

Chemical Age

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STYRENE DUTY (P. 602)

I.C.I. ANNUAL
REPORT (P. 605)

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14 April 1962. Vol. 87. No. 2231

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

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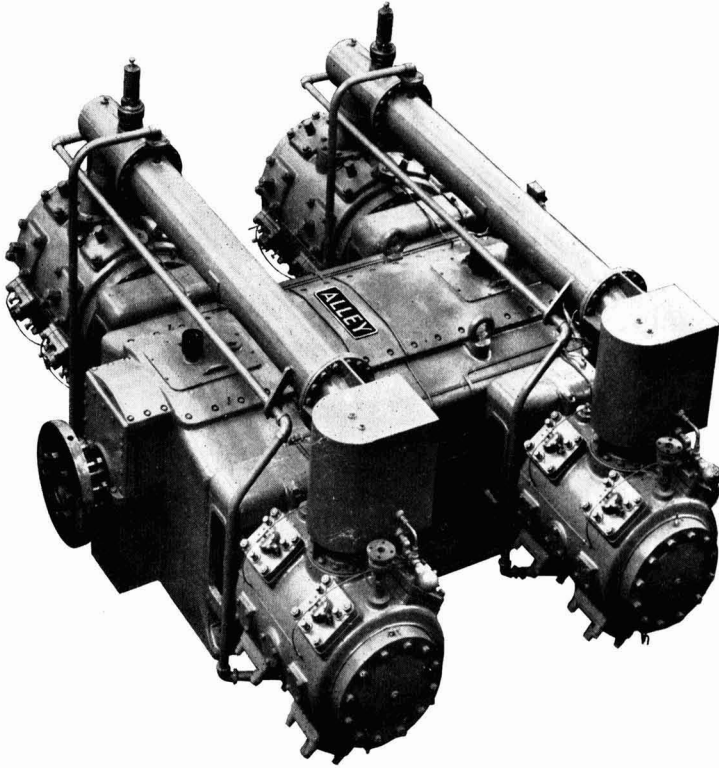
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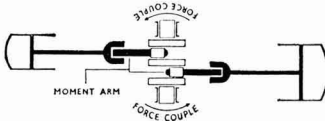
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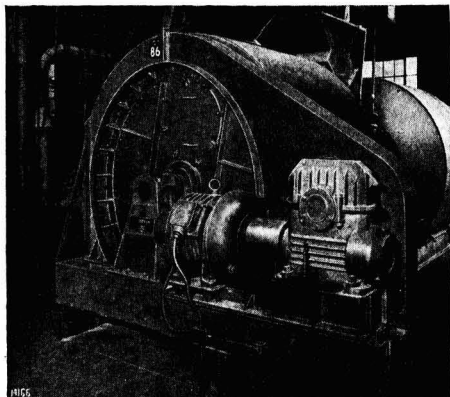
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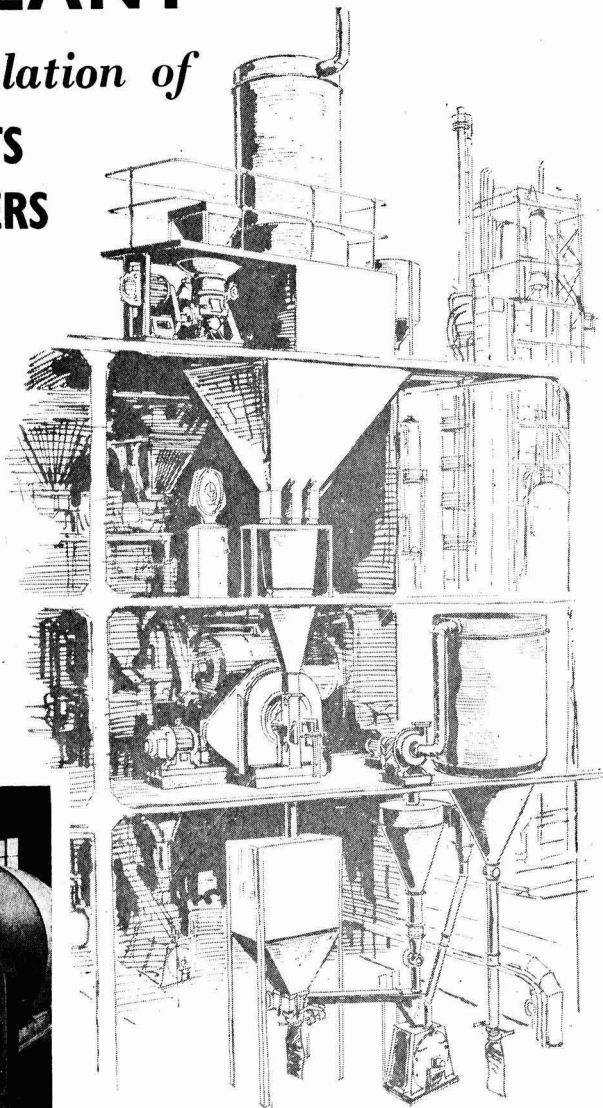
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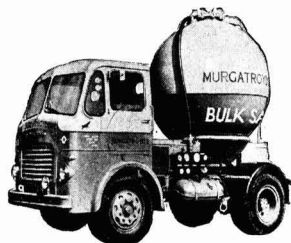
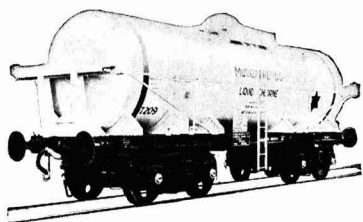
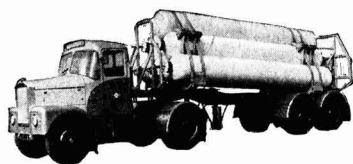
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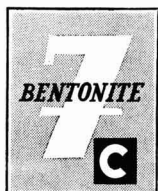
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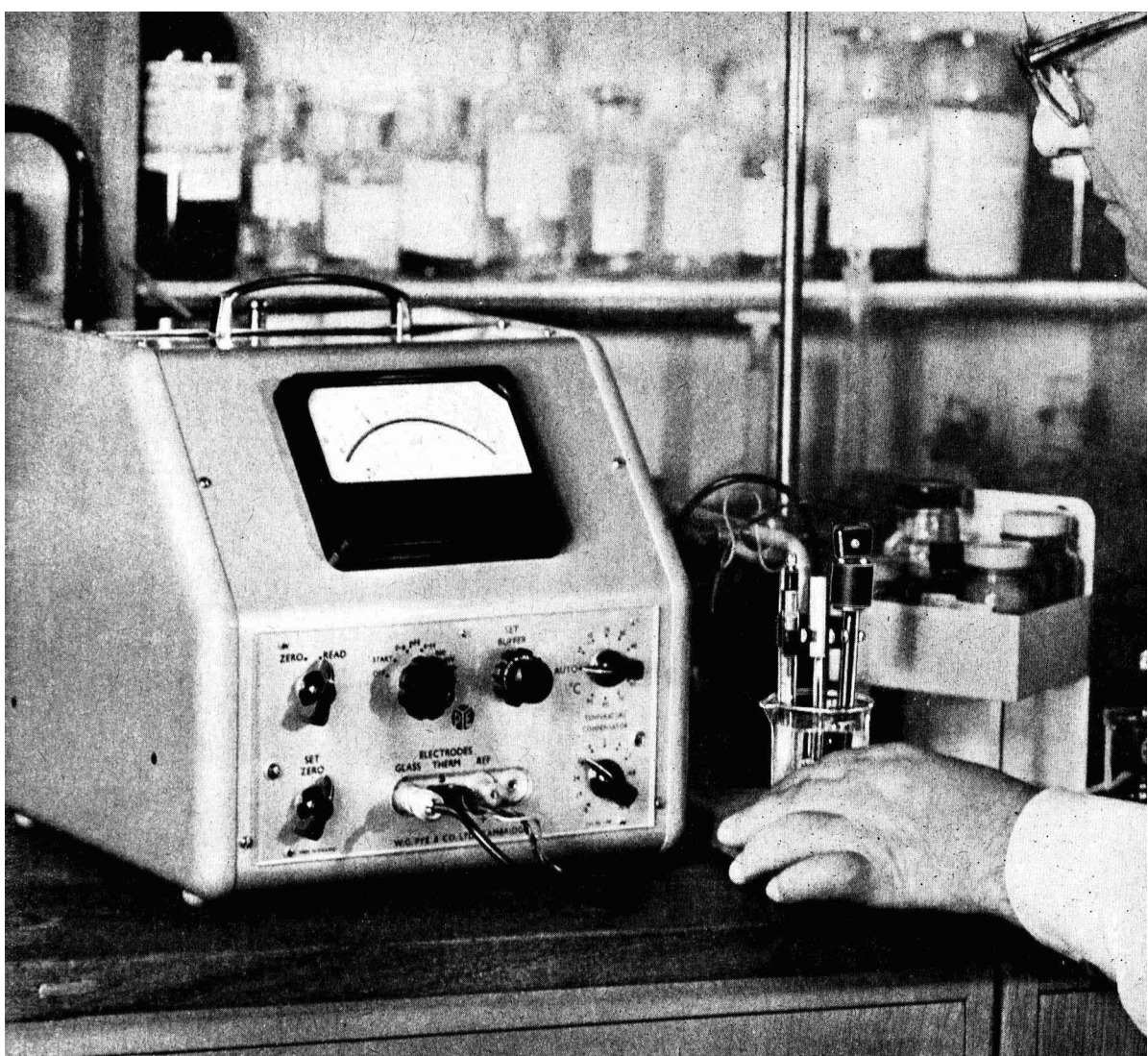
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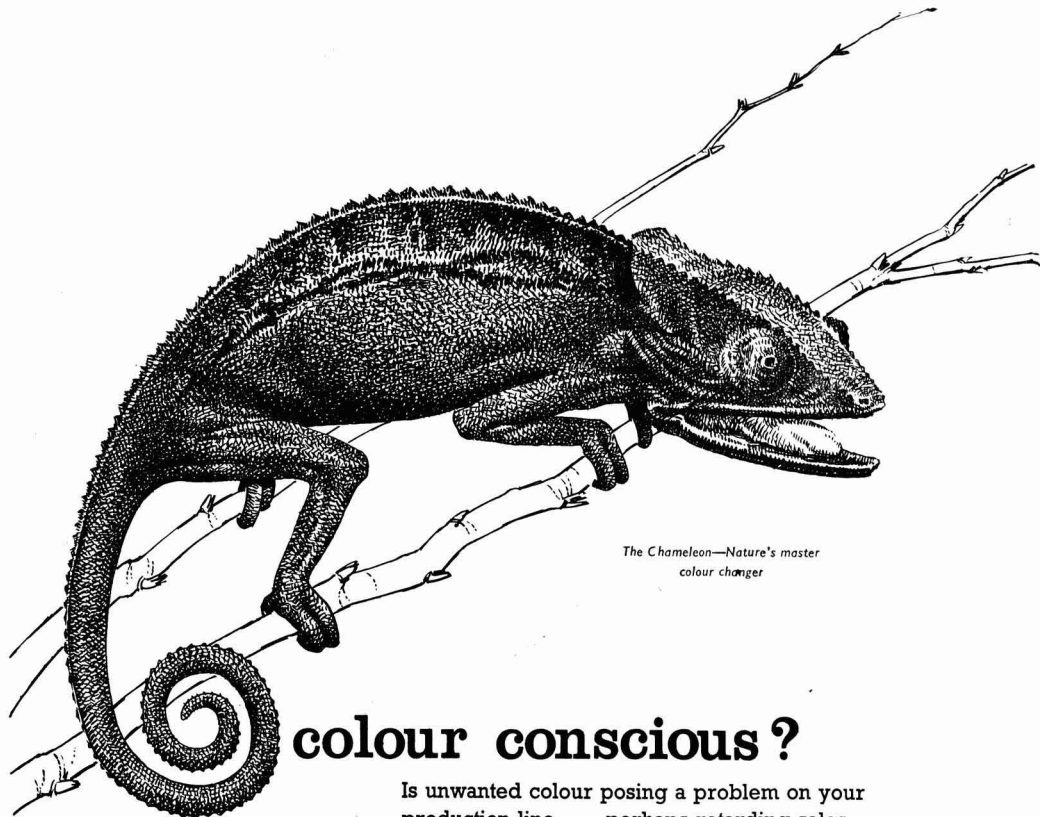
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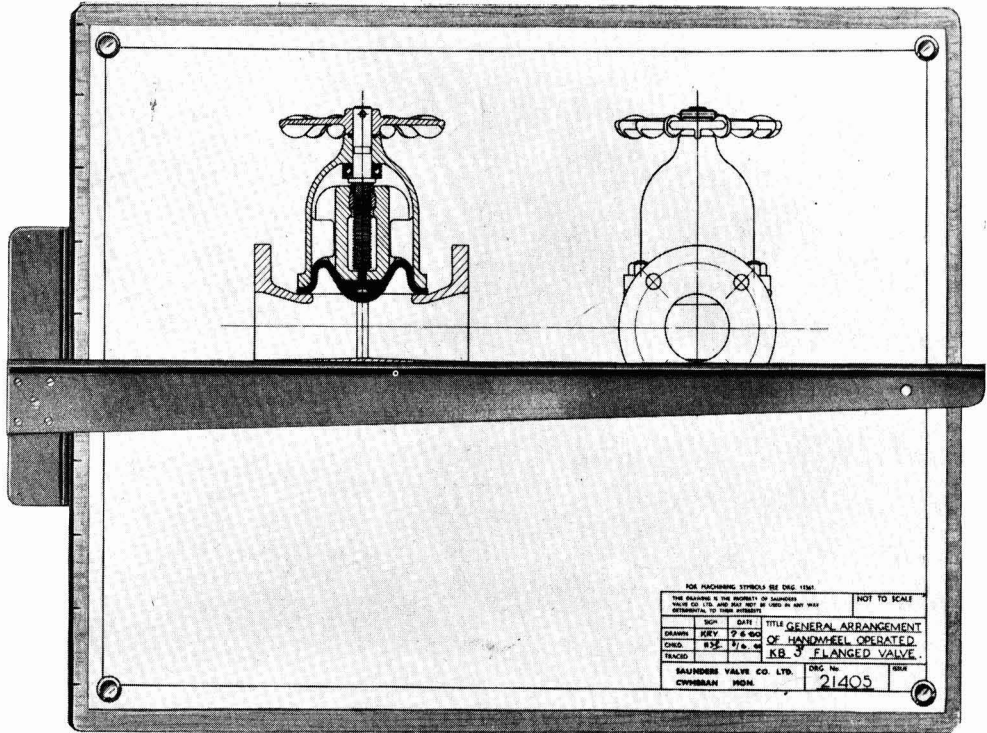
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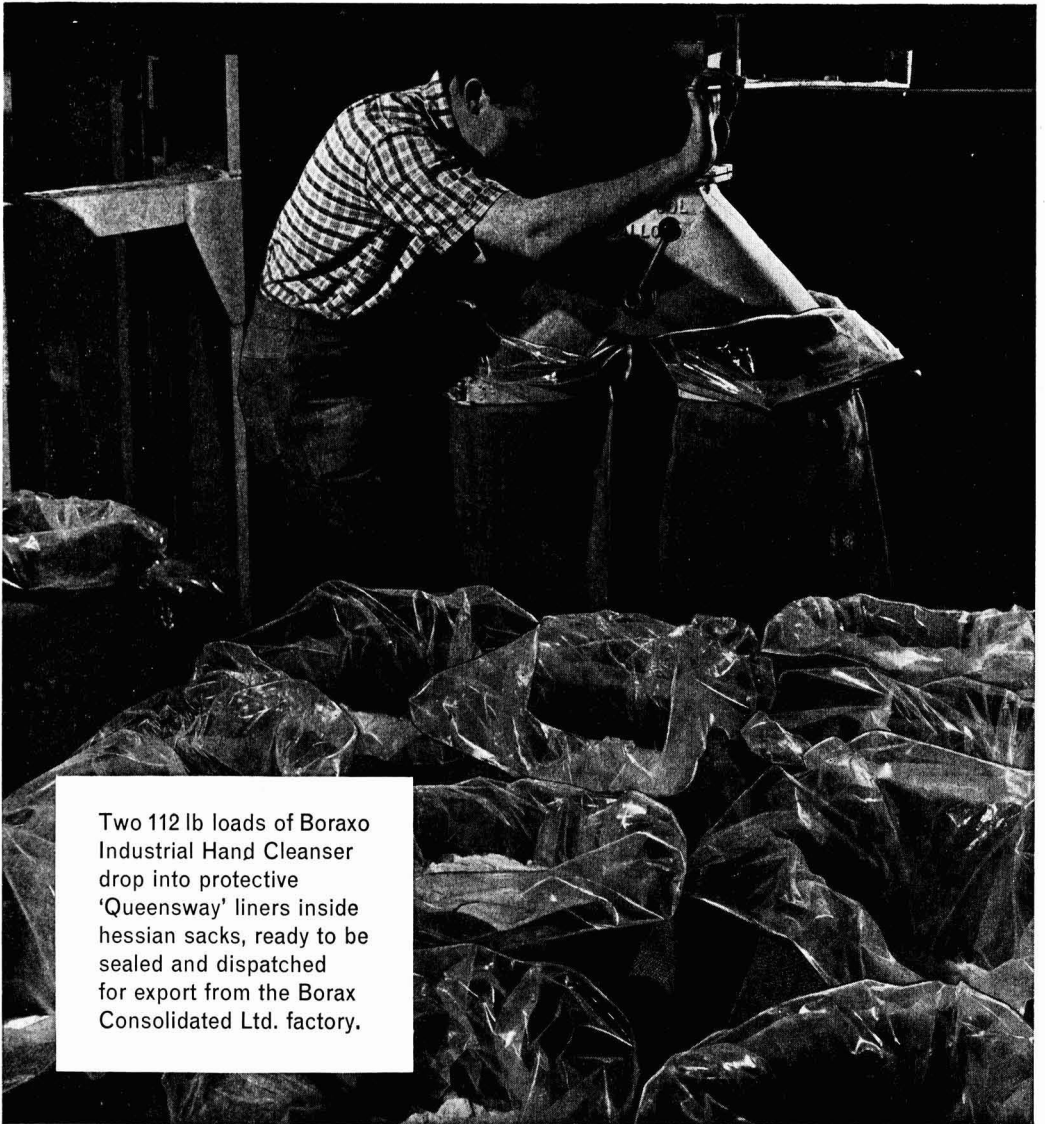


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[♠]**'Queensway' polythene liners**

QW191

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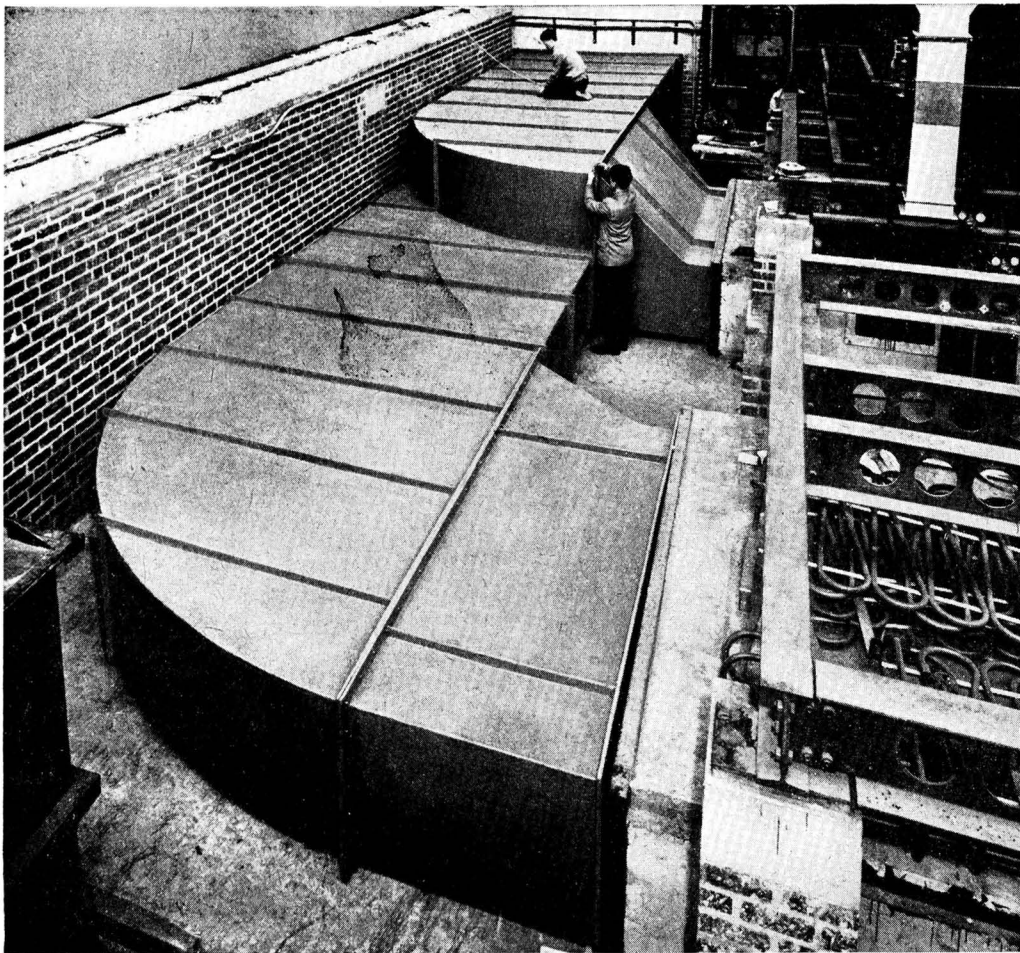
PAR has been claimed to be the most sensitive of all reagents for the colorimetric estimation of cobalt, the most sensitive water-soluble reagent for uranium, and perhaps the only water-soluble reagent for the colorimetric determination of lead¹. In addition, it is a versatile complexometric indicator in direct titrations of metal ions with EDTA², and of indium with nitrilo-triacetic acid³.

- 1) Pollard, F. H., Hanson, P., and Geary, W. J., *Anal. Chim. Acta*, 1959, **20**, 26-31
 - 2) Wehber, P., *Z. anal. Chem.*, 1959, **166**, 186-9
 - 3) Busev, A. I. and Kanaev, N. A., *C.A.*, 1959, **53**, 18747c
- 1 g 5s. 6d.; 5 g 20s. 9d.; 10 g 40s. 0d.

TIME FOR 'PANACIDE'

At this time of year renewed slime growth begins to appear in cooling towers, air conditioning systems and industrial water supplies generally. Slime growths are most easily avoided if treatment begins early. We recommend the B.D.H. product 'PANACIDE', and shall be happy to send full information about it, including a reprint of an interesting article from the journal 'Engineering', on request.

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B.D.H. LABORATORY CHEMICALS DIVISION POOLE, DORSET



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Fume ducts in 'Darvic' are light in weight and do not corrode

This ducting system has been designed to handle highly corrosive fumes from an automatic plating plant – yet it is made from sheeting only $\frac{1}{8}$ inch thick. The sheeting used is 'Darvic' rigid p.v.c., clad with glass-reinforced polyester resin. The use of 'Darvic' cut down weight so much that sections as large as 10 feet by 5 feet were fabricated and installed without becoming excessively heavy to handle. This ducting is extremely durable and never needs painting. If getting rid of corrosive fumes is a problem for you, ask your nearest I.C.I. sales office about 'Darvic' rigid p.v.c. sheet.

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services for the Steel
Company of Wales
at Margam*

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The new cold reduction mill at the Gartcosh works of Colvilles Ltd is an example of this type of project. There Simon-Carves are erecting pipe-runs for services to the five production units of the plant. The work includes pipes for acid, steam, compressed air, oils, grease, sludge, raw and clarified effluents and filtered, treated, softened and acidulated waters.

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A NEGATIVE BUDGET

THE 1962 Budget is likely to be remembered in the chemical industry for what it did not do, rather than for the changes it will bring about. Perhaps the most disappointing feature of a somewhat negative Budget is the continuance of the £2 a ton tax on fuel oils. This is a bad tax that has served only to hamper British industry and has in fact been bitterly opposed by all sections of industry.

Possibly the most topical comment is that contained in I.C.I.'s annual report, published on Wednesday this week. I.C.I. state that representations were made to the Government about this duty which has substantially increased the cost of power to industry. At a time when there is growing competition, both in the U.K. and in overseas markets, from foreign competition, it is most unfortunate that the price of fuel oil, after duty, is significantly higher in the U.K. than in the Common Market. All the Budget does is to implement a reduction of 0.2d in the tax, which means that prices will come down by a little over 4s/ton.

The Federation of British Industries on Tuesday evening aptly described the Budget as uninspiring at a time when inspiration was badly needed.

There has been no general boost to the export trade, although doubtless car manufacturers will take advantage of the lower purchase tax to increase their overseas sales. Other vital problems—closely allied to the paramount need to make British industry more competitive overseas—those of raising production and cutting costs also receive little or no help from this negative Budget.

Speaking of the need for sound economic growth in the House of Commons on Tuesday, Mr. Selwyn Lloyd, Chancellor of the Exchequer, said that the whole emphasis of the work of the new National Economic Development Corporation is on the importance of securing a faster but soundly based rate of economic expansion.

At the meeting of N.E.D.C. next month, Mr. Lloyd hopes that agreement will be reached on the method of carrying out an urgent study of the problem. He believes that this survey must be related to a specific figure for annual growth in the gross national product. The N.E.D.C. will consider whether the collective target set by O.E.C.D. for this decade of just over 4% per year should form the basis of the study or whether a larger figure should be fixed.

These are worthy aims—in fact they are vital if Britain is to compete with any degree of success in the Common Market. Yet Mr. Lloyd's Budget does not take the steps that will be necessary to see that these aims are in any way met.

The recent O.E.C.D. survey of the U.K. economy regarded as one of the main causes of Britain's economic bottleneck the fact that growth of output was confined to short periods and was abrupt when it did occur. Few industrialists would argue with that view, but the 1962 Budget seems to accept the time-worn philosophy that the British economy must continue to be regulated on the basis of periodic ups and downs.

It may well be that the Chancellor is waiting for the results of the N.E.D.C. study before deciding on the measures necessary to inject stability and growth into the British economy.

Annual subscription is: home, 57s 6d,
overseas, 65s, single copies 1s 9d (by
post 2s)

Higher import duty sought by styrene monomer producers

THE Board of Trade have given notice that they are considering an application for an increase in the import duty on styrene monomer. An application for the imposition of an anti-dumping duty on styrene monomer imported from Canada, West Germany and the U.S. (see CHEMICAL AGE, 3 March, page 354 and 17 March, page 440) is already being considered.

It seems that U.K. styrene monomer producers (Firth and Shell) wish to secure more lasting protection from imported styrene. The imposition of an anti-dumping duty—if granted—would be a temporary measure and it can only be imposed if it is proved that it is being sold in the U.K. at prices below those in the importers' home markets. The investigation of an application for an increase in import duty is more complex than that for the imposition of an anti-dumping duty. The applicants must prove that the duty is too low and that they are being harmed by it, and that an increase is in the national interest. Objections of interested parties are also investigated.

The current duty on styrene monomer is 33½% or 2s 6d per gall. on preferred imports, i.e. from Commonwealth countries. Imports of styrene last year were 4,017,941 gall. compared with 2,770,262 gall. in 1960.

A statement of the applicants' case

will be made available to all firms and organisations with a bona fide interest in styrene monomer and who may wish to make representations provided they are prepared to give an undertaking that they will treat the information as strictly confidential and to allow their comments to be passed to the applicants for reply.

A.C.C. move research and admin. to new H.Q.

RESEARCH, central engineering and administration facilities of the Associated Chemical Companies Ltd. are to be moved to new, larger headquarters in Harrogate.

The research block in Kirkstall Lane, Leeds, close to the cricket ground, now outgrown, is in the hands of Knight, Frank and Rutley to find a buyer. The building, which is on two floors, covers 12,500 square feet. It includes nine laboratories, conference room, research director's office, library, workshops, stores, offices, kitchen and dining room.

Products made by the A.C.C. group include a wide range of chromium chemicals, fertilisers, textile auxiliaries, animal feeding stuffs and sulphuric acid. These are made at 10 works, the major ones being at Stockton-on-Tees, Glasgow, Bromborough and Wakefield.

I.C.I. directors get an average of £23,000 each

ANNUAL report of I.C.I. discloses that in 1961 the directors shared total remuneration of £509,000, or an average of £23,000 for each director. Directors fees totalled £48,000. Other emoluments were £461,000 and £7,000 in respect of fees from other companies to whose boards they had been nominated by I.C.I.

These payments total £516,000, compared with £459,000 for 1960. Pensions and gratuities to former executive directors and their dependants totalled £159,000.

£11,500 payment for Bowmans' director

Mr. W. H. Bellamy, who left the employment of Bowmans' Chemicals Ltd., Widnes, in January and who resigned from the board on 15 March, is to be paid £11,500 in settlement of all claims arising from the premature termination of his service agreement.

Virtual end of Scottish shale oil mining industry

SHALE oil mining in Scotland is to end after 106 years. Scottish Oils Ltd., following the Government's announcement that the present preference would be withdrawn not later than 1964 and would not be replaced by subsidy, have reluctantly decided to cease operations in the near future, to permit workers to seek employment in the developing concerns.

Westwood Crude Oil Works and the supplying mines Westwood Pit and No. 1 and No. 6 mines at Philpstoun, and also the Broxburn Sulphuric Acid Works will all close down. About 1,050 workers will be affected by these and other developments. The company will continue meantime to refine from the U.K. oilfields at Pumpherston refinery together with manufacturing detergents and bricks, employing about 450.

Mr. John Caldwell, managing director of Scottish Oils Ltd., said this was the end of the industry in Scotland.

Berk make new coating for steel alloys

A NEW coating for special steel alloys undergoing treatment, developed by Rolls-Royce, has been licensed to F. W. Berk and Co. and is being made by them.

Called Berkatek, the coatings are based on bentonite or on ceramic oxides for some variants. The coatings have wide uses, especially for titanium and zirconium alloys, apart from the steel alloys used in turbines and aircraft.

The material is used to prevent the corrosion of metal at the high temperature used for stress-relieving. It is applied by dipping or spraying before heat treatment. Some varieties flake off after treatment and leave clean metal devoid of oxide and other corrosion compounds.

So far, a suitable Berkatek for straight carbon steels has not been found, but development work is still going on.

Drs. J. N. Murrell and R. O. C. Norman are joint recipients of Meldola Medal

THE 1961 Meldola Medal of the Society of Maccabaeans has been awarded by the R.I.C. to two candidates, adjudged to be of equal merit in different fields. They are Dr. J. N. Murrell, University of

methods of analysis to the elucidation of mechanisms of reaction of aromatic compounds.

Dr. Murrell, formerly a Research Fellow at Corpus Christi, Cambridge, was appointed to a lectureship in chemistry at the University of Sheffield in 1960. He has been collaborating with Prof. E. Heilbronner, Zurich, on problems in the interpretation of the electronic spectra of organic molecules and is the author of a forthcoming book on that topic. He is currently engaged on nuclear and electron magnetic resonance research, and the study of the delayed fluorescence of organic molecules.

Dr. Norman completed his Ph.D. at Merton College, Oxford, and after a year in the U.S., at Harvard and at the University of Illinois, returned in 1958 as Fellow and tutor in chemistry at Merton College and demonstrator in the Dyson Perrins Laboratory. He has since been concerned with the mechanism of ionic reactions of aromatic compounds. His research interests have recently been extended to the application of reaction mechanisms to biological processes



Dr. J. N. Murrell Dr. R. O. C. Norman

Sheffield, for his work in theoretical chemistry, with special reference to the interpretation of the electronic spectra of organic molecules; and Dr. R. O. C. Norman, Merton College, Oxford, for research in organic chemistry, in particular the application of modern

Project News

Ammonia sphere for Fisons ; I.C.I. boost *p*-xylene output

A NEW liquid ammonia storage sphere at the Immingham Works of **Fisons Fertilizers Ltd.** was insulated by **Dick's Asbestos and Insulating Co. Ltd.**, a subsidiary of Thomas Ward Ltd. The sphere is 35 ft. in diameter and is constructed of steel plate varying in thickness from 19/32 in. at the top to 23/32 in. at the bottom. Storage capacity is 375 tons of anhydrous liquid ammonia.

Ammonia temperature is controlled automatically at 3.5°C by a vapour recompression and refrigeration unit supplied by Lightfoot Engineering. Pressure in the tank corresponding to this temperature is 55 p.s.i.g. The tank is protected by dual Shand and Jurs pilot operated relief valves. Liquid ammonia is transferred from the tank as required by Sigmund pumps.

Refrigeration is necessary to remove sensible heat from liquid ammonia discharged into the tank from the atmosphere and from solar radiation. To keep the heat intake from these two sources to a minimum, insulation efficiency was of prime importance.

Two layers of Onozote slabs each 1½ in. thick, set and sealed in hot bitumen, were applied to the whole area including the 18 in. diameter 'legs,' followed by a layer of 1 in. mesh galvanised wire netting. Two coats ¼ in. thick Berry Wiggins rubber modified bitumen emulsion No. 174213 were then applied with a layer of glassfibre tissue in between to give additional mechanical strength, and to resist any expansion and contraction taking place.

The finished appearance of the sphere was an important factor and an aluminium p.v.c. liquid envelope—a heavy solid vinyl plastics manufactured by

Jenson and Nicholson Ltd.—was used to give an impervious, continuous plastics coating over the entire sphere, protecting it from the weather.

Large-scale *p*-xylene expansion for I.C.I.

● A NEW 60,000 tons a year plant for the production of para-xylene is being erected by **I.C.I. Heavy Organic Chemicals Division** at Wilton. It is due for completion by mid-1963. Para-xylene is the main raw material for Terylene and the increase is planned to meet continued expansion at home as well as by I.C.I. licensees abroad.

The process is an improved version of that discovered by I.C.I. and incorporated in the original Wilton plant whereby mixed xylenes, purchased from the oil industry, are isomerised to give a very high yield of para-xylene. The new plant is designed by I.C.I. and construction is already in progress.

Humglas and I.C.I. synthesis gas process

● THE appointment of **Humphreys and Glasgow Ltd.** as joint licensees with Power-Gas for the **I.C.I.** synthesis gas process means that the company is now able to offer processes for virtually all reforming requirements. The I.C.I. process is complementary in application to the Onia and Onia-Gegi process, the basis of a number of plants constructed by Humglas both in the U.K. and over-

seas over the last few years. Under the terms of the I.C.I. licence, the company will now be able to offer the new process throughout the world for the production of town gas and hydrogen, and in most countries for chemical synthesis purposes.

Enkalon nylon plant makes good progress

● GOOD progress is being made in the erection of **British Enkalon's** nylon-6 plant at Antrim, N. Ireland. It was revealed in the company's first annual statement that the steel construction of certain of the buildings was finished in March and that the first spinning machine will be in operation in the first quarter of 1963.

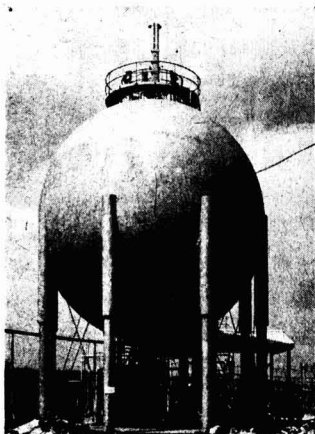
The erection of the plant is proceeding as planned and the output scheduled for the first phase of operations should be reached before the end of 1963.

Orders for most of the essential production equipment have been placed, mainly through A.K.U.'s suppliers. Main contractors are **Matthew Hall and Co. Ltd.**

B.O.C. awarded Indian oxygen contract

● A CONTRACT from the **Fertiliser and Chemicals, Travancore Ltd.**, near Cochin, S. India, has been gained by **British Oxygen** to build a twin tonnage air separation plant with a total capacity of 370 tons a day. The unit includes an integrated nitrogen wash plant for hydrogen purification and will produce 170 tons of oxygen and 200 tons of nitrogen a day. The contract is worth over £800,000.

The plant will be used in the production of ammonia synthesis gas from naphtha feedstock for nitrogenous fertiliser production. It will work in conjunction with a smaller B.O.C. air separation unit for the F.A.C.T. in the same works. As stated last week, main contractors are **Power-Gas Corporation.**



The completed sphere fully insulated

Story of Shell Haven chemical facilities

IT was in 1956 that the first chemical plant—an alkyl benzene plant, now distinguished by the fact that the major grade produced gives a 'biologically' soft detergent—was built at Shell Haven. This was followed in 1959 by the completion of a complex of plants for the production of ammonia, nitric acid and Nitra-Shell fertiliser. In 1960, a plant capable of producing up to 40 tons of liquid sulphur a day came on stream.

Nitrogen for ammonia synthesis and the 90% pure oxygen required for oil gasification are produced by a Linde Air Separation Unit. The unit takes in about 13,000 tons of air a day and is capable of separating 250 tons a day each of nitrogen and oxygen.

The ammonia plant, producing about 85,000 tons a year, uses the Fauser-Montecatini process which operates at a pressure of 250 to 350 atm. The heat of the reaction is used to generate steam

in waste-heat boilers. Liquid ammonia is pumped from storage by the ammonia shipping pumps to Fisons.

One novel feature of the nitric acid plant is that it employs equipment to remove traces of nitrogen oxides from waste gases discharged to the atmosphere. The Shell Haven plant is one of the first two in the U.K. to be equipped with the means of removing this source of atmospheric pollution.

The Shell Haven chemical plants use nearly ½ million tons of steam a year, most of which is made on the plants themselves, 70 million tons of water for cooling a year, and 75 million units of electricity a year; 13,000 million cu. ft. of air a year are taken in for ammonia production.

A booklet giving an account of the activities at Shell Haven in the chemical field and describing in outline the various processes has recently been issued by Shell Chemical Co. Ltd.



★ LIQUEFIED petroleum gases are playing an increasingly important part in the U.K. economy with the U.K. refineries currently selling some 150,000 tons a year. With full extraction, this output could be stepped up two- or three-fold. This is stated by Mr. L. J. Clark, assistant chief engineer of the North Thames Gas Board, which already operates some 26 miles of pipeline for transferring pressurised LPG between its Canvey Island storage depot and its work at Romford and Beckton.

The N.G.T.B. has also authorised the laying of some 75 miles of 8 in. diameter pipeline from Esso's Fawley refinery to the Southall Gas Works. This will carry more than 150,000 tons of L.P.G. a year for gas production—equivalent to today's production at all refineries.

Mr. Clark was writing in a *Financial Times* supplement published on Monday to coincide with the second international pipes and pipelines exhibition opened this week at Earls Court, London. Clearly there is a big future in the U.K. for not only for LPG, but also for the pipeline industry.

★ ALTHOUGH it is still not possible to get an official breakdown of U.K. production of synthetic fibres—nylon, polyesters and acrylics—the statistics show that synthetics as a whole continue to expand, although at a slower rate than previously. In 1961, production of synthetic fibres was 9% higher than in 1960, compared with an increase in 1960 of 50% over 1959. In 1961, world output of synthetics is estimated to have risen by more than 16%.

Actual production last year of synthetics rose from 82.1 to 87.5 million lb. for continuous filament and from 52.3 to 58.4 million lb. for staple fibre. Biggest man-made fibre increase last year was for continuous filament acetate and tri-acetate, showing a 20% rise from 44.9 to 53.5 million lb. Staple production rose from 14.6 to 17.9 million lb.

There was a sharp decline in viscose fibre although this is thought to be of a temporary nature. Continuous filament viscose output fell from 141.6 to 121 million lb. and staple from 256.6 to 229.4 million lb.

★ In this robot age we are hard to surprise, but, while electronic computers are, of course, not new to the chemical industry, I had not anticipated such a phenomenal information machine as it being developed at the U.S.S.R. Institute of Scientific and Technical Information. This, it is claimed, will pre-

dict the properties of chemical compounds not yet synthesised.

Within minutes this miracle machine will be able to extract from its 'memory' the required compound and indicate its formula and properties, as well as the reactions of which it is capable. It will process both figures and text, and the number of commands will increase from one thousand in existing computers to tens of thousands, with answers two or three times faster.

A more 'down-to-earth' development is the mobile data logger fitted out by Ferranti for hire to companies wishing to investigate the possibilities of automatic process control in their plants, but who do not want to buy costly equipment outright. Housed in a caravan, the data logger can readily be connected up with the various sections of a plant. Process variable can be sampled or scanned at speeds ranging from 60 to 1,650 samples per minute.

★ £37,000 has already been received for the National Advertising Benefvolent Society in response to Mr. Glanvill Benn's 1961/62 Presidential Appeal. This splendid amount has come from Mr. Benn's friends and colleagues in newspaper and periodical publishing, advertising agencies and national advertisers. And from readers of this journal.

"I can't tell you how grateful I am" Mr. Benn told me, "but at the risk of seeming greedy I must mention that any odd guineas received before my appeal closes at the end of this month will be most welcome. The money is wanted and will be well spent."

★ THE British chemical industry has shown in recent years how teamwork can help beat project construction schedules and so make a useful contribution not only to faster on-stream times, but also to reduction of construction costs. This is to be the theme of a paper that Mr. H. Birchall, technical director of the I.C.I. Dyestuff Division will present at the annual conference of the Institution of Plant Engineers at Harrogate from 9 to 11 May.

Title of Mr. Birchall's paper is 'The application of teamwork and scientific planning to engineering projects.' This paper will describe the important benefits of teamwork when used to the best advantage in planning projects, including the elimination of individual departmental safety margins on estimates. I am particularly interested in what Mr. Birchall will have to say about the techniques of operating task forces or project teams and liaison with contract-

ing companies, as well as the help to be gained from work study, feed back of operating know-how to design stages and the proper planning of maintenance with production for optimum results.

The author has had good experience at securing full co-operation on plant projects, for under his wing came his division's new TDI plant, which had as its main contractors Constructors John Brown Ltd.

★ CONGRATULATIONS to Chemical Engineering Construction (Pensnett) Ltd., Stourbridge, Worcs, on celebrating this month their first decade. It is good to see such a vigorous company develop from modest beginnings. On its inception in 1952 the company with a capital of £1,000 had the basic intention to engineer chemical plant, and, in particular, chemical descaling, acid regeneration and effluent treatment plants for the metallurgical industries. Its proud record: in the 10 years it has completed £700,000 worth of contracts, varying from £1,000 to £50,000 at home and £80,000 overseas.

Its effluent treatment scheme for Wilmot Breedon Ltd., Birmingham, is capable of handling 30 to 40 thousand gall./hr. and is the biggest in the Midlands dealing with electroplating wastes. Current tentative orders include effluent treatment plant for Tube Investments Ltd. and acid recovery plant for Helliwells Ltd.

The company is also busy making under contract rinse water recovery, acid fume extraction and acid neutralising plants, acid storage equipment and galvanising installations and a host of other units and general chemical processing plants.

★ CANADA is one of the leading Commonwealth countries in the scientific field and her 26-exhibit display at the World Fair in Seattle, U.S., opening on 21 April, should compare favourably with those of the 35 countries being represented.

The Canadian section will include an important chemical process developed by Shawinigan Chemicals Ltd., Montreal. Known as the Fluohmic furnace, this process made possible the first commercial production in Canada of sodium cyanide and, later, of hydrogen cyanide, both, of course, used as intermediates in chemical processes and in the electroplating and mining industries. Previously, however, they came mainly from foreign producers, and the invention is a real feather in Canada's cap, being patented in a number of countries.

The Shawinigan exhibit at Seattle will be a working model, about 1-30th the size of the actual device in operation in Quebec, and will operate at 1,900°F compared with the actual working temperature of 3,000.

Alembic

I.C.I. annual report

Big capital spending with new plants for polyethers, isocyanates, salt, para-xylene

ANUAL report of Imperial Chemical Industries, Ltd., published on Wednesday, discloses, that new Dyestuffs Division plants are being constructed, and new processes designed, to make polyethers and isocyanates. (Last year, this division brought on stream large-scale plant at Fleetwood for the production of TDI.)

Apart from projects already announced, the report states that the large projects sanctioned during 1961 included extensions of capacity for para-xylene, dyestuffs and dendritic salt. The para-xylene plant will embody important new features, resulting from I.C.I. research, and will produce material at a substantially reduced cost. The largest project sanctioned during 1961 was the Severnside scheme for the production of compound fertilisers.

Capital spending sanctioned during the year was exceptionally high, amounting to £73 million, compared with £40 million in 1960. Actual expenditure in 1961 on the U.K. construction programme was £46 million, compared with £34 million in 1960 and £32 million in 1959. During 1962, the first Severnside plants, those for ethylene oxide and glycol will come on stream, plus extra capacity for p.v.c., Perspex, Terylene filament yarn at Kilroot, and a new works for concentrated complete fertilisers which is being built near Belfast by Richardson's Fertilisers Ltd.

Reasons for profit cuts

The group's trading results were given in CHEMICAL AGE, 17 February, page 283. In their report, the directors give three reasons for the cut in profits last year. First there were substantial falls in world prices of certain chemicals—abnormal U.S. surpluses caused a lowering of prices which spread to Europe, a fall in prices that was most marked in plastics. Second, the policy of anticipating possible entry into the Common Market by deliberately adjusting some prices which might not otherwise have remained competitive. Third, although export trade increased and was a record, it was achieved in fiercely competitive conditions and profit margins were lower.

In the circumstances, a fall in profits was inevitable. Despite that, the record volume of business achieved in 1960 was maintained both at home and overseas.

Home trade. Volume of home sales was slightly higher than in 1960 with record sales for fertilisers, plant protection products, nylon polymer and phar-

maceuticals. The volume of Terylene sales exceeded that of 1960 and the volume of heavy organics and inorganics was about the same as in 1960.

Some divisions, notably metals, plastics and paints were hit by the recession in the durable consumer industries, but

Highlights of the report

- Capital spending sanctioned in 1961 was nearly doubled at £73 million
- Despite adverse conditions, the record volumes of 1960 were maintained at home and overseas
- Home sales of fertilisers, pesticides, nylon polymer and drugs were at record levels
- Exports were up 9% in volume and topped the record 1960 value level by 1%
- U.K. price of fuel oil, after duty, is significantly higher than in the Common Market

despite lower sales of paint to the motor and industrial markets, the Paints Division's total sales were a record.

Imports of polythene from the U.S. at 'dumped' prices led to a further cut in the price of Alkathene, which was now only half of what it was six years ago. Price cuts were also made in fertilisers, methanol, p.v.c., Propathene. Terylene staple fibre and chlorine products. In some cases price cuts were brought about by competition and in others they were made voluntarily to extend uses of the product concerned. The effect of the price cuts was to bring down the value of home sales to a figure of 2½% below the record level of 1960.

The report states that there were no major supply difficulties in 1961, but that the duty on fuel oil had substantially increased the cost of power. At a time when there was growing competition from foreign producers, it was most unfortunate that the price in the U.K. of fuel oil, after duty, was significantly higher than in the European Economic Community.

Export trade. Group external sales overseas totalled £252 million compared with £255 million in 1960. Of that total,

sales of products exported from the U.K. accounted for about 46%, while sales of products made by overseas subsidiaries accounted for 44%; the balance of 10% arose out of the merchandising of other companies' products.

Exports from the U.K. were about 9% higher in volume than in 1960, but owing to price cuts, the increase in value was only 1%. The f.o.b. value was £97.5 million, against £96.6 in 1960, the previous record year. This increase, it is pointed out, was achieved despite the increasing scale of production by I.C.I.'s associated and subsidiary companies in the Commonwealth.

The newer products again increased their share of exports and dyestuffs, plastics and Terylene accounted for about half of the total value. Exports of Fluothane were doubled.

Value of exports from the U.K. to the world's main trading areas was:

	1960	1961
	£ million	
Commonwealth and South Africa ...	36.2	34.2
India, Pakistan and Ceylon ...	10.5	9.4
Africa ...	9.7	9.3
Australasia ...	8.3	7.3
Canada ...	1.9	2.2
European Economic Community ...	13.9	12.7
European Free Trade Association, including Finland ...	15.6	17.8
U.S.S.R. and East Europe ...	5.5	5.4
Rest of Europe ...	5.2	5.5
United States ...	4.0	4.6
Central and S. America ...	6.7	7.6
Rest of World ...	9.5	9.7
Total ...	96.6	97.5

Research and development. Spending in 1961 in the U.K. alone totalled £15 million on research and development, plus £3 million on technical service to home and overseas customers.

Many advances were made in the expanding field of polymer chemistry. A new form of acrylic paint for the motor industry should, it is stated, produce a better finish at lower cost than anything now available. The Fibres Division had developed processes for making polypropylene yarn for rope, cordage and fishnet twine. Important new outlets continued to be found for Terylene and there had been significant advances in finishing techniques for Terylene/wool and worsted fabrics.

Heavy Organic Chemicals Division had introduced the new antioxidant Topanol CA to prevent deterioration to plastics materials through exposure to air. Because of the importance of the rapidly developing and closely related fields of polymers and heavy organics, I.C.I. had decided to supplement their already considerable research effort by setting up a new laboratory which would

be free from the day-to-day problems of the divisions and would devote itself entirely to exploratory research on chemicals of that type. (CHEMICAL AGE has already referred to this development—see C.A., 23 December, p. 998.)

The laboratories would have a staff of about 100 scientists. The site has not yet been decided upon, but it is likely to be on Merseyside.

Other results of research and development included extensions of the Procion dyes range; the production of a new 'free-flowing' form of urea; commercial development of hafnium and niobium; extension of Reglone as a weed-killer.

The report adds that research on the complex interaction of conditions in manufacturing processes was becoming increasingly important as a means of achieving maximum efficiency both in the operation and design of chemical plants.

Personnel. At the end of 1961, I.C.I.'s employees in the U.K. numbered 114,229, compared with 113,699 at the end of 1960. During the year, 482 scientists and engineers were recruited, compared with 304 in 1960. There was a further cut in the number of accidents with only 0.4 lost time accidents for every 100,000 man hours worked.

Overseas activities. Capital spending by overseas subsidiaries was £13 million; in addition there was substantial spending by associated companies, particularly Fiber Industries, U.S., and by African Explosives and Chemical Industries Ltd. A.E.C.I. again increased their sales and brought on stream plants for methanol and derivatives, plus extensions to chlorine and p.v.c. capacity.

Sales of Canadian Industries Ltd. were down 3.5%—plans included a new chlor/alkali plant in New Brunswick. In the U.S., Arnold Hoffman and Co. had higher sales and Fiber Industries who were successfully developing sales of Fortrel polyester staple fibre, now had facilities for polyester filament yarn.

The first chemical plants for Duperial at San Lorenzo, Argentina would be on stream by mid-1962. A 14,000 t.p.a. polythene plant is to be built there. Duperial's associates, Electroclor S.A. were raising capacity for trichloroethylene and p.v.c. I.C.I. sales to the Caribbean were a record at over £3.5 million (f.o.b.).

In Australasia, sales of I.C.I.A.N.Z. and subsidiaries were £A59 million (£A63 million). Commonwealth Fertilisers and Chemicals Ltd. were now a subsidiary of I.C.I.A.N.Z. With capital spending of £A4 million last year, this group plan plants at Botany for carbon tetrachloride and ammonia-methanol-urea.

I.C.I. (India) again had record sales and products made in India now comprised some 42% of total sales in that country. These products include polythene, paints, chlorine products, industrial explosives, safety fuse and vat dyes-stuffs. A rubber chemicals unit is being built.

The industrial explosives works of Indian Explosives Ltd. at Gomia which had doubled its output since 1958, now had further extensions in hand. The report points out that despite import restrictions and the increase in local manufacture, I.C.I. exports to India remained at a high level, reflecting the general growth of the country's economy.

Shell see brighter prospects for chemicals

IN the chemical business, their Group conferences had made large investments during recent years, mainly in Western Europe and North America, says the chairman of the 'Shell' Transport and Trading Co. Ltd., Mr. F. J. Stephens, in his annual report to be presented on 3 May.

He says that although their strong marketing position held out the promise of rapid growth in sales, most markets for chemicals, particularly for chemicals derived from petroleum, had become extremely competitive. The manufacturing capacity for several important products had grown even more quickly than demand, and this had led to widespread reductions in prices and consequently in profit margins. But, taking the longer view, the demand for chemicals should continue its rapid growth and it was hoped that the industry would thus be restored to a better balance within a few years.

Mr. Stephens said the grand total of capital and exploration expenditure for all companies for 1957-61 was £1,988 million, that for 1961 being £374 million (£419 million in 1960). Individual items in £ million for consolidated companies included:

Oil refineries, total 1957-61, £319; 1961, £49; 1960, £53.

Chemical plants, £132; £37; £27.

Pipelines and terminals, £63; £6; £13.

He said the volume of crude oil and oil products sold rose some 8% in 1961, and sales of chemicals were approximately the same as in 1960, representing about 10% of net sales.

British chemical industry gets Leipzig contracts

EXPORT contracts worth more than £800,000 were concluded by the British chemical industry at the recent Leipzig Fair. This figure does not include purchases of fertilisers by Dominions Export, whose head, Mr. Rudi Sternberg, reports raw materials purchases for fertilisers worth more than £2 million from East Germany. The Cookson Oilcakes and Oilseeds Co. took orders worth more than £100,000.

A contract worth \$625,000 for chemical equipment for the East German oil refinery at Schwedt went to the Dutch Peja Co.

Horace Cory building new works at Woolwich

NEW premises in course of construction in Nathan Way, Woolwich, for Horace Cory and Co. Ltd., London, to replace their Hatcham Manor works. Tustin Street, Old Kent Road, London, S.E.15, are scheduled to be ready later this year. The estimated total cost of the buildings, plant, machinery and equipment will not be less than £280,000. The enforced transfer—the company states that a disturbance claim will be submitted in due course to the London County Council—is being planned so as to ensure the minimum dislocation of production.

I.C.I. aim to recoup costs of synthesis gas process by sales of know-how licences

IT is the aim of I.C.I. Billingham Division to recoup the costs of development of the new synthesis gas process and as much more money as they can make by selling know-how for the general benefit in fields which do not conflict with the interests of their own manufacturing business. This was stated by Dr. P. W. Reynolds, Billingham Division technical director, speaking at a dinner recently at which he presented long service awards.

Referring to the new synthesis gas process, which went into operation in the first successfully commissioned unit at Heysham (see CHEMICAL AGE, 31 March, page 516), Dr. Reynolds said that there were naturally some restrictions in the licensing agreements to prevent this conflict. (See also 'Project news').

The start-up of the Heysham plant has provided experience which will be of great value when the plant now under construction at Billingham, comes on stream. The first of the units comprising the plant will be finished this year

and the whole plant will be in operation before the end 1963.

The Heysham plant was built by Billingham Division. It cost several million pounds and took about two years to build. In addition to the units which are being built at Billingham to replace the coke-based plants, the process, in which light oil fractions are reacted with steam over a catalyst under pressure, will also be used in the division's new ammonia plant at Severnside.

As the units come into operation, the major part of the division's ammonia and methanol production will be based on the process.

Gelatine and glue anti-dumping application extended to Switzerland

The Board of Trade have announced that the application for the imposition of an anti-dumping duty on gelatine and glue has been extended to cover imports from Switzerland (see CHEMICAL AGE, 7 April, p. 559).

Swiss Company Reports

CIBA REPORT HIGHER SALES OF DRUGS AND DYES IN 1961

GROUP turnover of CIBA AG, Basle, in 1961 totalled some S.Fr.1,269 million, or £104 million, compared with S.Fr.1,130 million, or £92.6 million in 1960. Of that total the parent company accounted for some S.Fr.492 million, or £40.3 million in 1961 (S.Fr.446 million, or £36.3 million in 1960). Greatest single turnover increase was in the field of pharmaceuticals, which last year accounted for 45% of group turnover. Sales of dyestuffs, which make up a further third of the turnover, continued to rise at the rate recorded in 1960.

Some 50% of group turnover and almost two-thirds of the parent company's turnover in 1961 went to the E.F.T.A. and E.E.C. blocs. Due to increased local production and increased shipments from the parent company in Switzerland, sales increases were recorded for all overseas areas; this was particularly the case in the U.S., which accounted last year for 26.5% of total group turnover.

Over 1961 some 14% more was invested in group research, the 1961 total equalling nearly S.Fr.100 million, of which about 60% concerned the parent company. In the field of dyestuffs, three new Cibanon dyes—a yellow, a brown and a Bordeaux—were added, to the Ciba range of anthrachinoid vat dyes for cellulose fibres and continuous dyeing processes, while the Cibacron molecule-bond range was expanded and the Terasil range for polyester-fibre dyeing introduced.

Rare metals

The production of tantalum and niobium metals and oxides reached a technical scale in 1961. Research was carried out in the photo-chemical and plastics field, in the latter attention being paid to production processing and auxiliary products for resins manufacture and the study of new types of resin combination, particularly in the case of reactions for the polyadditive production of plastics.

As far as actual plant investment was concerned, a considerable share of last year's expenditure was centred on Swiss plants. Plant was renewed at the Basle, Stein and Monthey works of the parent company; in Basle the construction of a production unit for azo-intermediates is nearing completion, the opening of a new block of buildings of the dyestuffs laboratories is approaching and extra facilities have been introduced for pharmaceutical research, while at Monthey the renewal and expansion of a production plant for plastics and pesticides continues.

The Swiss subsidiary Telko are currently undertaking the construction of

a new photo-chemical research and development centre at Marly, near Fribourg.

Outside Switzerland, the main investments in European subsidiaries were those in the Ciba-Sandoz-Geigy subsidiary Clayton Aniline Co. Ltd. (see CHEMICAL AGE, 7 April, page 557). A long-term reorganisation programme is being carried out at the branch works of Ciba at St. Fons, France, the first large-scale expenditure on which was made last year. New pharmaceutical production facilities built at Lyons by the French subsidiary Laboratories Ciba are completed and ready for production. The Milanese-based Ciba subsidiary is to move important parts of its organisation to a new site in the city outskirts. Similar building programmes are planned or already being carried out in other European countries.

Group companies in the U.S. and Canada are now at the end of a long period of intensive investment, while planning of new projects is ahead of them, so expenditure on new plants has here fallen off over the past two years.

World expansion programme for Sandoz, whose 1961 group turnover also up

ACCORDING to the annual report group turnover of Sandoz AG, Basle, last year totalled some S.Fr.731 million, or about £60 million, 13.4% more than the 1960 total of S.Fr.645 million. Of the 1961 sum, about S.Fr.323 million (S.Fr.275 million) was accounted for by pharmaceuticals, S.Fr.252 million (S.Fr.228 million) by dyestuffs and the remaining S.Fr.156 million (S.Fr.142 million) by chemicals.

The parent company alone last year spent some S.Fr.40 million, or 17.7% more than the 1960 total, on research.

Investments over the year under report in Switzerland and elsewhere again called for the expenditure of considerable sums. In Switzerland itself, the expansion of dyestuff production facilities in Basle was continued, the facilities in the Basle pharmaceutical department for production of pure substances and Galen drugs were expanded, work started on a new block for technical and commercial departments.

Elsewhere in Switzerland, a start was made in the construction of a new factory block for the production of agricultural chemicals at Muttens, where construction is in hand for storage and packaging facilities.

In other parts of Europe, production was started at the Horsforth, U.K., textile chemicals unit of Sandoz Products

Increased expenditure was undertaken last year in South America on production facilities and administrative and commercial headquarters, new buildings having been put up at Rivadavia (near Buenos Aires), Sao Paulo and Santiago de Chile. The Ciba-Sandoz-Geigy plant at Resende, Brazil is now on stream (see CHEMICAL AGE, 31 March, page 516).

Stresspoint of Asian investment is the pharmaceutical and dyestuffs research centre to be run by Ciba of India Ltd. at Goregaon, near Bombay. The expansion of existing pharmaceutical facilities in Pakistan is current, while new administrative and production units have been opened by group companies in Australia and Japan.

The Ciba Corporation was formed in the U.S. to replace three operational companies (now technically and commercially independent departments of the new company) and the former holding concern Ciba States Ltd., with which they were merged. A similar move was made by the formation of CIBA United Kingdom Ltd. in London. New group companies formed included Ciba Peruana S.A., of Lima, and Productos Ciba S.A., of Caracas. The Italian subsidiary took up a holding in the dietary-food concern Dieba SpA, of Milan, while in India Cibatul Ltd. were formed in Ahmedabad by Ciba and Atul Products Ltd., to supply raw materials and other commodities to Ciba of India Ltd. In Germany, Ciba AG, of Wehr, purchased the Neu-Isenburg photo-chemical firm Alfred Faber GmbH.

Ltd.; modernisation and expansion of the Nuremberg works of Sandoz AG (Germany) continued; a further production unit for agricultural chemicals built at St. Pierre-la-Garenne, France, by Produits Sandoz S.A. of Paris; administration headquarters of Sandoz S.A. (Belgium) expanded in Brussels and extended its site by the purchase of two further estates; and the Spanish subsidiary Sandoz S.A.E., Barcelona, bought property in Valencia for the branch there.

Property was also bought near Paris as an office site for the French subsidiaries. For the future, European subsidiaries' developments include the completion of expansion of the Orleans plants of Laboratoires Sandoz S.A.R.D., of Paris, and that of the new sales bureaux, application laboratories and dyestuff stores at Tourcoing.

Outside Europe, sites were bought in Santiago de Chile (Chile), Bogota (Colombia) and Lima (Peru) for the planned construction of Galen pharmaceutical units. The Uruguayan subsidiary Sandoz Quimica y Farmaceutica, of Montevideo, purchased a site on which it will build offices and stores. The Hanover, New Jersey, pharmaceutical plant of Sandoz Inc., New York, opened new laboratories and production facilities for pharmaceutical base materials.

In Parliament**Lords told that Abol-x ingredients are all of low toxicity**

LORD Douglas of Barloch asked in the Lords what were the constituents of the systemic insecticide known under the name of Abol-X and what research had been done concerning its effects on human beings.

Joint Parliamentary Secretary, Ministry of Agriculture, Earl Waldegrave, replied that the active ingredients of the garden product, sold under the name of Abol-X, were gamma-B.H.C., D.D.T. and menazon. The product had been given clearance under the Notification scheme. The three active ingredients have been individually tested for mamalian toxicity and they were all of low toxicity.

Lord Douglas asked if it was not the case that these poisons were accumulative poisons and could leave an accumulative effect in the course of time.

Earl Waldegrave replied that he thought these ingredients were probably slightly accumulative. There were no recommendations on the tin of Abol-X as to how produce should be eaten if the insecticide was used by gardeners in a sensible way. According to the direction on the tin, there was no appreciable risk.

No action on I.C.I.'s holding in Courtaulds

The Board of Trade does not think there is any parallel between I.C.I.'s holding of 38½% of Courtaulds' equity and Imperial Tobacco's 37½% holding in Gallaher's. Both the latter companies are tobacco firms, but in I.C.I.-Courtaulds, it is not I.C.I. who are monopolists in man-made fibres as a whole. This was stated in the House on Tuesday during the Budget debate.

Minister questioned on shale oil industry

The Minister of Power, Mr. Wood, was questioned in the House of Commons on Monday about the decision of Scottish Oils Ltd. to close the shale mines in the Lothians (see p. 602). Asked what steps he proposed to take, other than by way of subsidy, to preserve this source of supply of indigenous oil, he said he did not think any action was called for on his part. He reiterated that the Government did not feel they should replace the preference with a subsidy.

Seed Dressings and Wild Life

The Minister of Agriculture was asked in the Commons recently by Mr. Petre Crowder whether he was aware that the agreement between the Government and manufacturers and other interests for restrictions on the use of toxic dressings and pesticides had proved in-

effective as a safeguard for the smaller birds; and what further steps he proposed to take to protect birds and other wild life from the harmful effect of these chemicals.

In a written reply the Minister, Mr. Christopher Soames, said there had been a notable improvement this year and very few deaths of wild birds, whether large or small, had been reported to the Agricultural Departments so far. The agreed restrictions on certain cereal seed dressings appeared to be proving generally effective. No further steps were contemplated at the moment, but a close watch was being kept on the situation and the whole position would be reviewed after the end of the season in consultation with the chemical industry, with wild life societies and other interests concerned.

New chemical approach for drainage problems

AN entirely new approach to drainage problems caused by weeds and grasses in ditches and channels is provided by the introduction of Baywood Chemicals Ltd., 37-41 Bedford Row, London W.C.1, of Baywood 43, which, they state, acts both as a selective weedkiller and a grass growth regulator.

It contains as its basic ingredients the selective weedkiller 2,4-D, and a grass growth regulator, maleic hydrazide, with which Baywood have had considerable experience, notably on road verges, over the past decade.

I.C.I. offer new pigment for plastics

A NEW full strength phthalocyanine green pigment, Polynon GN 500, for use in plastics is added to I.C.I.'s range. It is specially suitable for use in all thermoplastics, and is of value in the colouration of cast acrylic resins and heat-cured or cold-cured polyester resins. In all these products it disperses readily, showing good heat stability and complete freedom from bleeding or migration. It is not recommended for use in p.v.c.

Refractometry in industry

A lecture on and demonstration of recent developments in refractometry for process stream analysis and liquid chromatography will be held at the Northern Polytechnic, Chemistry Department, Holloway Road, London N.7, on 16 and 17 April. Additional information is obtainable from Scientific Furnishings Ltd., Poynton, Cheshire.

B.O.C. meet increasing competition in oxygen

ALTHOUGH still very much a monopoly, the British Oxygen Co. Ltd. have not been allowed to sit back and have things all their own way. This was stated in a special supplement of B.O.C. published in *The Times* on Tuesday. It was pointed out that home competition had been growing in recent years, particularly on the north-east coast and in the Southampton area. A few firms, the most notable being Air Products Great Britain Ltd., are beginning to make their presence felt.

This competition is as yet negligible in the distribution of gases, but it is more apparent in the installation of tonnage plants. In the field of plant building Air Products claims to have captured 20% of the business and by the end of 1962 they hope to extend their gas distribution to industrial customers in the Midlands.

This rivalry, it is stated, has only served to spur B.O.C. into tightening up their already efficient organisation. This, when allied to technical and sales facilities, makes the company "a still formidable Goliath for aspiring Davids".

I.C.I. workers' calm and efficiency praised

HIGH praise was accorded to the men of 'B' shift on the hydrocyanic plant at Billingham at which an explosion occurred recently (see CHEMICAL AGE last week, p. 558) by Cassel works manager, Dr. H. R. Hailes. In a statement, he said that the response of the shift showed that Cassel works has the right spirit and sense of responsibility in the stress of trying circumstances. In spite of extremely hazardous conditions all men took the responsibility of seeing that the plant was shut down and that others were safe.

Most of the damage was to the pipeline structure above the plant and not to the plant itself. The work of reassembling the damaged equipment and restoring the disrupted services is well under way. The acetone-cyanohydrin plant is already back in operation and the methylmethacrylate production will be resumed as soon as services have been restored to the plant.

A. and W. Electropol process

Albright and Wilson (Mfg.) Ltd. have bought shares in Electropol Ltd. and not in Electropol Processing Ltd., as stated in CHEMICAL AGE (24 March). Electropol Processing Ltd. will still hold the sole jobbing right for operating the process in the U.K. and will remain a separate company.

New CIBA research institute for U.K.

U.K. research activities of the CIBA Group will shortly be expanded by the building of a new research institute which will be set up at CIBA Laboratories Ltd., Horsham, Sussex.

U.S. DE-ALKYLATION PROCESS CREATES TOLUENE DEMAND

UNTIL last year the main outlet for toluene was as an octane improver for petrol. Two factors are now influencing the end-uses of toluene—the manufacture of cars that can run on low-octane petrol, and the development of the de-alkylation process for converting toluene to benzene. An outlet for toluene which is becoming increasingly less important is the manufacture of T.N.T. It was owing to the sudden increase in demand for T.N.T. during the first world war that the discovery that toluene could be produced from petrochemicals as well as coal was made. In spite of the fact that this discovery was made nearly 50 years ago and toluene is currently in short supply, the only country to make toluene from petrochemicals on a large scale is U.S., though several new plants are now under construction in Europe and Asia.

Chemical end uses include benzaldehyde, benzoic acid, benzyl chloride and the toluidines, while in the plastics field it is used in the manufacture of methyl styrene and toluene diisocyanates—employed in the rapidly growing field of polyurethanes. The latter have had a fantastic growth record over the past few years, and in the U.S. consumption of toluene for this purpose is expected to have trebled by 1965. Toluene is also an important ingredient in latex paint, and here again the market is expected to grow steadily. The following table shows

Consumption of toluene
in U.S.

how the percentage end uses of toluene will have changed between 1955 and 1965—during this period it is estimated that world production of toluene will have doubled.

	1955	1960	1965
Petrol	65	55	30
Chemicals	12	15	45
Solvents	12	15	15
Explosives	6	5	4
Plastics	5	10	6

U.K. production statistics do not yet reflect the increased demand for toluene though at least two firms are known to be constructing new plant. The Celanese/Courtaulds plant is believed to have come on stream last summer, though it is not thought that this will have a great effect on the overall U.K. production figure for 1961. There was a sharp drop in production between 1954 and 1957 and the figure has since risen steadily. It is estimated that the 1954 figure may again be reached this year.

The process of de-alkylation of toluene to benzene has already had an effect on toluene production in the U.S., where benzene is in short supply. Over 20 mil-

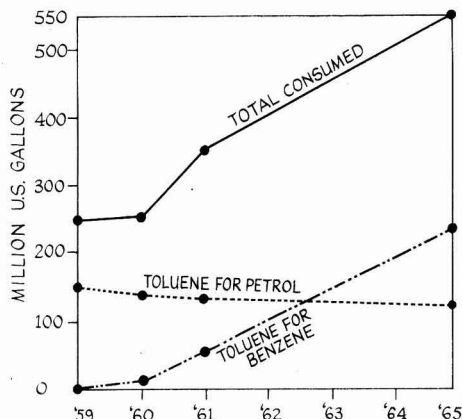
lion gall. more are already produced each year than in 1955. Last year benzene plants consumed 120 million gall. of the total 195 produced. Other new processes utilising toluene are expected to consume nearly 100 million gall. this year.

It will be seen from the accompanying graph that practically all the increased consumption of toluene anticipated during the next three years can be accounted for by the de-alkylation process. Three new benzene plants, utilising this process, and having total capacities of 55 million gall., will be going on stream during the first half of this year. The resulting increased demand for toluene has led to firmer prices in the U.S.

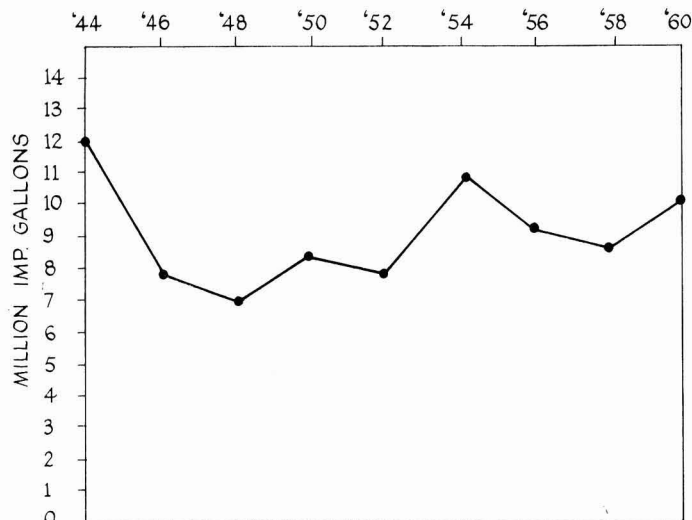
Phenol production might also be a very important end use for toluene in the U.S. Dow Chemical and California Research have recently co-operated to develop a process for phenol via toluene, and Dow has constructed a 36 million lb. a year plant in Kalama. When operating at capacity, this unit will consume over 5 million gall. of toluene annually.

U.S. production is currently in excess of domestic needs. In 1960, 326 million gall. were produced, as against 250 million consumed. This year the estimated production figure is around 475 million gall., while about 400 million gall. will be consumed. By 1965, however, 550 million gall. will be required for home consumption, and unless producers can continue to increase their annual output at the same rate as they have done over the past two years, the U.S. may well turn to Europe for imports of toluene in the near future.

In anticipation of increased markets for toluene and of further developments for its use, new plants are planned or are already under construction by several European firms. These are Gelsenberg Benzin A.G. at Gelsenkirchen, British Celanese and Soc. Nationale Petroles d'Aquitaine at Lacq. According to a recent survey, total world demand for toluene is expected to increase by 84% between 1962 and 1965, a substantially higher increase than that anticipated for benzene or xylene. Those firms contemplating an expansion of their toluene capacities may well find themselves with firm markets and good prices by 1965.



U.K. PRODUCTION OF TOLUENE



Amprolium market grows as patent suit nears climax in Paris

LAATEST steps in the legal battle on amprolium patents between Merck and their affiliates and Dr. Robert S. Aries, U.S. consulting chemist now at the Geneva University, School of Chemistry, have been the Fr.1 million warranty given by Merck and Laboratories Delagrangre, Paris, against patent damages and the fixing of a trial for 22 June 1962 in Paris.

Amprolium is a chemical additive for poultry feedstuffs. Merck have accused Dr. Aries of having learned the amprolium formula from Merck, while Dr. Aries charges that Merck merely seek to protect their international monopoly.

It is stated that some 1,300 million birds have already been fed amprolium and that the substance has captured 80% of the U.K. coccidiostat market and between 50% and 70% of the markets in the U.S., France and several other countries since its introduction in 1960. Production is at the rate of 8 million lb./year of the 25% premix sold by Merck under the trade name Amprol in North America and Amprolix in Europe.

Merck associates in the U.K. and France import an amino pyrimidine from the U.S. for final processing. It has been alleged that the net profit on amprolium is of the order of 300% after all costs of production. It has also been alleged that profits of most Merck international subsidiaries go to Merck holding companies in low-tax countries such as Panama, where the local subsidiary is Merck, Sharp and Dohme (Panama) S.A.

Dr. Aries has charged that Merck already had a pretax profit of \$6 million in 1961 on amprolium and that it is estimated this will be doubled in 1962. Dr.

Aries' patent suit against Merck, filed on 30 January 1962, is in addition to a criminal suit filed against Merck in July 1960 and a civil suit filed in Paris in November 1960. Merck and their associates have filed a number of suits against Dr. Aries.

Dr. Aries maintains that he negotiated an option agreement with Synorga in November 1959, giving them his know-how on amprolium and that this company passed on this information to Merck officials long before Synorga were acquired by Merck in June 1960. It has been alleged in Court that Merck were not using the process described in their patent applications, said to have been filed after those of Dr. Aries, who claims to have distributed samples as early as December 1957.

Chemicals production index up two points

INDEX of industrial production for 1961 gives a provisional figure for the chemicals and allied industries of 124 points, compared with 122 in 1960 and 111 in 1959. The index is based on a 1958 average. The December index stood at 119, compared with 128 in November and 118 in December 1960. Provisional January figure was 127.

The 1961 index for general chemicals etc., was 125, compared with 123 in 1960 and 111 in 1959; the December index stood at 118, compared with 129 in November and 118 in December 1960.

The 1961 index for coke ovens, oil refineries, etc., was 122, compared with 117 in 1960 and 107 in 1959. The December figure was 124, compared with 125 in November and 123 in December 1960.

Executive changes follow I.C.I. reorganisation of Wilton Works

New appointments to I.C.I.'s Wilton Council and to the boards of the Billingham and the Heavy Organic Chemicals Division, as well as resignations from the Wilton Council, are announced by I.C.I. as part of the reorganisation of Wilton Council (see CHEMICAL AGE, 3 March, page 357). All the changes are effective from 2 April.

Appointed to Wilton Council (in addition to their duties as H.O.C. Division directors) are: **Mr. K. W. Palmer**, managing director (technical) of H.O.C., who helped to design and build the first nylon plant at Billingham; **Mr. J. D. Brown**, engineering director of H.O.C., who is to be responsible for engineering matters at Wilton; and **Dr. C. Cockram**, technical director of H.O.C. Division.

The following have resigned from Wilton Council: **Mr. W. C. d'Leny**, chairman of Billingham Division; **Dr. S. W. Saunders**, chairman of H.O.C. Division; **Dr. H. S. Hirst**, works general manager at Severnside; and **Mr. C. M. Jennings**, an assistant treasurer.

Dr. J. Grange Moore, Wilton Works and personnel director is joining the board of H.O.C. Division where he will also be responsible for personnel affairs.

Dr. H. S. Hirst has become a director of Billingham Division, which has taken over from Wilton Council responsibility for Severnside.

New esters available from Robinson Bros.

A NUMBER of new esters are available from Robinson Brothers Ltd., Ryders Green, West Bromwich. They are: plasticiser 181—di-isooctyl ester of mixed dibasic acids; 791—dialphanyl (C₇-C₈) ester of mixed dibasic acids; 881—di-2-ethylhexyl ester of mixed dibasic acids; 991—dinonyl ester of mixed dibasic acids; 182—di-isooctyl tetrahydrophthalate; 792—dialphanyl (C₇-C₈) tetrahydrophthalate; 882—di-2-ethylhexyl tetrahydrophthalate; 992—dinonyl tetrahydrophthalate; 183—di-isooctyl azelate; 793—dialphanyl (C₇-C₈) azelate; 883—di-2-ethylhexyl azelate; and 993—dinonyl azelate.

Plasticisers 181, 791, 881 and 991 are of the same order of efficiency and price as the phthalates, but with improved low temperature properties.

Plasticisers 182, 792, 882 and 992 are unsaturated esters, and are suggested as being suitable for co-polymerisation with monomeric materials, to give internally plasticised products.

Plasticisers 183, 793, 883 and 993 are cheaper than the sebacates, while retaining many of the properties of these materials.

Princess Margaret visits I.C.I. Wilton Works

On Tuesday this week, Princess Margaret visited I.C.I. Wilton works. She saw the control room of the nylon works solvent area, the Terylene works, the Ulstron polypropylene filament yarn plant, and the Perspex plant.

Scammell tanker for caustic liquids



Caustic liquids will be hauled by this Scammell Handyman articulated tanker outfit, just delivered by Leyland Motors Ltd. to A. S. Jones and Co. Ltd., Liverpool. Powered by a 150 h.p. diesel engine, the tractor has a glass-fibre cab, automatic chassis lubrication equipment and fifth wheel coupling gear. The tank is a mild steel, single-compartment unit that can hold 2,800 gall. It is loaded and discharged by a Scammell radial air compressor mounted on the tractor chassis

India needs more fertiliser imports to meet urgent food production demands

WHILE Indian plans for new and expanded production facilities in fertilisers go full steam ahead, short-falls in current production and requirements also continue to grow, necessitating greater imports to meet pressing needs for higher food production.

Against imports valued at £27.37 million during April 1961-March 1962, a provision for £30 million is being made in 1962-63 to bridge the gap between indigenous production and total demand of 3,092 million tons of fertilisers. During 1962-63 production of sulphate of ammonia is estimated at 393,000 tons, ammonium sulphate-nitrate, 67,000 tons, urea 16,000 tons and calcium-ammonium nitrate 2,310,000 tons.

Gujarat State Fertilisers. A new company, Gujarat State Fertilisers Co. Ltd., has been registered in Ahmedabad to undertake the £21.15 million fertiliser project in the private sector with Government participation in capital structure and management.

The project will be located south west of the two million ton refinery in Koyali area (near Baroda) and is expected to produce annually 90,000 tons of urea, 125,000 tons of ammonium phosphate and 200,000 tons of ammonium sulphate. The raw material, naphtha, will come from the Koyali refinery. The project is proposed to be implemented in two stages; urea in the first stage, followed by ammonium sulphate.

French and Italian aid

Meanwhile a French and an Italian firm have expressed their willingness to supply machinery and advance loans for the project.

Fertiliser Corporation of India. During the first year of its operation (1960-61) the Government-owned Fertiliser Corporation of India (F.C.I.) commissioned the Nangal fertiliser factory at Nangal (Punjab) and has worked out detailed plans for setting up three more projects, namely, Trombay (Bombay), Nahorkatiya (Assam) and Gorakhpur (U.P.). The first two will be ready to be commissioned in 1964, while the third, Gorakhpur factory, is expected to be completed in 1965.

Rourkela fertilisers. The fertiliser plant being constructed at Rourkela near the steel plant by F.C.I. has been behind schedule by about nine months and is now expected to go into production in September this year. The nitric acid and limestone plants being built at Rourkela entirely by F.C.I. (except the ammonia producing section which is being built by Friedrich Uhde, a German firm) are believed to be the largest of their kind built at any one time anywhere in the world. The nitric acid plant at Rourkela

has a rated capacity of 820 tons/day and calcium ammonium nitrate (20.5% nitrogen) about 2,000 tons/day.

Trombay urea plant. The first two shiploads of equipment to be used as part of a multi-million dollar fertiliser complex, designed by Chemical Construction Corporation of New York for

INDIAN NEWSLETTER

India being geared to provide new and expanded production facilities in fertilisers.

French and Italian firms offer cooperation in £21.15 million fertiliser project in Koyali area.

Government-owned Fertiliser Corporation of India works out detailed plans for three more projects.

Establishment of a Central Institute of Fertiliser Technology at Sindri will give fillip to research and planning.

the F.C.I., have arrived in Bombay. This fertiliser complex, to be located at Trombay, is being financed by the Development Load Fund of the U.S. Government.

Chemical Construction Corp. were awarded the contract by F.C.I. in March 1961 to design and supply equipment for the ammonia, urea and nitric acid facilities.

Using waste gases and naphtha from the two refineries (Stanvac and Burma Shell) at Trombay as raw materials, this fertiliser complex will produce per day 350 metric tons of ammonia, 300 metric tons of urea and 320 metric tons of nitric acid. All of these units have been designed by Chemical Construction Corp. engineers.

It is now learnt that the Shaw Wallace-Rallis India £21 million fertiliser project will be assisted by Dutch States Mines of Netherlands. To be located at Mangalore (Mysore), the plant will produce per day 300 metric tons of urea, 375 metric tons of ammonia phosphate and 300 metric tons of ammonium sulphate.

New gas generator. With the commissioning of the ninth gas generator of Sindri Fertiliser Factory (Bihar) recently, production of fertilisers in the factory which recently suffered a setback is expected to be stabilised. The 33 million cu. ft. generator has been designed and built entirely by Indian engineers.

The Sindri Fertiliser and Chemical Corporation is the first major fertiliser unit established by the Indian Government. It was originally planned to produce annually 70,000 tons of nitrogen in the form of 350,000 tons of ammo-

nium sulphate and went into production in 1951. Since then its nitrogen capacity has been augmented by 50,000 tons a year in the form of 132,000 tons of ammonium sulphate-nitrate and 23,000 tons of urea annually. The new plants were brought on stream in 1959.

Acid process. For manufacture of ammonium sulphate, gypsum process is employed at Sindri. Lately, production at the factory has not been steady largely due to inadequate supplies and an inferior grade of gypsum from Rajasthan mines. An expert committee (which included a technical expert from Stamicarbon of Holland) appointed by the Indian Government has now suggested that to assure uninterrupted production at Sindri, one-fifth of the factory's output of ammonium sulphate should be immediately converted to the acid process. The committee has further recommended that the factory should switch over entirely to acid process in about 5-7 years.

Meanwhile F.C.I. will purchase 150,000 tons of superior grade gypsum from Pakistan to tide over the current shortage of the material for the Sindri factory.

During 1960-61, production in the factory showed some improvement. The total production of ammonium sulphate was 305,218 metric tons (289,826 1959-60). During the same period production of ammonia rose from 73,797 to 84,174 metric tons. Production of urea amounted to 10,666 metric tons (4,733).

Institute of fertiliser technology. A significant development at Sindri has been the establishment of a Central Institute of Fertiliser Technology. The Institute will offer facilities for research, and technology and pilot studies of new designs and processes. It is soon expected to develop into an effective instrument for the planning and execution of new fertiliser projects in India.

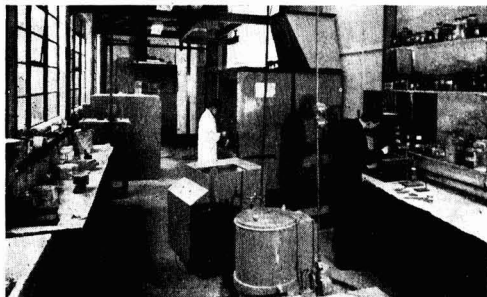
Obituary

Mr. Leonard C. West, sales promotion manager of the D.C.L. Chemical Division, has died, aged 55. He joined the sales department of British Industrial Solvents Ltd. in June, 1948, and during his 14 years' service with Distillers, he gained wide experience in the field of chemical sales and made many friends in the industry. Mr. West was unmarried.

Will

Mr. Evelyn Cuthbert Harrington, a director of Cork Chemical and Drug Co., Eire, and other concerns, who died on 31 July last, left estate in England and the Republic of Ireland valued at £34,770 (duty paid £6,279).

New technical service facilities for Berk Coating Division



View of new technical service department, believed to be the first of its kind in the U.K., set up at the Park Royal headquarters of F. W. Berk's Coating Division

A NEW technical service department has been established at the Park Royal headquarters of the Coating Division of F. W. Berk and Co. Ltd., Brent Crescent, North Circular Road, London, N.W.10. Believed to be the first of its kind in the U.K., the department offers a four-fold service to actual and potential users of plastics coatings

(a) When given a component for which a coating is required, the department will evaluate the various alternative materials

and will supply samples according to its recommendations.

(b) Application techniques will be recommended for any particular article to be coated and also the right equipment to use and methods of jiggling and handling.

(c) New materials will be studied and evaluated as they are introduced.

(d) Existing coatings will be tested and any necessary recommendations made as to substitutions, mode of application, formulation etc.

1963 I.U.P.A.C. congress to be held in London

THE XIXth International Congress of Pure and Applied Chemistry will be held in London, 10-17 July, 1963, immediately following the XXIIInd Conference of the International Union of Pure and Applied Chemistry.

The scientific programme of the conference will consist of some 20 invited congress lectures in addition to a wide range of contributed papers. Papers presented in the Division of Organic Chemistry will form the main theme of the congress, but certain aspects of inorganic chemistry, analytical chemistry and applied chemistry will be discussed.

Copies of the first circular concerning the congress may be obtained from the hon. secretary at 14 Belgrave Sq., S.W.1.

International symposium on organic chemistry

FURTHER information on the International Symposium on Organic Chemistry of Natural Products, to be held in Brussels from 12 to 15 June can be had from the Secrétaire du Symposium International de Chimie Organique, c/o Fédération des Industries Chimiques de Belgique, 32 rue Joseph II, Bruxelles 4

The symposium will be divided in sections as follows: determination of the structure of new natural products; methods used for the determination of chemical structure, recent contributions; synthesis and chemical reactions; biosynthetic theories and their experimental verifications; and mode of action of natural products in biological processes.

Chemistry papers at 1962 B.A. meeting

CHEMISTRY section papers at the 1962 British Association meeting, to be held at Manchester from 29 August to 5 September, will cover dyes and dyeing technology; organo-metallic chemistry of the transition elements; organic boron and aluminium chemistry; elastomers; and the tailoring of antibiotics. In addition, the General section will include a paper on 'Science before the B.A.—Chemical industry before 1830'.

President of Section B will be Professor R. D. Haworth, F.R.S., Firth Professor of Chemistry at Sheffield University. His section address will be entitled 'The chemistry of the tannins'.

A record attendance is expected for the meeting. Copies of the preliminary programme can be obtained from Mr. G. V. Allen, B.A. secretary, 3 Sanctuary Buildings, Great Smith Street, S.W.1.

Mr. Rounsefell on chemical packaging bill

In his paper on 'Packaging problems in the export of chemicals', presented at the recent A.B.C.M. packaging conference, Mr. E. O. Rounsefell, commercial director of Laporte Chemicals Ltd., said that a number of A.B.C.M. members had indicated that their purchases of packages represented between 5 and 17% of their total raw material purchases, the average being around 10%. In our brief report of this paper (C.A., 31 March) the words "raw materials" were omitted. Mr. Rounsefell's paper was reported in greater detail in our issue of 7 April.

Britain's growing mileage of pipelines

THE growing use of plastics pipelines in Britain was referred to by Sir Harold Hartley, F.R.S., scientific adviser to Constructors John Brown Ltd., and chairman of the convention held in conjunction with the second international exhibition of pipes, pipelines, pumps and valves opened at Earls Court, London on 9 April.

Referring to the pending import of Saharan natural gas, Sir Harold said that pipes made of plastics materials were now being made to carry it across the countryside.

He gave the present mileage of oil pipelines in the U.K. as 190,000 and gas pipelines, 610,000. Pipelines were rapidly being built in the U.K. to provide the most economic means of transport. The latest development was in the transport of coal and other solids. He believed that in the field of energy, pipes and pipelines must be a dominant factor in the future.

Better prospects for Nobel chemical sales

PROSPECTS for sales this year of the division's chemical products will be brighter, believes Dr. J. M. Holm, chairman of I.C.I.'s Nobel Division. Speaking at recent division meetings, he said that already some expansion in retail demand was becoming apparent.

Increased sales were anticipated for pentaerythritol, nitrocellulose and cellulose ethers, although competition was intense and might become more so as import duties fell. Severe competition, due to world over-supply, had cut sales of pentaerythritol in the export markets, but cellulose ether sales in 1961 were at a new level with a substantial increase over 1960.

Reorganisation for Scottish firms

AN organisation known as Edinburgh Pharmaceutical Industries Ltd. has been formed to cover the interests of a group of Scottish pharmaceutical manufacturers with issued capital over £1m. It will be responsible for group policy, research and development, while trading will be handled by subsidiary companies.

Associated in the development are Macfarlan Smith of Edinburgh and their three overseas companies which supply bulk medicinal chemicals. Medical specialty products are supplied by Duncan, Flockhart and Co. of Edinburgh, Allied Laboratories of London, and J. F. Macfarlan and Co. of Edinburgh. Wholesale pharmaceutical distribution is handled by T. and H. Smith Ltd. of Edinburgh and Glasgow, W. and R. Hatrick of Glasgow, and William Paterson and Sons (Aberdeen).

The parent company is completely Scottish owned and controlled. The shares are not quoted on the Stock Exchange and are held mainly by Scottish investment and insurance companies.

Overseas News

LIMITATIONS ON USE OF NATURAL GAS IN ITALY

PRODUCTION of natural gas is not increasing markedly in Italy. The average monthly output of methane rose from 537 million cu. m. in 1960 to 562 million cu. m. in January/November 1961, or only by 4.6%, which is insufficient to cope with the demand from the brisk expansion of Italian industries.

The Italian Ministry of Industry has divided consumers into priority and non-priority classes. The former comprises consumers who utilise natural gas as raw material for chemical industry or use it in special kinds of thermal processing that, for technological reasons, cannot be achieved with coal, oil or other fuels. This group includes also city gas works and heating plants designed for single flats. The latter group comprises consumers who use methane simply as fuel (this includes power stations and central-heating plants).

Noury-van der Lande open new Italian plant

The Deventer, Holland, concern of Koninklijke Industriele Maatschappij v/h Noury en van der Lande NV have opened their first Italian production unit, at Mornago, Lombardy. It will produce auxiliary products for the plastics industry and be operated by the Noury-van der Lande subsidiary, Noury-Italia SpA. The group, which already has chemical-industry units in Holland, the U.K., Federal Germany and France, will open a citric acid plant at Avenza, Italy, later this year as a joint venture with Rumianca of Turin.

Joint Shell/Esso refinery for Vietnam

Shell International Petroleum and Esso Standard Eastern plan a joint refinery in Vietnam at a cost of some \$16 million and with capacity of more than 1 million tons of crude a year. The refinery, which will be in production in 1964, will be owned and operated by a company to be set up in Vietnam. Esso Standard Eastern also have under construction a refinery at Port Dickson, Malaya, with a capacity of 20,000 bbl./day.

Vinyl expansion in Canada

B. F. Goodrich Canada, Ltd. plan to increase by 25% production of vinyl resin and chemical compounds at a plant near Welland, Ontario. New equipment is expected to be in production by October.

U.S. dumping of petrochemicals in Japan?

The Japanese Ministry of Trade and Industry and the national petrochemical manufacturers' association are jointly to study the effects of alleged U.S. dumping of petrochemical products on the Japanese market. Prices offered are

stated to be up to 40% lower than those offered by Japanese producers. The Ministry of Trade and Industry is expected to introduce "requisite import duties" if this is considered necessary.

B.A.S.F. co-operate in Turkish nylon yarn plant

Badische Aniline und Soda Fabrik, Ludwigshaven, are co-operating in setting up at Bursa, Turkey, a nylon yarn works at a cost of about £1.4 million. The plant is due on stream before the end of 1964 and output will total some 300 tons of yarn a year. The industrial Development Bank of Turkey is co-operating with B.A.S.F. in the venture.

Hungarian Komplex 50 oxygen plants supplied to Argentina, U.S.S.R. and China

THE Hungarian oxygen plant 'Komplex 50' produces, when permanently operated, from dry air at 20°C and 740 mm. Hg. pressure, 50 normal cu. m. 99.5 to 99.7% pure oxygen, at the same time it will deliver four times as much nitrogen. Based on 310 work days/year this is equivalent to the production of 372,000 normal cu. m/year of oxygen.

The plant consumes for the production of 1 cu. m. of oxygen, 74 kg. of cooling water, 0.08 kg. of steam and 1.34 kwh. of 380 V current. No more than 3 workers per shift are necessary to operate the plant (for producing the oxygen and filling it into bottles). The installation being operated at medium pressure, its operation is less dangerous than that of high pressure plants.

Hungarian industry has supplied several 'Komplex 50' oxygen plants to Argentina, the Soviet Union and the Chinese People's Republic.

State-controlled mining body proposed in Sicily

The Sicilian Government is at present studying a draft law that would set up a Sicilian Mining Board (Ente Minerario Siciliano, or E.M.S.). E.M.S. would be entrusted with the promotion of prospecting, production, processing and marketing of minerals. Oil, natural gas, sulphur, and potassium would receive particular attention.

E.M.S. would have priority in applications for prospecting permits, which

German aid for new Indian resin plant

The Bombay concern Chowgule and Co. (Hind) Pvt. Ltd. are to open at Thana, Bombay State, a plant for the production of 600 tonnes/year of alkyd resins, 300 tonnes of phenolics, 25 tonnes of maleic resins, 75 tons of urea resins, and 50 tonnes of plasticiser esters. Total capacity will be doubled to 2,200 t.p.a. of resins of all kinds within a year of run-on. Cost for the project, for which know-how and plant are being provided by Chemische Werke Albert, Wiesbaden, is put at some Rs.3 million. The German firm is to take over Chowgule shares worth some Rs.738,000.

New citric-from-molasses plant for India

Now under construction in India is a 10 million rupee project for the production of citric acid from cane sugar molasses for Citric India Ltd., Cawasji Patel Street, Bombay 1. Of the capital half is paid up and half is in the form of a loan from the World Bank. Equipment and technical collaboration will be supplied by Standard Messo Gesellschaft für Chemietechnik N.B.H., Duisburg. This will be the first plant to manufacture citric acid in the Far East. Production is due to start early next year and it is hoped that capacity will be doubled within three years.

would have to be exercised within three months. E.M.S. shares will be available to private investors, but these will not be eligible to serve as directors. Initial capital, provided by the Sicilian Government, will be 20,000 million lire.

Hydrofluoric acid plant for East Germany

This May is to see the opening at Dohna, East Germany, of a fully-mechanised hydrofluoric plant with annual capacity of 5,000/tonnes. Operator of the plant, whose investment costs are put at 20 million marks (East), is the State-owned body VEB Fluor-Werke.

B.A.S.F. expansion in plant protection field

Badische Anilin- und Soda-Fabrik AG announce a large-scale expansion in basic production of plant protection media and pesticides. Development of Alipur, they say, is notable in the field of weedkillers for root and vegetable crop cultivation. Production capacity of the organic weedkiller U46 is being increased continuously. Expansion of modern production facilities for such organic fungicides as Polyram and for systematic phosphoric acid esters of the Perfekthion type has just been completed. The company's plant protection media range has been enlarged by the inclusion of certain Shell products.

Overseas news

New toluene resin technique developed by Sumitomo Bakelite

CLAIMED to be the first of its kind in the world, a plant for the production of toluene resins will be constructed by the Japanese company, Sumitomo Bakelite. Sumitomo have been working for some time on the development of a technique for toluene resins and have now developed a process which they will put into operation in the 10-tonne-a-month plant. Marketing is expected to begin in the autumn.

The material is expected to compete directly with phenolic resins, but is claimed to have the advantages of easier working and cheaper costs. The current price of toluene in Japan is around 30 yen a kg. against 120 to 130 yen for phenol.

The condensation of toluene with formaldehyde has been considered difficult in the past, but Sumitomo Bakelite are confident that their new process will cause industrial circles to take an interest in toluene resins.

Rumania to boost exports of xylene

The Rumanian chemical industry is this year to enter the world market as a large-scale exporter of xylene, it is reported from Bucharest. Crude xylene, o-xylene, m-xylene and p-xylene will be among qualities offered, and since current production in Rumania of benzene and toluene is to be increased, this it is thought should also result in an expansion of the export range.

British advice sought on Dar es Salaam refinery

After nearly a year of negotiations concerning a projected £3 million refinery, the Tanganyika Government has invited a British oil expert to visit the country to assess proposals put forward by E.N.I. of Italy, Standard Vacuum and Caltex (East Africa) Ltd.

Polypropylene price cuts led by Hercules Powder

Reductions in the price of polypropylene of 3 to 5 cents a lb. have been announced in the U.S. Prices are now 38 cents a lb. for truckload quantities of injection moulding grade (reduced from 42 cents) 42 cents for fibre grade (from 45 cents) 39 cents for fibres grade (44 cents) and 39 cents for other extrusion grades (42 cents).

Hercules Powder were the first to announce price cuts, which were quickly met by other producers. Lower prices have been expected for some time. Hercules say that price cuts were made to increase growth, but overcapacity is evidently a factor.

Terneuzen as Dow's main common market plant ?

It is reported that the site of the Dow concern at Terneuzen, Netherlands, is likely to be developed as Dow's biggest chemical production facility within the

whole Common Market area (see C.A., 7 April, p. 556). The Terneuzen site, on the bank of the Wester Schelde, is of some 85 hectares and building there is expected to begin before the end of this year, production of plastics, industrial chemicals and intermediates to start in 1964, initial output possibly to include glycols. Although Dow still have a considerable amount of building area in reserve on their Rotterdam site, it is felt that with a view to future expansion, Terneuzen is being given preference. Ships with tonnages of up to 50,000 will in the foreseeable future be able to pass through the Terneuzen locks.

U.O.P. develop new Hypro process

Details for a new Hypro process for the recovery of hydrogen from refinery fuel gas streams were revealed by Universal Oil Products at the meeting of the U.S. National Petroleum Refiners' Association. The process is expected to help refiners by retaining the hydrogen available in crude oil, which is at present burnt, for hydro-treating processes. U.O.P. have already applied for patents on the process which they intend to licence. The Hypro process catalytically converts light hydrocarbons to hydrogen and carbon.

New chlorine/caustic plant for Monsanto

Monsanto are to build a new electrolytic chlorine/caustic unit at their Monsanto III. plant. The output of the plant—100 tons a day of chlorine and 110 tons a day of caustic soda—will be used captively within the plant. The new unit is expected to be in operation early next year.

Shell Chemical to increase urea capacity

An increase in urea capacity is planned by Shell Chemical at their nitrogen fertiliser plant in Ventura, Calif. The new capacity will be over 75,000 tons a year, an increase of 50%. The expansion will be completed by the autumn.

High grade phosphate rock found in Australia

First discovery in Australia of high grade phosphate rock has been made in the Northern Territory during a search for new uranium deposits in the Rum Jungle area. The deposits are close to the Rum Jungle uranium treatment plant,

which has the facilities to manufacture sulphuric acid—used in the manufacture of superphosphate, the most popular fertiliser in Australia—and access to road and railway. The extent or potential prospects of the deposit have not yet been determined.

German carbon monoxide plant for Japan

An order from Mitsui Kagaku Kogyo, of Tokyo, for a generator plant for use in the production of pure carbon monoxide has been received by the Dr. C. Otto and Co. GmbH chemical plant construction concern of Bochum, West Germany. The two-phase unit is believed to be planned for incorporation in a phosgene plant working on the Du Pont de Nemours process.

General Tire and Rubber awarded priority in Mobay suit

The U.S. Patent's Office Board of Interference Examiners have awarded priority of the claims in interference to Dr. C. C. Price in the General Tire and Rubber/Mobay Chemical dispute over patent rights covering the one-shot polyurethane foam process. General Tire have exclusive rights to the Price patent.

French backing for new Senegal refinery

Soc. Africaine de Raffinage have contracted with the Senegal Government to construct an oil refinery at Dakar with a crude cracking capacity of 1.2 million tons/year. Construction will be financed by the French State controlled Soc. Africaine des Pétroles and the Senegal Development Bank. Financial participation in the building of the new refinery will be open to all interested oil companies.

\$18.6 m. investment approved by Greek Government

The Greek Government has approved the investment of \$18.6 million for the establishment of a group of chemical industries in the provinces. The group will become operative within three years, and its range of production will include caustic soda, chlorine, calcium, carbonate and calcium hydroxide.

Of the total cost, \$6 million will be provided from domestic sources and the remainder will come from abroad.

Monsanto to supply know-how for Israel p.v.c. plant

Monsanto are supplying the know-how for the p.v.c. plant, which is being constructed at Acre in Israel. The first stage of the project is a monomer plant which will cost \$10 million. The capacity of the second stage, the polymerisation plant, will be 18 tons a day, about half of which will be exported.

A number of U.S. investors are participating with Electrochemical industries (Frutarom) in the construction of plants in Acre. The increase in capital of p.v.c. to 30 tons a day and of caustic soda and chlorine to 45 tons a day is under discussion.

● **Mr. J. A. Hepworth** has been appointed deputy chairman of the North Thames Gas Board in succession to **Dr. J. Burns**, who becomes chairman of the Northern Gas Board on 1 November.

● **Dr. Samuel Schweizer** has been appointed vice-president of the board of administration of CIBA AG, Basle.

● **Mr. W. Lee**, managing director, Royal Dock Chambers, Grimsby, chemical and fertiliser merchants, retired on 31 March. He is succeeded by **Mr. C. W. Tickner**.

● **Mr. Stephen Steiner** has been appointed senior project engineer of Sharples Centrifuges Ltd. in North-east England and Scotland, responsible for all Sharples activities, both in separation equipment and process plants in that area. He has been previously engaged in the chemical plant contracting business.

● **Dr. D. W. J. Cruickshank**, well known for his work in X-ray crystallography, has been appointed to the newly established Joseph Black Chair of Chemistry at Glasgow University. He will take up the appointment this year.



Dr. C. H. Bamford, appointed to **Campbell Brown Chair of Industrial Chemistry at Liverpool University** (see C.A., 31 March, p. 534)

● Senior appointments within the United Kingdom Atomic Energy Authority include, in the Production Group, **Mr. S. F. Hines**, formerly general manager, Capenhurst, to be production director, with his headquarters at Risley, and **Mr. W. R. A. Taylor**, formerly deputy general manager, to be general manager, Capenhurst, to succeed **Mr. Hines**. In the Reactor Group **Mr. P. W. Mummery** is appointed deputy director, Atomic Energy Establishment, Winfrith. These appointments are effective from 1 April.

● **Mr. J. Alexander Watson** has resigned the post of secretary to John and E. Sturge Ltd., but continues as finance director. **Mr. D. B. Akehurst** has been appointed secretary.

● **Dr. T. H. C. Taylor**, director of the Anti-Locust Research Centre (Department of Technical Co-operation) retired on 31 March, his successor being **Dr. P. T. Haskell**, deputy director since 1959.

● **Mr. W. F. Potter** has been appointed deputy managing director of Rose, Downs and Thompson Ltd. of Hull, a member of the Davy-Ashmore Group. He joined the company early in 1939 and was appointed a director in February 1960.

● **Dr. Harry R. Shawk**, of Nassau, Bahamas, has been appointed Middle East technical representative for the Lummus Co. He joined Lummus in

PEOPLE in the news

February 1962. He has served as a consultant for a number of foreign projects including the Pakistan Industrial Development Corporation fertiliser plant at Multan in 1958 and the Republic of China from 1955 to 1957. **Mr. Hugh E. Templeton**, of Cincinnati, Ohio, has been appointed to represent Lummus in Japan.

● **Mr. V. C. Wallis**, for many years chief inspector, L. Oertling Ltd., retired recently after 43 years with the company. Mr. Wallis has been closely associated with many important developments in balance design since the early thirties.

● **Dr. K. W. Gee**, deputy head of I.C.I.'s Central Work Study Department, is to return to the Heavy Organic Chemicals Division on 15 September as production manager. He will be succeeded by **Mr. A. A. Martin**, assistant chief engineer of the General Chemicals Division, who joins the department on 1 May.



G. Dring, who has reired from **Bakelite Ltd.** (see C.A., 7 April, page 574)

● **Mr. E. R. Barber** and **Mr. E. E. Stedman** have been appointed managing directors of R. W. Greff and Co. Ltd., 31-45 Gresham Street, London, E.C.2, and **Mr. A. J. H. Berthoud** and **Mr. D. E. Bristow** have been appointed directors of the company. **Mr. L. S. Heskins** is to retire from the board on reaching retirement age on 31 August, but will remain a director of Greff-Chemicals Holdings Ltd.

● **Mr. R. G. R. Robinson**, former oil storage manager with the traffic department of Unilever Merseyside Ltd., has been appointed manager of the chemicals department. In this new post, Mr. Robinson will control the sulphonation department and production of the

various finished lines now being manufactured there. On the retirement of **Mr. G. H. McLeod**, the new department will also take over part of the existing raw materials supplies department.

● **Mr. D. G. Moody** has been appointed commercial manager of United Coke and Chemicals Co. Ltd., Handsworth, Sheffield 13, a subsidiary of the United Steel Companies Ltd., with effect from 1 May. Mr. Moody joined U.C.C. as assistant commercial manager in 1956, having been formerly a divisional marketing officer with the National Coal Board. He succeeds **Mr. R. T. Hayes**, who is leaving the company to become director and general manager of Loewy Engineering Co. Ltd.

● **Mr. Keith Daniells**, head of the chemical engineering section of Sharples Centrifuges Ltd. at their Camberley Works, has recently been awarded an



K. Daniells

M.Sc. in chemical engineering by King's College, University of Durham. His thesis was 'The design of an evaporator with a rotating element'.

● **Mr. A. A. Puddick** has been appointed general sales manager (chemicals) of the Distillers Co. Ltd. Chemical Division, **Dr. K. W. Geddes**, marketing manager, and **Mr. S. W. Clayton**, export sales manager (from 7 May).

● **Mr. F. W. Robinson** has been appointed a director of Laporte Acids Ltd. Mr. Robinson is general manager and a director of Glebe Mines Ltd. **Mr. T. E. Peacock**, joint managing director and commercial manager of Laporte Acids has been appointed a director of Glebe Mines Ltd.

● **Dr. M. A. Phillips** has joined the board of Process Plant Designers and contractors Ltd. of 89 Oxford Street, Manchester, as consultant director. Dr. M. A. Phillips and Associates will continue to operate independently as consultant chemists and chemical engineers.

● **Professor Fritz Feigl** had his 70th birthday honoured in the form of an international symposium on analytical chemistry which opened on Monday at Birmingham University. He gave the first plenary lecture, on spot-test analysis, of the programme. Earlier, **Professor P. Alimarin**, on behalf of the Academy of Scientists of the Soviet Union, presented him with the Lomonosov Medal, and **Professor Morizo Ishidate**, on behalf of the Japanese Society of Analytical Chemists, presented him with a second medal.



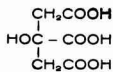
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Non-toxic — excellent sequestrant — one of the most versatile of industrial organic acids — efficient cleaner for ferrous and non-ferrous metals — successfully used in pre- and post-operational power plant cleaning and radio-active decontamination programmes.

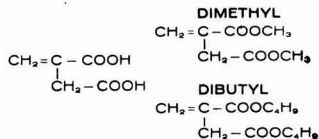
Citroflex* esters are gaining a reputation as efficient, non-toxic plasticisers.

*Trade Mark



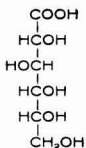
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Low toxicity — reactive monomer — carboxyl groups can add adhesion, stability and solubility to copolymers. Other itaconic monomers (dimethyl and dibutyl) commercially available.



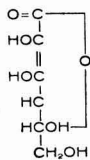
GLUCONIC ACID

Non-toxic — outstanding sequestrant in caustic solutions — low corrosion rate — extremely useful in formulation of metal cleaning compounds for rust removal and paint stripping. Also used in electroplating and other industrial sequestrant applications.



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Non-toxic — effective industrial anti-oxidant — widely used in the brewing industry to protect beer against 'off-taste' and 'haze' caused by oxidation.



TARTARIC ACID

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CH23/17010b

Commercial News

Associated Chemical

Group trading profit of Associated Chemical Companies Ltd. for 1961 was £1,275,245 (£1,383,746). After depreciation of £514,313 (£469,287), pre-tax profit was £747,460 (£912,160). Tax accounted for £255,358 (£312,568) and net profit was £492,102 (£599,592). A final dividend of 9½% is declared, making 16%, the minimum forecast on the capital increased under the acquisition of the Farmers' Company Ltd.

British Drug Houses

Group profits of British Drug Houses Ltd. for 1961 totalled £707,835 (£642,000). Tax took £311,859 (£316,297) and net profit was £319,424 (£262,568). Parent company's net profit was £277,902 (£247,047). Dividend is 16% (same); the 390,000 'B' ordinary 5s shares issued to Mead Johnson and Co. in July 1960 do not participate in the dividend. Mead Johnson hold 35% of B.D.H. equity. For 1962 the directors intend to pay part of the total dividend as an interim.

Bowmans Chemicals

In his annual report the chairman of Bowmans Chemicals Ltd., Mr. J. A. E. Howard, said higher costs and lower export demand had reduced their profit. There was no improvement in the latter part of the year, and, as announced, profits before tax and deferred repairs were down by £29,582. The increased expenses accompanied by lower selling prices were mainly due to deliberate policy designed to increase efficiency and sales, although, regrettably, they fell short of their objectives.

Technical and commercial management and organisation had been improved. They were aiming to spend £85,000 on further modernisation and extension of plant and a number of new products had been developed for commercial assessment. They were actively fostering new applications of lactic acid and lactates, particularly in the field of chemical manufacture, food and drink and textile processing.

In the export market they were selling to new areas and industries to offset the recession in some traditional markets and changes in the pattern of trade in others. Although the trading results for the first quarter were poor, he hoped the profit for the current year would show the decline halted.

Esso Petroleum

Group sales and other operating revenue of the Esso Petroleum Co. Ltd. totalled £323.89 million in 1961 (£309.34 million), but Customs and Excise duties were £23.65 million up and income at £192.16 million (£201.23 million) was down by nearly £9 million. Net profit was £9.88 million (£11.65 million).

● A.C.C. group profit down £108,000

● Higher profit for B.D.H.—dividend repeated

● Poor first quarter results for Bowmans

● Du Pont record first quarter sales

Capital spending in 1961 totalled £28 million; outstanding commitments total £22 million.

Esso expect sales to rise in 1962, but the conditions which have adversely affected earnings in 1961 are likely to be intensified, bringing further pressures on profit margins. Efforts will continue to be directed at promoting greater productivity and reducing costs.

Nearly 14 million tons of crude oil were processed at the two Esso refineries at Fawley and Milford Haven during 1961, an increase of over 15% in refining throughput compared with 1960.

I.C.I./Weardale Lead

I.C.I. have now been allotted the whole of the unissued share capital of the Weardale Lead Co. Ltd., and as a result they hold 51% of the total share capital. I.C.I.'s bid for this company, which has fluorspar interests, was reported in CHEMICAL AGE, 26 March, p. 486.

B.A.S.F.

1961 dividend of Badische Anilin-und Soda-Fabriken is being maintained at 18%.

Carbochimique

The Belgian nitrogen producers within the Société Générale de Belgique Group, Société Carbochimique, recorded for 1961 profits of B.Fr.25,210,000, or £1.8 million (B.Fr.16,530,000, or £1.18 million). A dividend of B.Fr.55 (B.Fr.50) per share is recommended. Current production volumes are said to be equal to those of a year ago and order levels are good; the price situation remains unsatisfactory.

Degussa

Deutsche Gold- und Silberscheideanstalt vorm. Roessler (Degussa) of Frankfurt, report for the year ended 30 September turnover of DM1,019 million (DM921 million). The share of export sales fell from 27.5 to 26%. Recommended dividend is 17% on increased capital, while Leukon AG, Zurich, holding company for Degussa's foreign interests, are to pay 6% (same). Over the first few months of 1961/62 the parent company's turnover has exceeded that of the same period last year.

Du Pont

Record first quarter sales are announced by E. I. du Pont de Nemours, totalling \$577 million, or 12% above

the 1960 figure of \$513 million. Sales in March topped the \$200 million mark for the first time in the company's history. First quarter earnings are not yet available, but they are expected to exceed by "a very substantial margin" the earnings for the 1960 first quarter.

Du Pont of Canada

Du Pont of Canada Ltd., are to pay an interim dividend of 15 cents (10 cents) for the first quarter of 1962. Earnings for the current year to date exceed those for the corresponding 1961 period, sales having been maintained at high levels.

Sales of nylon textile yarns, especially for textured and stretch yarn applications, were higher, states the annual report for 1961 of Du Pont of Canada (for financial results, see CHEMICAL AGE, 17 February, p. 289).

Initial imports were made for market development purposes of the new Lycra spandex fibre, a plant to manufacture which is under construction at Maitland, Ont. Cellulose film sales continued to rise, although at a slower rate, while polyethylene film sales were almost double those of 1960.

The markets for Freon fluorocarbons although growing, were in severe competition with low priced foreign material.

Française des Petroles

The French affiliates of British Petroleum Co., Française des Pétroles BP, are proposing a net 1961 dividend of NF2.75 per share on the increased capital, against NF3 before the 20% capital increase. Net profit in 1961 was NF21.1 million, against NF17.9 million. Shareholders will be asked to approve an increase of capital if necessary to bring the legal reserve to 10% of the capital.

W. R. Grace

W. R. Grace and Co. have authorised a 2-for-1 split of the common stock. A quarterly cash dividend equivalent to 22½ cents/share on the basis of the split stock has been declared.

Hercules Powder

Net sales for Hercules Powder Company in the first quarter of 1962 will total around a record \$103 million, an increase of 20% over sales of \$86 million in the same quarter of 1961. Earnings in the first quarter should reach a record 73 cents/share (61 cents). Stockholders, at the annual meeting, approved

(Continued on page 620)



DETERGENTS BEGIN AFLOAT

There is more to making detergent chemicals than first appears. Take tripolyphosphate, which requires sulphuric acid and phosphate rock. Marchon make 500 tons of sulphuric acid daily from anhydrite, which they mine themselves. Phosphate rock has to be brought into the country. Marchon's supplies are carried in their own ships: their third ship is now building. Acid and rock are used in Marchon's tripolyphosphate plant, the biggest in Europe. All this helps Marchon to make detergent chemicals at Whitehaven and sell them competitively all over the world.

Marchon

Capital increases for Bayer S.A., Hoechst and Rumianca

a 2-for-1 stock split and a new stock option plan to provide an incentive to executives and key employees of the company.

Mr. A. E. Forster, president, warned that the declining rate of return on investment by industry must somehow be stopped and reversed lest the present U.S. industrial plant wither and become obsolete, succumbing in the free world market to a more productive, vigorous foreign competition.

Farwerke Hoechst

Farwerke Hoechst A.G., Frankfurt, are to pay a dividend of 18% (same) for 1961. It is proposed to issue DM70 million nominal of new shares to raise the ordinary capital to DM770 million. The new shares are to be sold by a banking consortium to existing shareholders at the rate of one-for-10 at an issue price of 275%.

Montecatini Group

Montecatini are considering a merger of the following of their companies: Soc. Idroelettrica Atesina, Soc. Italiana del Litopone Anonima, Soc. Chimica Lombarda, Metallurgia Feltrina, Graniti d'Italia, and Marengo.

Pechiney

Turnover, excluding tax, of Pechiney for 1961 was NF1,112 million, an increase of 15% over 1960. The increase was mainly due to the Metals Division. Exports were responsible for 36.5% of sales as against 30.5% for 1960. Profits were NF43,933,365, an increase of NF10 million.

The board is proposing to fix the gross dividend at NF4.75, which is the same as for 1960, but applicable to a capital increase of 1/20 through incorporation of reserves from one year to another.

The sudden increase in foreign competition has resulted in a drop in prices in the chemical sector. Chemical sales amounted to NF293.4 million. Progress in plastics has been unequal, polyesters, latex and polystyrenes developing favourably. Sales of sodium chlorate and fluorocarbons have also increased.

Rumianca

Rumianca SpA, Turin, are to recommend at their annual meeting on 18 April, an unchanged dividend for 1961 of 10% after unchanged depreciation of 800 million lire. The dividend will be on a capital of 10,000 million lire. Capital is to be raised to 15,000 million lire, or some £5 million, by the issue of 5,000 million new 1,000-lire share in a ratio of 1:2 and at a rate of 150% nominal value. The company is also planning a bond loan of 6,000 million lire at 5½%. The moves are made to finance the com-

pany's new petrochemical projects at Cagliari, Sicily.

Saint Gobain

Investments of Saint Gobain in 1961 reached approximately NF400 million (£29 million).

Sandoz AG

Sandoz AG, Basle, announces a 1961 net profit of S.Fr.21,900,000, or £1.9 million (S.Fr.18,900,000, or £1.5 million). A dividend of 20% is recommended (same, but on lower capital).

Snia-Viscosa

Increases of capital proposed by Snia Viscosa, Milan, from 40,031,250,000 to 48,037,500,000 lire by the issue of new shares on the basis of two-for-10 and a further rise to 56,043,750,000 lire by a two-for-10 scrip issue, have been approved by shareholders. Dividend for 1961 is 140 lire (same). Net profit for the year was 5,128 million lire, while investments in new plants last year totalled 14,684 million lire. Fibre output totalled 120.5 million kg., 10.1% up on 1960.

Synpar S.A.

Synpar S.A. is the name of a new company in Brussels with a capital of B.Fr.149 million for the production of and trade in chemical products. With an American board, the company is participated in by the Reilly Tar and Chemicals Co., U.S., and the Swiss-based Davpar concern.

Market Reports

ENCOURAGING RISE IN SCOTTISH BUSINESS

LONDON Trading conditions on the industrial chemicals market have been steady with good movement against contracts. Prices for the most part are unchanged at recent levels. Export inquiry has been well maintained and has covered a wide range of chemicals. Fertilisers are in sustained demand and there appears to be little delay in deliveries.

Steady conditions are reported for most of the coal tar products with quotations well held.

MANCHESTER Traders have been dealing with a fair number of both home and shipping enquiries involving a wide range of products. Actual new business has been on a moderate scale. In both sections of the trade existing commitments are being drawn against reasonably well, though it is reported that there is room for improvement in a number of directions, especially on the export side, shipments to South Africa,

Squibb S.p.a.

Net profit of Squibb S.p.A., Rome, for 1961 was 550,134,369 lire, a 15% increase on the 1960 figure of 476,429,792 lire.

INCREASES IN CAPITAL

BAYER S.A., Antwerp, Belgian subsidiary of Farbenfabriken Bayer AG, Leverkusen, are to increase their capital from B.Fr.1 million to B.Fr.12.5 million, or from £70,000 to £809,000. Bayer are planning the building of a large-scale chemical plant in Antwerp.

DURHAM CHEMICAL GROUP LTD., Birtley, Co. Durham. Increased by £100,000 beyond the registered capital of £290,000.

International symposium on organic reaction mechanisms

The Chemical Society, Burlington House, London W.1, in association with the Institute of Chemistry of Ireland and University College, Cork, will sponsor a symposium on 'Organic reaction mechanisms' in Cork in 1964.



MONDAY 16 APRIL
S.C.I.—London: 14, Belgrave Sq., S.W.1, 5.30 p.m. A.g.m. & 'The chemist in crop protection'.

TUESDAY 17 APRIL
S.C.I.—Leeds: Civil Eng. Lec. Theatre, Univ., 5.30 p.m. 'Chemical processes for nuclear power' by Dr. R. Spence.
S. Instr. Tech.—Newcastle upon Tyne: Con. Rm., Roadway Hs., Oxford St., 7 p.m. 'Isotope developments'.

WEDNESDAY 18 APRIL
S.C.I.—Chester: The Grosvenor Museum, 7.30 p.m. 'Chemical engineering contracting—a service to modern industry' by F. P. Taylor.
Inst. Plant Eng.—Rochester: South Eastern Gas Board Lec. Hall, 95, High St., 7 p.m. 'Water treatment'.
S. Instr. Tech.—Middlesbrough: Cleveland Sc. & Tech. Inst., 7.30 p.m. 'Control systems design' by Dr. H. H. Rosenbrock.

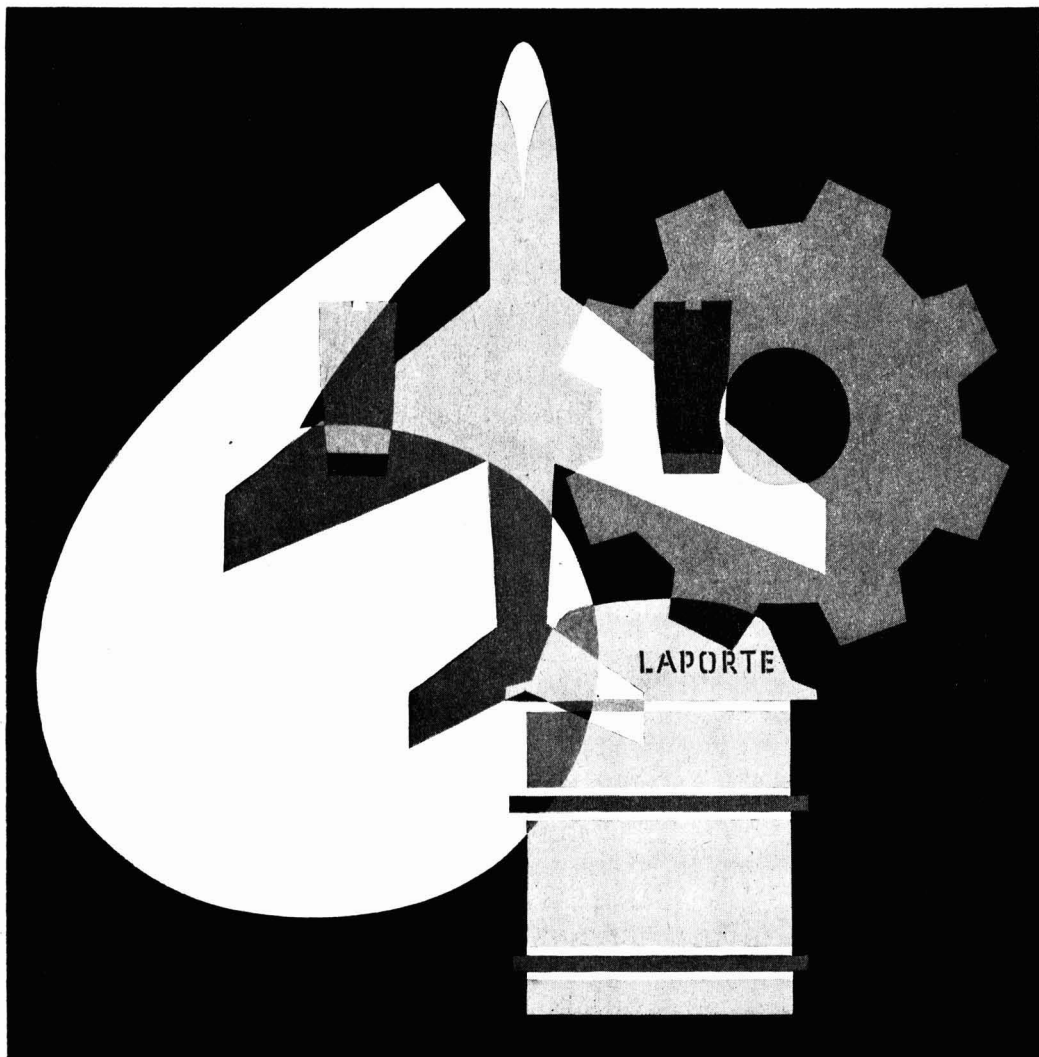
Australia, New Zealand and several European outlets so far this year having been disappointing. Prices generally have been maintained and few important changes have occurred.

SCOTLAND Business has shown an encouraging increase and this applies to paint, plastics, allied trades, textiles, etc., and in some cases suppliers have been hard pushed to meet the demand. The indications are that this development will continue, and in the circumstances the outlook is encouraging. With regard to agriculture, owing to the widespread adverse weather conditions, stocks have been piling up owing to the inability of farmers to get on the land. There will be a tremendous surge of activity in this sphere once weather conditions have improved, but suppliers are well placed to meet any normal demands. Export enquiries more or less have followed the usual pattern.



Hydrogen Peroxide

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Bookshelf

Welcome new edition of Reinhold chemical dictionary

THE CONDENSED CHEMICAL DICTIONARY. Edited by *A. and E. Rose*. Reinhold Publishing Corp., New York, 1961. Pp. xix + 1256. 140s.

The sixth edition of this invaluable dictionary, which lists main uses of chemicals as well as properties, derivation, containers and shipping regulations, will need little introduction.

The new edition has been completely revised and includes new entries—elements and compounds—and new terminology which has come into use since the fifth edition was published in 1956. Among the main revisions are the improved formulae which show structure, new uses and new derivations.

The fields of chemistry which have grown rapidly over recent years have been dealt with very adequately. For example, polymers are listed both individually and collectively, i.e. polymer structure and stereo-specific polymers.

This new edition will undoubtedly prove of even greater value than its predecessors.

► Nuclear chemistry

PROGRESS IN NUCLEAR CHEMISTRY. SERIES IX, ANALYTICAL CHEMISTRY, VOL. 2. Edited by *C. E. Crouthamel*. Pergamon Press, Oxford, 1961. Pp. vii + 400, 100s.

Eight topics (by eleven contributors) were selected for this volume, the criterion being their significance and influence on modern analytical methods, especially in the field of nuclear energy. There are a number of well written accounts of basic principles and instrumental designs and techniques, and also many examples of applications and limitations.

The first chapter is on recent advances in the assay of radioactivity, with particular reference to X-ray spectrochemical analysis by the gas ionisation proportional counter, solid-state counters (e.g. diamond, surface-barrier types) for heavy nuclear particles, and recent advances in scintillator spectroscopy. This is followed by a very clear account of electron spin resonance together with a survey of its applications in organic and inorganic chemistry, recent advances in the separation and analysis of the transuranium elements, liquid-liquid extraction processes used in analytical nuclear chemistry, and a short account of flame photometry and atomic absorption spectroscopy. The last three sections are concerned with recent advances in u.v., visible and i.r. spectrometry of those

elements associated with nuclear energy, back-scattering and X-ray production by beta-particle interactions—which have been developed for analytical purposes, and a survey of ion-exchange chromatography.

Although the contents have been aimed at nuclear chemists and physicists, this book is very good value for all those concerned with the subjects mentioned above.

► Radioactive wastes

RADIOACTIVE WASTES, THEIR TREATMENT AND DISPOSAL. Edited by *J. C. Collins*. E. & F. N. Spon Ltd., London, 1960. Pp. 239. 55s.

Mr. Collins has edited contributions from well selected authors to produce a useful book readable by both the relatively expert person such as a radiation protection officer and the relatively lay person such as a local authority official who finds that he has to understand the subject. The 10 individual chapters cover the nature, hazards and measurement of radioactivity; the sources, treatment, and biological concentration of radioactive wastes, and the law on radioactive wastes in the U.K. At the beginning there are eight pages of symbols and abbreviations and at the end a 10-page glossary of terms followed by an adequate subject index.

The book is excellently produced, well illustrated and well documented by tabular data and lists of references to the literature placed at the ends of the appropriate chapters. The reviewer is pleased to have received a copy.

► Beryllium toxicity

TOXICITY OF BERYLLIUM COMPOUNDS. By *H. B. Tepper, Harrold L. Hardy and R. I. Chamberlain*. Elsevier Publishing Company, Amsterdam, 1961. Pp. 190. 20s.

This monograph attempts to assemble knowledge of the toxicology of beryllium and its compounds for the industrial hygiene engineer and the physician dealing with occupational disease. Both these categories should welcome this effort; and many others will find much of interest in it. The authors give an account of beryllium disease with separate chapters on acute and chronic disease, but their discussions of X-ray changes and the pathology keep the two

classifications together. Chapters on experimental approaches to the toxicology of beryllium and on the absorption, distribution and excretion of beryllium are included. The final chapter is a useful one on industrial hygiene aspects covering sources, etc., of beryllium, limits of exposure, maximum permissible concentrations, control of environmental contamination and analytical methods. There are 14 pages of references to relevant literature and an eight-page subject index. The nicely printed text is supported by eight photographs and 12 tables of data.

► Organic analysis

EXPERIMENTAL CHEMISTRY. PART III. QUALITATIVE ORGANIC ANALYSIS. By *P. A. Claret*. Pitman. Pp. 130. 16s.

A description of the analytical scheme is followed by a chapter on preliminary tests. Chapter 3 consists of recommended group tests and derivatives, while chapters 4 and 5 contain the experimental instructions for carrying out the group tests and for preparing derivatives. The next chapter describes the qualitative analysis of a mixture of organic compounds. Useful tables of the physical constants of organic compounds are given. The three appendices are devoted to a specimen laboratory report, and lists of the reagents and of the apparatus required.

Chapter 2 comprises 11 preliminary tests to be applied to each substance under investigation. Carried out by a good student and intelligently interpreted this approach will provide much useful information, but many teachers will have reservations about this procedure in the hands of beginners and others. Some of the group tests in chapter 4 could have been omitted with advantage.

The success of a book on this topic depends largely on the clarity of the method of analysis and of its presentation, and in this respect the present book would appear to be inferior to several of the excellent texts already available.

► Other books received

CHEMICAL FORMULARY VOL. XI. Edited by *H. Bennett*. Chemical Publishing Co. Inc., New York, 1961. Pp. 416. \$8.

QUALITATIVE ELEMENTAL ANALYSIS. By *E. H. Swift and W. P. Schaefer*. W. H. Freeman and Co., London, 1961. Pp. xiv + 469. 42s.

SIR HARRY MELVILLE. *Department of Scientific and Industrial Research*. George Allen and Unwin, London; Oxford University Press Inc., New York, 1961. Pp. 200. 25s.

ORGANIC SYNTHESIS VOL. 41. Edited by *J. D. Roberts*. John Wiley and Sons, London, New York, 1961. Pp. ix + 118. 30s.

CHEMICALS AND PEOPLE. By *S. A. Gregory*. Mills and Boon, London, 1961. Pp. 175. 15s.

BADGER

IN THE UNITED KINGDOM



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TRADE NOTES

Butyl dioxitol acetate

Shell Chemical Co. announces that with effect from 2 April, butyl dioxitol acetate has been added to its marketing range of solvents. Diethylene glycol monobutyl ether acetate is the highest boiling glycol ether or glycol ether ester now available from their range of Oxitol solvents.

New telephone number

Luwa (U.K.) Ltd., manufacturers of evaporation, fractionation equipment, etc., 340 Clapham Road, London S.W.9, have changed their telephone number to Macaulay 0333 (three lines).

B.T.L. catalogue

The 1962 edition of their catalogue of scientific instruments and apparatus, available from Baird and Tatlock (London) Ltd., 14-17, St. Cross Street, E.C.1, has 768 pages covering laboratory furniture and fittings, general laboratory apparatus and instruments, and medical/allied, industrial and specialised sciences. There are many new sections, and 'stop press' pages make it right up to date.

Plastics film depot

To meet immediate demands of DIOphane film from their customers in the Greater London area, Transparent Paper Ltd. have opened up a new London depot. However, all enquiries as from

30 April 1962 should be addressed to the company's new London offices at Bury House, 126-128 Cromwell Road, London S.W.7.

Riblene polythene

L. A. Smith and Co. Ltd., 231 Strand, London W.C.2, have been appointed U.K. representatives for Riblene polythene, produced by A.B.C.D. of Rome.

Timborised timber

Full information on the use, etc., of Timborised timber is contained in an illustrated colour brochure issued by the timber department of Borax Consolidated Ltd., Borax House, Carlisle Place, London S.W.1.

Beresford's new office

James Beresford and Son Ltd., Birmingham manufacturers of submersible deepwell pumps and centrifugal pumps, have recently opened an office at Albion House, 2 Hamilton Road, Glasgow E.2 (Shettleston 1672), under the management of their Scottish representative, Mr. R. W. Deane.

A. and W. export list

A new list of general chemicals for export is available from Albright and Wilson (Mfg.) Ltd., Export Department, 1 Knightsbridge Green, London, S.W.1. These chemicals are known abroad as Sterling brand chemicals and the list

gives the formula, physical form and the packages in which the chemicals are available. Products are sold to some 80 countries and the company's technical service, supported by fundamental and applied research, is freely available to all customers.

Bisol development products

Since some time usually elapses before mention of new products is made in standard literature, Distillers' Chemical Division have produced a new booklet called 'Bisol development products' which is intended to fill the gap, and which is available from the Sales Development Department, The Distillers' Co. Ltd., Chemical Division, Devonshire House, Piccadilly, London W.1.

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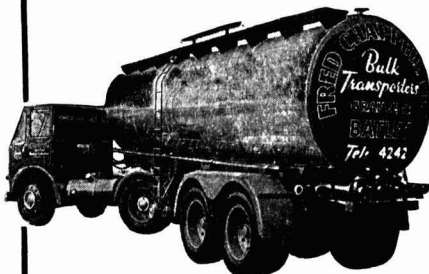
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Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any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

ACCEPTANCES

Open to public inspection 9 May

Titanium dioxide pigment particles and process of producing same. American Cyanamid Co. 896 067

Process for the preparation of trimethylborate. Montecatini Soc. Generale per L'industria Mineraria. 895 925

Purification of terephthalic acid. Du Pont de Nemours & Co., E. I. 895 926

Penicillin compounds. Pfizer & Co. Inc., Chas. 896 072

Production of 1-dialkylamino-4-hydroxyacetones-(2). Badische Anilin- & Soda-Fabrik AG. 895 927

Process for the preparation of 2,6-dialkyl phenols. Shell Internationale Research Maatschappij NV. 895 928

Method of preparing dinitrogen tetrafluoride and nitrosyl fluoride. Du Pont de Nemours & Co., E. I. 895 943

Amide and compositions of matter containing same and the manufacture thereof. [Switzerland 1316, Feb. 5, 1960.] 896 079

Process for the production of chloropentafluoroethane. Union Carbide Corporation. 896 068

Method for preparing bis-(dimethylamino)borane. United States Borax & Chemical Corporation. 896 023

Steroid compounds and their preparation. Merck & Co. Inc. [Divided out of 896 103.] 896 104

Steroids and the manufacture thereof. Upjohn Co. [Divided out of 896 206.] 896 207

Open to public inspection 16 May

Salts of organic acids. Olin Mathieson Chemical Corporation. 896 508

Preparation of glucosaccharolactone salts. Pfizer Ltd. 896 724

Plastic compositions. Permanoil Ltd., Townsend, L. W. E., Bates, E. C., and Ogdan, S. 896 725

Ethynyl alkyl sulphones and pesticidal compositions containing them. Chemagro Corporation. 896 373

Steroids and their synthesis. Olin Mathieson Chemical Corporation. 896 596

Polyalkylene base material. American Machine & Foundry Co. 896 739

Solid, thermoplastic, polyspirane resins. Shawinigan Resins Corporation. 896 254

Elastomers obtained from alpha-olefin polymers and co-polymers and process for their preparation. Montecatini. 896 598

Production of naphthalene polycarboxylic acids and their anhydrides. Mid-Century Corporation. [Addition to 807 091.] 896 255

Epoxide resin-quaternary ammonium salt compositions. Devoe & Reynolds Co. Inc. 896 601

Process for the manufacture of polyvinyl alcohols having emulsifying and foaming properties. Farbwerke Hoechst AG. 896 775

Partial esters of aliphatic substituted succinic acids and rust-inhibiting compositions containing same. Monsanto Chemical Co. 896 376

Water-insoluble monoazo-dyestuffs and process for their manufacture. Farbwerke Hoechst AG. 896 602

Synthetic resins and processes for the manufacture thereof. Beck & Co. GmbH. 896 396

Process for reducing the acid number of polyesters. Hudson Foam Plastics Corporation. 896 711

Process for the manufacture of very pure silicon. Wacker-Chemie GmbH. 896 258

Alkylation of benzene. Aries, R. S. 896 390

Method for the preparation of substituted phthalain dyes. Terzajska, D., Korbil, J., and Svoboda, V. 896 260

Synthetic crystalline zeolites. Union Carbide Corporation. 896 783, 896 784

Process for the production of polymers of monoepoxy compounds, and the resulting polymers. Petrochemicals Ltd. 896 587

Synthetic organosilicon resins and manufacture thereof. Napier & Son Ltd., D. 896 301

Organometallic compounds. Ethyl Corporation. 896 391

Metalliferous monoazo-dyestuffs containing halotriazine residues and their manufacture and use. Ciba Ltd. 896 785, 896 675

Catalyst feeding. Celanese Corporation. 896 786

Theophyllin compounds and their production. Wülfing & Co. GmbH, A., Iglar-von Wülfing, T. and Wülfing, I. von., (trading as Wülfing, Johann, A. (firm of)). 896 787

Sulphonyl ureas and the manufacture thereof. Wellcome Foundation Ltd. [Divided out of 872 102.] 896 303

Process for the production of dichloro-s-triazine derivatives. Deutsche Gold-und Silber-Scheidanstalt vorm. Roessler. 896 619

Process for the regeneration of degraded solutions from a hydrogen peroxide synthesising process. Columbia-Southern Chemical Corporation. 896 346

Polymerisation of unsaturated hydrocarbons. Montecatini and Zeigler, K. 896 509

Process for the manufacture of polyvinyl ester dispersions. Farbwerke Hoechst AG. 896 510

Thermoplastic foam materials. Schickedanz, E. 896 623

Monoazo dyestuffs of the benzothiazole-azobenzene series. Imperial Chemical Industries Ltd. 896 232

Production of N-carboxy-alpha-amino-acid anhydrides. Courtaulds Ltd. 896 511

Disazo-dyestuffs insoluble in water and process for their manufacture. Farbwerke Hoechst AG. [Addition to 876 000.] 896 605

Process for the production of stabilised linear polyamides. Bemberg SpA. 896 606

Dyestuffs of the anthraquinone, peredricarboxylic acid imide and phthalocyanine series and process for their manufacture. Ciba Ltd. 896 590

Foamed resins. Monsanto Chemicals Ltd. 896 234

Carbalcoxyalkyl diphenyl ethers. California Research Corporation. 896 397

Process for the manufacture of water-insoluble quinacridones free from sulphonic acid group. Ciba Ltd. 896 803

Antihistamine-active basic ethers and their salts, and processes for producing same. Spofa, Sdruzeni Podniku Pro Zdravotnikou Vyrobu. 896 527

Hydrocatalytic treatment of petroleum hydrocarbons. British Petroleum Co. Ltd., Adlington, D. G. and Tupman, K. 896 625

Preparation of niobium oxide. Pechiney. 896 528

Preparation of phosphates of bivalent metals. Thorn Electrical Industries Ltd. 896 660

Polyvinyl alcohol fibres of dyeability. Kurashiki Rayon Kabushiki Kaisha. 896 244

Aqueous dispersions of modified alkyl resins. Dorst, W. 896 743

Azo colouring matters containing 2-hydroxyquinoline residues. Imperial Chemical Industries Ltd. 896 472

Process of manufacture of 6-amino-penicillanic acid. Imperial Chemical Industries Ltd. 896 245

Stibene derivatives and process for their manufacture. Sandoz Ltd. 896 264, 896 533

Hydrohalogenation of myrcene in presence of cuprous compounds. Boake, Roberts & Co. Ltd., A. 896 262

Lubricant additives. Shell Internationale Research Maatschappij NV. 896 435

Manufacture of polymeric materials. Imperial Chemicals Industries Ltd. 896 437

Bis-(hydroxyphenyl-carboxylic acid ester)-methanes. Farbenfabriken Bayer AG. 896 265

Cellulose derivatives useful as anion-exchange materials and their application. Glaxo Laboratories Ltd. 896 439

Separation of nitrogen compounds from hydrocarbon mixtures. Union Oil Co. of California. 896 440

High molecular weight polycarbonates. Farbenfabriken Bayer AG. 896 266

Purification of alkyl aryl hydrocarbons. Continental Oil Co. 896 441

Production of carboxy copolymers and of cross-linked products therefrom. Devoe & Reynolds Co. Inc. 896 821

Water-soluble quaternary ammonium heterocyclic monoazo-dyestuffs and a process for their manufacture. Ciba Ltd. 896 673

Organic peroxides. Koninklijke Industriële Maatschappij Voorheen Noury & Van Der Lande NV. 896 813

Acylating agents and process for their manufacture. Ciba Ltd. 896 814

Rhenium pentacarbonyl hydride and its production. Badische Anilin- & Soda-Fabrik AG. 896 445

Antibiotics. Pfizer & Co. Inc., Chas. 896 279

Polymerisation of olefins. British Petroleum Co. Ltd., Yeo, A. A. and Hambling, J. K. 896 822

Resins. Imperial Chemical Industries Ltd. 896 815

Steroids and the manufacture thereof. Upjohn Co. 896 817

Preparation of an alumina based catalyst. Spence & Sons Ltd., Peter 896 314

Cobalt-containing monoazo dyestuffs and their preparation. Badische Anilin- & Soda-Fabrik AG. 896 239

Hydrazinium salts, their production and mixtures comprising a hydrazine. Grace & Co., W. R. 896 450

N-arylsulpho-n-alkoxy ureas. Farbenfabriken Bayer AG. 896 678

Hydrazinium compounds, their production and resins obtained therefrom. Grace & Co., W. R. 896 451

Cationic mono-azo dyes, their production and their application. Du Pont de Nemours & Co., E. I. 896 681

Preparation of acetyl salicylic acid. Norwich Pharmaceutical Co. 896 715

Separation processes by distillation. Shell Internationale Research Maatschappij NV. 896 464

Oxytetracycline ester and preparation thereof. Pfizer & Co. Inc., Chas. 896 452

Bis-amino compounds. Ciba Ltd. 896 652

Synthetic resins, articles made therefrom or coated therewith and synthetic resin coating compositions, having fungicidal and bactericidal surfaces. Farbenfabriken Bayer AG. 896 454

Ureas and process for preparing same. Ciba Ltd. 896 455

Graft copolymers of certain monomeric sulphonic acids. Dow Chemical Co. [Addition to 849 063.] 896 456

Separation of sulphur oxides from waste gases. Badische Anilin- & Soda-Fabrik AG. 896 457

Polymerisation of unsaturated ethers. Hercules Powder Co. 896 844

Antibacterial 4-(5'-nitro-2'-furyl) thiazoles. Abbott Laboratories. 896 495

Isocyanide-dihalides and process for their production. Farbenfabriken Bayer AG. 896 323

Process for polymerising olefins. Solvay & Cie. 896 305

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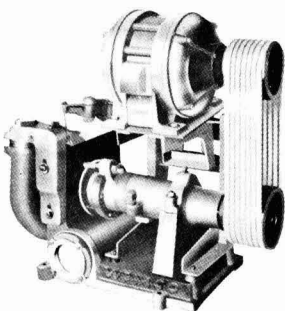
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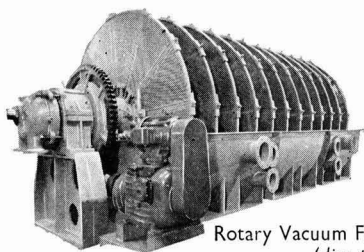
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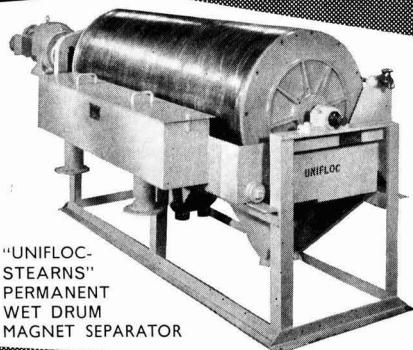
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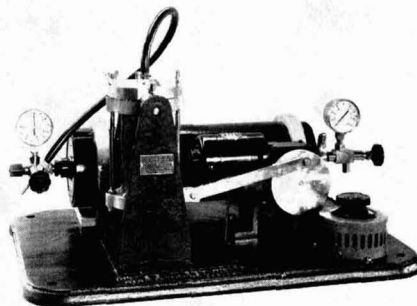
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