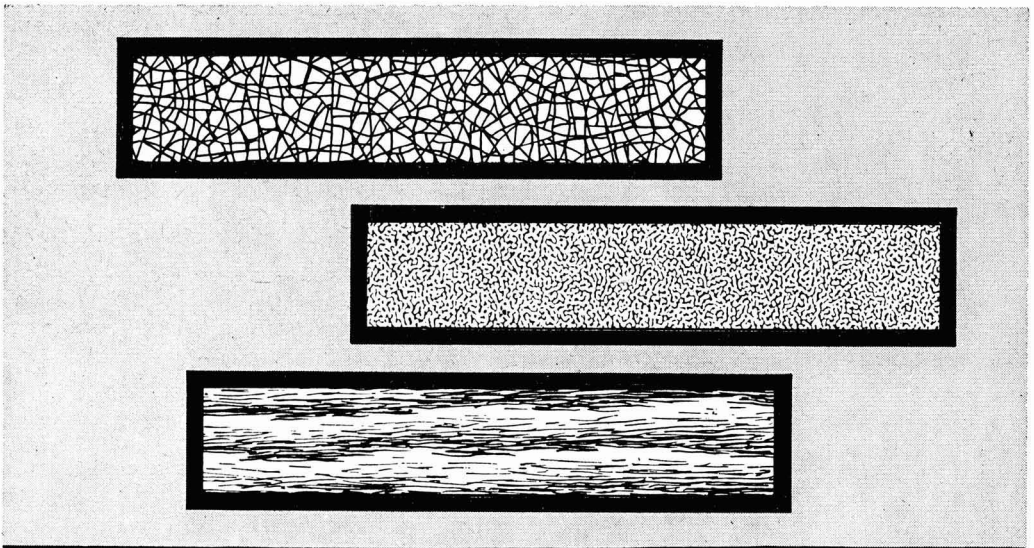

ETHO CHEMICALS

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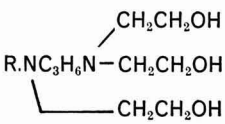

where R denotes tallow fatty acid radical

A double tertiary amine and an intermediary in the synthesis of other products

Corrosion inhibitor in cutting oils, asphalt additive, emulsifier

ETHOMEEN C/25

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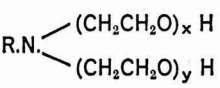

where R denotes the coco alkyl group and x + y = 15

A water-soluble tertiary amine which behaves like a nonionic compound

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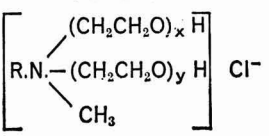

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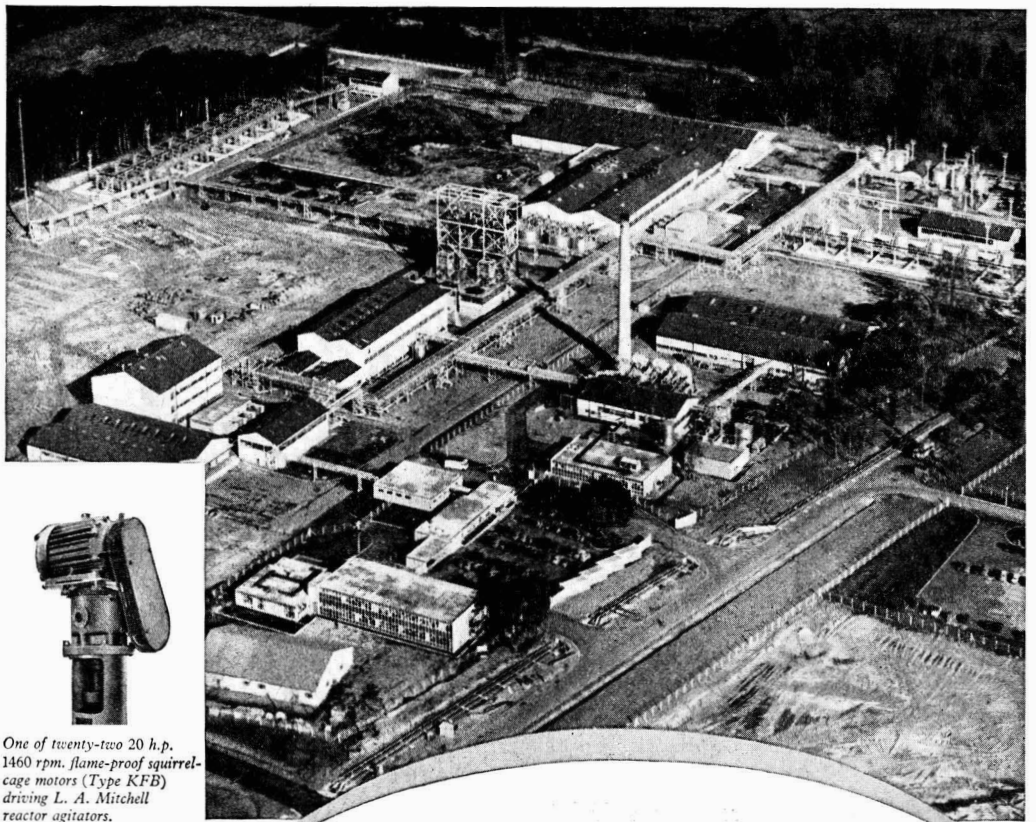
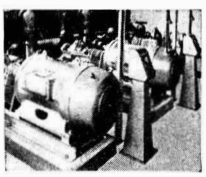
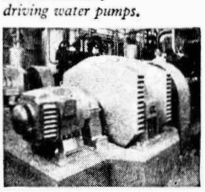


One of twenty-two 20 h.p. 1460 rpm. flame-proof squirrel-cage motors (Type KFB) driving L. A. Mitchell reactor agitators.



Two of four 100 h.p. 2920 r.p.m. squirrel-cage motors (Type HRSP), with pedestal control stations, driving water pumps.



Two of four 425 h.p. 300 rpm. salient pole synchronous motors (Type SM) with overhung exciter driving Laurence Sterne refrigeration compressors.

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The plant of the International Synthetic Rubber Company Ltd at Hythe is capable of producing 90,000 tons of synthetic rubber a year using butadiene and styrene as the main raw materials. Three grades of rubber are produced suitable for making motor vehicle tyres, coloured rubber products and general products. The motors, ranging from 0.25 to 620 h.p. and used for driving pumps and compressors, were all supplied by AEI. In addition, AEI made and erected the switchgear, transformers and other substation equipment for this plant.

AEI Associated Electrical Industries Limited

Motor and Control Gear Division

RUGBY AND MANCHESTER ENGLAND

A5580

VOL. 87 No. 2226
MARCH 10 1962

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PROSPECTS MYTH EXPLODED

THIS week, critics of the chemical industry have been well and truly confounded. Sir Miles Thomas, chairman of Monsanto and Mr. Bernard Hickson, chairman of Hickson and Welch, in their annual reports, as well as Mr. S. P. Chambers, chairman of I.C.I., speaking at Widnes on Tuesday, and the Board of Trade in its survey of the chemical industry growth rate, have all quite independently exploded the myth that British chemicals are no longer an expanding industry.

Mr. Chambers told members of Widnes Chamber of Commerce that it is not unnatural for many, during a period of economic depression, to take a pessimistic view of the future. The reverse is true, of course, during periods of boom when the tendency is to regard the future through rose-tinted spectacles.

These are the times, however, when it is profitable to stand away from current events and to take a long-term look at the future. Both Mr. Chambers and Sir Miles do this—and they come to the same conclusion—which is, of course, supported by all the facts. The economic experts, quite independent of the chemical industry, throughout the world have put on record their belief that rising living standards as well as the upsurgence of the less-developed countries will combine to produce a period of long-term economic and industrial expansion.

Throughout the world in Europe, North America and the Communist-bloc countries, the chemical industry has over the past 10 years enjoyed a growth rate well in excess of that of industry in general. The British chemical industry's rate of growth, at least double that of all U.K. productive industry, is one of the best in the world. There is no reason whatever to suppose that in such a period of general economic expansion the chemical industry will develop at a rate below that of the past decade.

Quite apart from the demands of the less-developed areas of the world for the more sophisticated products of the chemicals and plastics industries, rising living standards elsewhere will ensure that demand is accelerated in the coming years.

One of the weakest arguments of the industry's critics is the constant harping on surplus capacities, citing these as an indication that the industry is on the downgrade. The reverse is the case; overcapacity is a sign of a healthy, bustling, expanding industry. The same is true of competition. This, too, is not an unhealthy sign.

Sir Miles Thomas, Mr. Chambers and Mr. Hickson all make the point, which CHEMICAL AGE has made before, that the fortunes of the British chemical industry will fluctuate with changes in world economic conditions and more particularly with the current fiscal policies of the United Kingdom. When credit restrictions are imposed and taxes are raised, then there inevitably follows a period of industrial recession. This has happened throughout British industry; chemical producers, since they supply all other industries, cannot escape the results of such Government policies.

In the long run, the trend towards lower tariff rates, rising living standards, both in industrialised countries and in the more backward areas, together with the results of the chemical industry's heavy spending on research and development, replacement of obsolete plant, process improvement and introduction of new and improved products, will mop up current surplus capacity.

The future prospects of the chemical industry are undeniably bright, despite the vicissitudes of the 1960's.

Controversy on dumping duty for ammonium sulphate

ALLEGATIONS that the home price of ammonium sulphate is now unreasonably high in relation to the prices of overseas producers have been made by Propane Fertilisers Ltd., importers specialising in trade with Soviet bloc countries, following last week's imposition by the Board of Trade of a £3/ton anti-dumping duty on ammonium sulphate (except analytical reagent quality) originating from East Germany.

The new anti-dumping duty came into force on 3 March, under S.I. 1962, 419 (H.M.S.O., 3d.), and applies to ammonium sulphate classified in tariff subheading 31.02 (E). For the implementation of the order, the Customs and Excise authorities "will require proof of the origin of any such ammonium sulphate exported from the Soviet Zone of Germany, the Federal Republic of Germany, Berlin, the Netherlands, Belgium, France, Denmark, Norway, Sweden and Poland."

Propane Fertilisers last year sold 25,000 tons of East German ammonium sulphate—stated to represent about 3% of the total market—to U.K. fertiliser manufacturers at a price based on a "world price" of £12/ton, plus £4/ton duty. It is alleged that the new duty raises the price of East German ammonium sulphate, at £19/ton, to more than the current price of the U.K.-produced product. Chief U.K. producers are I.C.I., whose prices to fertiliser manufacturers are not revealed, but according to Propane Fertilisers the I.C.I. price last November was about £17 8s/ton, whereas, it is stated, U.K.-produced ammonium sulphate was at that time being offered to Irish buyers at only £12 10s/ton.

The N.F.U. commented that it must deprecate anything that puts up the cost of farming, but is sympathetic with any justifiable anti-dumping measures.

However, the N.F.U. is "not entirely satisfied" that all the plant being used for the manufacture of ammonium sulphate in the U.K. is of the most modern and efficient type, and hopes that "the chemical industry will make every effort to keep abreast of the most up-to-date methods of nitrogen production."

On the subject of plant modernisation, it should be noted that I.C.I. have a big modernisation programme in hand at Billingham and the big new ammonia facilities should be in operation in 1963. As Mr. S. P. Chambers, I.C.I. chairman, stated in his exclusive interview with CHEMICAL AGE (17 February), the new ammonia process will most certainly lower ammonia costs and there will be cuts in prices of some products.

U.K. export prices of ammonium sulphate have recently been weak at around $28/ton f.o.b. in bulk. Price of the fertiliser product to U.K. farmers has risen 3s 6d since February to the current level of £20 7s 6d; subsidy is £8 15s.

With regard to the price of U.K. ammonium sulphate sold in Eire, it is obvious that there is no question of 'dumping' here, as ammonium sulphate is not produced in Eire; there is therefore no competitive domestic product.

The application for anti-dumping duty on ammonium sulphate has been under consideration for eight months (C.A., 29 July, 1961, page 160). The Board of Trade is also now considering requests for anti-dumping duty on polythene imported from the U.S. and Italy. On the basis of an eight months' time lag, a decision on polythene is not likely to be made until July or August.

Fertiliser needs of under-developed areas should rise 500% by 1980 says F.A.O. Panel

FERTILISER needs of the less-developed countries are expected to rise to 30 million tons a year by 1980 from the present level of 5 million tons. Since 1945 total world fertiliser consumption has risen from 7.5 million to 27 million tons.

These figures were given in a report presented to the Fertiliser Industry Advisory Panel of the Food and Agricultural Organisation meeting in Rome last week. The panel, representing the world fertiliser industry, approved the second year of the Freedom-from-hunger campaign designed by F.A.O. to speed fertiliser usage in less-developed areas.

The panel also pledged more than $300,000 for the second year, plus $10,000-worth of fertiliser to be used for field work. For the first year of operation, the industry contributed $270,000.

Some 1,100 fertiliser demonstrations and trials are being carried out in several countries of the Near East and West Africa, and a considerable increase in this number is expected in the next few months. Similar work will soon be undertaken in northern Latin America.

Panel members approved the field programme for the coming year and the appointment of three further fertiliser specialists—two for northern Latin America and one for the Near East—who would join seven specialists already working in the field. They also approved plans for the holding of regional fertiliser meetings in the three programme areas.

The panel reviewed the first of a series of studies scheduled on the economic aspects of fertiliser use in developing countries, dealing with crop production levels and fertiliser use.

I.C.I.'s offer 3% rise to general workers

PAY increases averaging about 3% have been offered by I.C.I. to unions representing their 50,000 general workers. The proposed increases in some cases amount to as much as 8%. It is understood that the unions' demand was for a flat increase of 4%. The I.C.I. management are also prepared to consolidate part of certain bonus earnings with the basic rate, and to review the whole wage structure next autumn.

The increased basic rate, if agreed, will be backdated to 5 March—four weeks before the end of the Government's 'pay pause' period. The unions are expected to reply to the I.C.I. proposals on 15 March.

As we go to press, I.C.I. have also offered their 12,000 craftsmen an increase of 2d/hour in the basic rate, with consolidation of part of bonus earnings with the basic rate. This offer has been accepted by the unions concerned.

Negotiations affecting some 60,000 workers in the heavy chemicals, fertiliser and plastics industries—which are to be resumed by the employers' side of the Joint Industrial Council for the Chemical and Allied Industries next week.

Cyanamid make 15% cut in N.H.S. prices

PRICE to the National Health Service of antibiotics is to be cut by 15% on 12 March by the Lederle Laboratories Division of Cyanamid of Great Britain Ltd. This is the fifth reduction in antibiotic prices made by Cyanamid since 1951.

Mr. O. N. Williams, managing director, who says that price levels have been reduced 49% since 1949, adds that the latest cuts would "probably result in the largest savings made to date under the Voluntary Price Regulation Scheme, although the actual amount cannot yet be estimated."

The antibiotics concerned are Aureomycin (chlortetracycline), Achromycin and Achromycin V (tetracycline), and Ledermycin (dimethylchlortetracycline). Cyanamid state that it is important in their successive price cuts to "watch with great care that financial appropriations for research programmes are not jeopardised by the expediences of economy."

Lower prices for U.K. refined borax

FOLLOWING their reductions in prices of boric acid (CHEMICAL AGE, 3 March, p. 354), Borax Consolidated Ltd. have now cut the prices of their British refined borax decahydrate and Neobor borax pentahydrate by £2 and £1 per ton respectively. The price of Neobor is now £56/ton in paper bags. The prices of borax (technical grade) are as follows (net per ton):

	Paper bags		Hessian sacks	
	£	s	£	s
Granular	44	10	45	10
Crystal	—		49	0
Powder	49	0	50	0
Powder, extra fine	50	0	51	0

Project News

I.C.I. REPHASE POLYPROPYLENE EXPANSION PLANS AT WILTON

RECENT technical progress by **I.C.I.'s** Plastics Division engineering staff has made it possible to slow down the work on the extensions being carried out on the Wilton polypropylene plant. More polypropylene can now be produced from existing facilities than was at first envisaged.

The capacity of the first polypropylene plant was planned at 11,000 tons a year, and the first stage expansion plan to double the capacity was already in hand when it was announced that the plant was fully on stream (see CHEMICAL AGE, 3 December 1960, p. 942). It is now possible, however, to produce 15,000 tons of polypropylene per year in the original facility. Part of the expansion already completed has put the capacity beyond the 15,000 tons, although I.C.I. have not revealed by how much.

The original plant was built by **Constructors John Brown**, who were also awarded the contract for the extension. The plant was built in a record time: it was on stream only 17 months after work was begun on the site. To meet the tight schedule, the project was divided into self-contained units, some of which were designed by I.C.I. engineers and the rest by C.J.B. The plant was built in such a way as to allow for rapid expansion.

The effect of rephasing the project will reduce the contractors' labour force from 175 to 25.

Pittsburgh acrylic resin know-how for B R.P.

● IN the near future **British Resin Products Ltd.**, of the Distillers Plastics Group, will start the production of a range of thermosetting acrylic paint resins at their Barry, Glam, facilities. B.R.P. will produce under licence from **Pittsburgh Plate Glass International S.A.**, using their patents and know-how. B.R.P. will offer a full technical service to paint producers and users.

Main properties of paints based on thermosetting acrylic resins are good alkali resistance, good adhesion with one coat application, high mar resistance and good flexibility. It is in the one-coat field that these paints should find an increasing market, particularly for domestic equipment.

Shell's Indonesian pipeline under test

● FULL-SCALE testing of **Shell's** newly completed 20-in., 150-mile oil pipeline, connecting the Tandjung oilfield with the Balik Papan refinery in East Kalimantan, is now in progress. With an annual throughput of 2 million tons of crude, the pipeline will boost Shell's production in Indonesia by some 50%. Construction contractors were **William Brothers Overseas**, U.S., and **Constructors John Brown Ltd.**, U.K.

Flow problems due to the solidification at normal day temperatures of the Tandjung crude, which has a high wax content, have been overcome by carrying the oil as a suspension in water, the crude oil being mixed with the water at controlled temperatures and in controlled proportions.

Monsanto's capital spending at Fawley, Newport and Ruabon

● CAPITAL spending by **Monsanto Chemicals Ltd.** in 1961 totalled £1,330,246, covering expansion and modification projects as well as the construction or completion of several projects.

New production facilities at Newport, Mon, which double capacity for Montopore expandable polystyrene came into operation at the turn of the year. Work on the project at Fawley to raise capacity for polythene from 17,000 tons a year to more than 25,000 tons has already begun; this project will achieve a significant improvement in manufacturing costs.

During the year a new unit for the production of diphenyl was commissioned at Newport, doubling production of this intermediate while new equipment for the production of a new lube-oil additive was brought on stream, also at Newport.

New construction includes plant at Newport to make 5 million lb./year of fumaric acid, due on stream this year, plus additional capacity for the production of new and established rubber chemicals at Ruabon.

Equipment contracts

Cooling tower for Indian styrene plant

● A COOLING tower using Polygrid plastics packing is to be supplied to **Polychem Ltd.**, for installation at a styrene monomer plant near Bombay, by **Head Wrightson India Ltd.**, a subsidiary of Head Wrightson and Co. Ltd., Thornaby-on-Tees. The tower will include 6,000 U.S. gall./min. of water.

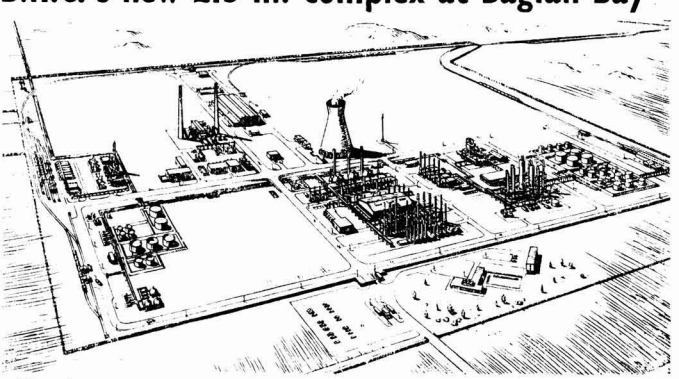
Another order is for a concrete-shell mechanical draught cooling tower to be supplied to **Tata Iron and Steel Co.** at Jamshedpur for a tonnage oxygen plant. This tower will incorporate timber packing and will handle 2,000 U.S. gall./min.

Fertiliser dryers for I.C.I. Severnside project

● Two large rotary-drum dryers for the drying of granular fertiliser at **I.C.I.'s** new plant at Severnside are to be supplied by **Head Wrightson Stockton Ltd.**, a subsidiary of Head Wrightson and Co. Ltd., Thornaby. Steel shells for the dryers will be ¾ in. mild steel plate and each shell will be supplied in three approximately equal lengths, prepared for butt welding on site. Construction of both dryers is expected to be completed during May 1962.

I.C.I. have a £10 million project at Severnside to produce 100,000 tons/year of ammonia plus plants for urea and other fertilisers. It was recently announced that site work by Simon-Carves Ltd., who together with Simon Handling Engineers Ltd., are undertaking a major part of design and construction, was proceeding satisfactorily. Units to be designed by them include granulating and sulphuric acid plant, and a packing shed. Civil engineering and erection is by Simon-Carves, who are also responsible for the civil engineering and construction of a phosphoric acid plant.

B.H.C.'s new £13 m. complex at Baglan Bay



View from south west of the new petrochemicals complex at Baglan Bay, Glam., of British Hydrocarbon Chemicals Ltd., now under construction at a cost of £13 million. Chemicals to be made initially are ethylene dichloride and butadiene (by B.H.C.) and styrene (by Forth Chemicals Ltd.)

WHERE does the money go? Of the £21,051,658 received by Monsanto Chemicals Ltd. in 1961 from the sales of products, from dividends, interest, etc., £13,906,147, or 66.1%, went on raw materials, fuel, supplies, etc. In 1960 these payments accounted for 63.8% of total income.

Other items in the Monsanto budget were: wages, salaries, national insurance, pensions, etc., £3,815,516, or 18.1%; (16.3% in 1960); depreciation and obsolescence, £1,702,498, or 8.1% (6.9%); debenture interest and interest on overdraft, £358,435, or 1.7%. The remaining 6% was applied as follows: taxes, £500,044, or 2.4% (4.6%); dividends, £408,843, or 1.9% (2.7%); retained in the business, £360,175, 1.7% (4%).

Income in 1960 totalled £21.2 million and it is interesting to note that raw materials, wages, and depreciation each accounted for a higher proportion of income in 1961. Against that, the proportion allocated in 1961 to taxes, dividends and retained income were all down on 1960.

As usual, presentation of the annual report is a credit to Monsanto. The use of top quality paper, colour, graphs and a large number of photographs must be greatly appreciated by shareholders. Certainly they can have no complaints with the amount of information given.

SCORNING my suggestion of 'meetnik' as a word to describe somebody who attends a scientific conference or symposium, a Scottish reader writes to say that the only correct word is 'symposiast'. And when it is pronounced, he warns, the 'o' should be short, it is not an 'omega'. The word is derived from *συμποσίου*—a drinking party or entertainment (usually a gross exaggeration, he adds).

IN the effort of chemicals and plastics producers to open new markets for their products—a task that is doubly important in an era of temporary overcapacities—the chemical specialty producers have a vital role. Many of the newer markets for polymers in fact would be non-existent were it not for the special properties imparted by microquantities of special additives.

One of the world's industrial experts in this field, Dr. J. Arndt Weicksel, who was recently made responsible for the marketing of all plastics additives produced by American Cyanamid, and who has been in the U.K. on a fact-finding tour, told me last week that the U.S. market for light stabilisers should reach $10 million by 1965, much of which would be represented by captive manufacture.

Currently Cyanamid are looking for additives that will reduce static in plastics and hope to introduce a product that can be added to the polymer before it enters the moulding stage. In another area, they are seeking to improve the flame-extinguishing characteristics of plastics. In a more spectacular way, they are carrying out research on the problem of ultra-violet degradation in space, an important point for cosmonauts who want a clear view from the windows of their capsules.

THE lack of ultra-violet stability has been the major obstacle to growth of the polyolefins. In 1959, despite this drawback, polythene became the first plastics in the U.S. to top the magic 1,000 million lb./year mark. Until 1959 carbon black with its obvious limitations was the only light stabiliser compatible with these polymers.

Now, however, thanks to the newer absorbers (2-hydroxy-4-*n*-octoxybenzophenone; 2,2'-dihydroxy-4-*n*-octoxybenzophenone; and *p*-octylphenyl salicylate are examples) the total U.S. market for polythene is expected to increase by some 400 to 800 million lb./year. Last year the production of polystyrene in the U.S. also topped the 1,000 million lb. mark for the first time. Of that, 25 million lb. was in the light louvre area, and between 0.25 to 0.50% of total polymer composition was represented by ultra-violet absorbers.

Sales of polypropylene in the U.S., estimated at 100 million lb. in 1961, rising to an expected 260 million lb. in 1963, would hardly have got off the ground but for the existence of efficient stabilising additives. This is particularly true of the fibre field. Although these problems are more urgent in some of the sun-drenched states of America, the problem is a vital one for the British plastics industry for it is clear that full weatherability is the key to the opening up of vast new outlets in the building and other industries.

ONE of the points that has intrigued me about the I.C.I.-Courtaulds battle has been the big build-up that Courtaulds have given to their trade with the Soviet Union. This has covered the large complete plant contracts for which Courtaulds handle procurement and engineering as well as know-how, including the £7 million fibre plant now under negotiation in Moscow for Latvia, as well as the more recent disclosure of Soviet orders for some £2 million worth of yarn and staple fibres.

I learn that this is strictly a one-way trade and that Courtaulds, unlike I.C.I., do not buy any chemicals from the U.S.S.R. One of the factors that led the Russians to declare their support publicly for Courtaulds in Rome recently, is the fact that Courtaulds will not only sell know-how but will also act as main contractors. Apart from price considerations, one of the reasons why one big chemical know-how deal with I.C.I. is still on the stocks is that company's reluctance to handle construction, which it feels should be done by one of the large specialist contracting companies.

ONE of the most enterprising consultancy practices in the U.K.—and probably the only one of its kind—was started two years ago by a group of Cambridge graduates who left their jobs in industry to establish a new link between university and industry under the title of Cambridge Consultants Ltd., at 8 Jesus Lane.

This group, which recently equipped a workshop for the construction of prototypes and experimental equipment, draws on the skills of people working in the research departments of the University who act as consultants to industry. They will advise on all stages of research, development and manufacture.

Currently their work also covers technical writing (publicity literature, technical manuals, articles, glossy brochures) and translations of all types of literature. It is not surprising that Cambridge Consultants' largest research contracts have come from the U.S., where firms are very much alive to the possibilities of a fresh approach to their scientific problems.

MY on-the-spot correspondent tells me that the absence of the big West German chemical companies at this year's Leipzig Spring Fair appears to have made little difference to the amount of business they are likely to do there! The products of the companies are being shown by agents and in addition, each of the companies has teams of executives —apparently with order books.

Big talking point of the Fair has been the increase in the number of U.K. exhibitors—40 up on last year. New among the chemical companies showing are the Laporte Industries Group, who are exhibiting with their German subsidiary company.

Alembic

GROWTH IN THE CHEMICAL INDUSTRY

Growth rate averaged 6% p.a. from 1954-61, double U.K. industry as a whole, says B.o.T.

THE chemical industry in the U.K. grew at over twice the rate of manufacturing industry as a whole from 1954 to 1961; its growth rate averaged a little under 6% per annum. Among the major industrial groups, this record growth over the period was matched only by the electrical engineering and, up to 1960, by the motor vehicles industries.

These conclusions were drawn from a detailed survey of the U.K. chemical industry published in the 2 March issue of the *Board of Trade Journal*. For the purpose of the survey the chemical industry was taken as consisting of: chemicals and dyes, including dyestuffs, fertilisers and chemicals for pest control, inorganic chemicals, organic chemicals, other chemicals and gases etc.; pharmaceutical and toilet preparations; explosives and fireworks; paint and printing ink; vegetable and animal oils, fats, soap and detergents; synthetic resins and plastics materials; polishes, gelatine, adhesives etc.

In 1960, the chemical industry is estimated to have accounted for a labour force of approximately 405,000 (some 4% of all U.K. productive industry), a net output approaching £800 million (some 6½% of all U.K. productive industry) and, in recent years, for an investment of around £130 million per annum (some 10%).

The increasingly important part the chemical industry is playing in the economy as a whole is shown by successive results of the Census of Production; in 1948 it accounted for some 4½% of total net output of all U.K. productive industry, 5% in 1951, 5½% in 1954 and 6% in 1958.

The high ratio of capital and low ratio of labour employed is one of the notable features of the chemical industry. This is borne out by the high level of investment in fixed assets. During the 10 years, 1951-1960, some £1,000 million in total was invested in fixed assets. The annual rate in the first years of the period varied around £70 million, but in the last few years it has risen to around £130 million. Compared with this, the growth in employment over the decade was 15%, an average rate of 1½% per annum.

The value of direct exports of chemical products in 1960 was £323 million (including £6 million of animal and vegetable oil etc.) or 9% of all visible exports. The value of imports of chemicals for the same year was £229 million (including £54 million of animal and vegetable oil, etc.) or 5% of all visible imports. It is estimated that direct exports of the chemical industry in 1960 accounted for some 22% of the volume of output while a further 10% or so was exported indirectly.

From the accompanying table, which gives the relative importance of the various sectors of the chemical industry, it can be seen that, while industrial production rose at an average rate of just over 2.6% per annum for the years 1954 to 1961, chemical industry output rose at an average of 5.8%. Except for dyestuffs, animal and vegetable oils and fats, and soap and detergents, all sectors of the chemical industry have shown a growth rate significantly higher than that of the U.K. productive industry as a whole, with the most rapid rates for plastics, organic chemicals and pharmaceuticals.

The differential high rate of growth in the chemical industry has occurred also in other industrial countries.

AVERAGE % PER ANNUM RATES OF GROWTH 1955-1960

	Chemicals (a)	*All industry* (b)	*Ratio* (c)
U.K.	6.2	2.6	2.4
W. Germany ...	11.8	7.0	1.7
U.S.	5.2	2.3	2.3

(a) Groups 31 and 32 of the International Standard Industrial Classification, which includes mineral oil refineries and coke ovens.

(b) Manufacturing industries, mining and quarrying, gas, electricity and water; excluding construction.

(c) The ratio (a) to (b).

The size of the group covering inorganic chemicals, other chemicals, gases etc., and explosives, and the rapid growth of the organic and plastics materials sectors make these of special importance in the overall growth of the chemical industry. Inorganic chemicals etc. and explosives, between them accounted for 35% of the net output of the industry in 1958, but contributed rather under 30% of the total growth between 1954 and 1961. Organic chemicals and plastics materials, between them accounting for 19% of the net output of the industry in 1958, contributed nearly 40% of the total growth between 1954 and 1961.

Sector round-up

Inorganic chemicals. In 1960, this sector accounted for about one-tenth of the net output of the chemical industry as a whole. Over the period 1954 to 1961 production increased by an average of some 4% per annum, a rate above the average of all U.K. productive industry.

Organic chemicals. This sector, which includes coal tar chemicals, by 1960 accounted for about one-eighth of the net output of the chemical industry. Over the period 1954 to 1961 production increased by an average of over 10% per annum, a rate of growth surpassed by hardly any other sector of industry (and only by plastics materials within the chemical industry).

Other chemicals, gases, etc.; explosives. This large group accounted for a quarter of the net output of the chemical industry. The output of some products of this group, e.g., industrial gases has grown very rapidly in recent years; against this production of explosives has declined. Overall the rate of growth in the period 1954 to 1961 averaged rather less than 5% per annum, which is higher than the rate for inorganic chemicals though below the average for the chemical industry as a whole.

Plastics materials. This sector accounted for about one-twelfth of the net output of the industry in 1960. Over the period 1954 to 1961 production in-

PRODUCTION IN THE CHEMICAL INDUSTRY

	Net Output 1958 £m. (c)	Index of Production 1958 = 100 1954	1955	1956	1957	1958	1959	1960	1961	Average % per annum rate of growth 1954-61
Dyestuffs	22.9	173	125	113	126	100	125	141	138	0.1
Fertilisers	24.6	85	92	97	98	100	108	117	119	4.9
Other chemicals:										
Organics (a)	64.0	74	—	—	—	100	119	148	148	10.3
Inorganics	61.9	92	—	—	—	100	111	122	121	4.1
Other chemicals, gases, etc.	110.9									
Explosives	29.5	84	—	—	—	100	107	116	116	4.8
Misc. chemical industries (b)	30.2									
Plastics materials	45.2	59	73	77	93	100	123	147	149	14.1
Paint & varnish	53.9	84	91	94	96	100	110	112	111	4.1
Pharmaceutical preparations	62.5	74	—	—	—	100	113	125	137	9.2
Toilet preparations	19.7	89	97	95	100	100	109	120	123	4.8
Soap, detergents, etc. ...	37.0	93	97	101	102	100	103	106	107	2.0
Vegetable & animal oil & fats	18.7	103	105	106	100	100	108	106	106	0.4
Total, chemical industry ...	581.0	84	91	94	100	100	111	123	125	5.8
Total, all U.K. productive industry	—	94	99	100	101	100	105	112	114	2.6

(a) Including coal tar chemicals. (b) Adhesives; polishes; insecticides and disinfectants, etc.; printing ink. (c) Excluding amounts paid for services.

THE MOVEMENT IN WHOLESALE PRICES 1954—1961

	(1954 = 100) 1954	1955	1956	1957	1958	1959	1960	1961
All manufactured products ...	100	103	107	110	111	111	113	116
The chemical industry ...	100	99	103	106	105	106	105	104
General chemicals	100	102	105	108	108	107	105	104
Pharmaceutical preparations	100	99	99	100	100	99	99	101
Plastics materials	100	97	95	93	92	88	86	81

EXPORTS OF CHEMICALS BY MAIN PRODUCING COUNTRIES

	From U.K.	1960 exports From all main countries	% of markets held by U.K.	% increase in value of exports 1954-1960 From U.K.	From all main countries
		U.S. $ million			
E.E.C. countries:					
Benelux	21	240	9	79	102
France	24	219	11	52	66
Germany, W.	37	336	11	177	176
Italy	29	297	10	100	149
Netherlands	44	326	14	108	135
Total E.E.C.	155	1,419	11	102	125
E.F.T.A. countries:					
Austria	4	95	4	130	93
Denmark	17	109	16	55	86
Norway	16	69	23	81	76
Portugal	9	46	20	70	63
Sweden	30	150	20	77	89
Switzerland	12	182	7	66	120
Total E.F.T.A. (excluding U.K.)	88	651	14	72	93
U.K.	—	335	—	—	67
Other O.E.E.C.	42	197	21	40	60
U.S.	30	336	9	50	40
Canada	26	326	8	37	66
Japan	10	219	4	330	222
Non-O.E.E.C. sterling area	363	828	44	37	69
Latin America	48	717	7	16	29
Soviet Union & East Europe	31	159	20	790	182
Other countries	93	905	10	51	45
Total	887	6,092	15	55	73

creased by an average of some 14% per annum, an exceptional rate of growth for U.K. industry. Within the sector, the production of thermoplastic materials, accounting for over two-thirds of the net output, increased by an average of 17% per annum while thermosetting materials increased by an average of 7%, though some of the newer thermosetting materials showed increases much above this average.

Other sectors. Among the remaining sectors of the chemical industry, pharmaceutical preparations showed a high rate of growth at over 9% per annum for the period 1954 to 1961. In 1958 it accounted for less than one-ninth of the net output of the chemical industry.

The fertiliser and toilet preparations sectors with growth rates of the order of 5% per annum, and paint and varnish with a growth rate of some 4% per annum over the period 1954 to 1961, all surpassed the average rate for all U.K. productive industry. The soap and detergent sector had a growth rate rather lower than the total for U.K. industry, but detergents, with a little under half the net output of the sector in 1958, had an average growth rate over 1954 to 1961 of rather under 6% per annum, while soap showed little change over the period.

There are three reasons which go far in explaining the relative fast rate of growth of the chemical industry: chemical products, already in demand by virtually all industries, have been used in increasing proportion in place of traditional materials; many of the industries using large quantities of chemicals have grown at a rate above the average of all U.K. productive industry, e.g. glass, electrical products and engineering consumer goods; and the relative favourable price movements which have occurred in recent years in the main chemical materials.

Prices in the chemical industry have on the whole remained relatively stable compared with the general level of prices. In some cases, particularly for plastics materials, very considerable price reductions have occurred.

International trade. The accompanying table shows in current value terms (expressed in U.S. dollars) the size and growth of the principal markets for U.K. exports of chemicals over the period 1954 to 1961.

Temporary exemption from import duties

UNTIL 1 January, 1963, unless otherwise indicated, the following compounds are exempt from import duty:

Sodium thiocyanate; cyclopentanol, *o*-tertbutylphenol; antimony potassium tartrate; *n*-butyl-lithium (until 1 May, 1962); *sec*-butyl-lithium (until 1 May, 1962); diethylalumium chloride; ethylaluminium dichloride; prepared rubber accelerators containing not less than 80% by weight of *NNN'*-trimethylthiorurea; aluminium oxide (fulfilling certain conditions); 1:2:3:4:5:6-hexachlorocyclohexane, mixed isomers, of which the α-isomer content is not more than 50% by weight or of which the γ-isomer is not less than 16% by weight (until 1 May, 1962); 1:2:4-trichlorobenzene; formic acid, of a strength not less than 98% by weight (until 1 July, 1962); propionic acid; sorbic acid (until 1 July, 1962); yarn wholly of polyurethane, polyurethane monofil and grouped yarn with a core of polymethane monofil, all capable of being stretched to at least five times their original length without breaking with instantaneous recovery to not more than one and a half times its original length on release after tension (until 1 May, 1962).

Monsanto do not expect substantial improvements in profits this year

UNLESS there is a dramatic reversal of present national and international economic conditions, Monsanto Chemicals Ltd. do not expect any substantial improvement in their trading results in 1962. This is stated by Sir Miles Thomas, chairman, in his annual report.

The sharp fall in profit margins in 1961 was due to drastic decreases in selling prices. Sir Miles pointed out that three factors, beyond the company's control, influenced its results—world level of industrial activity, U.K. fiscal policy, and relationship between capacities and demand throughout the world.

Monsanto's net profit in 1961 was £769,018 compared with £1,416,569, as stated in CHEMICAL AGE, 17 February, page 276. See 'Project News' for details of Monsanto's capital spending in the U.K.

During the year direct exports represented 37% of total sales at £7,669,099, compared with £7,254,551 (35%) in 1960. Monsanto total turnover, at £20,629,635 (£20,761,862), was affected by the reduced industrial tempo in most parts of the world and by stringent U.K. credit restrictions.

In addition the commissioning of new chemical plants all over the world in delayed response to the shortages of past years brought into being much new capacity. The need to operate such plants at the highest possible levels of production made additional large tonnages of chemicals and plastics available in world markets.

Although a hallmark of a progressive and dynamic industry, the fact that chemicals had consistently grown at a faster pace than industry in general carried with it the risk of periodic imbalance between supply and demand. The present imbalance was aggravated by the current substantial rise in capacity coinciding with a temporary cut in demand.

In 1961, plastics represented 23.1% of Monsanto's total sales; rubber chemicals, 21.7%; pharmaceuticals (salicylates, aspirin and phenacetin), 11.2%; phthalic and maleic anhydride, plasticisers, 10.4%; phenol and by-products, 6.8%; other, 26.8%. Of exports, 34.6% went to the Commonwealth; 15.8% to E.E.C.; 12.3% to E.F.T.A.; and 37.3% to the rest of the world.

Despite severe competition, Monsanto had been aggressive in seeking new export business to keep their plants working at economic levels, even though profit margins had often been microscopic. Sales turnover of fine chemicals and pharmaceuticals further increased in volume, but competition, notably in aspirin and salicylates, intensified at home and overseas.

Sales of styrene monomer, marketed for the associated Forth Chemicals, suffered from lower home demand for polystyrene and synthetic rubber, as well as from low-priced imports. Sales of Monsanto's own polystyrene products fell following reduced demand for consumer goods. Future prospects were

(Continued on page 406)

Courtaulds' supplementary statement

RISE IN OTHER ACTIVITIES MATCHES DECLINE IN VISCOSE PROFITS

THE trend in Courtaulds' profits in recent years had been obscured by the fact that total group profits had represented the result of two contrary influences—a decline in viscose profits and a rise in those from other activities. This is declared in a supplement to their financial statement that was issued on 24 January.

Overall, Courtaulds' profits from viscose had declined between 1955/56 and 1916/62 from £12 million to £5 million. This fact had completely masked the dynamic rise in profits from other activities—from £5 million to £12 million.

Now, following major rationalisation of the industry, Courtaulds believed that costly adjustments in viscose were over and that the U.K. viscose industry was in a stronger position than any in the world.

Viscose. The anticipated increase of £3.4 million from viscose between 1961/62 and 1962/63 was expected to arise from:

	£m.
Extra volume from British Enka industrial and Lustrafil textile yarn	1.1
Closure of Coventry Works	0.4
Improvements in N. America	0.4
Cheaper pulp & chemicals	1.0
Increased sales of staple	0.6
Other items (cost savings less price cuts)	0.1
	3.4

The first three items had been accomplished; the fourth was based on price cuts already in operation. Thus, £2.9 million of the total was virtually certain.

Looking to 1964/65, the further increase of £0.6 million was composed of:

	£m.
Continuous filament textile yarn	+0.9
Continuous filament industrial yarn	−0.2
Staple fibre	−0.3
Related activities in U.K. & overseas	+0.5
Allowance for higher research & overheads	−0.3
	+0.6

Transfer between 1962/63 and 1964/65 of the textile yarn output of British Enka to Courtaulds' existing factories would add £0.7 million in profit. Courtaulds believed that U.K. consumption of viscose textile filament yarn would now grow at least in line with the consumption of all fibres for textile end uses.

Main use for industrial yarn was in tyres and between 1955/56 and 1961/62 the share of this market held by viscose fell from 84% to 72%. Courtaulds had developed a stronger viscose tyre yarn which was 20% stronger still, and which matched nylon on strength grounds. They were confident that this, plus further improvements expected, would enable viscose to continue to hold at least 60-65% of the total tyre yarn market by 1964/65 despite the pressure of nylon and steel. In a growing tyre market, and with the further development of other viscose industrial uses outside tyres, even this decline in market share would result in only a small reduction in volume add Courtaulds.

Courtaulds were the sole U.K. producers of viscose staple. U.K. consumption of which in the middle and late 50's had risen by around 10 million lb. a year to a total of 220 million lb. in 1960/61. Last year, 1961/62, saw a decline partly because of the recession in the carpet trade; but helped by the new varieties of staple that Courtaulds were now introducing, a resumption of growth was clearly foreseen in 1962/63 and beyond—to a total of 240 million lb. in 1964/65. The fall in profits shown despite higher volume was due to provision made for the price cut and loss of volume which might result from increased competition from E.F.T.A. countries.

Major changes in other activities were:

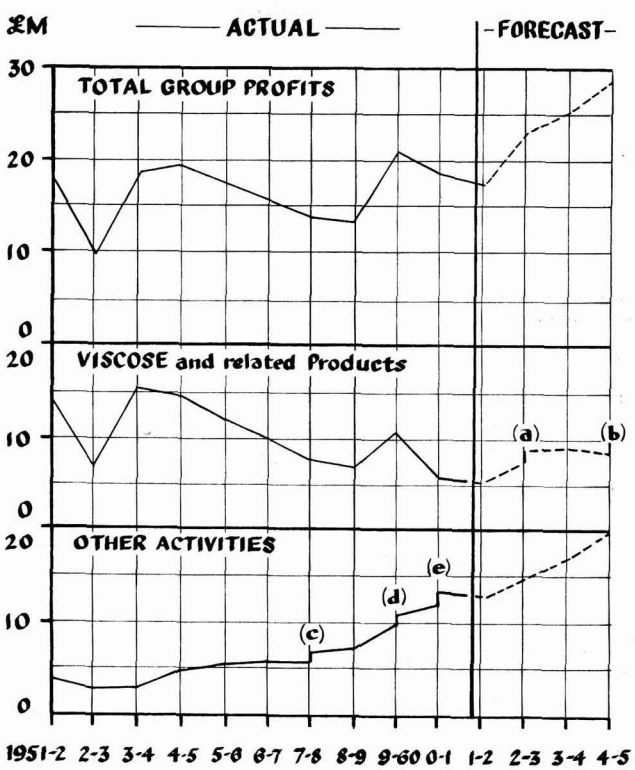
	1961/62 to '62/63	1962/63 to '64/65
	£ million	
British Celanese	0.7	1.0
Courtelle (U.K. & France)	0.2	1.7
British Cellophane	0.1	0.4
P.J.A. & Cellon (paint)	0.4	0.5
Other	0.7	1.3
	2.1	4.9

Profits of British Celanese had grown since acquisition in 1957/58, from £1 million to £4.5 million in 1961/62. Currently profits were running at close to the level estimated for next year. Further growth was based on expansion in fibres, chemicals, plastics, fabrics and garments. Profits of P.J.A. were also already running at the level of the 1962/63 estimate.

The growth for Courtelle represented production within the limits set by present announced capacity—32 million lb. in the U.K., 10 million lb. in France. Courtaulds were confident that demand for that fibre would expand to perhaps 50 million lb. in the U.K. by the mid-60's. Courtelle had the lowest capital and running costs of any acrylic fibre in the world, and profit prospects were good.

The last graph summarises all activities other than viscose since 1951/52. It shows that Courtaulds' profits from these "other activities" have quadrupled in the decade.

COURTAULDS GROUP PROFITS BEFORE TAX



Acquisitions: (a) British Enka tyre yarn & Lustrafil agreement—£1.1 m.; (b) British Enka textile yarn—£600,000; (c) British Celanese—£700,000; (d) G.D.L. Group—£200.000; (e) P.J.A. and Gossard—£1.3 m.

ACTIVITY IN COURTAULDS SHARES MARKS CLOSE OF I.C.I. BID

WITH the last minute substantial turnover in shares of Courtaulds this week to beat the Thursday deadline of the I.C.I. bid, Courtaulds claim to have received 57,800 postcards from stockholders indicating support for the company's attempts to remain independent. This is said to represent at least 25% of the equity.

On Monday and Tuesday this week it is estimated that some 5 million of Courtaulds' 80 million ordinary shares changed hands, representing disposal by small investors. At the same time, there has been substantial buying of Courtaulds by larger investors as a means of gaining I.C.I. loan stock.

Other last minute developments have been the formation of Courtaulds Investments Ltd., the company to which £40 million of the Courtaulds assets are to be transferred and the statement on Monday by the National Provincial Bank, on behalf of I.C.I., to the effect that if acceptors of I.C.I.'s offer wished to change their minds they must do so by Tuesday this week.

Courtaulds stated on Monday that the company had received letters of support from some "very large shareholders" in addition to those large stockholders who had already returned postcards. Last week, Robert Fleming and Co., advisers to I.C.I., had stated they did not know of one institutional investor who would stay with Courtaulds.

It has become clear that I.C.I. will not get the 90% acceptances required for a full merger and on 28 February, Mr. P. T. Menzies, I.C.I. finance director, declared that if I.C.I. obtained an 80% interest in Courtaulds, he would expect a "high degree" of collaboration, but would not expect so much if I.C.I. had only a minority interest.

He believed that after a settling down period, there would be the greatest degree of co-operation possible without a complete amalgamation.

This general belief that I.C.I. were unlikely to gain complete control of Courtaulds has led Sir James Pitman, Conservative M.P. for Bath, to give notice of his intention to introduce in the House of Commons on 13 March a special Bill which would give the Board of Trade powers to require a company to divest itself of shares in a subsidiary if the Monopolies Commission ruled that ownership of such shares was a monopolistic and harmful to the public interest.

Following a thorough investigation of I.C.I.'s prospects, a leading firm of U.S. stockbrokers last week issued a report in which it stated that if the U.K. joined the Common Market, I.C.I. shares would be one of the best investments in the C.M. area.

Pipeline Bill gives control to Minister and permits compulsory purchase by companies

INTRODUCED in the House of Lords last week was the Government's Pipeline Bill, which is intended to control the development of pipelines and to regulate their construction, operation and maintenance. As well as curbing haphazard development in the public interest, the Bill is intended to assist the development of schemes by private enterprise.

Subject to control by the Minister, with procedure for objections, a company wishing to construct a pipeline would be able to obtain compulsorily the land rights necessary without recourse to a private member's Bill.

There are four main points to the Bill. Firstly, anybody wishing to construct a cross-country pipeline would be able to acquire the necessary land, rights and underground road crossings. Secondly, the Minister of Power would be given control of pipeline development and a procedure would be laid down for objections to be heard locally in the areas affected. Thirdly, the Minister would be able to regulate the construction, operation and maintenance of both local and cross-country pipelines to ensure safety and, fourthly, pipelines would be rateable.

A pipeline is defined under the terms of the Bill as a pipe or system of pipes for conveying anything other than air, water, water vapour or steam, but not including pipes for domestic purposes or for heating or cooling, sewers, drains, etc.

Pipelines more than 10 miles long are defined as cross-country pipelines and to save delay and the need to go through a separate procedure the Minister would direct that planning permission should be deemed to have been granted simultaneously with giving his authorisation for construction.

Most controversial clause is that which would permit compulsory purchase by pipeline promoters. There would be special parliamentary procedure with provision for objections to be heard, but if rights or land cannot be acquired privately then compulsory purchase may be authorised. Compensation paid in such cases would be in accordance with the Land Compensation Act of 1961: owners of land would be compensated on the ground that they have suffered depreciation; damage to land or personal property would also be provided for.

The Minister would also be able to specify in what way the work was to be carried out and what components and materials were to be used.

F.B.I. trade pact with East Germany covers chemicals, plastics

UNDER trade arrangement made between the Federation of British Industries and the East German Chamber of Foreign Trade for 1962, the level of the 1961 quotas will be maintained. The agreed list for U.K. exports to East Germany covers chemicals to the value of £600,000 including the following:

Oil additives; cable insulating oil; pastes; silicones; nickel sulphate and oxide; rubber; spectrographical standard substances; thermal insulation (85% magnesia or asbestos of calcium silicate); light magnesium oxide and carbonate; essential oils; flavouring essences; food dye-stuffs.

For British plastics materials other than transparent cellulose film for packaging, the quota is £500,000.

Chemicals and paraffin are included on the quotas for import into the U.K. In addition non-quota trade is expected to include purchases by East Germany of chemicals worth about £500,000. The East Germans hope to sell non-quota goods, including fertilisers and chemicals, worth about £5.5 million.

Explosion in May and Baker plant

A SMALL flash explosion occurred on 1 March in one of the minor manufacturing plants of May and Baker Ltd., as a result of which a process worker was badly burned.

The fire was brought quickly under control by the May and Baker works brigade, but a small pocket of solvent vapour caused a further explosion, injuring members of the fire brigade. All casualties received treatment at the local hospital but only the process worker is still detained.

The material damage from the explosion is not very great. The plant, which is still out of operation, suffered mainly from fire fighting chemicals.

New B.o.T. statistical service for industry

A NEW information series designed to provide a speedy and up-to-date statistical service on industry is announced under the title 'Board of Trade business monitor: production series'. It consists of more than 60 titles, of which about 40 will be published quarterly and the rest monthly.

Each issue will present the latest statistical data on the industrial production of a commodity or group of commodities. Titles include the following:

Salt; rubber; pesticides and insecticides; toilet preparations; paint and varnish; colours; synthetic detergents and soap; plastics materials; polishes.

Except for those on salt and rubber, these reports will be published quarterly. First issue on toilet preparations will appear in April; those on paints, colours, syndets, plastics and polishes in May.

Subscription rates are £1 a year for monthly periodicals and 7s 6d a year for those published quarterly.

London chemical engineering congress should lead to advances in four vital fields

ADVANCES in the knowledge of four specific areas of chemical engineering can be expected to follow the third congress of the European Federation of Chemical Engineering to be held in London in June, in conjunction with the Chemical and Petroleum Engineering Exhibition. This is because the scope of the congress has been limited to four main themes—three of them dealing with problems facing process industries today, the fourth being concerned with a subject that could well lead to new production techniques in the future.

The four themes are: Interaction between fluids and particles; the handling of solids; process optimisation; and the physics and chemistry of high pressures.

At least 2,000 congress members are expected from more than 30 countries. On Tuesday at the institution's London headquarters, Professor A. R. Ubbelohde, head of the Chemical Engineering Department, Imperial College, hoped that the simultaneous presence in London of so many of the world's experts on these four themes would lead to contribution of real value being made. More than 80 papers are to be presented by leading authorities of many countries; these will all be preprinted in advance of the congress and are to be taken as read. They will be introduced briefly to allow maximum time for discussion.

Translation service

The conference hall at Olympia will hold 1,000 delegates for each of the symposia. Simultaneous translation services of proceedings will be made available in English, German and French to each congress member.

The congress will be opened by Lord Hailsham, Minister for Science, at Olympia on 20 June. An official reception at Lancaster House, St. James's Palace, London, on 26 June will be given by the Government to entertain overseas congress members and their ladies. Guests will be received by Mr. Denzil Freeth, Parliamentary Secretary, Minister for Science.

Details of the congress were announced on Tuesday by Mr. Colin Spearing, president of the Institution of Chemical Engineering and chairman of the congress co-ordinating committee. Mr. Spearing said that as much as any technology, the higher standard of living of tomorrow was invested in chemical engineering. All the process industries depended on it—petrol, oil, food, paper, tobacco, plastics, pharmaceuticals, metals, fuel and power.

Outside the U.K. and Holland, which probably had the largest output of chemical engineers per head of population in West Europe, the numbers being trained in the area were less than might be expected in view of the long tradition of chemical industry in Europe. The Soviet Union, however, appeared determined to correct the balance and claimed to be producing about 7,000 per annum. The U.S. probably came next with about 3,000 per annum. Ignoring China, the

Colin Spearing, president of the Institution of Chemical Engineers

U.K. held third place with 500-600 per annum. Canada, India and Japan followed with figures ranging from about 290 a year to about 220. With the exception of Holland, it was doubtful whether any other of the Western European countries produce more than 200 chemical engineers each year.

The four symposia are:

Interaction between fluids and particles. The first symposium (20-22 June) will be on a subject of importance to many processing industries including chemicals, food, paper and petroleum. To reach the fullest possible understanding of the subject, papers from both academic and industrial sources will be presented on operations such as thickening, sedimentation, fluidisation, fixed and fluid bed reactions, filtration and dust removal.

The handling of solids. The second symposium (25 June) on the handling of solids draws together such diverse interests as the coal, drug, fertiliser and metallurgical industries, where some of the processes such as the manufacture of tablets, granules and the making of briquettes for smokeless fuel involve common principles. The problem of controlling the movement of solids, which is often more difficult than the control of the flow of liquids, is especially important in automation. Papers will fall into four main categories—controlled flow of solids; cohesion of solid particles in the formation of agglomerates; continuous weighing; problems in the handling of solids.

Process optimisation. The maximisation of profits is the underlying purpose of the third symposium (26 June) on process optimisation. For example, a scientific study of the operations of a world-wide petroleum company shows that maximum profit is not necessarily obtained when each individual unit seeks to maximise its own profit.

Physics and chemistry of high pressures. The fourth symposium (27-29 June) may be less related to industrial practice than the other three symposia, but it is of particular interest in that the work to be described may lead to entirely new manufacturing techniques, though some of the work reported may not come to fruition for 20 years.

First section of the symposium will be pure science and will deal mainly with change of state. In mixtures these changes can be quite complicated.

A further session will deal with the more violent changes which take place at extremely high pressures (100,000-1,000,000 atm). The final session comes closer to industrial practice, in that it deals with chemical reactions at high pressures.

Copies of the congress paper and registration forms can be obtained from the Institution of Chemical Engineers at 16 Belgrave Square, London S.W.1.

Kestner's new chemical plant drawing offices

Commissioning of the new drawing office marked the second stage in the building of the new chemical plant engineering works of Kestner Evaporator and Engineering at Greenhithe. The new D.O., 162 ft. by 45 ft., gives room for 40 drawing boards which could be expanded to 60 with comfort. One section is devoted to chemical plant in conventional materials, another for chemical and allied plant in Keebush, Keeglas and related plastics materials, while one end of the D.O. is used for making models of installations

I.C.I. chairman on growth prospects

RAPID EXPANSION WILL CONTINUE AND WILL MOP-UP SURPLUS CAPACITY

"THERE is absolutely no evidence to support the theory that saturation of the world's chemical requirements has been reached. It is a shallow, short-period view suitable only to those who have a vested interest in denigrating the chemical industry.

"On the contrary, there is much evidence to convince even the most sceptical but unbiassed observer that rapid expansion will continue and in most cases will quickly mop up any surplus capacity. Surplus capacity is a different matter altogether in a stagnant industry or part of an industry where the long-term trend is downward, or, at best, only marginally upward."

This was stated by Mr. S. P. Chambers, chairman of I.C.I., in an address to Widnes Chamber of Commerce on Tuesday on 'Prospects for the world's chemical industry'.

Two stress points

He stressed two points: 1, the rate of expansion in chemicals depended on the pace of economic growth throughout the world; 2, the growth rate for chemicals had been and would continue to be faster than the general rate of economic growth. To get a balanced view about the future of chemicals it was essential to look first at the future over a 10-year period, which was long enough to smooth out the inevitable dips and humps in the curve.

In the case of West Europe, O.E.E.C. had set an economic growth target for 20 countries of 4.1% per annum between 1961 and 1970. A 4.1% per annum increase over 10 years would be equivalent to an economic growth of 50% in a decade, which was pretty fast by any standards. That was the kind of yardstick against which one must estimate the prospects for the chemical industry.

The rate of chemical expansion in recent years had been double the rate of economic growth—that was a measure of the importance of chemicals and gave some idea of the potential for the chemical industry in West Europe. That view was substantiated by the Chemical Committee of the Fourth Plan, recently published, covering the period 1962-1965 which gave a growth rate for the French chemical industry of 9.1% per annum over the period.

In East Europe and in Communist countries, the estimates for their various economic plans all put chemicals high on the list and on average the target rate of expansion was well above 10% per annum.

The third large industrial area of the world, the United States, had now emerged from the period of mild recession and there was confidence that the chemical industry would continue to expand at a similar rate as in the past. Again, the rate of growth in chemicals was likely to be, as in the past, about twice the rate of growth of the economy as a whole.

GROWTH POINTERS FOR CHEMICALS

- **Rising living standards will accelerate chemical industry expansion**
- **This expansion will mop-up any surplus capacity**
- **Lower tariffs will stimulate demand for chemicals**
- **Increasing competition is not the first sign of stagnation**
- **The N.E.D.C. can do much to eliminate overcapacity**
- **U.K.'s record in chemicals is better than critics are prepared to believe**
- **Continental advantages are fast disappearing**

Rising living standards and an awakening in less-developed countries was bound to mean that economic expansion in the world would be much faster in the next few decades than in the past. It was inevitable that expansion in chemicals would be even more rapid.

One of the factors which would stimulate the world economy, and would increase trade between countries was the increasing tendency towards tariff reductions.

Other than purely economic considerations also pointed strongly to the fact that the chemical industry would sustain its present rate of expansion in the world. The increasing amount of money being spent on research, on improving existing processes, inventing new processes for existing chemicals and on recognising new chemicals with commercial possibilities would all lead to an extension of uses and an expansion of demand for chemicals.

In the last 18 months nearly all chemical manufacturers in the U.S., the U.K. and Germany had been operating at reduced profit levels. That had been a measure of the increased competition in chemicals. But, taking a long view, that was not a bad thing; it was not the first sign of the stagnation of the chemical industry; quite the reverse.

Surplus capacity had been put up in the U.S. because of faulty estimation of the rate of increase in demand and also because of the ignorance that one producer had of the plans of other producers to put in extra capacity to meet the same growing demand.

Those errors were more likely to occur in an industry of section of industry where demand was growing rapidly than in one which was relatively static. Nevertheless, Mr. Chambers believed that some action was necessary to reduce the degree of error and to counteract as far as possible the worst effects of the errors on world trade.

So far as the U.K. was concerned, he believed that the kind of forecasting and co-ordination of plans which might result from the setting up of the National Economic Development Council could do a lot of good.

No return to cartels

"It is wrong", he declared, "to waste the national resources in putting up surplus capacity in any industry. So far as international trade is concerned, we cannot, of course, go back to the bad old days of cartels, but at least we can have improved legislation and machinery to deal with dumping from countries that allow surplus capacity to arise in a wholly unco-ordinated way and thus allow their producers to dump in other countries while protecting the same producers from imports by the imposition of heavy duties."

Mr. Chambers then emphasised that "even if no action of this kind is taken, the discomfort of surplus capacity in any industry which is growing rapidly is remedied quite quickly by growing demand, and this will certainly happen in the chemical industry."

On the question of profits Mr. Chambers pointed out the contribution made by established, unspectacular, chemicals. Only a part of the vast expenditure on research and development was devoted to the discovery of completely new products. Similarly, only a part of capital expenditure was devoted to completely new products.

"So much, then, for the prospects for the world's chemical industry and for the

(*Continued on page 408*)

Overseas News

BIG RISE IN ITALY'S 1961 EXPORTS OF CHEMICALS

ADVERSE balance of Italy's overseas trade in chemicals declined in 1961 to 7,326 million lire, compared with 36,269 million lire in 1960. Chemical imports were valued at 226,048 million lire (213,409 million in 1960), while exports were worth 218,722 million lire (177,140 million).

Italian imports of chemicals were as follows:

	Tonnes	
	1961	1960
Explosives, etc.	470	459
Chemical fertilisers ...	189,797	280,650
Pesticides, etc.	9,514	11,229
Soap, glycerine, etc. ...	4,663	12,751
Perfumery	3,712	4,354
Pharmaceuticals	10,845	10,384
Tanning extracts	10,160	7,442
Paint, varnish, etc. ...	20,486	21,013
Essential oils	892	851
Synthetic rubber	38,130	38,296
Plastics & syn. resins ...	58,822	60,182
Other inorganics	146,278	116,393
Other organics	181,244	158,975
Miscellaneous chemicals ...	278,816	275,104

Italy's exports of chemicals included:

	Tonnes	
	1961	1960
Explosives	4,044	3,736
Chemical fertilisers ...	1,658,487	1,250,071
Pesticides	34,611	36,409
Soap, glycerine, etc. ...	4,310	2,078
Perfumery	2,460	1,697
Pharmaceuticals	6,650	3,241
Tanning extracts	18,709	17,268
Paint, varnish, etc. ...	10,680	9,240
Essential oils	947	729
Synthetic rubber	45,946	37,026
Plastics & syn. resins ...	130,442	99,692
Other inorganics	307,244	265,860

Nippon Shokubai develop new technique for terephthalic acid

Nippon Shokubai Kagaku Kogyo of Japan have developed a new technique for the production of terephthalic acid from *p*-xylene. They are operating a pilot plant, producing 3 tonnes a month, based on the process.

The firm are confident that the product is of good quality—both Teikoko Rayon and Toyo Rayon have tested it—and intend to construct a 50-tonnes/month plant to be completed late this year or early in 1963.

A patent has been granted for the new technique, which involves the direct oxidation of *p*-xylene.

Foster D. Snell acquire chemical markets publication

The Calkin and Bayley Division of Foster D. Snell, Inc, 29 West 15th Street, New York 11, has acquired *International Chemical Development*, from Noyes Development Corporation. This is a semi-monthly journal of marketing information directed to those interested in world trade in chemicals. Each issue contains a review of the chemical industry or an aspect of it of one or several foreign countries, and a list of new plants planned or under construction outside the U.S.

Snell will integrate *International Chemical Development* into its line of chemical marketing periodicals, which now includes *Chemical Market Abstracts, Polymer Market Abstracts, PetroMarket*. Noyes Development will concentrate on the sale of books, guides and annuals such as its series of 'Chem-Petro Guides' to Europe, Asia, the U.S., Latin America, etc.

Ohio German refinery may be resited

The refinery planned to be set up at Mannheim by Wintershal and Ohio Oil may now have a new site. Excessive demands regarding air pollution and seepage of oil have been made at Mannheim and an offer is now being considered to locate the refinery at the nearby town of Speyer.

Monsanto to launch new sulphuric acid catalyst

Monsanto plan to market a new type of vanadium catalyst for the production of sulphuric acid within the next few months. Details of the manufacturing process are not known but it is claimed to yield a catalyst with a considerably increased surface area. Called Type II, the catalyst, the company say, has been tested for more than three years in both old and new sulphuric acid plants of various types. It is claimed that conversion efficiency is increased in all cases.

Prince Bernhard to open Dordrecht Orlon plant

The new Dutch Orlon acrylic fibre plant of E. I. Du Pont de Nemours concern is to be opened at Dordrecht on 1 April. The unit will be officially opened by Prince Bernhard of the Netherlands.

New acrylic fibre unit opened at Krefeld

Phrix-Werke AG, synthetic fibre producers, Hamburg, have opened at Krefeld a new unit for the production of acrylic fibres. This is part of a general synthetic-fibre expansion scheme on the part of Phrix-Werke.

Polyarylates—a new material for fibres?

THE use of polyarylates as a future base material for synthetic fibres is foreseen in a paper entitled 'The polyarylates, a potential material for fibres' to be presented in Weimar, German Soviet Zone, by W. W. Korshak and S. W. Vinogradova, of the Institute of Element-Organic Compounds, Moscow, later this month. The congress at which the paper will be given is the Chemical Fibres Symposium of the Chemische Gesellschaft in der Deutschen Demokratischen Republik from 28 to 31 March.

Polyarylates are polyesters derived from a bivalent phenol. "Most interesting," according to the paper, are polyarylates of aromatic C_2 acids, which can be best produced by conversion of C_2 acid chlorides with bivalent phenols or with the phenolates of bivalent phenols. Should bivalent phenols themselves be used, polycondensation takes place in a high-boiling-point solvent at raised temperature, while if phenolates of these are taken, polyarylates are produced in a matter of minutes by inter-phase polycondensation at room temperature and in open apparatus.

The physical properties of the polyarylates depends largely on the polymer chain of base materials, the *p*-position bases resulting in higher softening points than those with *m*-position functional groups. This softening point ranges from over 500°C for polyarylate from terephthalic acid and hydrochinon to 350°C for polyarylate from terephthalic acid and *p.p.*-dioxydiphenyl propane (the so-called Polyarylate TD), 320°C for polyarylate from terephthalic acid and phenol phthalein (Polyarylate TF_F), 275°C for polyarylate from isophthalic acid and *p.p.*-dioxydiphenyl propane (Polyarylate ID) and 265°C for polyarylate from isophthalic acid and phenol phthalein (Polyarylate IF_F).

Certain polyarylates, for example those on the phenol phthalein basis, possess excellent solubility in a number of organic solvents, including chloroform, cyclohexanone and tetra-hydro-furane, this facilitating their processing to fibres and foils. Firm foils with good di-electric properties can be formed by moulding of solution or melt. High thermal resistance is a further good property of polyarylates. They have a good standard of resistance against long-term treatment with many organic and mineral acids, oxidation media, oil and petrols. Properties can be modified by the introduction to the polyarylates of reactionable compounds such as hydroxyl and carboxyl groups.

Shell to build distillation plant in Italy

Shell Italiana, the Italian subsidiary of Royal Dutch/Shell, are to build a petroleum distillation plant with a total capacity of 5.2 million tons year at La Spezia. The new distillation unit will cost £3 million and will be built inside the area of Shell's existing refinery at La Spezia. Its nominal capacity will be 4.1 million tons plus a 30% reserve capacity. The operation of the existing plant at La Spezia, which has a capacity of 2.1 million tons, will be suspended when the new plant comes on stream in 1963.

Overseas news

NEW CITRIC ACID AND OCTANOL PLANTS FOR USINES DE MELLE OF FRANCE

CAPITAL spending by Usines de Melle of Melle, Deuz-Sèvres, with offices at 20 rue de la Baume, Paris 8, totalled NF.11 million during 1960/61, mainly for completion of a new butanol plant at Pardies, near the Lacq complex and for new plant to produce heavy esters, citric acid and octanol. Also last year, Usines jointly set up Tolochimie with Rhône-Poulenc to produce TDI, using phosgene supplied by the Toulouse National Gunpowder works and the TDI plant should be on stream this year.

Usines de Melle have received an indemnity of NF.990,978 for closing down their Forges d'Aunis distillery which produced alcohol from sugar beet for sale to the Government and a further indemnity of NF.327,850 to abandon the State contracts. The company, which recently doubled its capital to NF.20.4 million, produce solvents, phthalate plasticisers, synthetic resins and raw materials for organic synthesis and plastics production. The company is largely controlled by Seichime (Soc. d'Exploitation et d'Intérêts Chimiques et Métallurgiques), an investment and holding company of the Péchiney Group.

Shell masterbatch plant on stream at Pernis

The new black masterbatch plant of Shell Nederland Chemische Fabrieken at Pernis is now on stream with capacity for 10,000 tonnes/year of masterbatches based on SBR produced at the nearby plant. Shell state that the process disperses the carbon black uniformly throughout the rubber, leading to softer stocks.

Ohio aid for Spanish refinery at La Coruna

Ohio Oil of the U.S. and Compania Iberica de Petroleos have now had Government approval for their refinery at La Coruna, North Spain. Ohio will invest some $18 million in the refinery which will have a crude throughput of 1.2 million tons/year. No date has been set for start of construction, but completion is expected to take about 20 to 24 months.

Large petroleum gas order for Japan

What is claimed to be the largest cargo of LPG to be moved by sea has left Kuwait for Japan. The shipment consists of 8,505 tonnes of propane and 8,140 tonnes of butane. The gases are being transported in insulated tanks at −42°C and −29°C respectively at atmospheric pressure, in contrast to the usual method of transportation where gases are kept under high pressure.

The ship, the *Bridgestone Maru*, is claimed to be the largest LPG tanker in the world. It was specially built for Bridgestone by Mitsubishi Nippon Heavy Industries to carry LPG bought from British Petroleum under an agreement signed in February 1960. She is expected to make an average of eight trips a year from the Middle East to Japan. (See also 'Overseas News,' 23 December 1961, p. 1001.)

India makes gypsum deal with Pakistan

India has signed an agreement with the Pakistan Industrial Development Corporation whereby 150,000 tons of gypsum will be imported to India for the Sindri fertiliser plant. The order will be completed by March of next year. P.I.D.C. have guaranteed to supply 1,000 tons a month. (See 'Overseas News,' 24 February, p. 323.)

Synres joint resin venture in Mexico

NV Chemische Industrie Synres, Hook of Holland, plan a joint venture with Mexican interests to produce synthetic resins on a Mexican site, ground for which is believed already to have been purchased. It is expected that Synres will have a 49% share in the project, possibly due to Mexican Government aid to firms with a majority holding in local hands. Synres will grant technical aid and production processes to the proposed joint venture.

Overseas licences for Japanese companies

Among the agreements approved by the Foreign Investment Council of Japan is the licensing of Chugai Pharmaceutical for the manufacture of smoke generators for disinfectants and insecticides by the I.C.I. technique.

Other agreements ratified include: the use of the Texaco process for synthesis gas by Ube Industries; the introduction of technique for the production of polystyrene by Toyo Polystyrene Industry Co. from Cosden Petroleum Corporation; and the introduction from Dow Chemie of Switzerland of know-how for the production of high-pressure polythene by Asahi-Dow.

Australian lube plant contract for Badger

Contract for the process design and engineering of a lubricating oil plant at Shell's Geelong refinery near Melbourne, Australia, has been awarded to Badger NV, The Hague—Netherlands affiliate of Badger Ltd. The plant is expected to be completed late in 1963.

The 80,000 tons/year plant, to be among the world's most efficient and technically advanced, will produce basic oils for automotive and industrial lubricants with high stabilities, high viscosity index and low pour point. The complete project includes units for vacuum distillation, propane de-asphalting, sulphur extraction (Shell and Texaco process), hydro-treatment (Shell process), and a Mex dewaxing unit (Texaco).

Sterling-Winthrop develop new steriod

A team of researchers at the Sterling-Winthrop Research Institute has developed the new steriod Winstrol (17β-hydroxy-17α methylandrostano (3,2-c)-pyrazole. It is now being marketed by Winthrop Laboratories.

Australian fluorocarbon plant of Monsanto–Consolidated Zinc now on stream

(*Monsanto annual report—continued from page 400*)

encouraging and Monsanto were offering completely new ranges of styrene polymers which should command increased uses. Outlook for expandable polystyrene was very bright and sales of Montopore increased substantially.

Volume of polythene sales increased again but foreign competition forced heavy price cuts. Uses of polythene were growing all the time and in the longer term Monsanto expected supply and demand to achieve a better balance.

Despite the recession in the car industry total turnover of rubber chemicals was maintained by efforts to open up new overseas markets.

Progress has been made in research with gains in product quality and profitability. New products of the company's research include an improved form of aspirin and a more effective sulphuric acid catalyst. Longer term research showed promise of new products in rubber chemicals and in materials with better high-temperature performance. Several project studies were taken to the design and engineering stage and new studies began in other areas.

Monsanto Chemicals (Australia), in whom Monsanto hold 58.8% of ordinary, suffered from severe deflationary measures. Australian Fluorine Chemicals, owned by the Australian company and Consolidated Zinc Pty., began operations at Rozelle, N.S.W., in December.

Monsanto's holding in Alta Laboratories was raised 50% to permit financing of expansion in salicylates aspirin production by this Indian company. Both developments will be engineered by Monsanto and the first stage should be on stream in the second half of 1962.

1962 O.C.C.A. technical exhibition

OUTSTANDING DEVELOPMENTS IN THERMOSETTING ACRYLIC RESINS

THREE outstanding developments in thermosetting acrylic resins were noted at the O.C.C.A. Exhibition in London last week. These were the entry of the *Distillers Plastics Group* into this field (see 'Project News'), the arrival of Primal acrylic resins in aqueous solutions (*Charles Lennig and Co. (Gt. Britain) Ltd.*) and a low temperature stoving acrylic, Wresacryl 200 (*Resinous Chemicals Ltd.*). This low temperature stoving resin (120°C) has an advantage over conventional acrylics since it allows paints based on it to be run on alkyd/melamine production lines without having to raise the temperature. Excellent colour retention to overbake and u.v. light make it particularly suitable for use in the electrical appliance field.

The properties of Primal films were clearly shown on a number of test plates. These acrylics in water solutions are suggested as vehicles for water reducible coatings, with respect to a variety of metal decorations. Primal 2003 affords hard films with good chemical resistance, while the 2004 grade gives tough flexible films with resistance to impact.

A new development of *Vinyl Products Ltd.* promises to be of interest in the manufacture of resin bound water paints. This is Vinacryl 4000, an acrylic copolymer emulsion, designed for use in highly pigmented paints.

Alkyd resins. The importance of fast setting and rapid drying alkyds was gathered by reference to the 'clock' diagram exhibited on the stand of *Resinous Chemicals Ltd.* Here a vinyl modified alkyd, Wresinol 502, was shown to have tremendous potential in undercoats because of excellent brushability and flow properties; overcoating is possible almost immediately. Attention was also directed to the resin's high base viscosity, permitting substantial solvent additions.

A new vinyl modified isophthalic alkyd, Wresinol 503, combines fast set, by virtue of the vinyl copolymerisation, with the interesting machine properties of Wresinol 3000 isophthalic alkyds. It has been designed as a rapid setting printing ink vehicle for lithographic or letterpress inks. Another new printing ink resin is the maleic resin, Wresinite 6580. This differs from the usual oil-soluble maleics by virtue of high viscosity oil varnishes which can be produced with it.

Other developments in isophthalic alkyds were noted for a soya-isophthalic alkyd, Beckosol P 1471 (*Beck Koller and Co. (England) Ltd.*), which leads to a general improvement in both chemical and physical properties where used, and a new thixotropic alkyd. The latter—Gelkyd 330 W—has been made specifically for the production of highly pigmented paints such as flat, semi-gloss and egg-shell wall finishes, undercoats and primers. *Cray Valley Products Ltd.* produce this alkyd by a patented system which controls the rheological properties of the resin very closely.

Vinyl resins. Progress in investigational and development work on vinyls was much in evidence on the stands of *Dunlop* and *Scott Bader and Co. Ltd.* The former exhibited a comprehensive display of technical information on Polimul 995, a vinyl acetate/acrylic copolymer emulsion. Broadly speaking, this dealt with a number of aspects relative to formulation, colour and stability, application, film formation and strength, high pigmentation, and selected formulations involving Polimul 995.

As a result of a vast amount of investigations, Scott Bader are able to offer a vinylidene chloride polymer, Polidene DP 903 VC, to meet the requirements of paints chemists. It is 50% solids emulsion with good film-forming characteristics and stability towards pigments, but there is still a long way to go before it becomes possible to claim a vinylidene chloride polymer ideally suited to paint manufacture.

Turning to adhesive applications, *Shawinigan Chemicals Ltd.* expect Resin D 269, a polyvinyl acetate/maleate copolymer in organic solvent solution, to be of major interest for laminating adhesives. Drying rapidly to a non-tacky film, it exhibits excellent adhesion to metal foil, polyvinyl chloride, polyester and cellulose acetate surfaces. The polymer is modified to provide excellent adhesion to metal, the solvent is a blend of isopropyl acetate and toluene.

Epoxy resins. In the case of epoxy resins, *Dow Chemical Co. (U.K.) Ltd.* have introduced two such products, D.E.R. 732 and D.E.R. 736. These differ in molecular weight and are based on straight chain diglycidyl ethers; curing can be done with conventional hardeners. Functionally these epoxies 'flexibilise' conventional epoxies by providing a long chain flexible polymer throughout an otherwise densely cross-linked, cured, epoxy mass. Their mode of action is consequently different from known methods of inducing pliability such as by inert plasticiser. When used to modify epoxy resins, they can affect both physical and chemical resistance, a factor dependent on their concentration and the hardener chosen.

Styrene resins. From another aspect Dow Chemical are hoping to arouse interest in styrene/butadiene resins for emulsion paints. This is aimed at replacing the more usual p.v.a. resins at present preferred in the U.K. A useful booklet was available describing these latices in detail. Aimed at the motor industry, Pliolite Resin Latex 481 is designed for high performance as an air-drying metal primer (*Goodyear Tyre and Rubber Co. (Gt. Britain) Ltd.*). This colloidal suspension of a modified styrene/butadiene copolymer in water forms non-tacky films which exhibit high uncured tensile strength.

Miscellaneous coatings. Another example of protection against corrosion was to be seen on the *I.C.I.* stand—Alloprene (chlorinated rubber) thick coatings of 3-10 mls. Non-toxic polyurethane systems were another feature on this stand, i.e. Suprasec KN for curing polyurethane wood lacquers. The versatility of this isocyanate curing agent was shown in a series of lacquers ranging from matt to glossy.

The Chemicals Division of *Esso Petroleum Co. Ltd.* attracted attention with their new Buton-based wood finishes. These are said to give high-quality lacquers which compare favourably with alkyd modified nitrocellulose lacquers in raw material cost, chemical and solvent resistance, build and mechanical properties. Buton 300 is a modified butadiene-styrene thermosetting copolymer. In combination with nitrocellulose and an acid catalyst it forms a stable three-component system that produces lacquer films with excellent physical properties.

Soluble resin coatings

Soluble resins. Two new developments were observed for alcohol soluble resins, namely R.D.L.'s Dispersamide polyamide chips and C.V.P.'s resins X 5150 and 5151. The polyamides are characterised by the absence of toxicity, good miscibility with other resins, adhesion, resistance to water, oils, fats and waxes. Similarly *Cray Valley Products* envisage that their X-resins have possibilities in paper varnishes, gravure and flexographic inks, and even wood lacquers. Properties of the films were compared with shellac and manila copal—unlike the former they are not greatly affected by alkali solutions. The flexibility of the unplasticised coatings is between shellac and copal. Most striking perhaps is their stability in the molten form at 150°C, little change occurring after seven days.

Oils. A new class of tris amino drying oils and alkyds was the principal exhibit of *Honeywill Stein Ltd.* These vehicles are made by esterifying a tri-hydroxy amino alcohol with fatty acid and treating the substituted di-ester with formaldehyde. The products are characterised by fast drying, improved chemical resistance, good wetting, adhesion and gloss retention properties.

In manufacturing oil modified alkyd resin it is the fatty acid residues which completely stop the polymer chains. *Monsanto Chemicals Ltd.* demonstrated how benzoic acid can fulfil this function of a chain stopper in controlling polymer length in the processing of short oil length alkyd resins. The economics of the benzoic acid method were illustrated.

PEOPLE in the news

● Two British chemists—**Prof. Charles Kemball** of Queens University, Belfast, and **Prof. E. R. H. Jones** of Oxford University—will receive awards from the American Chemical Society at a meeting in Washington on 26 March. Prof. Kemball will get the $3,000 Ipatieff Prize for outstanding work in the field of catalysis, and Prof. Jones will receive the annual $1,000 Fritzsche Award for his research on terpenes.

● **Mr. C. A. Vandervell** has joined Polypenco Ltd., Welwyn Garden City, Herts, as general manager, and **Mr. P. E. Rook** has joined the company as manager, fluorocarbon department.

● **Mr. K. C. H. Bootheway** has been appointed manager of B.P.-California Ltd., the company formed jointly by British Petroleum and California Chemical Co. (a subsidiary of Standard Oil of California) to produce and market aromatics. Mr. Bootheway joined B.P. in 1960 and has served at Grangemouth, the Ruhr refinery project, before joining in 1961 the commercial division of refineries department in London. He will now be responsible for the production and sale of aromatic hydrocarbons.

K. C. H. Bootheway (left) and Dr. H. M. Kimberley

● **Dr. H. M. Kimberley,** manager—administration since 1960 of Petrochemicals' Carrington Works near Manchester, who has been appointed general manager in succession to **Dr. J. A. Berriman,** joined Shell in July 1949 as a trainee at the Shell Haven Refinery. He gained his B.Sc. at Canterbury University College, New Zealand. Before joining Shell he took a chemistry degree at Emmanuel College, Cambridge, followed by a post-graduate research in physical chemistry. From 1951 to 1954 he worked at Stanlow Refinery as a technologist and was then assigned to Royal Dutch where he worked in 'start up' teams in several parts of the world. In January 1958 he was transferred to Shell Chemical Co. and became operations superintendent responsible for the operation of all chemical plants at Shell Haven.

● **Dr. R. F. Curtis** and **Dr. G. H. R. Summers** have been appointed senior lecturers in chemistry at the University College of Wales for the 1962-63 session.

● **Mr. F. G. Delahoy,** formerly sales manager for adhesives and compounds, has been appointed general sales manager of Dunlop Chemical Products Division at Chester Road, Erdington. Aged 35, he joined Dunlop Special Products Ltd. in 1954, the division manufacturers flexible adhesives for industry generally, and compounded latex for textiles, carpets and man-made fibres, as well as polyvinyl acetate and acrylic and copolymer emulsions.

● **Professor Arne Tiselius,** Nobel Laureate, of Uppsala, Sweden, will receive the S.C.I. Messel Medal and deliver his address on 'The Nobel foundation and its activities' on 11 July, during the annual meeting of the Society of Chemical Industry in Newcastle on Tyne.

● **Lord Cobbold, Mr. Alastair Frederick Down,** and **Mr. William Fraser** have ben appointed directors of British Petroleum Co. Ltd. Mr. Down and Mr. Fraser will be managing directors. Mr. Down, age 47, joined B.P. in 1938 and was until recently president of B.P. Canada. Mr. Fraser, aged 45, joined B.P. in 1950 and is at present managing director of Kuwait Oil.

● **Dr. L. J. Dunn** has resigned after 25 years as chief chemist of Reeves and Sons Ltd., but will continue as consultant to the company. Mr. Dunn is to set up his own consultancy practice in industrial chemistry, specialising in pigments, paints varnishes and certain adhesives.

● **Mr. H. R. Arthur,** senior lecturer in organic chemistry at the University of Hong Kong, has been awarded a bursary under the Royal Society and Nuffield Foundation Commonwealth scheme to assist him to visit Oxford and Manchester in 1962 to study new research techniques.

● **Mr. Gregory Flint** has been appointed manager and **Mr. John H. Cosgrove** assistant manager of market development for Allied Chemical, International Division.

● **Mr. J. A. Fuller,** chairman of Shawinigan Water and Power Co., Montreal, has relinquished his directorship of Shawinigan Ltd., Marlow House, Lloyds Avenue, London, E.C.3. **Mr. R. G. Fuller** has been appointed a director of the U.K. company.

● **Dr. R. H. Purcell,** scientific adviser to the Home Office, will from 12 March take up the appointment of chief of the Royal Naval Scientific Service. Dr. Purcell, who succeeds **Dr. H. F. Willis,** who is to become a scientific adviser at the Ministry of Defence, was seconded to the Admiralty during the war and was research superintendent at the Admiralty Materials Laboratory from 1947 to 1952.

● **Dr. P. Borrell** and **Dr. D. Cohen** have been appointed lecturers to the University College of North Staffordshire and not assistant lecturers, as stated in the 24 February issue of CHEMICAL AGE.

● **Mr. George M. Hoffman** has been appointed technical services manager for film products of Du Pont de Nemours International S.A. He joined the Du Pont Co. in the U.S. in 1947.

● Boards of two new subsidiaries set up by Matthew Hall and Co. Ltd., 101-108 Tottenham Court Road, London W.1, have now been announced. They are: Matthew Hall Engineering Ltd., **Mr. P. D. Doulton** (chairman and managing director), **Mr. G. Allen, Mr. C. B. Morton, Mr. A. L. Pearson** and **Mr. G. R. Peatey;** Matthew Hall Mechanical Services Ltd., **Mr. S. Kindler** (chairman and managing director), **Mr. B. E. Burns, Mr. V. A. Marigliani, Mr. A. L. Pearson, Mr. S. A. Stevens** and **Mr. W. A. Troake.**

● **Dr. W. E. Ripper** has resigned his position as managing director of Dow Agrochemicals Ltd., in agreement with the board. He will now be able to devote his full time to developing a new principle of applying agricultural chemicals.

I.C.I. chairman on growth prospects

(*Continued from page 404*)

work which is being done to reduce costs on old and new products and to find still newer ones . . . all the evidence points to a strongly developing chemical industry for the world as a whole.

"What about Britain's share in this industry? British industry is so often criticised, not only for its real failings but for those alleged failings which are the product of the imagination of those people who either do not wish to see the truth or have a vested interest in concealing it. Our record in the chemical industry is altogether better than critics of this kind are prepared to believe."

Mr. Chambers then repeated two points that he made in his interview with CHEMICAL AGE (17 February, page 279).

The British chemical industry over the past 10 years had grown twice as fast as all British industry. The German chemical industry, admittedly growing at a somewhat greater rate, had nevertheless grown only 1.3 times as fast as German industry as a whole during the same period.

The great advantages that Continental producers had had because of lower wage rates had disappeared as in the case of West Germany or were disappearing because of the substantial increases in wages and reduction of hours on the Continent. For the first time, Britain would be competing with the Continent on nearly level terms.

The chemical industry of the world had a great future and there was today every indication that the British section had the opportunity of playing its full part and doing it profitably.

Commercial News

- Plant start-up costs hit A. & W. results
- Big rise in Borax quarterly profits
- Hickson's record chemical output and sales
- Mitsui Chemical and Miike to merge

Albright and Wilson

Profits of the Albright and Wilson Group for 1961 were lower despite higher sales. This was due to a decline in profit margins and because of expenditure in the second half of 1961 on the start-up of major new plants. Forecasts for 1962 indicate increases in sales with little change in profits. (Comparative 1960 figures in the results below have been adjusted to include W. J. Bush.)

Group trading profit after depreciation of £2,833,000 (£2,541,000) was £5,599,000 (£6,270,000). Tax took £2,098,000 (£2,736,000) and group net profit was £2,954,000 (£3,037,000). Profit attributable to stockholders of Albright and Wilson Ltd. was £2,713,000 (£2,435,000). A final dividend of 14% (same) on ordinary, makes 20% (same).

Henry Balfour

The offer of Pfaudler Permutit Inc., of the U.S. for the capital of Henry Balfour and Co. Ltd has been accepted in respect of more than 99% of ordinary holders and more than 90% of preference holders. The offer is now unconditional.

Boake Roberts

Group net profit of A. Boake Roberts and Co. for the 53 weeks ended 31 December was £213,564 after tax of £192,172. A dividend of 30% will be paid for the period. Last year no dividend was paid for the 39 weeks ended 25 December, 1960.

Borax

Trading profits of Borax (Holdings) Ltd., for the three months ended 31 December, 1961, were £1,021,509 (£742,147 for the same period of 1960). Group net profits of the group were £647,918 (£494,421). In comparing the figures for the December quarters of 1961 and 1960, an increased TV advertising programme was begun a year ago in the U.S., the cost of which adversely affected the 1960 profits. This campaign, which is being continued this year, has led to increased sales of consumer products in the U.S. which, in turn, has contributed to the improved results.

Sales of boron products throughout the European markets were at a lower level than in the comparable quarter of 1960, but were more than offset by improved sales in the U.S.

Hickson and Welch

Results of all companies of the Hickson and Welch (Holdings) group for the first four months of the current year (to 31 December 1961) show that a good start has been made and it is expected that the annual results will be comparable with those for the year ended 30 September 1961 (see CHEMICAL AGE, 3 February 1962, p. 209), and that the 19% dividend will be maintained. This is stated by Mr. Bernard Hickson in his annual statement.

Profits from the chemical section of the group declined in 1960-61, although output and turnover were at a record level. Hickson and Welch Ltd. increased their turnover by approximately 10%, and manufacturing costs were reduced. Competition reduced profit margins, however, and profits were lower. To some extent, the lower profits were offset by improved results from other activities, particularly abroad.

Rio Tinto/Zinc

Full details of the proposed merger of Consolidated Zinc and Rio Tinto are expected to be sent to shareholders by the middle of May. Both companies are expected to announce their final dividends for 1961 before the end of April, when preliminary profit figures will be published.

A K.U.

Algemene Kunstzijde Unie N.V., Arnhem, are paying a final cash dividend of 12%, making 16% (17% in cash and 5% in stock to mark the golden jubilee).

A.K.U. have decided on a 4½% convertible debenture loan of Fl.70 million at par to help finance capital expenditure. Of the total, Fl.44 million will be available for subscription to shareholders in the proportion of one debenture for three shares of Fl.1,000 nominal value.

Dominion Tar

Consolidated sales of Dominion Tar and Chemical Co. Ltd. in 1961 totalled $325,705,782 ($316,987,470). Pulp and paper accounted for 64% of sales, chemisals 16% and building materials 20%. Net profit was $18,799,052 equal to $1.29/share ($18,063,103 or $1.26/share).

Dow Chimica Italiana

For the year ended 31 May, 1961, Dow Chimica Italiana S.p.A., Milan, sustained a loss of 49,787,663 lire.

Du Pont

Under a new Federal Court ruling, Du Pont and Christiana Securities Co. have been ordered to divest themselves of all holdings of General Motors common stock over a three-year period. The order covers the 63 million shares owned by Du Pont as well as the 535,500 shares held by Christiana and any additional shares that the latter company may receive as a result of its ownership of Du Pont stock, which is to be distributed to its shareholders. The means of Du Pont's divestiture were not specified in the ruling.

Merck

The U.S.-based Merck concern, producers of chemical and pharmaceutical preparations, announce a 1961 net profit of $27,190,000 ($27,810,000), or $2.51/share ($2.57). Turnover rose from $218,100,000 to $228,600,000. For the last 1961 quarter sales were $58,100,000 ($51 million), and net profit was $7,880,000 ($5,980,000) 73 cents/share (55 cents).

Mitsui/Miike

Plans for the merger of two Japanese firms, Mitsui Chemical and Miike Gosei, have been concluded. The date of the merger will be 1 April. The authorised capital of the combined company will be increased from Yen 6,500 million to Yen 20,000 million.

Monsanto Chemical

First quarter 1962 earnings of Monsanto Chemical, St. Louis, should exceed last year's 55 cents/share. Little change is expected in the near future in chemical industry prices.

Parke, Davis

Parke, Davis and Co., U.S. recorded in 1961 a net profit of $22,330,000 or $1.50/share ($30,460,000 or $2.05/share). Sales dropped from some $200 million to $184,300,000. For the last 1961 quarter, net profit was at $8,360,000 ($7,960,000) or 56 cents/share (53 cents); sales were valued at $48,100,000 ($48,800,000).

Produits de Titane

Turnover of Produits Chimique de Thann et Mulhouse in the second half of 1961 was NF.25.32 million (NF.24.7 million). During 1961, sales of this company and its subsidiary, Produits de Titane, rose 10% in volume. The new plant of the latter at Le Havre will start operating in the second half of 1962, when capacity for titanium oxide will be increased from 18,000 tonnes/year to 26,000 tonnes. Pechiney hold a substantial interest in Produits Chimiques de Thann et Mulhouse and their affiliates.

Royal Dutch/Shell

Net income of the Royal Dutch/Shell Group for 1961 is estimated at £187 million (£178.5 million). About £8 million of the increase came in the last quarter of the year.

Thiokol Chemical

Thiokol Chemical Co., U.S., announce a net profit equal to $1.10 for 1961 ($0.76). Sales rose from $171,540,000 to $190 million. A further increase in profits is expected for 1962.

INCREASE IN CAPITAL

ASFALTI BITUMI CEMENTI E DERIVATI S.P.A. (A.B.C.D.), Palermo. An increase of capital from 3,000 million to 5,000 million lire has been authorised.

SOC. DE PRODUITS CHIMIQUES DE SYNTHESE, controlled by Saint-Gobain and Péchiney. Capital has been increased from NF.4,997 million to NF.14,992 million.

U.K. chemical engineering firms share Humglas stand at Leipzig

PROMINENT among the record 260 British exhibitors at this year's Leipzig Trade Fair is the stand shared by 11 engineering companies—a joint venture organised by Humphreys and Glasgow Ltd., London—which covers 5,000 sq. ft. of the Fair's Chemical Hall.

Humphreys and Glasgow's exhibits comprise five models—two of them being small working models of the Morris contactor—a device for contacting solids and liquids or two immiscible liquids for the purpose of heat exchange, solvent extraction or chemical reaction. One Perspex example of each type is on display, clearly showing the working details. The third exhibit is a scale model of plant to produce 7,000 tons/year of metallic sodium using the Downs process developed by I.C.I., involving the electrolysis of brine solution. A scale model of tonnage oxygen plant at a pressure gasification installation built for the Scottish Gas Board, and a site model of the works, completes the Humphreys and Glasgow display.

Other exhibits on this stand include a new oil-fired boiler—the only one being shown at Leipzig by a British manufacturer—by John Thompson (Wolverhampton) Ltd., while exhibits from the Oxley Engineering Co. Ltd., Leeds specialists in stainless steel, include a portable mixing vessel and a steel heated tank. Stainless steel is also featured by Langley Alloys Ltd. of Slough, who are showing stainless steel valves manufactured to German standards. On the same stand, G. and J. Weir Ltd., of Glasgow, show panels of photographic illustrations of seawater distillation plant they have installed throughout the world.

Sharples Process Engineers Ltd., Camberley, are exhibiting a representative selection of centrifugal machinery, ranging from the laboratory type machines to larger centrifuges suitable for full scale processing. A full range of electrical surface heating equipment is shown by Isopad Ltd., Boreham Wood, while the display of Q.V.F. Ltd., Stoke-on-Trent, comprises a glass distillation unit, a climbing film evaporator and various types and sizes of glass pumps and valves.

Six of I.C.I.'s divisions are represented at Leipzig—Dyestuffs, Billingham, Heavy Organic Chemicals, General Chemicals, Pharmaceutical and Plastics. Among the products being stressed at Leipzig by I.C.I. are developments in their Procion and Procinyl fibre-reactive dyes; an improved catalyst for sulphuric acid and a new catalyst for the removal of acetylenes from cracked gases containing C_2/C_3 hydrocarbons; plasticiser alcohols; solvents; antioxidants; phenol; Alloprene chlorinated rubber and Cereclor (chlorinated paraffinic hydrocarbons) as plasticiser extenders for p.v.c.; fluorocarbons; fluothane anaesthetic; griseofulvin; polythene; acrylic moulding powders; polypropylene; acrylic sheet; and polyethylene terephthalate film.

Price cuts for isopropyl ether

SHELL CHEMICAL CO. have announced reductions in the price of their isopropyl ether, effective from 1 March. Bulk deliveries are reduced by up to £11 a ton and ton lots by up to £6.

A further move towards full standardisation of solvent price schedules will be made by supplying isopropyl ether in free non-returnable 45 gal. drums.

DIARY DATES

MONDAY 12 MARCH

C.S.—Cardiff: Chem. Dept. Univ., Cathays Park, 5 p.m. 'π-Complexes of iron' by Prof. P. L. Pauson.
C.S.—Durham: Sc. Labs., Univ., 5 p.m. 'Recent advances in the organic chemistry of Boron' by Dr. W. Gerrard.
Inst. Packaging—Coventry: Hotel Leofric, Plastic Films II & A.g.m.
O.C.C.A.—Southampton: Polygon Hotel, 7.30 p.m. 'Fungus & paint' by N. I. Hendey.
S.C.I.—Bradford: Inst. Tech., 'Recent advances in infra-red spectroscopy' by Dr. L. J. Bellamy.

TUESDAY 13 MARCH

C.S.—Dundee: Chem. Dept., Queen's Col., 5 p.m. 'The triplet state in chemistry' by Prof. G. Porter.
Inst. Packaging—Edinburgh: 109, Princes St., 7.15 p.m. A.g.m. & 'Adhesion theory' by Dr. W. C. Wake.
R.I.C.—Hatfield: Tech. Coll., Roe Green, 7 p.m. 'The chemical control of soil fertility'.
S.C.I.—London: 14, Belgrave Sq., S.W.1, 10.30 a.m. 'Magnesium'.
S.C.I.—London: 14. Belgrave Sq., S.W.1, 6 p.m. 'The effect of surface active substances in damping waves & ripples' by Prof. J. T. Davies.

WEDNESDAY 14 MARCH

C.S.—Aberdeen: Chem. Dept. Univ., 8 p.m. 'Some aspects of radiation chemistry' by Prof. F. S. Dainton.
Inst. Metal Finishing—London: 80, Fetter Lane, E.C.4, 6.30 p.m. 'Application of plastic coatings by the fluidised powder technique' by D. E. J. Cunningham.
Inst. Rubber Industry.—Manchester: Newton Heath Tech. Coll., 6.45 p.m. 'Using SBR to advantage' by P. G. Bourne.
Plas. Inst.—Bradford: Inst. Tech., 7.30 p.m. 'Identification of plastic materials' by Dr. W. R. A. D. Moore.
S.C.I.—London: 14, Belgrave Sq., S.W.1, 5.30 p.m. A.g.m. & tech. films.
S.C.I.—London: Metal Box Co. Ltd., 37, Baker St., W.1, 7 p.m. 15th Conversazione.

THURSDAY 15 MARCH

C.S.—Bangor: Chem. Dept., Univ. Coll., 5.45 p.m. 'Stereochemical correlations' by Prof. W. Klyne.
O.C.C.A.—Glasgow: Royal Col. of Science & Tech., 7 p.m. 'The thermal decomposition of esters & polyesters' by Prof. P. D. Ritchie.

FRIDAY 16 MARCH

C.S.—Glasgow: Royal Col. Sc. & Tech., 4 p.m. A.g.m.
C.S.—Newcastle-upon-Tyne: Chem. Dept., King's Coll., 5.30 p.m. 'The mode of action of lead tetra-ethyl as an anti-knock' by Prof. A. D. Walsh.
Inst. Packaging—Bristol 1: Royal Hotel, College Gn., 6.45 p.m. A.g.m. & 'Polyurethane film' by J. L. Shaw.
Plas. Inst.—Birmingham 3: James Watt Memorial Inst., Gt. Charles St., 6.30 p.m. 'The chemical resistance of rubber & plastics' by L. S. Evans.
S.A.C.—Swansea: Chem. Dept., Univ. Coll., Singleton Park, 6.30 p.m. 'Fluorescence' by Dr. C. A. Parker & Dr. R. J. Otter.
S. Water Treatment & Exam.—London: R.S.H., 90, Buckingham Palace Rd., S.W.1, 9.30 a.m. A.g.m. & symposium on 'Underground water supplies'.

Market Reports

NEW HOME BUSINESS IS MODERATE

LONDON Steady trading conditions have been reported from most sections of the industrial chemicals market with contract delivery specifications calling for good volume. New business placed on home account has been of moderate dimensions and usually for nearby requirements, while the flow of overseas enquiries continues at about the recent level. Prices have moved within narrow limits and the undertone remains steady.

Among the coal tar products there has been a good request for creosote oil and cresylic acid and a satisfactory enquiry for the light distillates.

MANCHESTER Traders have reported a reasonably steady flow of delivery specifications from home consumers for most descriptions of industrial chemicals against contracts. Fresh inquiries have been on a fair scale, mainly in respect of prompt or early delivery parcels, and moderate orders have been booked. Shipping movement in most lines has been maintained at about its recent level. Few changes in the price position have occurred.

In the fertiliser section, there is now a fair seasonal demand for the compounds, as well as for superphosphates and the nitrogenous materials. A quietly steady business continues in the tar products.

SCOTLAND Although the week opened rather quiet, business did show some improvement towards the end, when a very much brisker position prevailed, a continuance of which is hoped for. The offtake against contract requirements has been fairly regular and on the whole quantities have been steady. Prices have shown little change, apart from the boric acid and borax price cuts.

The overseas market was reasonably active with still a good volume of enquiries being received.

Steady demand for bulk chemicals by oil industry

ORDERS for bulk chemicals, catalysts, barytes, etc., placed in the U.K. by oil companies during 1961 reached a total of £26.3 million, compared with the total of £27.6 million for 1960, which was a record year for U.K. petroleum materials and equipment orders.

Total orders for all categories of materials and equipment in 1961 reached £101.1 million compared with £118.9 million for 1960. There was a general improvement during the last quarter of the year, figures for this quarter including: bulk chemicals, catalysts, barytes, etc., £7,133,174 compared with £7,087,254 for the fourth quarter of 1960; specialised equipment for oil refineries, etc., £1,781,513 (£1,483,572); tubulars, pipe fittings and valves, £1,608,654 (£3,291,165); pumps (excluding slush, oilwell and kerbside), £376,472 (£435,225).

NEW PATENTS

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

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

ACCEPTANCES

Open to public inspection 11 April

Process for colloiding nitrocellulose. Hercules Powder Co. **893 481**

Dispersion polymerisation. Imperial Chemical Industries Ltd. **893 429**

Separation of bromine or iodine from solutions containing the same. Scientific & Industrial Research, Council for. **893 692**

Synthetic resin emulsions and their production and to surface coatings and vibration damping compositions derived therefrom. Revertex Ltd. **893 816**

Apparatus for producing an aerosol. Defensor A. G. **893 693**

Ethylene oxide adducts of tertiary acetylenic alcohols and diols. Air Reduction Co., Inc. **893 431**

Process for the manufacture of aluminium salts. Farbenfabrik Wolfen Veb. **893 696**

Process for producing water-insoluble metaliferous azo dyestuffs on vegetable fibres or regenerated cellulose fibres. Farbwerke Hoechst AG. **893 574**

Dyestuffs and photographic materials and process. International Polaroid Corporation. **893 575**

Dialkoxymethyl-benzoxindoles and process for the manufacture of benzindoles therefrom. Ciba Ltd. **893 798**

Racemisation of menthol. Boake, Roberts & Co. Ltd., A. (Glidden Co.). **893 673**

Process of stabilising cellulose triacetate. Institut für Chemie und Technologie der Plaste. **893 854**

Process for the purification of a solid thermoplastic polymer or copolymer. Pechiney Compagnie de Produits Chimiques et Electrometallurgiques. **893 722**

Cyclopentanophenanthrene derivatives and process for their production. Syntex S.A. **893 723**

Steroids and process for their manufacture. Ciba Ltd. **893 577**

Phosphorus-containing resinous polyesters, polymers and copolymers thereof and a process for their manufacture. Farbwerke Hoechst, A. G. **893 674**

Phenol-aldehyde resin-bonded abrasives. Abrasive & Metal Products Co. Inc. **893 677**

Process for accelerating the peroxidic hardening of unsaturated, phosphorus-containing polyesters. Farbwerke Hoechst, A.G. **893 675**

Polyhydroxy compounds. Pittsburgh Plate Glass Co. **893 341**

Acylated ureas and compositions containing them. Miles Laboratories, Inc. **893 435**

Substituted indole-(2)-aldehydes and process for their manufacture. Ciba Ltd. **893 839**

Diesters of 2-propyl-heptanol. Eastman Kodak Co. **893 763**

Therapeutic compositions comprising substituted triazenes. American Cyanamid Co **893 437**

Complexes of metal hydrides. Imperial Chemical Industries Ltd. **893 488**

Method of purifying silane or chlorinated silanes. Licentia Patent-Verwaltungs-GmbH. **893 495**

Process for the manufacture of alkali metal and alkaline earth metal chlorites. Farbwerke Hoechst AG. **893 438**

Cellular polyurethanes. Imperial Chemical Industries Ltd. **893 746**

Manufacture of organic peroxides. Farbwerke Hoechst AG. [Addition to 870 118.] **893 747**

Treatment of synthetic fibres obtained from olefin polymers. Montecatini. **893 603**

Alumina. Du Pont de Nemours & Co., E. I. **893 852**

Dyestuff derivatives and their manufacture and use. Ciba Ltd. **893 748**

Production of aluminium and of mixtures of aluminium and aluminium carbide. Pechiney Compagnie de Produits Chimiques et Electrometallurgiques. **893 345**

Polymerisation of ethylene. Monsanto Chemical Co. **893 750**

Water-insoluble monazo dyestuffs containing N-acyl-sulphonamide groups. Farbenfabriken Bayer AG. **893 751**

Monoazo-dyestuff insoluble in water and process for its manufacture. Farbwerke Hoechst AG. **893 607**

Bleaching processes and compositions. Du Pont de Nemours & Co., E. I. **893 440**

Pyrazolo pyrimidines. Ciba Ltd. **893 753**

Production of metal oxide powders. Union Carbide Corporation. **893 522**

Pyrazoles and process for their manufacture. Ciba AG. **893 755**

Process for the continuous manufacture of vinylidine chloride. Feldmuhle Papier-Und Zellstoffwerke AG. **893 726**

Process for the manufacture of calcium-tetracuproxychloride. Wacker-Chemie GmbH. **893 829**

Phenylacetic acid derivatives having central depressant activity and processes for their production. Nederlandsche Combinatie Voor Chemische Industrie N.V. **893 391**

Process for the manufacture of unsaturated monocarboxylic acid esters. Wacker-Chemie GmbH. **893 727**

Granular fertilisers. Imperial Chemical Industries Ltd. **893 389**

Preparation of aromatic isocyanates. F.M.C. Corporation. **893 729**

Method of and apparatus for treating polyvinyl alcohol film. Kurashiki Rayon Kabushiki Kaisha. **893 523**

Removal of carbon dioxide from gaseous mixtures. Fluor Corporation Ltd. **893 423**

Purification of methylacetate by distillation. Kurashiki Rayon Kabushiki Kaisha. **893 730**

Process for preparing vinylaromatic sulphonic acid salts. Dow Chemical Co. **893 732**

2-fluoro and 6-fluoro-$\Delta^{1,4}$-steroids. British Drug House Ltd. [Addition to 854 343.] **893 584**

Bis-(tertiary alkylperoxy) compounds and their use as curing or cross linking agents. F.M.C. Corporation. **893 586**

Manufacture of carbon black Continental Carbon Co. **893 378**

Alpha olefin polymers. Du Pont de Nemours & Co., E. I. **893 462**

Cyclised olefin polymers. Du Pont de Nemours & Co., E. I. **893 463**

Recovery of 6-aminopenicillanic acid from aqueous solutions. Beecham Research Laboratories Ltd. **893 588**

Dyeable polymeric compositions and their preparation. Montecatini. **893 604**

Separation of mixtures which contain a non-volatile complex catalyst. Badische Anilin-& Soda-Fabrik AG. **893 809**

Tryptamine derivatives and a process for the manufacture thereof. Roche Products Ltd. **893 707**

Diazacyclopropane compounds. Bergwerksverband GmbH. **893 388**

Removal of polymers from solvents selective for diolefins. Polymer Corporation Ltd. **893 595**

Process for the production of tetra-1.4-dithiin. Du Pont de Nemours & Co. E. I. **893 589**

Production of N-vinyl and N-substituted vinyl 2-oxazolidones. Revertex Ltd. **893 689**

2,3-dimercapto-quin-oxaline derivatives. Farbenfabriken Bayer AG. **893 393**

Polycaproamide composition. Sinclair Refining Co **893 640**

Method for the purification of hexamethyldiamine. Chemstrand Corporation. **893 709**

Removal and utilisation of carbon black formed in the cracking of hydrocarbons. Badische Anilin-&-Soda-Fabrik AG. **893 504**

Photosensitive polymer derivatives and photosensitive elements containing them. Du Pont de Nemours & Co., E. I. **893 616**

Weather-resistant copolymers and their production. Du Pont de Nemours & Co. **893 507**

Ethylene polymerisation. Grace & Co., W. R. **893 710**

Process for preparing polyolefin textile fibres. Montecatini. **893 605**

Pest control metal phosphide compositions and a process for the production thereof. Deusche Gesellschaft Fur Schädlingsbekampfung. **893 711**

Polychloroprene elastomers. Du Pont de Nemours & Co., E. I. **893 851**

Oxidation of aromatic compounds. Phenolchemie GmbH. **893 851**

Oxidation of aromatic compounds. Phenolchemie GmbH. **893 634**

Process for the colour stabilisation of high molecular weight linear thermoplastic polycarbonates. Farbenfabriken Bayer AG. **893 396**

Steroid compounds and the preparation thereof. Franasco Vismara S.P.A. **893 629**

Antihypercholesterolemic amino acids. Jorgensen, E. C. **893 735**

Hydrocarbon fuels. Shell Research Ltd. [Addition to 821 219.] **893 646**

Organosiloxane compositions. Dow Corning Corporation. **893 399**

Process for the production of penicillin-splitting enzyme preparations. Farbenfabriken Bayer AG. **893 418**

Polymerisation of unsaturated ethers. Hercules Powder Co. **893 713**

Copolymers of methacrylate possessing good elongation values. Dow Chemical Co. **893 517**

Antibacterial agents. Beecham Research Laboratories Ltd. **893 518**

$\Delta^{5(10)}$-steroids. Organon Laboratories Ltd. **893 450**

Process for the polymerisation of unsaturated compounds. Farbenfabriken Bayer AG. **893 472**

Tetrapolymer. Esso Research & Engineering Co. **893 460**

Polyethylene diluted polypropylene. Esso Research & Engineering Co. **893 540**

Production and difficultly inflammable polystyrene and styrene-containing copolymers. Chemische Werke Hüls AG. **893 774**

Phenylacetic acid derivatives having central depressant activity and processes for their production. Nederlandsche Combinatie Voor Chemische Industrie, N.V. [Divided out of 893 391.] **893 392**

In Parliament

Home Office studies recent chemicals explosion

Asked what action was taken by the Home Office to ensure that safety precautions were taken in respect of the movement by road of hazardous chemicals, Mr. D. Renton, Minister of State, Home Office, replied that statutory controls as to conveyance by road existed in respect of explosives to which the Explosives Act, 1875, applied and of petroleum spirit and mixtures and certain other substances, mainly gases.

The recent explosion at West Bromwich involving a lorry carrying chemicals was being investigated. If the probable cause of the explosion could be ascertained the Minister would consider what action might be required to prevent a recurrance.

Yield from duties on oils

Total yield of the duties and taxes levied on hydrocarbon oils in 1961 was about £480 million, stated Mr. A. Barber, Economic Secretary to the Treasury.

State orders for I.C.I.

Sir Cyril Osborne was told in the House on 1 March that information on the value of Government orders given to I.C.I. in 1961 was not readily available. Sir Cyril had also asked how much tariff protection those orders enjoyed and what would have been the saving if they had been at free world market prices.

TRADE NOTES

Specialised organic chemicals

As a further extension to their organic chemical sales service, Kodak Ltd. offer to undertake the manufacture of certain specialised organic chemicals on a custom basis. A list of suggested items for custom synthesis is available from: Kodak Ltd., Chemical Sales Department, Kirkby, Liverpool.

Materials for G.L.C.

In a new catalogue by Hopkin and Williams Ltd., 'Materials for Chromatography,' the range of substances originally introduced has been extended to include some materials for gas chromatography and the selection of chromotographic aluminas has been considerably augmented.

Agreement on Pfaudlon 301

Under a recent agreement with Enamelled Metal Products Corporation (1933) Ltd., both James Lithgow (U.K.) Ltd., Buckley, Flints., and Corrosion Technical Services Ltd., Brentford, Middlesex, are now authorised applicators of E.M.P. Penton coatings, which are now marketed under E.M.P.'s trade mark 'Pfaudlon 301'. Penton is a product of the Hercules Powder Co. Ltd.

Laboratory furniture

A 60-page catalogue of laboratory furniture produced by Griffin and George Ltd. shows both wood and metal furniture, both of which can be supplied in one of three different types. These types comprise pedestal units, table benching and cantilever bench supports, and all can be easily dismantled and packed flat for shipping. In addition to the furniture many extras and accessories are shown in the catalogue, including taps, service racks and fume cupboards. Besides supplying the furniture, Griffin and George (Laboratory Construction) Ltd. also undertake the installation and if required will provide a design service.

Ion exchange resin

'Baker analysed reagent Dowex ion exchange resins' is the title of Product Bulletin 103 from J. T. Baker Chemical Co. Copies can be obtained from the British distributors for the company, Omni (G.B.) Ltd., 35 Dover Street, London, W.1.

Cadmium pigments

Johnson Matthey and Co. Ltd have introduced two new ranges of their cadmium pigments. At the same time a reduction in raw material costs and increased production has allowed reductions in prices for the orange and red colours of the standard range.

Glass for industry

In addition to the range shown in the previous edition, the latest version of Q.V.F.'s catalogue on 'Glass for Industry' has a section devoted to packaged standard chemical plant units, a section on the Q.V.F. glass centrifugal pump and details of spherical joints which are useful in loop circuits where alignment is difficult. Except where otherwise specified, all items in the catalogue are made from a high grade thermal shock resisting borosilicate glass.

Electrothermal catalogue

A catalogue of electrothermal apparatus and equipment has been produced by Electrothermal Engineering Ltd., London E.7.

Price cuts

Price reductions for Gusathion—an organophosphorus compound for the control of codling moth and tortrix caterpillars on apples and pears, fruit tree red spider and bryobia mites—have been announced by Baywood Chemicals Ltd., 37/41 Bedford Row, W.C.1.

Mydel 550

Introduction of a new chemical, Mydel 550, has been announced by Dow Chemical Co. (U.K.) Ltd. This is a dry strength resin for paper and paperboard, and is a water-soluble acrylamide type resin which when used in paper making furnishes improves the dry strength of paper and paperboard products.

Aluminium price cuts

A further round of price cuts has been announced by British Aluminium and Alcan Industries. These represent a reduction of more than £37/ton, or 11½% on sheet and coil. British Aluminium say that since January, their price cuts have totalled about £55/ton, or 16½%.

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