

# Chemical Age

incorporating

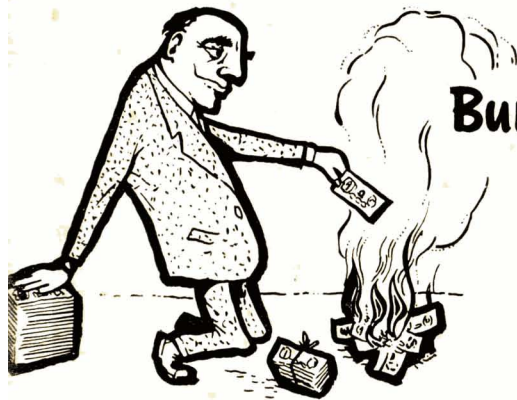
PETROCHEMICALS and POLYMERS

17 February 1962. Vol. 87. No. 2223

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

'CHEMICAL AGE'  
INTERVIEWS MR.  
S. P. CHAMBERS (P. 279)

ESSO AND FISONS  
DROP AMMONIA  
PLANS (P. 276)

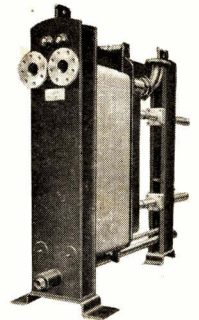


## Burning banknotes is one way...

... but, of course, the waste is obvious. Not so obvious is the money lost when hot effluents are allowed to run to drain, or hot vapours to exhaust to atmosphere without first reclaiming the valuable heat content. APV Heat Exchangers put paid to such waste. They are designed for the efficient recovery of heat from process liquids, vapours and saturated gases. Take advantage of APV's wide practical experience in supplying Heat Exchangers for recovering waste heat in innumerable industrial processes. They may have the answer to your particular heat exchange problem.

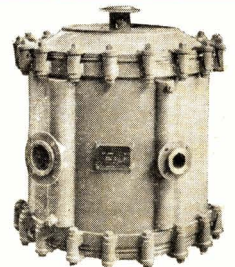
### The APV Paraflow Plate Heat Exchanger

The Paraflow is without equal for heat recovery from corrosive and potable liquids. Compact, highly efficient, easily cleaned and extremely flexible, it can handle several duties simultaneously. Made in a range of sizes and frame types with plates of stainless steel or selected alternative metals. Send for Publication A340 for full details.



### The APV Rosenblad Spiral Heat Exchanger

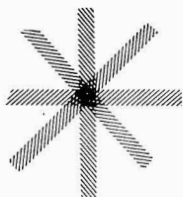
Made in a range of metals and of a basic design capable of many variations, the Rosenblad is of a unique spiral construction which ensures an extremely high heat transfer. It is particularly valuable for recovering useful heat from low value sources. Send for Publication A334 for full details.



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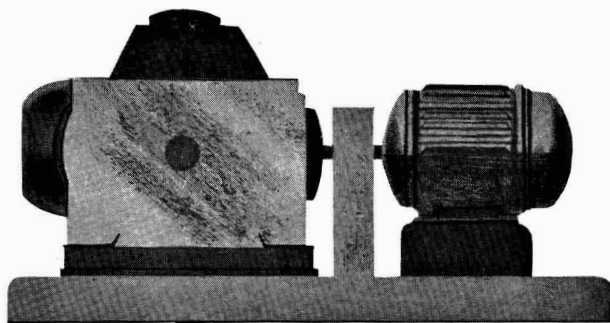
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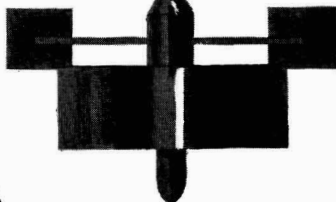
Aiton PWV mixers are vibrationless, made to the highest quality standards, and offer maximum efficiency with minimum maintenance.

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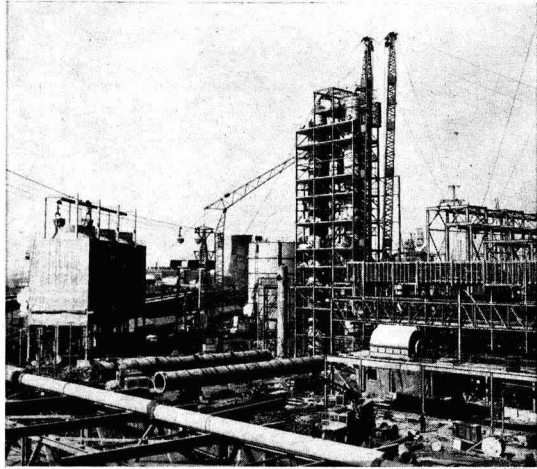


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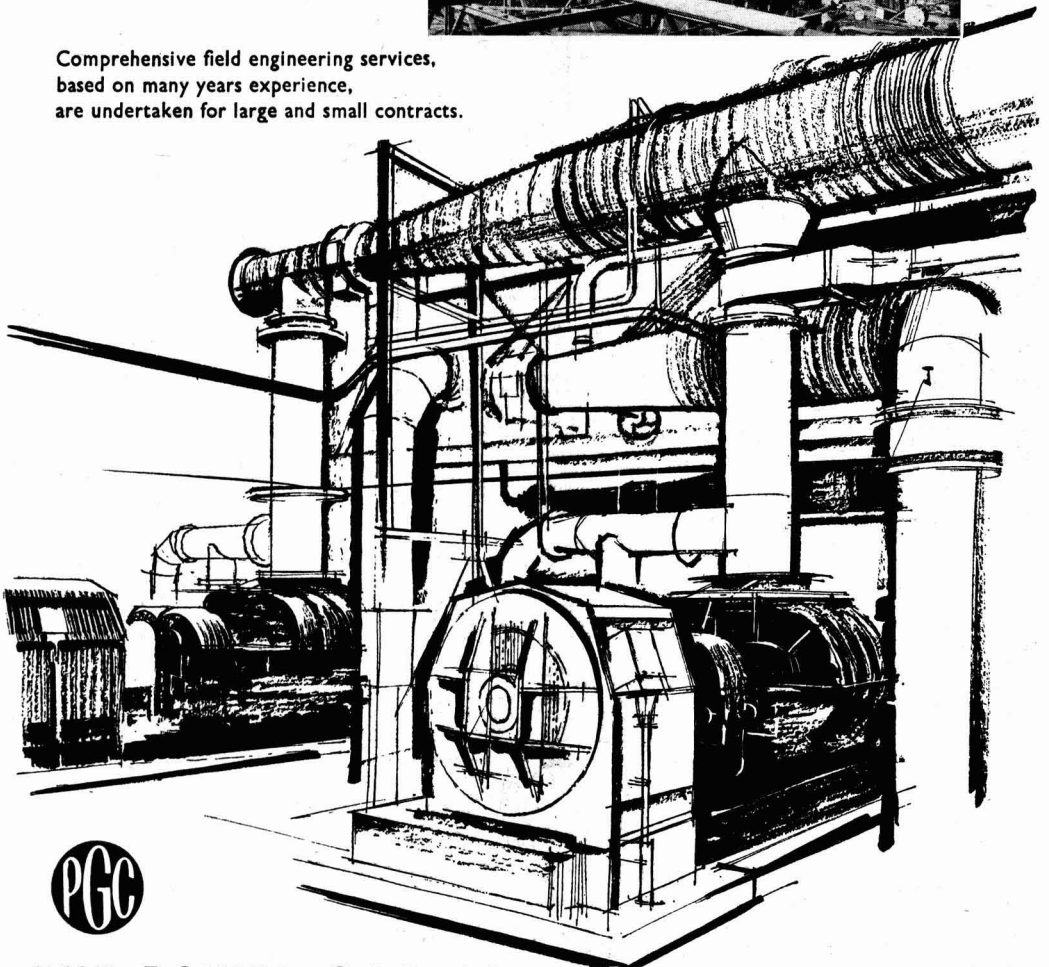


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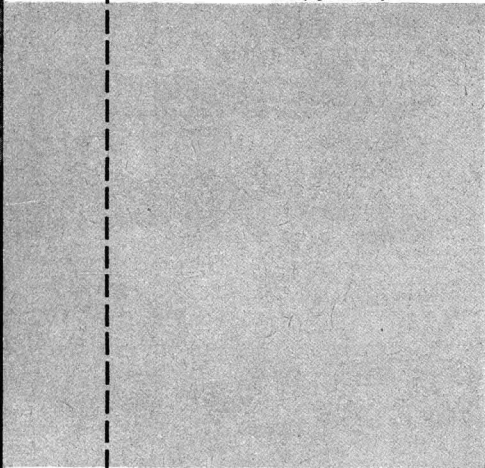


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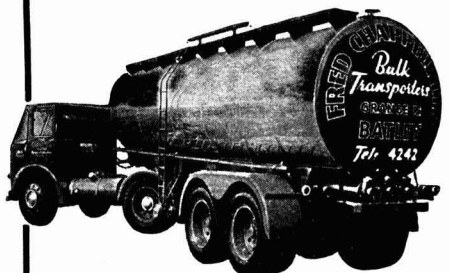
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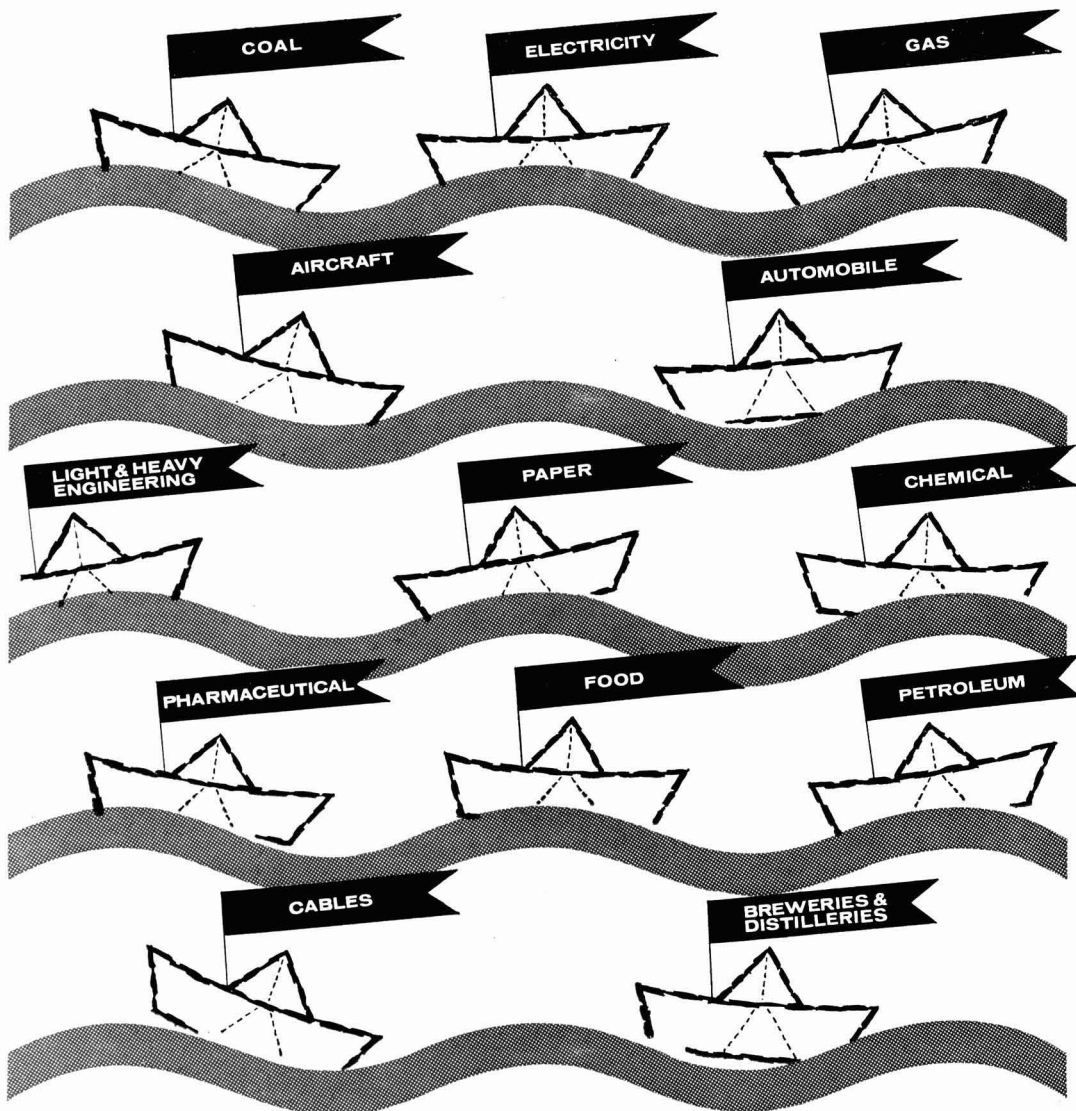
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# MIXING

## MACHINES

## FOR

## ALL

## PURPOSES

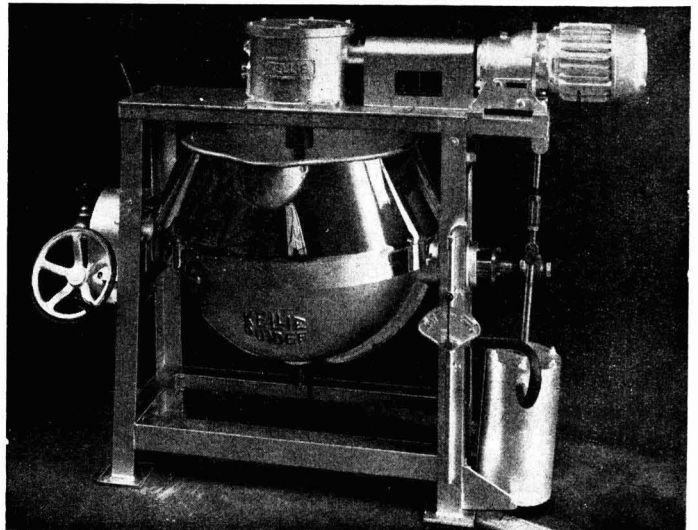


Stainless Steel Boiling and Mixing Pan for soup, etc., Type 20 PJ.

Special Purpose Mixing Machine, Type 23 PJ

**LIGHT, HEAVY  
SUPER HEAVY,  
INDIVIDUAL MIXERS  
DESIGNED FOR  
ALL PURPOSES**

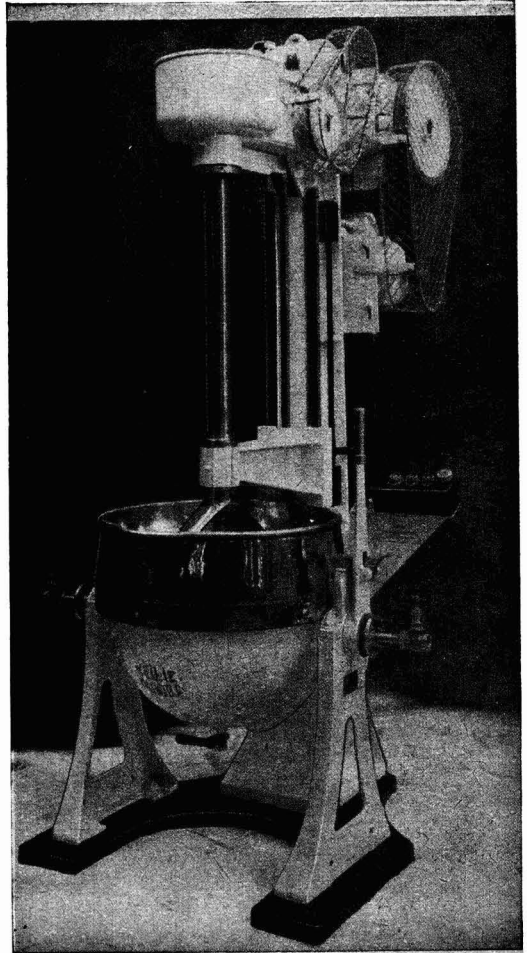
*Food, Chemical  
Cereal, Liquid  
Viscous, Non-Viscous*



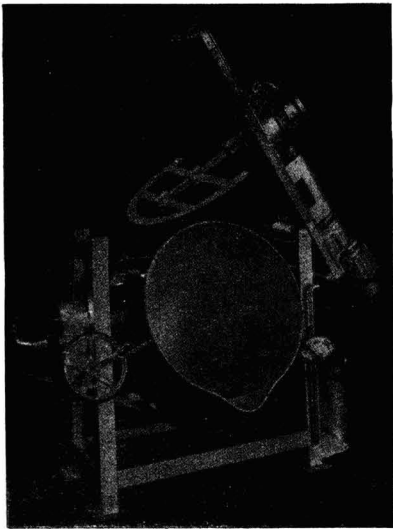




Heavy Duty Hydraulic Mixing Machine for caramel, nougat, etc., 1½ to 3 cwt. capacity, Type 16 PD.



Mixing Machine for caramel, etc., 1½ cwt. Type 7 PD.



This Mixing Machine has Pan lined with Pure Silver. Type 23 PJ.

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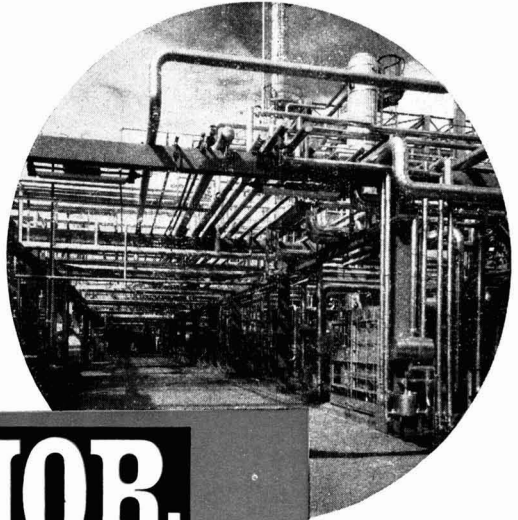
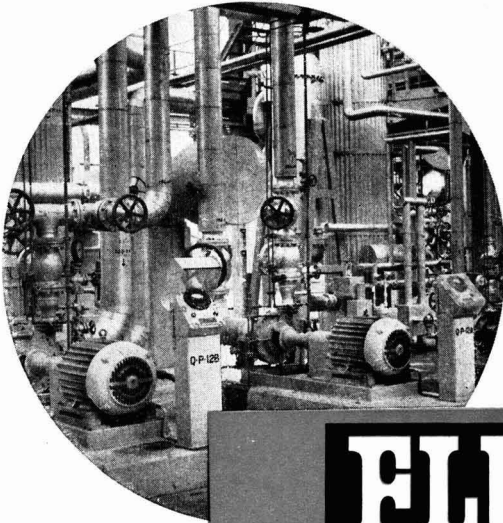
Telegrams & Cables: KELLIE, DUNDEE

Illustrated here are only a few of the many types of Mixing Machines that are being produced by Kellie of Dundee.

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Write or telephone now for details of the Kellie Technical Consulting Service. It is free and without obligation.

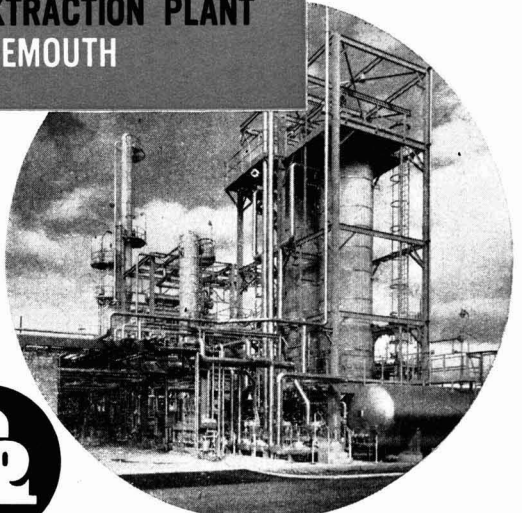
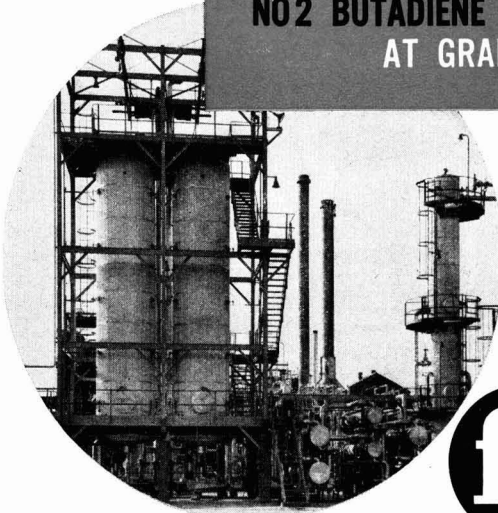


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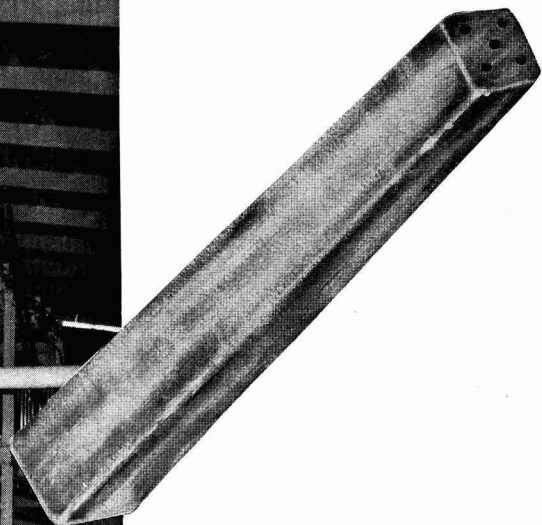
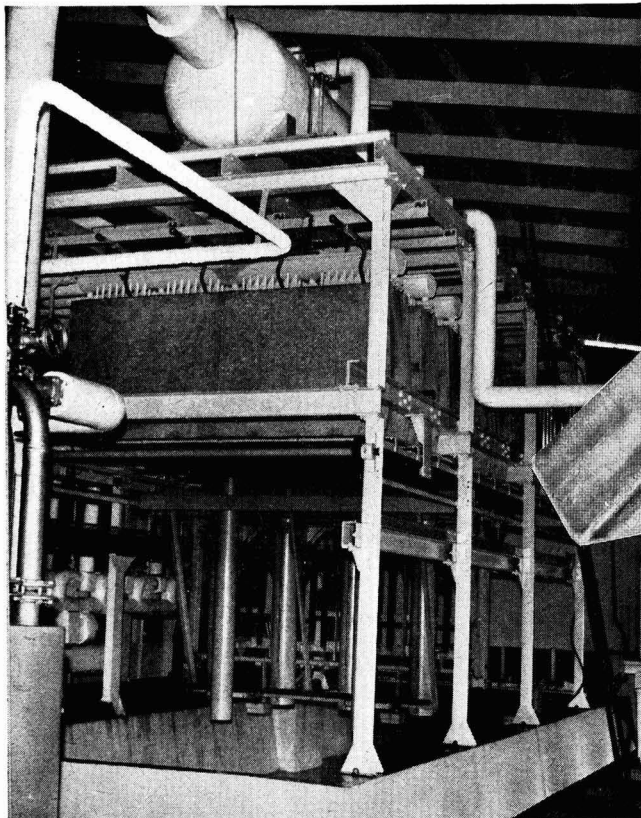
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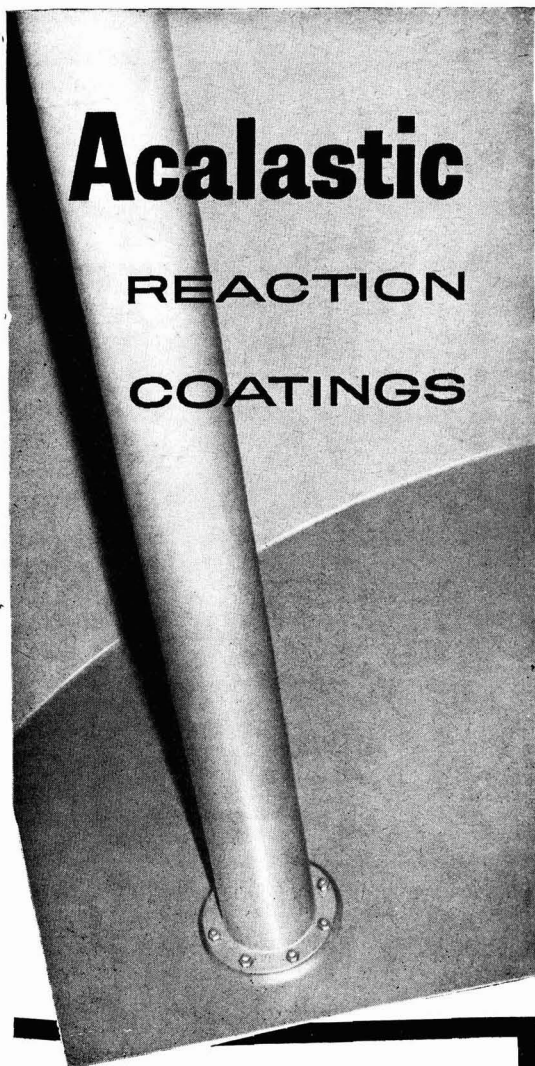
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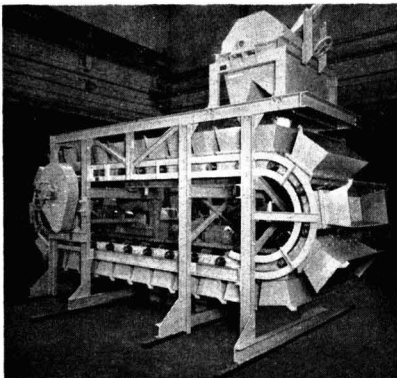
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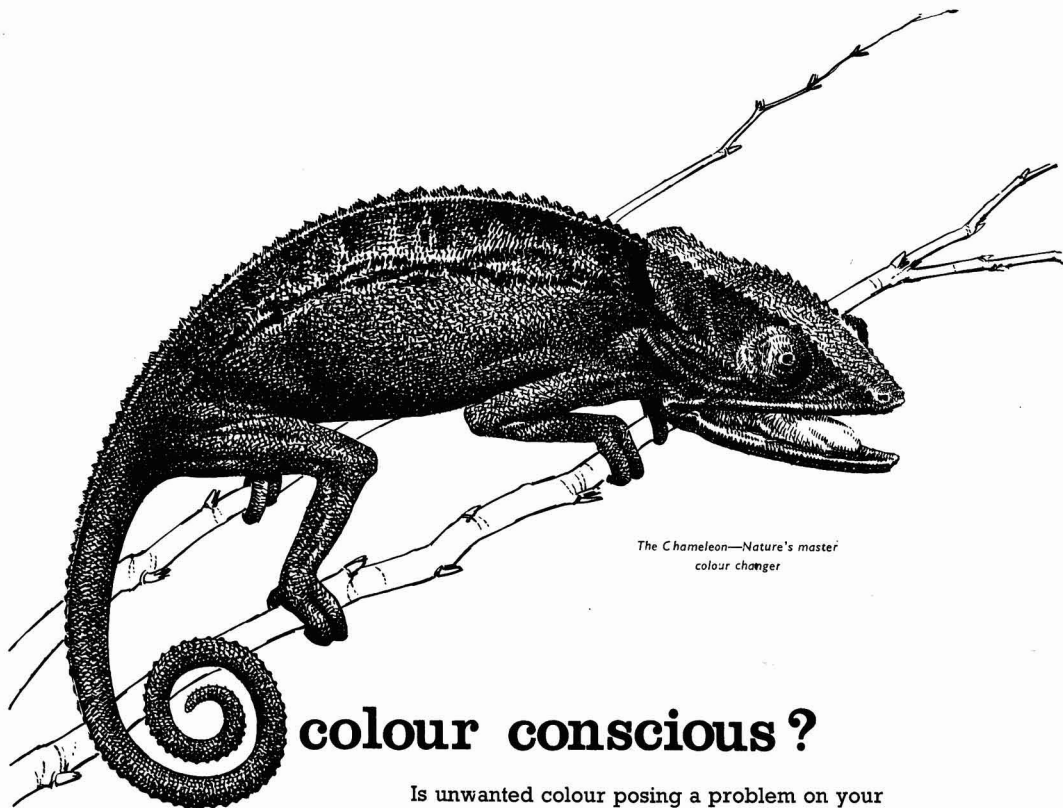
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VOL. 87

No. 2223

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## AMMONIA

IT is understood that it was a very long term look at the economics of ammonia production that is behind the decision to abandon the joint Esso/Fisons ammonia project at Milford Haven, and not reconsideration in the light of Common Market negotiations as was previously supposed. Apparently, it is considered that the downward trend in the price of ammonia will make it uneconomic for any U.K. company to produce it in the future. It will be cheaper to import ammonia from places such as Trinidad where Grace have a plant based on natural gas. The price quoted for natural gas in Trinidad is 1d a therm, whereas the cheapest any Gas Board has ever thought of quoting in the U.K. is 4d, and companies with natural gas to sell could expect to obtain 7d a therm.

I.C.I. obviously think differently. In 1960, Billingham Division completed their 60,000 tons a year ammonia-from-oil project and they have already begun construction of the 100,000 ton plant based on the new process, which has been described by Billingham as "the most modern process in the world for making hydrogen from light distillate oil." Certainly I.C.I.'s chairman has confidence in the new process. He told CHEMICAL AGE in an exclusive interview (see p. 279) that it will most certainly lower ammonia costs and help put I.C.I. in a more competitive position. Many companies, several in the U.S., have been seeking licences to operate the new process.

The long term view that ammonia will become a virtually international commodity may prove to be wrong, but it is certainly feasible that, given a cheap source of natural gas (such as is available in Trinidad) and economic transportation, imported ammonia could become competitive with that produced in the U.K., even by the new I.C.I. process.

Alternatively, if natural gas ever became available in the U.K. really cheaply, for instance through direct pipeline connections, the established liquid feedstock processes, such as those of Shell and Texaco, may meet some stiff competition. Fisons, it seems, are not prepared to take the risk.

No information is available on ammonia prices. Prices published are unrealistic since they are for small quantities, and bear little relation to the bulk supply that a firm like Fisons would require for their projected nitrogen complex.

Meanwhile ammonia capacity and production continues to rise. U.K. ammonia capacity is estimated at 600,000 tons a year and will rise to 700,000 to 750,000 tons a year by 1964 (the latter estimate excludes the abandoned Esso/Fisons project). I.C.I.'s current capacity is estimated at 325,000 tons a year. U.K. output in 1960 was 560,000 tons.

The picture is similar in the U.S. Capacity at the beginning of 1961 was about 5.4 million tons a year. When already announced expansions come on stream, it will be around 6.5 million tons a year. 1960-1961 was another year of record ammonia production in the U.S. Output was about 5 million tons compared with 4.7 million tons in 1959-1960.

Ammonia is a cheap chemical. Producers cannot afford to run a process that is not economically the best available. This is particularly important in view of the expanding demand for nitrogenous fertilisers and the competitive state of the market.

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## Esso and Fisons abandon joint ammonia project in Wales

**I**N a joint statement issued last week, Esso Petroleum Co. Ltd. and Fisons Ltd. announced that the plans for the construction of an ammonia plant and an adjacent nitrogen complex at Esso's Milford Haven refinery, have been abandoned.

It is believed that the project was abandoned after consideration of the downward trend in ammonia prices and the possibility of cheap imports of ammonia making it impracticable for U.K. companies to produce it in the future (see also 'Leader', page 275).

Plans for the joint venture were announced last April (see CHEMICAL AGE, 29 April 1961, p. 689). The £4 million ammonia plant, owned on an equal basis by Esso and Fisons and to be operated by a company called Milford Haven Ammonia Co. Ltd., would have produced eventually 150,000 tons of ammonia a year and was expected to be in operation by 1964. Ammonia from the new plant was to have been pumped to the wholly owned Fisons nitrogen complex to be built on the same site, where ammonium nitrate and other nitrogen products were to have been manufactured. Fisons have also indicated their interest in the growing market for industrial nitrogen. The original estimate of the cost to Fisons involved in the two projects was £12 million.

### Milford Haven reappraisal

First indication that a reappraisal of the Milford Haven project was taking place came from Sir Clavering Fison, at a Press conference on the annual report (see CHEMICAL AGE, 4 November 1961, p. 715). He announced that part of the Milford Haven project had been abandoned, reducing the estimate of expenditure to £10 million, although he did not say which part. It now appears that when the whole project was originally planned, a 60,000 t.p.a. urea plant was to be included, but this was scrapped early on.

Esso and Fisons have now concluded that the project is not of mutual interest. Both companies are adamant that there has been no ill-will between them. Work had not yet begun on the project so that no serious financial loss is incurred by abandoning it at this stage.

Although the combined Esso/Fisons part of the project has been abandoned, Fisons still intend to go ahead with their own part of the plans, although not at Milford Haven. Avonmouth is felt to be a possibility for the new site. In their statement, Fisons say that the capital expenditure contemplated will be greatly reduced.

It is estimated that U.K. consumption of nitrogen, currently around 440,000 tons/year will by 1965 rise to over 600,000 tons.

Coincident with the joint statement

from Esso and Fisons came the announcement of the acquisition by Esso Mediterranean of a majority interest in Amoniaco Espanol S.A., a company that has been authorised to build and operate a nitrogenous fertiliser plant in Malaga, Spain (see 'Overseas News').

### Courtaulds latest proposals

Proposals of Courtaulds Ltd., issued to stockholders on Wednesday in an attempt to defeat I.C.I.'s take-over, are summarised on page 282.

## Monsanto report lower dividend and profit but look for better returns later in 1962

**W**ITH news of a cut in dividend and profits for Monsanto Chemicals Ltd., Sir Miles Thomas, chairman, on Wednesday stated that the immediate outlook for 1962 shows little improvement. He added, however, "We are expecting better returns as the year develops." Fuller information will be given in the directors' report next month.

Group trading profit for 1961 was down 30% at £3,443,813 (£4,835,359). Depreciation took £1,971,583 (£1,718,570) and tax £540,259 (£1,251,016). Net profit was £730,339 (£1,700,342) and profit attributable to the group was £720,194 (£1,564,674).

Parent company's net sales were down slightly in value at £20,629,635 (£20,761,862); parent company's trading profit totalled £2,907,972 (£3,787,780),

with net income at £769,018 (£1,416,569).

The final dividend is halved to 3d, making 6d per 5s share (9d). In future, dividend declarations and half-yearly and yearly results will be announced during London Stock Exchange hours.

Sir Miles Thomas points out that in his last six-monthly report he made it clear that the trend was towards lower profit margins; this he then indicated was gathering momentum. The final figures, he says, "tell their own story".

As shown the value of sales was only a little below last year, tonnage of output showed some increase. Exports rose to 37% of total trade, but world surpluses of chemicals and plastics led to severe competition in overseas markets which contributed to the reduced profits.

## Cellophane-Dutch venture for production of packaging films in Holland

**MAJ**OR holding in a new Anglo-Dutch venture to convert cellulose and other transparent films in the Netherlands will be held by British Cellophane Ltd., of the Courtaulds Group. The Dutch partners are Leeuwarder Papierwarenfabriek NV; and the new Dutch joint company, which will start production towards the end of this year, is Engels-Nederlandse Verpakkingindustrie NV.

Site and other details of the plant will be announced later. In the meantime offices are at Leeuwarder. The new company will become Dutch selling agent for British Cellophane and for Colondense, a subsidiary. The plant will supply printed film, laminates and other packaging materials in roll, sheet and bag form.

British Cellophane will hold 74% of the £200,000 share capital.

There have been a number of cases of packaging film links between British and Dutch companies in recent years. One is Shorko Ltd., in whom Metal Box Co.

Ltd. and Royal Dutch/Shell are interested. Based in London, this company has recently turned down plans to build a plastics film plant at Bishop Auckland, Co. Durham, in favour of a site, yet to be named in the south of England.

In May of last year, I.C.I. announced that negotiations had been completed for the purchase by them of Hollandsche Gummifabrieken Weesp, manufacturers of plastics sheet and film and p.v.c.-coated fabrics.

### Dow flexible epoxies now available in U.K.

Two new flexible epoxy resins, introduced into the U.K. by Dow Chemical Co. (U.K.) Ltd., 48 Charles Street, London W.1, will be featured by the company at the Oil and Colour Exhibition in London at the end of this month. These new resins will be described in the CHEMICAL AGE preview of the O.C.C.A. exhibition next week.

## Plea for duty relief on industrial hydrocarbon oils

**A** MEMORANDUM asking for the relief from duty (2s 6d/gall. plus 3d surcharge) on light oils used for industrial purposes has been presented to the Chancellor of the Exchequer by a deputation from the Industrial Light Oils Committee. This memorandum puts the committee's case for the amendment of the Customs and Excise Act, 1952. It draws attention to the overall burden of the duty on a wide variety of industries, particularly in the light of the negotiations for membership of the European Economic Community. It was emphasised that every one of the U.K.'s industrial competitors is granted some relief, and, in most instances, total relief from duty on oils used for industrial purposes.

## Project News

# Kellogg get main contract for Gulf's Rotterdam refinery

**C**ONTRACT for **Gulf Eastern's** second European refinery, that at Europort, Rotterdam, has been awarded to the **Kellogg International Corporation Ltd.**, London. This refinery will cost about \$30 million and will process some 1.5 million tons of crude oil a year (30,000 b.p.s.d.) from Gulf Oil's world sources. The refinery is due on stream by mid-1963. Main processing units will include a crude oil atmospheric and vacuum unit, a vis-breaking unit, naphtha desulphurising and reforming units, two desulphurisers to provide low-sulphur gas oils and a sulphur dioxide extraction unit.

Kellogg's are handling construction of Gulf's previously announced refinery at Stignaes, Denmark. With a similar capacity, this is due on stream by the end of this year.

Kellogg were also recently awarded the contract to build the Caltex refinery in Frankfurt and have under construction a refinery in Pakistan. This year they are due to complete I.C.I.'s crude distillation unit on Tees-side and have in hand major contracts for an olefins project in Germany and a fertiliser complex in Portugal.

Yet another major refinery contract which will be awarded to a London company is the B.P. Belfast project. This will, it is believed, have two main contractors—one for process units and one for off-site work.

## I.C.I. formaldehyde licence for Metal Propellers

● **UNDER** arrangements recently made with **I.C.I.**, **Metal Propellers Ltd.**, stainless steel specialists, of 74 Purley Way, Croydon, Surrey, now have available a formaldehyde process licence. An economic range of tonnage plants will be offered with full performance guarantee, site erection and commissioning services. Metal Propellers are confident that the export market in particular will be interested in this development.

## Sulphur recovery units for Lurgi gas project

● **DESIGN**, engineering and supply of two sulphur recovery units for the West Midlands Gas Board's Lurgi gasification plant project at Coleshill, Birmingham, have been entrusted to **Parsons Powergas**, a joint enterprise of the **Ralph M. Parsons Co.**, of Los Angeles and the **Power-Gas Corporation Ltd.**, of Stockton-on-Tees (a member of the **Davy-Ashmore Group**).

The sulphur recovery units will operate on hydrogen sulphide contained in a waste gas stream coming from a purification plant. Designed to run in

parallel, they will produce about 28 tons/day of sulphur from an acid gas feed which contains approximately 40% hydrogen sulphide, with the sulphur at a purity of better than 99.6%.

The order was placed with **Parsons Powergas** by the **Woodall-Duckham Construction Co. Ltd.**, main contractors for the Lurgi project at Coleshill. **Ashmore, Benson, Pease and Co. Ltd.**, another member of the **Davy-Ashmore Group**, is fabricating the waste heat boilers and wash coolers on the gasification plant.

## Lummus to build new Spanish refinery

● **CONTRACT** for the designing, engineering and construction of the \$18 million oil refinery planned for North Spain by **Compania Iberica Refinadora de Petroleos** has been awarded to **Lummus Co.**, the international organisation, who have a London office. Spanish company is jointly owned by **Ohio Oil**, whose Libyan crude will be used, and Spanish interests.

## Matthew Hall vacuum distillation unit for B.P.

● **FOR** installation at the Isle of Grain, Kent, refinery of **BP Refinery (Kent) Ltd.**, is a vacuum distillation unit for which **Matthew Hall and Co. Ltd.** will be responsible for process design, engineering, procurement of equipment and construction. The unit, designed for a throughput of 25,000 barrels a day, will produce three products—high quality feed stock for catalytic cracking, diesel fuel and residue for fuel oil. Designed to handle one of three reduced crudes, namely **Iraq (Kirkuk)**, **Kuwait** and **Tia Juana**, the unit is capable of operation at high or low vacuum conditions. It is due for completion in mid-1963.

## I.C.I. plan expansion at Ulster site

● **I.C.I.** have plans for developing their 200-acre site at Kilroot, Co. Antrim, where a Terylene spinning plant costing £7 million is now being built and due for completion during 1963. This was stated by **Mr. S. P. Chambers**, chairman of **I.C.I.**, when he spoke at a lunch of the Belfast Chamber of Commerce on Monday. He added that the site was larger than was at present needed.

## Equipment contracts

### New transformers for Billingham ammonia project

● **A** NEW 73-ton transformer and cooler which will form part of the power equipment on the new gas making process for

ammonia manufacture of **I.C.I. Billingham Division** was delivered to Billingham recently from the **Heaton-on-Tyne** works of the contractors, **C. and A. Parsons and Co.** The transformer is the first of two, to be housed in a new substation, that will provide Billingham, for the first time, with a full 50-cycle power supply—until now, Billingham has been powered by a 40-cycle supply. The second transformer was also due to be delivered early this month.

## Fume precipitation for steelworks

● **COMPLETE** plant for the collection and disposal of iron oxide fume from the two new 45/55-ton **Kaldo** converters at **Shelton Iron and Steel Ltd.'s** new melting shop has been ordered from **Simon-Carves Ltd.** (whose **Precipitator Division** was merged with **Lodge-Cottrell Ltd.**, at Birmingham some time ago). The contract has been placed by the **Steel Processes Division** of **Davy and United Engineering Company Limited**, who are engineering and supplying the main project. As far as is practical, the operation of the plant will be completely automatic.

## F.W. process heating for new B.N.S. plant

● **THREE** 11 million B.Th.U. vaporisers have been installed by **Foster Wheeler Ltd.**, London, at the new Gloucester plant of **British Nylon Spinners Ltd.** Using a diphenyl oxide/diphenyl medium, these process heating systems provide vapour temperatures of 350° to 700°F with corresponding pressures between 0 and 95 p.s.i.

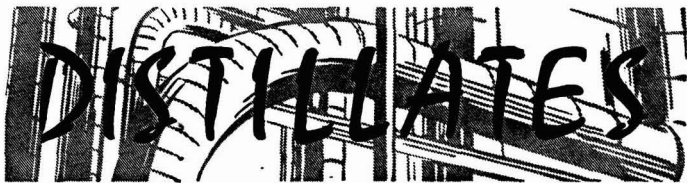
## Semtex flooring for Abbott Laboratories

● **SOME** 26,100 sq. ft. of different types of flooring have been supplied and laid at the £1.5 million new works of **Abbott Laboratories** at Queenborough, Kent, by **Semtex Ltd.** Semastic decorative tiles were used in the administration and pharmaceutical blocks and in the canteen. Other materials laid were **Vinylx** tiles and wood mosaic.

## Fuel loading of U.K. research reactor in Germany

First fuel elements have been loaded into the core of the U.K.-designed **Merlin** research reactor at the new research station at **Jülich**, near **Düsseldorf**. Designed for the State of North-Rhine Westphalia by **The Nuclear Power Group**, **Merlin** is a pool-type reactor moderated and cooled by light water contained in an aluminium tank, shielded by a dense concrete wall. The fuel is enriched uranium.

Site work started at **Jülich** in early 1960. The reactor plant, excluding the secondary cooling circuit, was supplied by **T.N.P.G.** German associates were responsible for the remainder of the plant. The reactor will be in full operation this year.



★ THIS week's favourite guessing game—what do the mystic initials BHS stand for? They symbolise Courtauld's new synthetic fibre. There are at least three possibilities: (1) The initials of the research workers who made the discovery (Bert, Harry and Sam?); (2) a chemical name (presumably incorporating benzene in some form, since it is cheap); or (3) a brand name (why not British Home Spun?).

In any event Mr. Chambers was not to be undone. On Monday, the day that BHS made its debut in London, Mr. Chambers across the water in Belfast spoke of expansion at I.C.I.'s Kilroot site, where the latest Terylene spinning plant comes into production next year.

On the eve of the Commons debate on monopoly (Wednesday evening), *The Times* devoted its first leader on Wednesday to the I.C.I.'s take-over bid. It is sympathetic to Courtauld's, not only because of the British inclination to support the small man, but also on grounds of past performance and future prospects.

★ SUCH is the interest in the subject that the former British Section of the American Association of Cost Engineers has now been turned into a new body known as the Institution of Cost Engineers with a founder membership of some 40 people.

Aims and objects are the same as for the U.S. organisation—to promote cost engineering, which is defined as the application of scientific principles and techniques to cost estimation, cost control and profitability.

Details of the new organisation can be obtained from the acting secretary, Mr. E. Cousins, who is engaged in the chemical industry, care of the Midland Bank, 22 Victoria Street, London S.W.1.

★ MANY of those who were associated with the late Dr. E. de Barry Barnett, an organic chemist whose work will long be remembered, feel it would be appropriate to honour him in some way. In view of his long connection with the Sir John Cass Technical Institute—which he joined as a lecturer in organic chemistry in 1919, becoming head of the Chemistry Department and then deputy principal before his retirement in 1947—it is fitting that the proposed memorial should be linked with the college.

It will therefore take the form of an Exhibition tenable at the college. Contributions should be sent to Dr. S. D. Ross, treasurer of the appeal fund at 135

Hendon Way, London N.W.2. All donations will be acknowledged personally; cheques, etc., should be made payable to Dr. Ross and crossed 'Barnett Memorial Fund'.

Those who knew Dr. Barnett will need no reminding that he was author of a number of well-known books including his "Anthracene and Anthraquinone" (1921) and his co-authorship with Wilson of "Inorganic Chemistry" (1953). After graduation at University College, London, and before joining the Sir John Cass College, he held a number of industrial appointments in dyestuffs, explosives and fine chemicals.

★ A CONTRAST to the enthusiasm of the German Soviet Zone to work together with the chemical industries of the Western World—examples are the co-operation with British chemical and chemical plant companies, the Leipzig and East German staging of and participation in various scientific congresses—is provided by a recent news item.

According to this, scientists at the Universities of Halle and Leipzig who are members of the Socialist Unity Party have been urged to take the offensive in political discussions, meeting the views of many East German scientists who complain that the unity of German science has been broken since the erection of the Wall in Berlin with the statement that "Unity of science in states with varying ideologies is completely impossible".

★ LEST I be accused of partiality on the question of public relations in I.C.I. and Courtauld's, I should like to reiterate a point made more than once in the past few years in this column. The impact that a company's P.R. department can make depends entirely on the board's policy on the subject.

A number of companies that employ highly skilled public relations staff still manage to convey the impression that they have no real interest in P.R. This is solely because the hands of their expert staffs are tied by management. When it comes to a question of the 'public image' that a P.R. department can create, I.C.I. are undoubtedly well in advance of most other companies (although as stated previously this 'image' has been sullied in the past few weeks).

But I.C.I.'s record of providing information to the Press on questions relating to industrial activity, expansion projects and the like is no better than

that of most other chemical companies, in fact in some cases it is notably worse. It differs, of course, widely from division to division, some being very good and others notoriously bad. This again is no reflection on the P.R. personnel concerned, but is a case of management having no conception of the value of publicity and who believe it a virtue to maintain a strict security clamp, even when everyone in the industry knows quite well what is going on.

★ PUMPING plastics materials into oil wells would seem to be a strange way of preventing blockage, but that is just what the technique recently developed by Royal Dutch/Shell Exploration and Production Laboratories is claimed to do.

Many oilfields are restricted in their production rate because sand enters the well bore, causing plugging of the borehole and excessive wear on liners and equipment. Mechanical methods for controlling migration of sand, such as the insertion of metal screens into the borehole, are not successful in all cases. The ideal way of preventing sand movement would be to bind the particles together in the formation so that they cannot be displaced by moving oil, but most attempts in this direction have resulted in serious restriction of the flow. The Shell technique, however, enables a plastics material to be injected into the formation so binding the particles firmly together, without reducing to any appreciable extent the spaces between the sand particles through which the oil has to flow.

This technique has proved invaluable in Nigeria, where considerable increase in the production rates of the wells has been experienced since its introduction. The method is being applied with equal success to other areas.

★ As a further practical step towards setting up a code of practice for packing users and suppliers which would help to reduce or eliminate odour in packaging, Dr. H. G. Harvey, a consultant chemist, has been engaged by the Institute of Packaging to make a survey of available literature on the subject. When completed, this review will provide the essential material on which to base the code of practice and standardise methods of examining food packaging materials for odour and taint.

The decision to retain Dr. Harvey's services for an initial period of one year follows the highly successful Odour in Packaging Conference which the Institute organised in November 1960 in conjunction with user organisations.

*Alembic*

# I.C.I. CHAIRMAN ON PROSPECTS FOR U.K. CHEMICAL INDUSTRY

*Exclusive interview with 'Chemical Age'*



S. P. Chambers, C.B., chairman of Imperial Chemical Industries Ltd., on the balcony of his sixth floor Millbank office

**Mr. Chambers talks of big expansion prospects; benefits of trade in C.M.; ammonia prices, acrylonitrile; N.E.D.C. and overcapacity problems; increasing wage costs of Continental producers**

**D**OUBTS have recently been expressed about the future prospects of the British chemical industry. The industry, it has been alleged, is only just starting to run up against overcapacity; its prices are said to be uncompetitive; and it has been described as being particularly vulnerable to European competition.

In this exclusive interview with CHEMICAL AGE, Mr. S. P. Chambers, chairman of I.C.I., strongly denies that the chemical industry is more vulnerable than others to competition—the reverse is the case. He adds that I.C.I. are “as keen as mustard” to get into the Common Market.

**He says that with rising wage costs on the Continent, the competitive advantages held by European producers are fast disappearing and in coming years he thinks the British chemical industry will enjoy a growth rate at least equal to that of the Continent.**

In this interview, Mr. Chambers, talks about the growth products of the future; overcapacity problems; dumping; I.C.I.'s high level of capital spending; ammonia prices; the National Economic Development Council; and acrylonitrile.

*Question: I.C.I. have referred to official estimates that free-world demand for chemicals will double in the next 10 years. Can you elaborate on that and say what steps I.C.I. are taking to ensure that they get their share of that increase and what will be the major growth products?*

*Answer:* That estimate was made by the Organisation for European Economic Co-operation. As far as I.C.I. are concerned our rate of capital spending in 1961 was very high; we are expanding more rapidly now than at any time in the company's history. We are cutting our costs of production as well as the prices of our products and are accepting a narrower margin of profit in order to ensure a wider share of business.

This, of course, is a continuous process; it is not something that the company has just started to do. For instance, our new and revolutionary ammonia process is the result of a great deal of research.

Several other important factors will influence the share that we take of rising demand. Costs are now rising on the Continent, particularly in West Germany. Wage rates are increasing and the length of the working week is shorten-

## Higher wage costs help reduce advantages of Continental competitors

ing. These trends mean that the Continental companies are losing their competitive advantages.

By seeking to manufacture in Rotterdam, we shall have a basis of comparing the costs of operating on the Continent with those in the U.K., so that we shall get the best of both worlds. This is a very important point.

We have every reason to assume that we shall get our full share of the increased demand for chemicals. As for the major growth products, I see these as being mainly in the fields of plastics, synthetic fibres and a number of petrochemicals. We hope also to expand substantially in pharmaceuticals.

So far as dyestuffs are concerned, our record in the discovery of new products is every bit as good as, if not better than, that of any other company in the world. Our Procion dyestuffs are doing very well and are being made both in Britain and overseas, including the U.S. This is a good example so far as sales performance is concerned of being technically in front. There are many other fields where this holds true for I.C.I.

### Rising living standards

There will also be expansion in other sectors, because of continually rising standards of living throughout the world. As standards rise, people spend more money on the things they use in everyday life; paint is one of the many products which will benefit.

In other things, growth will be more in line with the general rate of expansion. This is particularly true of the heavy inorganic chemicals. Soda ash, caustic soda and chlorine are, for instance, always steadily rising. They don't enjoy a sudden spectacular jump to be followed by a dropping off and they will continue to experience a steady growth rate.

There are a few chemicals for which U.K. demand will remain static or may even decline, but these are far less important to I.C.I. With the amount of coal being mined remaining static, demand for explosives will not rise and may actually fall. Nitro-glycerine explosives will decline as new types of ammonium nitrate mixtures with oil come into use.

It is, however, important that a company should remain technically alert even in an industry where demand is declining. We have made many advances in recent years in the adoption of modern, automatic techniques in our explosives sector. The widespread use of remote control with T.V. sets monitoring production units at Ardeer has done much not only to increase the safety factor and prevent loss of life, but has also meant the reduction of costs even for a static or declining market.

*Do you think that over capacity will be a continuing long-term problem? If*

*so, should any action be taken to prevent the dumping of surplus capacities of one country in another?*

The dumping in the U.K. of plastics and other products with a high growth rate is bound to continue. In these products, there is a dramatic and continuing rise in demand; capacity goes up in spectacular leaps, then levels off for a while before going up again. For a growth product like Terylene, any increase in capacity must be a big one, but, because the rise in demand is steep and continuing, it will not be long before further expansion is necessary. For a relatively static material like rayon, the big gap between capacity and demand will remain.

Temporary dumping, therefore, makes no difference whatever to our plans to put in new capacity, because we know that demand inevitably will rise.

Dumping becomes very important where you have marginal costs which are only a small proportion of the total cost; it then pays overseas producers to dump here at below their home market prices. If there are either no tariffs, or a low even tariff structure, then you can dump back—under these conditions it no longer pays to dump.

This is not possible in the case of a material like polythene, where the import duty is 10% in the U.K. and 47% in the U.S. In cases like this there have to be anti-dumping regulations; they must be more efficient than the existing laws. This is a problem that I have discussed with Continental producers for all chemical companies are affected by it.

### No slowing up

*Has the present situation led I.C.I. to hold up any plans for the development of major projects and has there been any slow-down in the development programmes for Severnside or Rotterdam?*

Our capital sanction programme in 1961 was very high indeed as the figures will show when they are reported in due course. We are certainly not slowing up.

*On the subject of prices, can you say whether the new ammonia synthesis process is likely to lead to lower prices for ammonia and related products?*

The new ammonia process, which, as we have already stated, is being widely sought by other companies, will most certainly lower our ammonia costs and help put us in a more competitive position. Where we are competing with other producers, the price is dictated by world conditions. For some ammonia products, there will be a cut in prices, reflecting the use of our improved process; in other cases there will be a restoration of profitability on prices that are already extremely low.

*It has been said that chemicals are*

*particularly vulnerable to European competition. What is your view on this and can you see any prospects of a higher rate of growth for the U.K. chemical industry, where the growth rate has been well below that of France, Germany and Italy?*

We have consulted all of our divisions and they are all terribly keen that Britain should enter the Common Market. Without doubt, we would gain more business than we would lose. Chemicals are certainly not more vulnerable to European competition than the rest of British industry. On the contrary, it is just the other way round. We are as keen as mustard to get into the Common Market, for we have so much to gain in the way of new business.

Until about 18 months ago, wage rates in Germany were substantially below the British rates. Also, the German chemical industry had fallen behind because of the war. It was inevitable that it should take advantage of its low wage structure to catch up with us.

### Disadvantage disappears

This advantage no longer exists and as I see it the development of the chemical industry in this country will be at least as rapid in the future as that of Continental countries. The fact that the British industry will no longer be at a disadvantage on costs is of the greatest importance.

*What can the National Economic Development Council do to help the British chemical industry?*

If the N.E.D.C. can co-ordinate forward plans of industry as a whole, two distinct advantages will emerge:

- (1) A better knowledge of the growth of demand;
- (2) A better understanding of the effect of competitors' plans to increase capacity.

Knowledge on these two fronts would, I think, make it easier to prevent the putting up of capacity greatly in excess of demand, even if demand is growing; it would also help us get rid of this problem of dumping of surpluses.

This co-ordination of demand should go beyond Britain and cover the whole of the European Economic Community, together with effective rules on dumping, whether from the U.S., the Soviet Union or from other countries.

If such a plan works in practice, it will help industry to make its plans more logically and, incidentally, by so doing help prevent our resources and capital spending being wasted on the creation of surplus capacity.

*Has an acrylonitrile process been taken up yet, or is this awaiting the outcome of the present bid?*

No one company can always be the lowest cost producer in the whole range of chemicals. In an industry like this, someone will always get a technical lead and so jump ahead. This happens from time to time and a large company like I.C.I. can take a broad view of cutting its losses and getting quickly on with a new process. In the case of ammonia, we have taken this lead and are scrapping all our coke-ovens, and now 15 other companies

want to buy the process rights from us. I.C.I. receive far more royalties in the course of a year than is paid out in the form of royalties to other companies.

In the case of acrylonitrile, Sohio of the U.S. discovered a route starting from entirely different raw materials, which made our own process uneconomic. So we shut down our plant and agreed to purchase from the U.S. (the Board of Trade granting our request for temporary exemption from 33½% import duty).

Purchase of U.S. acrylonitrile was made for the benefit of our two U.K. customers, Courtaulds and Chemstrand. We also immediately started discussing with Sohio, the question of rights to use their process, and our team is still in the U.S. This is a good example of how we took quick action and did not attempt to maintain our price once the process was shown to be obsolete.

*Courtaulds say they have a number*

## France lifts dumping duty on polythene

ANTI-DUMPING duty imposed last October on polythene made by Spencer Chemical of the U.S. has now been withdrawn by the French Government. As reported in CHEMICAL AGE, 6 January, p. 10, U.S. polythene producers have increased their export prices to Europe.

The Board of Trade still has before it applications by U.K. producers for anti-dumping duty on high pressure polythene originating in the U.S. and Italy. Representatives of the industry have pointed out to CHEMICAL AGE the difference between French and British approach to alleged dumping. The French Government is quick to impose a high rate of duty in order to protect its domestic producers from the effect of dumping and is just as swift to remove that duty once the threat has receded.

## Built-in flame resistance claimed for Courtaulds' new synthetic fibre

AS though in confirmation of the vigorous research and development activities which have been advanced as one argument in favour of their continued independent operation, Courtaulds have now announced a new synthetic fibre which is claimed to be the first to have flame resistance as an integral characteristic besides other desirable properties.

The new fibre, designated BHS, is stated to be specially designed for a wide range of apparel, household and industrial textiles that are (a) flame resistant, (b) strong and hard-wearing, (a) soft, warm and light and having easy-care properties, and (d) highly resistant to damage by sunlight, chemicals, bacteria and insects. The flame-resistant properties are claimed to survive even repeated washing or dry cleaning and, in fact, to meet the highest British Standard Specification for flame-resistant fabrics.

No clue is given as to the chemical origin of BHS, but Courtaulds say that the raw materials are cheap and readily available. It will be introduced at first

of complete plant projects in prospect for the U.S.S.R.—is this true of I.C.I.?

I.C.I. neither manufacture chemical plant nor sell them. We use a large range of contractors and many of the big contracting companies put up plants for us. We take the view that we want to be free to get the best contractor according to the kind of plant that is involved.

So far as other countries are concerned, we may sell a process for a lump sum or royalties and a contracting company will build the plant. This has happened in the case of polythene and not very long ago we announced the sale of the process to four East European countries; in each case Simon-Carves were engaged to construct the plant. Another example is the licensing of Terylene manufacture to Poland and Czechoslovakia.

On the other hand, Whitehall has always been most reluctant to introduce anti-dumping duties, even in the most flagrant cases. This is doubtless partly due to a strong free trade lobby. In any event, it is pointed out that this policy will never meet the needs of the chemical industry, where dumping, when it occurs, is usually of a short-term duration, but also frequently very severe in its harmful effects on sectors of British industry.

What is required, it is widely felt, is some means of imposing an anti-dumping duty quickly without the necessity of holding a full-scale enquiry with evidence submitted by all concerned and then a long delay while all this is sifted and while protracted discussions are held with interests concerned.

in the form of continuous filament which, the company states, will cost less than nylon or Terylene of comparable denier. Current pilot-scale production at Coventry has yielded quantities of yarn for evaluation in Courtaulds' weaving, knitting and dyeing departments. This has confirmed that yarns and fabrics can easily be dyed or printed in a wide range of fast colours.

BHS is expected to find immediate application for flame-resistant children's wear, further uses including silk-like dress fabrics, underwear, shirtings, and curtains. A display which will be open to interested members of the trade, fire prevention bodies, etc., is to be staged by Courtaulds at Celanese Houses, Hanover Square, London W.1, from 21-23 February.

### Will

**Mr. Clifford Marshall Auty**, retired chemical engineer, who died on 12 October, left £23,121 net (duty paid £3,475).

## Big East-West agreements expected at Leipzig

TWO-WAY contracts with non-Communist countries worth about 950 million marks (about £80 million) are expected to be concluded by East German trade organisations at the Leipzig Spring Fair opening next month. Herr Rolf Lemser, director of the Fair, said in Berlin last week that this was about £5 million more than business done with Western countries at the 1961 event and £40 million more than in 1960.

Apart from some of the larger U.K. chemical companies who have notable connections with Iron Curtain countries, exhibitors will include 12 U.K. engineering companies with a stand organised by Humphreys and Glasgow—outstanding in this market for their acquisition of the rights to all East German chemical processes.

## MEKP lorry explosion being investigated

PRELIMINARY investigation has been carried out by Laporte Industries Ltd. into the causes of the explosion which occurred in West Bromwich last week (see CHEMICAL AGE last week, p. 244). It has not yet been possible to determine the cause of the fire or the explosion but detailed investigations are continuing.

The methyl ethyl ketone peroxide, which formed the major part of the load, was packed in the normal 5-gal. containers. The hydrogen peroxide, also being carried, was of a concentration which is normally used in industrial applications.

## 'Black Monday'—in a research lab.

NOT all the 170,000 people hurt in industrial accidents in the course of a year are hurt on the factory floor; some accidents occur in research laboratories. This is why a new I.C.I. film unit production, in black and white and entitled 'Black Monday,' features research workers.

In the film these trained scientists, fully aware of safety precautions are seen carrying out a routine operation—a Grignard reaction. On this particular occasion, however, it ends in disaster. Sequences were filmed at an I.C.I. Plastics Division at Welwyn Garden City.

## Liverpool B.A.C. Exhibition of scientific apparatus

THE Exhibition of Scientific Apparatus, organised by the Liverpool Section of the British Association of Chemists, is again being held in the Donnan Laboratories of Chemistry, Liverpool.

As in 1960, the exhibition will be open to visitors for two days (4 to 5 April). Although the exhibition already promises to be larger than last time, there is a limited amount of space still available for any firm that has not already received a personal invitation to exhibit. Enquiries should be addressed to H. L. Haigh, Exhibition Organiser, British Association of Chemists (Liverpool Section), McKechnie Bros. Ltd., Ditton Road, Widnes, Lancs.

## SECOND LIST OF APPROVED FARM CHEMICALS ISSUED

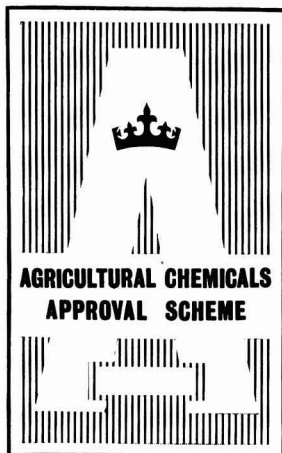
THE second 'List of approved products' to be issued under the Agricultural Chemicals Approval Scheme is now available. The new list includes details of additional products which have been approved since the 1961 list was published.

Approved products now carry a distinguishing mark as shown. The approval mark on a product means that the Agricultural Departments are satisfied that the claims made on the label relating to insect pests, diseases or weed control, the dosage rates and the crops on which the product can be used without damage, are based on sound experimental and practical experience. Labels also include details of the precautions necessary to ensure the safe use of the chemical, the name of its active ingredient, the proprietary name and that of the company marketing the product.

Copies of the 1962 list may be obtained free of charge from the Ministry of Agriculture, Fisheries and Food (Publications), Ruskin Avenue, Kew, Surrey, from any regional or divisional office or from the main office of the Agricultural Department in Scotland, Northern Ireland, the Channel Islands and the Isle of Man.

Details of the first additions to the 1962 list have also been released. They are as follows:

**INSECTICIDES:** *gamma-EHC (Lindane) wettable powders—Agrocide 26 DP (Plant Protection) Endosulfan liquid formulations—Thiodan emulsifiable concentrate (Boots) Rhothane wettable powders—Rhothane wettable (Pan Britannica Industries);*



New distinguishing mark for approved farm chemicals

**HERBICIDES:** *Dalapon sodium salt formulations—Boots dalapon (Boots) Dichlorprop liquid formulations—Poly-spray (Pan Britannica Industries), Shell DP (Shell Chemical), Stantox 24-DP (S.D.C. Pesticides) MCPA potassium and sodium salt formulations—Neals MCPA (G. and S.G. Neal) Mecoprop (CMPP) potassium and sodium salt formulations—Neals CMPP (G. and S. G. Neal) Sodium chlorate with Monuron granular formulations—PP Chlorea granules (Plant Protection).*

## Courtaulds offer on dividends, cash payment and loan stock issue

UNDER proposals to stave off take over by I.C.I., Courtaulds on Wednesday offered a growth income to holders of £100 Courtaulds ordinary stock of £16 10s in 1961-62 and £20 10s in 1962-63, compared with £10 and £11, respectively, if they accept I.C.I.'s four-for-five offer and £10 and £16 5s if they accept I.C.I.'s offer of convertible loan stock.

Courtaulds propose that not less than 50% of trading profits, with the whole of investment income should be distributed by way of dividends. A dividend of 12½% will be recommended for 1961-62 and not less than 13% for 1962-63.

These dividends will be supplemented by a special cash distribution of 2½% tax free out of capital profits in 1961-62, 1962-63 and 1963-64. In addition some £40 million of capital reserves will be capitalised by the issue to ordinary stockholders of 10s of a 7% unsecured loan stock 1982-87 for each £1 of ordinary stock held.

The principal trade investments of

Courtaulds (other than B.N.S.) and Government securities, which are surplus to the needs of the company's trading activities, will be transferred to a subsidiary to be run as an investment trust. All the income, with other investment income, will be distributed.

## Third duty cut on E.F.T.A. goods

THE Import Duties (General) (No. 2) Order, 1962 (SI. 1962, No. 232) now published (H.M.S.O., 4d) introduces on 1 March the third reduction in the import duties on goods produced in and imported from the countries of the European Free Trade Association. This third reduction will reduce E.F.T.A. duties by a further one-seventh, i.e. to 60% of the basic rates, except for: (a) pectin and neat's-foot oil and bone oil, and (b) certain composite goods containing hydrocarbon oils, where the duties are partly protective and partly revenue. For these two items the reduction will be other than one-seventh.

## Swiss petrochemical marketers to form U.K. company

OSWALD E. BOLL, international petrochemical marketing organisation, of 45 Seefeldstrasse, Zurich, Switzerland, who already have offices in Paris, Hamburg, and Milan, are shortly forming a British associate. Mr. V. M. Farrant has resigned as sales promotion manager with Mervyn Instruments Ltd. to become the managing director of the new company. He thus returns to petroleum products marketing where he has already an established reputation.

O. E. Boll will put on the British market a new range of Stratibol glass/epoxy and paper/phenolic laminates of U.S. and European origin. In addition, the sale of SCL and ELCO Concentrates for E.P. gear oils, manufactured by the Elco Corporation, Cleveland, Ohio, will be expanded. Boll also market the wide range of additives for use with such as marine oil emulsifying agents, rust preventatives, and base pesticides, manufactured by the ALOX Corporation of Niagara Falls, U.S.

Additional products include highly active petroleum sulphonates, gas-turbine synthetic lubricants, and base oils, while the Boll organisation has for some time sold abroad many petrochemical products of British manufacture.

When the U.K. Oswald E. Boll company is formed, it will operate from Woking, Surrey, in the meantime, Technisol Ltd., 3 Ridge End, Hook Hill Lane, Hook Heath, Woking (Woking 4443) will continue to act as their sub-agents.

## Tote bins solve handling problem

ONE hundred Tote bins, some capable of containing 1½ tons of material, are being used to store and transfer alumina trihydrate by the Linde Company in the production of 100 tons a month of molecular sieves at North Tonawanda, N.Y.

It is reported that the contents of a 100,000 lb. hopper rail car can be transferred into the bins by one man in two shifts. This has led to a saving of 20 man-hours per rail car compared with the previous method.

## Special heat exchangers

In the summary of the symposium held by the North-Western Branch of the Institution of Chemical Engineers in Manchester recently (C.A., 27 January, p. 171), the A.P.V. Rosenblad spiral heat exchanger was described as consisting of steel tube of 3/16—1 in. diameter. The spiral in fact is constructed of two plates wound round each other in a spiral to form two separate concentric passages, and it is the width of these passages that can vary from 3/16 in. to 1 in. depending on design conditions.

The paper describing the Ramen heat exchanger at the same symposium was not by Mr. A. P. Hosking as stated, but was prepared by Mr. W. Fletcher and Mr. G. Ymse and was read at the symposium by Mr. Fletcher.



## I.C.I.'s financial statement

# I.C.I. TURN THE CORNER, EXPECT SALES TO RISE 80% IN NEXT 10 YEARS

**A** BETTER trading year in 1962 than in 1961, when the maximum impact of surplus capacity was felt, with the improvement coming mainly in the second half of the year, is the prospect seen by Imperial Chemical Industries Ltd. in the statement issued to their shareholders last week. The present forecast is that 1962 profits should be appreciably higher than in 1961 when pre-tax group income is expected to total £62 million, compared with £88 million for 1960—a record year. A final dividend of 1s 6d will be recommended for 1961 thus maintaining a total ordinary payment at 2s 9d.

I.C.I. directors say they would consider it "quite irresponsible" to seek to influence stockholders by detailed forecasts of profits two or three years ahead—for these depend partly on factors outside their control. All they will say is that beyond 1962, they expect the trend of profits to be upwards and expect the record profit of 1960 to be exceeded within the next two to three years, with the trend continuing upwards.

### £80 m. on current capital spending

The group now has £80 million invested in plants under construction or not yet in commercial production, all of which will contribute to future profits, by meeting rising demand or by enabling I.C.I. to cut production costs with new processes and cheaper raw materials.

The directors see no reason why I.C.I. should not maintain the same rate of growth, with a substantial increase in profits, during the present decade as it did during the last. There had not been a reduction in any I.C.I. dividend for more than a century.

The 40% cut in 1961 profits is attributed to three factors:

- Substantial falls in world prices of certain chemicals, notably in plastics, where temporary surplus capacities in the U.S. had a direct impact on prices in Europe.
- The board's policy to anticipate entry into the Common Market by deliberately adjusting prices which might not otherwise have remained competitive.
- Difficult trading conditions in the U.K. and a higher proportion of I.C.I. business being done in fiercely competitive overseas markets.

Despite the inevitable fall in profit margins, the record volume of business achieved in 1960 was more than maintained in 1961 both at home and in ex-

ports. Every year for the last eight years, I.C.I. had increased their export volume—this increase in 1961 was appreciable and the f.o.b. value of exports reached nearly £100 million. This was ample proof of I.C.I.'s ability to match world quality and prices.

I.C.I. say that doubts recently expressed about the future prospects of the chemical industry are entirely without foundation. Official estimates had shown that a continuation of the present growth trend in the free world's living standard would demand a doubled output of chemicals in the next 10 years; any surplus capacity for individual products would be of brief duration.

I.C.I. were well placed to secure an appropriate share of the higher demand; their own estimates led to the firm belief that sales would increase by at least 80% in volume during the same period.

Action taken to reduce prices in cases where there was doubt as to whether I.C.I. would remain competitive in the Common Market, had reached the point where tariff protection was of small account. The enlarged trading area would

afford I.C.I. substantially greater opportunities for the profitable expansion of their business.

I.C.I. then repeat their basic objective in the establishment of an integrated man-made fibre industry able to compete in world markets on equal terms with the powerful U.S. and European producers. The advantages of such a merger have led I.C.I. to believe that the merger would soon increase the profits of the combined group by not less than £2.5 million a year above what would otherwise be achieved. Within a decade, it is believed that this figure should reach £10 million/year. There would be additional economies and increased efficiencies, though on a smaller scale, in non-fibre fields in which both companies are engaged.

I.C.I. directors are convinced that the proposed merger was in the national interest and that the terms were fair to stockholders of both companies, whose expectations of earnings and dividends from the merged concern were greater than those for either company if they remained apart.

## I.C.I. REPLY TO COURTAULDS' CHARGES IN STATEMENT TO M.P.s

**I**N their statement to all Members of Parliament, entitled "Man-made fibres industry—the I.C.I. view", the directors of I.C.I. reply to some of the charges made by Courtaulds in their statement to M.P.s. Much previously unpublished information is also given on a number of subjects, including prices, Terylene exports, the extent of Courtaulds' business with I.C.I. research expenditure, and statistics on the production of man-made fibres.

*Size.* Courtaulds' claim to be the world's largest single producers of man-made fibres and that their output is more than 20% greater than that of Du Pont is disputed. Courtaulds' give their own production by weight at 490 million lb.; published figures, however, show that Du Pont production in 1960 was at least 500 million lb.

I.C.I. argue that weight as a basis of comparison is entirely misleading. On the basis of sales value—a better measure of capital, effort and skill involved—a different picture emerged. Less than 20% of Du Pont sales by weight in 1960 were in viscose rayon and acetate (they had already abandoned rayon staple as unremunerative). The balance was in more

modern fibres. Du Pont's fibre output in 1960 was valued at more than £230 million, or some 3½ times that of Courtaulds' total man-made fibre business.

On a weight basis it was true that Courtaulds produced about 80% of the U.K. man-made fibres, compared with I.C.I.'s 16%. Viscose and acetate rayon, of which Courtaulds were the only U.K. producers, represent a sales value only about the same as the total sales value (at world prices) of nylon and Terylene. On a sales value basis for all man-made fibres, the relative importance of Courtaulds and I.C.I. was about 65:35; but the I.C.I. proportion consisted wholly of the rapidly growing fibres. If the relative interests of both companies were considered in the more modern fibres, the position was reversed, becoming 60:40 in favour of I.C.I.

*Research.* Neither I.C.I. nor Courtaulds had so far made a major basic discovery in man-made fibres. Nevertheless, the research and development activities of both companies had been very successful. Neither I.C.I. nor Courtaulds standing alone could match the effort of the largest overseas producers, but working

together they should be fully competitive with anyone in the discovery and development of new fibres.

I.C.I. point out that for the production of Terylene, they have devised processes that incorporate several important chemical discoveries of their own; they have also vastly improved the efficiency of the nylon polymer process. The failure of Ardil was not technical, but commercial and the proper comparison was with Courtaulds' Fibrolane. I.C.I. had the courage to abandon Ardil when it was seen to have an inadequate commercial future; Courtaulds still operated their Fibrolane pilot plant, but sales of the fibre, like those of Courlene and Alginate were of negligible commercial significance.

I.C.I. were currently spending £17.5 million/year on research and development; work on fibres was in close contact with research in the related fields of plastics and petrochemicals.

**Fibre variety.** I.C.I. decided against large-scale production of Orlon—for which they held exclusive Du Pont licences—because in 1955 they had insufficient resources to undertake another major fibre project, having already been engaged in Terylene; and because it was then judged that Terylene was likely to be more versatile than Orlon. Nothing had since occurred to change that view.

It was not true that I.C.I. had prevented other U.K. makers from developing an acrylic fibre. Having decided not to manufacture, I.C.I. abrogated any potential patent rights, which had returned to Du Pont.

**Raw material costs.** It is stated that Courtaulds had rightly followed a policy of buying raw materials from the cheapest sources—their purchases of raw materials from I.C.I. had risen from £2.2 million in 1951 to £6.5 million in 1961 and now represented a little over 1% of the I.C.I. Group total business. In the case of caustic soda, Courtaulds in February 1960, signed a 10-year supply contract with I.C.I. Those purchases would not have continued to grow if products had been available elsewhere on better terms or if Courtaulds had been able to make an economic case for taking up manufacture themselves.

Comparison of domestic prices of chemicals is complicated by questions of quality, quantity and mode of delivery, but the following table lists some important I.C.I. products and gives a ratio between I.C.I.'s U.K. prices and those current on the Continent. Prices above I.C.I. U.K. prices are given as "plus" and those below their prices as "minus."

Sodium carbonate (gran.)	... ..
Caustic soda (liquor)	... ..
Chlorine	... ..
Trichlorethylene	... ..
Sodium cyanide	... ..
Methanol	... ..
Urea	... ..
Higher alcohols	... ..
Acrylic sheet (Perspex)	... ..
Acrylic moulding powder (Diakon)	... ..
Polythene	... ..
P.v.c.	... ..
Terylene (staple)	... ..
Terylene (filament)	... ..

**Exports.** Courtaulds quote their exports at £26 million/year, including fibres, chemicals, Cellophane, etc. I.C.I. exports in 1961 of man-made fibres alone were nearly £14 million, while the f.o.b. value of all exports was nearly £100 million. Courtaulds had said the chemical industry was more vulnerable to European competition. It was, however, significant, that I.C.I. exports to Europe had risen steadily through the years, reaching an all-time record in 1961 of £41.4 million.

Referring again to the misleading com-

parison of Courtelle with Ardil, I.C.I. say the proper comparison was between Courtelle and Terylene. Here I.C.I. had demonstrated their ability to develop an entirely new fibre independently and successfully. Sales had risen from 5 million lb. in the first year (1955) to more than 50 million lb. in 1961 and were still rising. I.C.I. had licensed production in France, Germany, Italy, Benelux, Spain, Japan, the U.S., Canada and India for large lump sum payments and royalties. Patent protection was still maintained by subsidiary patents arising from I.C.I. research.

## U.S.S.R. offer to sign acetate plant contract to help Courtaulds fight off I.C.I.

THE Soviet Union is prepared to sign a contract for a complete £7 million plant for the production of acetate yarn that has been under discussion for some time, if that would help Courtaulds in their struggle to avoid a take-over bid from I.C.I. This was stated over the week-end by Mr. Frank Kearton, a deputy chairman of Courtaulds, who said that Mr. Klenstov, head of a U.S.S.R. state purchasing agency had made the offer in Rome early last week.

The contract now offered for signing is for a Tricel plant for Latvia which has been under discussion with Techmashimport for the past 15 months.

Courtaulds are supplying a £2 million acrylic fibre unit to Yugoslavia and a similar unit to Poland. Mr. Kearton believes that the U.S.S.R. would want many more acrylic fibre plants as living standards are raised—he also sees prospects for sales to China.

Last week, Mr. A. W. Knight, Courtaulds' finance director said that looking at his company's profit prospects, the 50s offer by I.C.I. was not enough.

Sir John Hanbury-Williams, chairman of Courtaulds, has denied that detailed negotiations for a full merger had been in progress from early last September, as maintained in the I.C.I. statement. He said it would be untrue to say that when the reduction of Courtaulds' interim dividend was decided on the Courtaulds board knew that a take-over bid was contemplated.

The exploratory discussions never contemplated a take-over bid; their objective was the strengthening of the man-made fibres industry generally.

Courtaulds employees' at Grimsby,

France	Germany	Italy
Similar	+15%	+15%
Comparisons vary from	-5% to +10%	
Comparisons vary from	-24% to +6%	
Similar	-4%	-12½%
+20%	+15%	+35%
Similar	-7½%	Similar
Similar	Similar	Similar
Similar	-12½%	-20%
+50%	+15%	+30%
+5%	+5%	Similar
Similar	-5%	-5%
+12½%	+12½%	-10%
Similar	+19%	Similar
+15%	+30%	+60%

where Courtelle is made, are to press for a substantial wage increase. This decision has been influenced, it is reported, by Courtaulds' forecast that profits will rise £11 million in the next three years.

An opposition motion in the House of Commons on Wednesday this week, after CHEMICAL AGE had closed for press, was expected to attack the Government decision not to set up a public enquiry.

## I.C.I. offer attractive alternative bid terms

THE new terms, posted to shareholders of Courtaulds this week, offer them an alternative. They can either accept a straight share exchange on the previous basis of four-for-five, or instead take up an amount of 6½% convertible loan stock, 1972-77, which at par, values each Courtaulds share at 50s. Earliest conversion is set for 1963, giving Courtaulds' shareholders the same number of I.C.I. shares as they could get by the four-for-five share exchange.

Courtaulds shareholders are thus offered an income of 6½% together with an equity option which should prove valuable as I.C.I. profits begin their steady improvement.

The combined net assets available as cover for the convertible loan stock will be of the order of £800 million and the total profits before tax are now running at about £80 million and should soon rise to cover £100 million.

Closing date for the offer will be 8 March. It is a term of the offer that I.C.I. reserve the right not to extend the alternative of changing into convertible loan stock beyond that date. I.C.I. will hold an extraordinary general meeting on 16 March to authorise additional capital.

## Obituary

**Dr. Arthur Wilhelm**, vice-president of the Swiss chemical company Ciba AG, of Basle, has died unexpectedly at the age of 63.

## Will

**Sir Bertram Hyde Jones, K.B.E.**, of Cape Town, former chairman of Griffiths Hughes Proprietaries Ltd., who died on 14 October, aged 82, left estate in England valued at £23,915.

## Overseas News

# PORTO EMPEDOCLE FERTILISER PLANT READY FOR PRODUCTION

**M**ONTECATINI'S new plant at Porto Empedocle, Sicily, for the production of granular fertilisers is now ready to go into production. Sited on land reclaimed from the sea, the plant incorporates the latest automation techniques.

Phosphate rock imported from Morocco and the U.S. will be used, together with ammonia from Montecatini's Priolo plant and potash mined at San Cataldo. Some 6,000 million lire have been spent on the facilities.

Nearly plants operated by Akragas, Montecatini affiliates, are being expanded. A 500 tonnes/day sulphuric acid plant is to be added to existing facilities, stepping up output to some 2,900 tonnes/day. Potential output of the potassium sulphate plant at Camporfranco is to be raised from 350 to 700 tonnes/day.

In December 1961 Montecatini shipped 26,000 tonnes of fertilisers, sulphuric acid, etc., from Porto Empedocle, a figure that was exceeded in January.

### Nylon expansion plans for Du Pont of Canada

Du Pont of Canada are to undertake immediately an expansion of nylon yarn facilities at Kingston, Ont. The new facilities will involve an addition of about 25,000 sq. ft. of floor space to the existing plant.

This expansion will proceed simultaneously with a \$1 million-plus addition to facilities to produce a new type of nylon filament yarn designed particularly for use in carpets. Expansion of nylon yarn capacity is scheduled for completion by end-1962.

### Petro-Tex buy Esso butyl rubber licence

Petro-Tex Chemical of the U.S., who are large-scale producers of isobutylene, have acquired a licence to use the butyl rubber process of Esso Research and Engineering.

### Hercules Powder to make polypropylene film

Hercules Powder Co. will manufacture and market biaxially oriented Pro-fax polypropylene film. Construction of a film plant is underway at the Covington, Virginia, facilities and will be completed early in 1963. Pending completion of this plant, commercial quantities will be available from an interim plant located at Hercules' research centre near Wilmington, Delaware.

The entry of Hercules into the film market follows almost three years of extensive film process development and market evaluation in the flexible packaging industry. As the pioneer American

producer of polypropylene, Hercules will now be a basic supplier of this polymer in the form of film, fibre, and moulding powders.

### Oleonaphte plant on stream at Brunsbüttelkoog

Units for the annual production of 10,000 tonnes of alkyl phenol and of 3,500 tonnes of synthetic resins of the 'Super-Beckacite' type of Reichhold-Chemie AG, Hamburg, are now on stream at the Brunsbüttelkoog, North Germany, plant of Oleonaphte Chemische Fabrik GmbH, a joint petrochemical subsidiary of Reichhold-Chemie and the Deutsche Erdöl-AG oil company, Hamburg. The alkyl phenol plant is so constructed that, apart from production by a Reichhold-Chemie process of butyl phenol, it can also produce nonyl phenol and dodecyl phenol.

## French refining capacity and consumption showed slight increase in 1961

**F**IRST complete reports of the French petroleum industry in 1961 (European Petroleum Industry's Surveys) show that refining and consumption have risen slightly, while more crude is being produced in the Franc-zone. Over 25 million tons of various products were consumed in 1961, compared with 23 million tons in 1960. Consumption of gas-diesel oil and LPG have risen by 11%, while that of other products has risen by 7% to 9%.

The capacity of French petroleum refineries in 1961 rose from 40.2 million tons in January to 43.7 million tons in December. In 1960, 33 million tons were treated, but in 1961 the total was 37 million tons, an increase of 12%.

Production of crude from the Sahara reached 16 million tons. Gas fields, now linked to the Mediterranean by a three-pronged line, produced 250 million cu. m. of methane. The fields at Lacq and St. Marcet produced 5,700 million cu. m. and 300 million cu. m. respectively, and the former also produced 1.1 million tons of sulphur (0.77 million tons in 1960).

### Allied co-operate in Spanish aluminium sulphate project

Annually 55,000 tonnes of aluminium sulphate are to be produced at a plant to be built at Tarragona, Spain, by La Alquímica S.A., of Barcelona, and Allied Chemical Corporation, of New York, through the joint Spanish subsidiary Alianza Quimica. La Alquímica already operate a test plant in Barcelona for the exploitation of their own process in which bauxite with high silicon content

### U.S. President approves Du Pont tax relief Bill

In approving the U.S. Du Pont tax relief Bill, Mr. J. Kennedy, President, has stated that neither he nor Congress have approved a divestiture which would permit the stock of General Motors to pass through Christiana Securities Corporation to the shareholders of the company. Christiana are a holding company whose shares are held by members of the Du Pont family.

### Mulhouse TiO<sub>2</sub> tetrachloride process for Cabot, U.S.

An exclusive licence for production in the U.S. of titanium oxide by the oxidation of the tetrachloride has been granted to the Cabot Corporation by Fabrique de Produits Chimiques de Thau et Mulhouse.

### Swiss producers guarantee price stability

The leading Swiss chemical companies Ciba AG, J.R. Geigy AG, Sandoz AG, Lonza AG and F. Hoffmann-La Roche AG have announced that to stop a further rise in price levels they will introduce no price increases within Switzerland until the end of this year. The companies produce chemicals, plastics pharmaceuticals, pesticides, and dyestuffs.

is used as raw material for aluminium sulphate. It is expected that something like two-thirds of the Tarragona production will be exported.

### Italy to import Soviet coal-chemicals

Under the recently signed trade agreement, Italy is to import during 1962 the following from the U.S.S.R.:

	'000 tonnes
Crude oil	4,200.0
Fuel oil	700.0
Paraffin	3.5
Benzole	30.0
Toluene	20.0
Napthalene	10.0
Turpentine	4.0

In the case of naphthalene the agreement provides an option for Italy to take up a larger quantity.

The Soviet Union will purchase from Italy 65,000 million lire worth of equipment for the chemical industry, 40,000 million lire worth of pipes and other equipment for the oil industry and 4,000 million lire worth of tankers and other ships.

## Overseas News

# ESSO MEDITERRANEAN ACQUIRE MAJORITY INTEREST IN SPANISH FERTILISER FIRM

ESSO Mediterranean Inc., a fully-owned affiliate of Standard Oil Co. of New Jersey, have acquired a majority interest in Amoniaco Espanol, S.A., a company which has been authorised by the Spanish Government to build and operate a nitrogenous fertiliser plant in Malaga, Spain. The plant will produce a wide variety of nitrogenous products based on a production of 300 tons of ammonia a day. The output of the plant is expected to meet most of the existing deficiency of nitrogenous fertilisers in Spain. At present such fertilisers are imported so that the new plant will effect a considerable saving in foreign currency.

## Snia Viscosa sulphur processing unit

The plant which Snia Viscosa are building in co-operation with the Italian Sulphur Board at Licata, Sicily, to process sulphur concentrates will come on stream in the spring. Initial capacity will be 100 tonnes/day, capable of being increased to 200 tonnes if required. The new unit will cover Snia Viscosa's own requirements, but sales to other interests are contemplated.

## Reichhold have plans for phthalic in Mexico

Reichhold Chemicals de Mexico S.A., subsidiary of Reichhold Chemicals Inc., U.S., plan to spend over £1,150,000 during the coming three years on the erection of new facilities for the manufacture of formaldehyde, phthalic anhydride and softening agents. Site is believed to be Cuernavaca, south of Mexico City.

## Great Lake Carbon aid for new Indian project

The first calcined petroleum coke and calcined anthracite to be produced in India is to be manufactured by a 50,000 t.p.a. plant to be built at Gauhat, Assam, by the newly-formed company India Carbon Ltd. The project will cost some 8 million rupees, with technical aid and a minority holding to come from Great Lake Carbon Co., U.S. Raw materials for the Gauhat plant will come from two Assamese oil refineries.

## Greek LPG plant in production

The Greek State oil refinery at Aspropyrgos, 10 miles west of Athens, is now producing liquefied petroleum gas and supplying the Greek market. It is hoped that before long prices can be reduced to lower than those of foreign LPG producers, current plans being to export to the Middle East.

As reported in C.A., 28 October 1961, p. 689, the LPG unit at Aspropyrgos has a capacity of 50,000 tonnes/year against a domestic consumption of 12,000

tonnes. Imports of LPG into Greece have stopped and it is expected that tariff measures to prevent further imports will be imposed shortly.

## Soviet credit and aid for Indian Refinery

A 2 million tons/year refinery to be built near Koyali in India, will be financed with some \$21 million of Soviet credits. Provision has been made for the use, where possible, of Indian equipment, the balance having been offered for supply by Tjzhpromexport, the Soviet State trading agency. The refinery will be built in two stages of 1 million tons each, the first due to go into production during the second half of 1964 and the second to be on stream some nine months later.

## S. European pipeline seeks third U.S. loan

Third large loan required for the further development of the French South European Pipeline Co. is being sought in the U.S. Sixteen West European oil companies put up the initial capital of Fr.150 million; an Fr.120 million loan was raised in France early in 1961 and a Fl.50 million loan was raised in the Netherlands at the end of last year. The present loan is for \$40 million.

The 475-mile pipeline will carry crude oil from Laverla to Strasbourg and Karlsruhe and is due for completion in April 1963 at a total investment of Fr.600 m.

## Du Pont and Nitto examine possibility of joint venture

Du Pont are examining with Nitto Chemical of Japan the possibility of joint manufacture in Japan of plastics resins of the fluorocarbon type. It is emphasised, however, that there has been no final determination of an agreement. Nitto Chemical are hoping to expand their production in this field.

## Esso AG plan new German refinery

Construction will start soon on the new DM200 million refinery of Esso AG at Ingoldstadt, near Munich. It is planned that the new refinery will come on stream by the end of 1963 with an annual throughput of 3.4 million tonnes of crude oil. The site is one of the terminal points of the pipeline now being laid from Genoa to Bavaria.

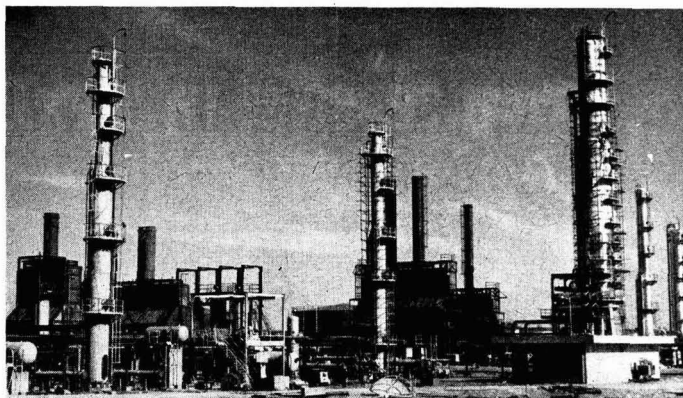
## Antibiotics and drug plant for Australia

Total investment in the new pharmaceutical plant to be built at Laverton, Victoria, Australia, as a joint venture of the American Cyanamid Co. and Drug Houses of Australia Ltd. (see C.A., 30 Dec. 1961, p. 1028) is expected to be about £A1.5 million.

## Polythene and ethylene plants completed in Texas

The new low-density polythene plant of Rexall Chemical Co. at Odessa, Texas, with a rated capacity of 120 million lb./year of conventional high-pressure polythene, is now in full production. Close by is the 150 million lb./year ethylene plant recently completed by El Paso Natural Gas Products Co. Both plants were completed in less than 18 months.

## New refinery built by E.N.I. in Morocco



Platforming and topping plants of the new 1½-million-ton petroleum refinery built for SAMIR (Société Anonyme Marocaine-Italienne de Raffinage) by three members of the E.N.I. Group (Snam-Progetti, Nuovo Pignone, and SAIPEM). The refinery, situated at Mohammedia, about half-way between Rabat and Casablanca, is linked with the port by a pipeline. It includes de-sulphurising, de-ethanising, and other chemical processing plants as well as a plant for separation of butane from propane. Storage facilities with a capacity of some 200,000 tonnes have been provided

## BTR-German link on erection of corrosion-proof chemical plant

IN association with *Gewerkschaft Keramchemie* of Siershahn, Westerland, the corrosion engineering service of BTR Industries Ltd., Herga House, Vincent Square, London S.W.1, has been extended to embrace the design, supply and erection in the U.K. of chemical and corrosion-resistant plant and equipment. The arrangement facilitates the supply of complete corrosion-proof installations, including acid conveying and storage plant, extraction and destruction plant, and makes available in the U.K. *Keramchemie's* highly specialised experience in the design and manufacture of ceramic products and acid resisting bricks.

The BTR corrosion engineering service was set up to organise into a comprehensive and specialised section all the company's resources and experience in the field of protective coatings. An important part of this service—designed for all industries concerned with handling and processing corrosive materials—is the lining and covering with natural and synthetic rubbers, and ebonite, of storage and process tanks, pipelines, road and rail tankers, drums, barrels, pumps, valves, and vessels of all kinds. These rubber and ebonite linings and applied at BTR's Farington, Lanes, and Silvertown, London, factories, or on any site.

Under the trade-name *Silverflow*, the company produces an extensive range of corrosion-resistant rigid p.v.c. pipes and fittings. These rigid moulded fittings are made by a process which is said to en-

sure high-impact and normal impact p.v.c. components of greater density and better dimensional stability than by conventional methods. BTR now supply the *Silverflow* range in pipe sizes up to 6 in. internal diameter and in standard lengths of 20 ft.

BTR have also introduced a range of pipes and fittings made in polypropylene, which has excellent resistance to a wide range of chemicals and solvents and which can be used in many instances at temperatures reaching 212°F.

Under an exclusive manufacturing agreement with *Resistoflex* Corporation, U.S., BTR can offer in the U.K. a complete range of p.t.f.e.-lined pipes and fittings. These will operate within the range 100°F to 500°F and are resistant to all known chemicals except molten alkali metals and fluorine at elevated temperatures and pressures.

To meet the demand for protection against corrosion (and abrasion) in cases where difficult contours make the application of sheet-lining impracticable, BTR have developed their range of *Synco* coatings in neoprene, Hypalon, nitrile, Viton, epoxies and a new aqueous dispersion of p.v.c. In addition to special applications such as on-site spraying of structural steelwork against contamination by corrosive atmospheres, a wide variety of conventional equipment can also be protected—including storage and processing tanks, processing vessels, pipes, valve bodies and filter plates.

## U.S. acetate sheet know-how for Celanese

A JOINT company is to be formed in the U.K. by British Celanese Ltd., a subsidiary of Courtaulds, and Rowlands Products Inc. of Kensington, Conn., U.S., to manufacture two-colour patterned extruded acetate sheet. British Celanese will have the controlling interest.

Two-colour acetate sheet is extruded by an exclusive process developed by Rowlands and it is primarily intended for the optical industry. The advantages for spectacle frames are its extreme hardness and the varieties of colours and designs which can be produced for men's, women's and children's frames. Unlike celluloid it is non-inflammable.

In 1958 acetate sheet was used for approximately 30% of spectacle frames in the U.S. Today acetate accounts for 85% and the same potential is seen in the U.K.

The Rowlands process in the U.K. may later be extended to other plastics which are now being assessed in the U.S. as the new company will have complete exchange of information. British Celanese have also acquired the rights for the process in Australia and New Zealand.

## Fire damages I.C.I. silicon plant

FIRE caused extensive damage to the final processing and storage area at the Gaskell Marsh, Widnes, silicon works of I.C.I. General Chemicals Division recently. Stocks of silicon (used for rectifiers) were completely destroyed and the plant is expected to be out of service for some time. The fire broke out in the early morning and fire appliances from Lancashire county, Widnes and Huyton stations, Cheshire county, Runcorn and Liverpool city fire brigades, and some 40 firemen were engaged for about an hour before the blaze was extinguished. A security cordon was thrown around the three-storey, 300-ft. long building situated behind the main laboratory—an I.C.I. spokesman said this was because the building contained plant and equipment that was of a commercially secret nature.

I.C.I. experts have not yet determined the cause of the fire.

The Gaskell Marsh works was the scene of a smaller fire some 17 months ago (C.A., 24 September 1960, p. 487) when damage was confined to a roof in the experimental section and production was not affected.

## Wills

**Mr. Frederick Brown**, managing director of Murphy and Son Ltd., consulting and manufacturing chemists, Wheathampstead, who died on 8 September last, left £6,956 3s. 6d. gross, £6,016 0s. 3d. net (duty paid £652).

**Dr. Arnold Fitton**, well-known chemical engineer who at the time of his death last November was employed at the Warren Spring laboratory, Stevenage, left £10,505 4s. 8d. gross, £8,632 18s. 11d. net (duty paid £199).

## U.K. fertiliser industry not afraid of Common Market, says F.M.A. spokesman

HAVING been preparing for Common Market developments for some years, and now further ahead in its planning than many other industries, British fertiliser producers were not afraid of the European Economic Community. This was stated by Mr. J. B. C. Carr, general manager of the Fertiliser Manufacturers' Association, recently in London. He was giving the third of a series of lectures on industries associated with agriculture organised by the Association of Agriculture and London University.

It was, he thought, of great significance that leading fertiliser companies were currently investing huge sums in new plant and equipment. This was hardly the action of an industry lacking confidence in its future.

The structure of the British fertiliser industry was healthy: it had streamlined its operations: its efficiency would stand comparison with any in the world: it had steadily reduced its prices four years running. These were certainly grounds for confidence.

British fertiliser manufacturers had built up their industry upon the needs and demands of the home market, which they had studied most carefully. Like British agriculture itself, they gave good service to the nation by saving imports involving demands on foreign currency. However, the industry was also quite capable, should the need arise, of playing its part in developing exports.

## Technicon open new U.K. laboratories and works

New laboratories and works at Chertsey, Surrey, of Technicon Instruments Co. Ltd., makers of the Technicon Auto-Analyzer system of continuous automatic chemical analysis, were opened by Mr. W. T. M. Beale, Minister for Economic Affairs, U.S. After the opening ceremony there was a series of demonstrations of the techniques and applications of the AutoAnalyzer.

● Directors of the newly created Glaxo Group subsidiary, Glaxo Research Ltd., are: **Sir Harry Jephcott**, chairman; **Dr. A. H. Campbell**; **Dr. B. A. Hems**; **Dr. T. F. Macrae**, and **Dr. J. Ungar**.

● **Dr. J. Arndt Weickel**, product supervisor for American Cyanamid's plastics additives will be in London on a visit to Cyanamid of Great Britain Ltd., from 26 February to 2 March. Dr. Weickel is an authority on ultraviolet absorber application and has been engaged for several years in the development marketing of these products.

● **Mr. A. J. Prince** has been released by Cremer and Warner, consulting chemical engineers, to take up a 12 months' appointment with the United Nations as special technical advisor to the Department of Industrial Development in New York, as from 1 March.



**Faber Birren, Shell Chemicals' consultant on plastics colours (see C.A., 10 Feb., page 238)**

● **Mr. Emlyn Evans**, head of the Department of Chemical Engineering at Birkenhead Technical College, has been awarded a scholarship by the English Speaking Union. Worth £500, it enables him to spend eight weeks in the U.S. visiting colleges and institutes.

● **Mr. C. D. Muntz**, joint managing director of Woodall-Duckham Construction Co. Ltd., has been appointed a director of Woodall-Duckham Ltd., the holding company of the Woodall-Duckham group.

● **Mr. A. D. Cory James**, who joined the International Nickel Co. (Mond) Ltd. in 1919 and has been manager of the metals sales department for the past 10 years, has been appointed sales adviser to the managing director. **Mr. P. J. R. Butler**, who joined the company in September 1937, has been appointed manager of the metals sales department and will be directly responsible for all metals sales activities.

● First appointments have been made to the National Economic Development Council which will hold its first meeting in March. Members will include the President, Board of Trade, Minister of Labour, Chancellor of the Exchequer, **Dr. R. Beeching** (chairman, British Transport Commission); **Mr. F. A. Cockfield** (managing director, Boots Pure Drug Co. Ltd.); **Sir Oliver Franks** (Provost-elect, Worcester College, Oxford); **Mr. R. M. Geddes** (managing director, Dunlop Rubber Co. Ltd.); **Mr. C. E. Harrison** (vice-chairman, English Sewing Cotton); **Mr. E. J. Hunter** (chairman, Swan, Hunter and Wigham Richardson); **Mr. J. M. Laing** (manag-

## PEOPLE in the news

ing director, John Laing and Son); **Professor H. Phelps Brown** (London School of Economics); **Lord Robens** (chairman, National Coal Board); **Sir Robert Shone** (director-general of N.E.D.C.), and **Mr. J. N. Toothill** (director, Ferranti Ltd.). **Sir Donald MacDougall** (Nuffield College, Oxford) who is to be economic director, is a former economic director of O.E.E.C.).

● **Mr. K. Soesbeek**, a director of Algemene Kunstzijde Unie NV, has been appointed chairman of the newly-formed company NV Petrochemie AKU-AMOCO, of Arnhem (see also 'Commercial News', today's date). Other directors will be **Professor D. W. van Krevelen**, **Mr. J. Meynen**, **Dr. J. H. E. Hessles**, **Mr. J. H. Forrester**, **Mr. D. A. Monro** and **Mr. W. S. Nordburg**.

● **Dr. F. B. Gribnau**, chairman of the Dutch textile chemists' association Nederlandse Vereniging voor Textielchemie, has been elected president of the International Federation of Associations of Textile Chemists and Colourists. Dr. Gribnau is laboratory head of Ankersmit's Textielfabrieken.

● **Mr. H. J. Northeast**, who has taken up his new appointment as general sales manager of Dunlop Footwear Ltd., was previously with Dunlop's Chemical Products Division in Birmingham. He is chairman of the Midland Market Research Group.

● **Councillor Joseph Kennedy**, who is to be the next Mayor of Birkenhead, is now a departmental manager with I.C.I. General Chemicals Division, Liverpool. He is a science graduate of Edinburgh University.

● **Mr. W. Hopkins** has been appointed technical manager of Plastic Filters Ltd., Horsham, Sussex. He was previously chief engineer of Lintott Engineering Ltd., Horsham.

● **Mr. David W. Bixby**, who has been appointed chemical engineer for the Sulphur Institute, Washington, is supervisor of chemical engineering research for the American Agricultural Chemical Co., Carteret, N.J. Mr. Bixby will be responsible for developing and supervising institute-fostered research activities

concerned with the uses of sulphur and sulphur compounds in fertiliser manufacturing.

● Opportunities to expand Scottish exports to Sweden are very good and much more business can be done during the next year or two, said **Mr. Robin MacLellan**, joint managing director of George MacLellan and Co. Ltd., rubber manufacturers, Glasgow, on his return from Stockholm on 12 February. Mr. MacLellan, who was a member of the trade mission to Sweden sponsored by the Scottish Council (Development and Industry), said he thought the biggest future lay in well-made specialist products.

● **Professor E. L. Hirst**, Forbes Professor of Chemistry, Edinburgh University, is to be made an Hon. L.I.D. at a degree congregation of Birmingham University in July.

● In our announcement of the appointment of **Mr. S. R. Hogg** as a director and chairman of Wm. Butler and Co. (Bristol) Ltd. ('People in the News', 10 February), it was inadvertently stated the South Western Gas Board held a 25% interest in the company and were to purchase the remaining 75%. This was incorrect, the S.W.G.B. hold a 25% interest in Bristol and West Tar Distillers Ltd., a Wm. Butler subsidiary, and are to purchase the balance.



**J. C. Fraser**

● In a reorganisation of their marketing and advertising departments, Fisons Pest Control Ltd., Harston, Cambridge, have appointed **Mr. J. C. Fraser**, formerly sales promotion manager, as marketing manager. He retains responsibility for sales promotion and advertising both for Fisons Pest Control and Fisons Farmwork Ltd., a subsidiary.

● **Mr. J. E. O'Brien** and **Mr. J. F. Schippers**, managing director and technical director respectively of James Gordon and Co. Ltd., Dalston Gardens, Stanmore, Middlesex, will shortly retire from their present positions, but will remain consultants of the company. Mr. O'Brien will remain chairman.

● **Professor Dr. H. Hellmann**, head of the Organics Department of the Chemical Faculty of Tübingen University, will on 1 April take over the research department of Chemische Werke Hüls AG Marl, West Germany, as a company director.

● **Mr. H. F. James**, who came from the U.S. in 1957 to join the board of McKechnie Brothers Ltd. on a short-term contract as technical director, has now resigned his position to return to the U.S.

## Commercial News

### Blythe Colour Works

Net profit of Blythe Colour Works Ltd. after tax of £180,757 (£189,250) was £188,685 (£192,972). A final dividend of 12½% (same) is declared, making 25% (same).

### Pfaudler-Balfour

Formal cash offer of Pfaudler Permutit, U.S., for the share capital of Henry Balfour and Co. Ltd., Leven, Fife, has now been sent to the shareholders. As reported in C.A., 20 January, p. 128, the offer is being recommended by the Balfour directors.

Balfour's chairman, Mr. W. Lindsay Burns, states that it has long appeared to the board that Enamelled Metal Products, which was jointly owned with Pfaudler, should be wholly owned by Balfour, and this suggestion was put to Pfaudler, who countered with an offer to acquire the Balfour capital.

It is intended, if the offer for the Ordinary shares becomes unconditional, that five of the present six directors of Balfour shall continue in office with Mr. Burns as chairman and that Mr. P. Stanley Collier, Pfaudler, will join the board as vice-chairman. Mr. A. C. Bennett, recently appointed to fill a vacancy on the board, will retire, and four further representatives of Pfaudler will join the board.

### Canadian Industries

Consolidated sales of Canadian Industries Ltd. and subsidiaries in 1961 totalled \$165,241,000, a fall of 3%. After claiming maximum capital cost allowances, 1961 net income at \$5,281,000 was 20% down. Net earnings were equal to 59 cents a common share (74 cents).

Mr. P. C. Allen, president, states that replacement of dynamite by ammonium nitrate mixtures continued to be a factor in the explosives business and that a plant to manufacture TNT was under construction. Domestic sales of Terylene were greater but exports declined. Substantial quantities of polythene were used for film production and exports of resin increased, but world prices had dropped severely. Demand for chemicals generally improved and sales of compound fertilisers were much higher. Increased capacity was authorised for the production of caustic soda and chlorine at Cornwall and at a new plant in New Brunswick.

### Du Pont of Canada

Du Pont of Canada Ltd. report 1961 sales of \$112,065,000, up 13% over 1960 total of \$99,812,000, reflecting the improved level of business activity in Canada and greater market penetration by products coming from most of the newer facilities. Net income in 1961 rose to \$8,867,000, equivalent to \$1.20 a share of common, or 30% higher than the preceding year's \$6,835,000 or 92 cents. Dividends declared totalled 60 cents/

- Pfaudler confirm cash offer for Balfour
- Canadian Industries' net earnings fall 20%
- Cyanamid earnings 5% higher in 1960
- Higher sales and net income for Hercules

share, an increase of 10 cents.

The return earned on average operating investment rose to 6.4% from 5.2%. Capital spending declined to \$3,585,000.

### American Cyanamid

Sales of American Cyanamid Co. reached a record total of \$603,959,000 in 1961—a rise of 4%, or \$25,569,000 over the \$578,390,000 reported for 1960. Net earnings for the year rose 5% from \$46,821,000 or \$2.20/share in 1960 to \$49,354,000 or \$2.31/share in 1961. Sales of Lederle pharmaceuticals, agricultural chemicals, decorative laminates and other products, as well as the acquisition of Wasco, contributed to the increase.

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

Net profit of Imperial Chemical Industries of Australia and New Zealand fell by nearly £A800,000 last year to a total slightly more than £A2 million. Sales by the company and its subsidiaries fell by £A4 million.

In the company's annual report, the managing director attributes the decline in profits and sales to economic measures introduced in 1960 by the Australian Government. They had reduced the level of business of a number of secondary industries, which in turn had had an adverse effect on the sale of I.C.I.A.N.Z. products. During the period, however, export sales rose by 36%. They were worth over £A1 million.

### L'Air Liquide

L'Air Liquide have purchased the holdings of Saint-Gobain in the three French chemical companies—Soc. Chimique de la Grande Paroisse, Ammoniaque de Lieven and Union Chimique et Minière pour la Fabrication des Engrais Azotes.

L'Air Liquide paid for the purchase with 47,000 of their shares, worth about £111,000.

### Hercules Powder

Net sales and operating income of Hercules Powder Co. in 1961 totalled \$380,182,000 or 13% up on the 1960 total of \$336,905,000. Net income increased 3% to \$27,978,000, while earnings of \$3.05/share and dividends of \$1.30/share were unchanged. Earnings showed an increase despite heavy start-up costs. Capital expenditures were \$41,499,000 in 1961 and are expected to be the same this year. Research and development costs are about \$15.4 million/year. A substantial business improvement took place in the last quarter of 1961; this should continue.

Hercules disclosed plans to build a multimillion-pound plant for the manu-

facture of biaxially oriented polypropylene film at Covington, Va., for polypropylene fibre. Expansion projects in 1961 included extension of rocket engine facilities at Bacchus, Utah; construction of a new tall oil fractionation plant in Portland, Or.; start of construction of a new and second polyolefins unit.

Work for the U.S. Government in the space, missile and defence field comprised about 15% of gross sales; the paper industry accounted for 14%; protective coatings, 12%; plastics, 9%; agricultural chemicals, 7%; mining and quarrying, 6%; rubber, 5%; and 3% each to food, petroleum, printing ink, synthetic fibres, and miscellaneous chemicals; adhesives and construction each accounted for 2%; the remaining 13% is attributed to a wide variety of other consumer industries.

Hercules Powder Co. are to pay a first quarter dividend of 30 cents a share (25 cents). A two-for-one split of common stock is to be recommended, making the dividend payment equal to 15 cents/share after giving effect to the proposed split.

### N.V. Petrochemie

The formation of a new Dutch petrochemical company, NV Petrochemie AKU-AMOCO by Algemene Kunstzijde Unie NV, of Arnhem, and Amoco International SA, of Geneva, is announced in Arnhem (see CHEMICAL AGE, 22 July and 16 September, 1961). Capital is Fl. 75 million and paid-up capital Fl. 27 million, of which each of the founder companies holds 50%. The company will start production of DMT next year on a Delfzijl site.

### Texas Gulf Sulphur

Texas Gulf Sulphur and Delhi-Taylor have broken off their merger discussions. Texas Gulf Sulphur state that they are currently interested in other merger possibilities.

### Van der Grinten NV

Chemische Fabriek L. van der Grinten, Venlo, Holland, are to recommend at the annual meeting next month a dividend of 24% (20%) for the financial year to 30 November.

### NEW COMPANY

SHORKO PACKAGING (U.K.) LTD. Cap. £1,000. Manufacturers of and dealers in chemicals, plastics and plastic products, packaging materials and containers, etc. Subscribers: Shorko Ltd., 161 Fleet Street, London E.C.4, and Metal Box Co. Ltd., 37 Baker Street, London W.1. Solicitors: J. G. Hodder, 37 Baker Street, London W.1.

## Bookshelf

# TWO BOOKS ON RARE EARTH SYMPOSIA ARE COMPLEMENTARY

**THE RARE EARTHS.** Edited by *F. H. Spedding and A. H. Daane*. Wiley, London, 1961. Pp. xii + 641. 118s.

**RARE EARTH RESEARCH.** Edited by *E. V. Kleber*. Macmillan Co., New York, 1961. Pp. vi + 313. 73s.

Both these books record the proceedings of symposia the first held in November 1959 and the second in October 1960, but they are complementary rather than competitive. The papers in the first were chosen to survey the available knowledge of the field whereas those in the second were chosen as a basis for the discussion of current research. These facts are not immediately apparent from the section headings of the books which are similar.

The general chemical reader will be most interested in Spedding and Daane's volume. The papers have been carefully chosen so that the field is well covered. The treatment is rather more uniform than one often finds. The symposium was chiefly concerned with ironing out discrepancies and removing overlap.

Kleber's volume is for the specialist. It contains 33 papers which are printed without summaries. Several are progress reports or reviews of work in progress rather than formal scientific communications. They must have been stimulating to those at the conference but it is doubtful if it is best to publish such material. The preface states that the authors revised their papers after the meeting but no record of the discussion is printed.

## ▶ Organophosphorous poisons

**ORGANOPHOSPHOROUS POISONS.** By *D. F. Heath*. Pergamon Press, Oxford, 1961. Pp. 403. 80s.

It is claimed that this book is the first systematic treatment of the chemistry, biochemistry and pharmacology of the organophosphorous compounds that are anti-cholinesterases or are metabolised to anti-cholinesterases. The material is divided into four parts: chemistry, biochemistry, and pharmacology in mammals, and in insects. The first part covers types of compounds, methods of preparation, chemical reactions and methods of purification, and hydrolytic related reactions. The second part discusses some enzymes (mainly cholinesterases and phosphorylphosphatases) the inhibition of enzymes *in vitro*, the metabolism of phosphorous compounds in mammals, insects, plants and soil. The third part starts with an introductory chapter which points out that the studies of the mechanism of nerve function, the pharmacology of phosphorous compounds and reversible anti-cholinesterases have developed together and influenced each other so

much that they cannot be separated. It covers effects on isolated organs *in vitro*, partly isolated organs *in vivo* and on the whole mammal together with therapeutic methods and abnormal effects.

The book is a very considerable piece of work which will be of value to the specialist and should stimulate further work and debate, but at 80s it is not likely to be bought by individual outsiders.

## ▶ Organic analysis

**TUTORIAL QUESTIONS IN QUALITATIVE ORGANIC ANALYSIS.** By *P. A. Ongley*. University of London Press Ltd., London, 1961. Pp. 96s. 6s.

This is a successor volume to Dr. Ongley's earlier collection of questions and problems for students of organic chemistry. To those familiar with the previous book, the main difference lies in the character of the questions which, as the title implies, are based in the main on typical laboratory exercises. There are 11 sets of questions, averaging about 30 to 50 questions per set, and both author and publishers are to be congratulated on compressing so much into a small volume.

In the final set of questions, Dr. Ongley has assembled from the literature a remarkable set of diverse chemical observations which would surely stimulate the interest of the more advanced student. The questions are graded according to three standards of difficulty, the easiest being suitable for H.N.C., or first year university students. Short, usually one-line, answers are provided; these are intended to ensure that the student is set on the correct road, but wisely leave him to fill in the detail.

This volume is of at least as high a standard as its forerunner, and at the price asked is certainly a bargain.

## ▶ Organic syntheses

**ORGANIC SYNTHESIS. VOL. 40.** Edited by *Melvin Newman*. John Wiley and Sons, London and New York, 1961. Pp. vii + 114. 32s.

Volume 40 of this well-known work follows the pattern of its predecessors. Full details are given for the preparation by a wide variety of techniques of 39 organic compounds from the aliphatic, alicyclic, aromatic and heterocyclic series. A useful feature is the inclusion of preparative details for a series of related compounds. Thus the preparation of N,N-dimethylaminoferrocene methiodide is described together with methods for obtaining ferrocenyl acetonitrile and hydroxymethyl ferrocene from this compound.

With this volume appear further warnings concerning the explosion hazard in the preparation of diazomethane and ethyl diazocarbonylate, as described in earlier volumes.

*Organic Syntheses* should be available to all organic research laboratories and this volume is no exception.

## ▶ Micro diffusion analysis

**MICRO DIFFUSION ANALYSIS AND VOLUMETRIC ERROR, 5TH EDITION.** By *E. J. Conway*. Crosby Lockwood and Son Ltd., London, 1962. Pp. 467. 42s.

That this is the fifth edition of a well-known work by a writer equally well known for his knowledge of his subjects means that nearly all who will find it useful merely need to be informed that a new edition exists. The author, himself, draws attention in his preface to some new inclusions of methods and applications—namely the blood ammonium method, the procedures of Weil-Malherbe and Green for total nitrogen determinations, the determinations of glutamine, monosamine oxidase and histaminase; acetylcholinesterase; cyanide, taminase; acetylcholinesterase; cyanide, sulphide, phenol, methanol and isopropanol in blood; volatile poisons and carbon monoxide in blood; halogens; and plasma bicarbonate.

The new edition is a valuable addition to laboratory libraries which is not likely to be displaced until the 6th edition, which the author is obviously contemplating already, is available.

## ▶ Energy transfer

**MOLECULAR ENERGY TRANSFER IN GASES.** By *T. L. Cottrell and J. C. McConbrey*. Butterworths, London, 1961. Pp. viii + 205. 45s.

The authors have succeeded admirably in their aim to produce a well-balanced account of molecular energy transfer suitable for chemists. They have therefore conferred a considerable boon on the scientific community for as knowledge expands more attention is paid to the detailed energy requirements of chemical systems. It has been difficult for the average reader to survey this field for himself as contributions have come from studies of aerodynamics, shock waves, acoustics and re-entry studies and have been published in journals not often found in chemical libraries.

After a short introduction the authors consider 'Sound propagation in gases' (27 pages); 'Measurement of velocity and absorption of sound in gases' (18 pages); 'Other methods for low-lying vibrational states' (23 pages); 'Experimental results for low-lying energy states' (50 pages); 'Theory of energy transfer to low-lying states' (47 pages); and 'Energy transfer involving higher energy states' (23 pages). The treatment in all the chapters except the last is so complete that it will satisfy the needs of most readers.

This book is written with the needs of a particular class of reader clearly in mind. Consequently it is a thoroughly useful work that is unlikely to be superseded for several years.





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# TRADE NOTES

## Nopco chemicals in bulk

Deliveries of Nopco chemicals in the U.K. by their sole licensees, Adolph Hess and Brother Ltd., Leeds, are now being made by road tankers.

## Embanox antioxidants

A new edition of the booklet, 'Embanox food grade antioxidants' is available from May and Baker, Ltd., Dagenham, Essex. It contains details of a new formulation, Embanox 6, which is similar in composition to Embanox 3 for which it can be used as an alternative. It is particularly intended for use in the more highly unsaturated vegetable oils.

## Vokes agency

Vokes Ltd. of Guildford, have been granted a U.K. licence for the production of process equipment for the treatment of sewage and industrial wastes by Chain Belt Co., Milwaukee. The equipment includes 'Floctrol' for the flocculation of solids either with or without the use of coagulating chemicals.

## Aerosol licence

Sole rights to U.K. production of the range of water-based aerosols of Power-Pack, Bridgport, U.S., have been purchased by Aerosols Packaging Co. Ltd., Bracknell. In these aerosols for insecticides, air fresheners, hair lacquers etc., water replaces part of the solvent and part of the propellant.

## Secondary plasticisers

Comprehensive details of the properties and applications of the Ravolen range of secondary plasticisers are contained in an illustrated brochure produced by Manchester Oil Refinery (Sales) Ltd., 76 Jermyn Street, London S.W.1. The first section contains information on tests with p.v.c. stock with and without Ravolen together with notes on compounding, compatibility, colour stability, physical and mechanical properties; the second section deals with the use of these

plasticisers in specific types of p.v.c. stocks, and includes notes on formulations.

## L.D.A. services

A new booklet outlines the services and development work, expanded library facilities, technical literature and other promotional material of the Lead Development Association, from whom copies are available at 34 Berkeley Square, London W.1.

## Change of address

Megator Pumps and Compressors Ltd. are moving their head office from Berkeley Square to 151 Gower Street, London W.C.1 (telephone: Euston 5345), with effect from 19 February.

## Instrumentation exhibition

An exhibition of over 500 instruments and controls from more than 25 manufacturers, together with a programme of lectures on industrial instrumentation and control subjects is being organised by A. M. Lock and Co. Ltd., Newborough Road, Shirley, Solihull, Warwicks, and will take place at the Central Y.M.C.A., Snow Hill, Birmingham, from 20 to 23 March.

## Change of name

As a result of the acquisition of the shares of J. W. Towers and Co. Ltd. by A. Gallenkamp and Co. Ltd., the name of the former has been changed to A. Gallenkamp and Co. (Northern) Ltd. Both companies will in future trade under the registered business name of Gallenkamp. Head office is at Technico House, Sun Street, London E.C.2.

## Reinforced plastics

The Industrial Division of Osma Plastics Ltd., Grove House, 551 London Road, Isleworth, Middx, has published a brochure, 'Reinforced Plastics for Industry', which explains the division's facilities and services and details the applications of reinforced plastics.

## Market Reports

### ROUTINE CALL FOR SODA AND POTASH PRODUCTS

**LONDON** The market for industrial chemicals has shown a fairly active call for the routine soda products and potash chemicals, while users are generally taking satisfactory deliveries against contracts. Export business is reported to be reasonably good with a steady flow of inquiries in circulation. The base prices for white lead have been reduced by 45s/ton and for red lead and litharge by 50s/ton—the revised prices came into operation on 9 February. Elsewhere prices for the most part are steady at recent levels.

The coal tar products market is rather quiet with a moderate flow of new inquiries both on home and export account.

**MANCHESTER** New business has been on a moderate scale and has covered a fairly wide range, mostly for prompt or near delivery positions. At home, lead-

ing industrial users with a few notable exceptions are drawing steadily against contracts and a fair amount of supplies on overseas account is reported. Caustic soda and other soda compounds as well as the potash and ammonia products are being called for in reasonably good quantities.

**SCOTLAND** Buying for the home market has been slightly brisker. The 'offset' against contract requirements was satisfactory; other demands were mostly against current requirements although there were some forward bookings. Prices for the most part were steady, with some variations, in particular for butyl acetate and isobutyl acetate. In agricultural chemicals, there is now a fair volume of enquiries for the coming season, together with some forward demands.

## Stellavinyl D for U.K.

Corrosion Technical Services, a subsidiary firm of John Mowlem and Co. Ltd., have been appointed the sole U.K. agents for the sale and application of Stellavinyl D, an aqueous p.v.c. dispersion, manufactured by Dr. Otto Saurebau und Keramikwerke of Bendorf/Rhein. Stellavinyl D said to be unique in that it provides the full chemical resistance of p.v.c. sheeting but can be applied by spray. Normally applied in thicknesses of 0.040 in., it also has the advantage that being always supported by the steel or concrete to which it is applied, and to which it adheres strongly, it can be used at a slightly higher temperature range, and it is suitable for continuous temperatures of up to 70°C and short period peak temperatures of up to 90°C.

## DIARY DATES

### MONDAY 19 FEBRUARY

- C.S.**—Aberdeen: The Chemistry Department, The University, 8 p.m. 'Calabash-curare alkaloids' by Prof. H. Schmid.  
**C.S.**—Cambridge: The University Chemical Lab., Lensfield Rd., 5 p.m. 'Some nuclear magnetic resonance studies of amino acids and their complexes' by Dr. L. Pratt.  
**C.S.**—Leicester: The University, 4.30 p.m. 'The kinetics of halogenation of acetone' by R. P. Bell.  
**C.S.**—Oxford: The Inorganic Chemistry Lab., 8.30 p.m. 'Chemical transmission of nerve effects' by Sir Lindor Brown.  
**S.C.I.**—Leeds: Chemistry Lecture Theatre, The University, 6.30 p.m. 'The chemical structure of coal' by Dr. I. G. C. Dryden.  
**S.C.I.**—London: 14, Belgrave Sq., S.W.1, 3 p.m. 'Aspects of the use of emulsions in pesticide formulations' by Dr. J. K. Eaton, Dr. D. A. Haydon, & Dr. C. G. L. Furnidge.

### TUESDAY 20 FEBRUARY

- C.S.**—Nottingham: The Chem. Dept., The University, 8 p.m. 'Stereochemical correlations' by Prof. W. Klyne.  
**R.I.C.**—Norwood: Technical College, Knight's Hill, S.E.27, 6.30 p.m. 'Aspects of chromatography' by T. S. G. Jones.

### WEDNESDAY 21 FEBRUARY

- C.S.**—Glasgow: Chemistry Department, The University, 4 p.m. 'Calabash-curare alkaloids' by Prof. H. Schmid.  
**O.C.C.A.**—London: Manson House, 26, Portland Place, W.1, 7 p.m. 'The adhesion of paint films' by T. R. Bullcut.

### THURSDAY 22 FEBRUARY

- C.S.**—Bristol: The Chemistry Department, The University, 7.30 p.m. 'Rocket fuels' by Dr. W. G. S. Parker.  
**C.S.**—Liverpool: Department of Inorganic & Physical Chemistry, The University, 5 p.m. 'Some recent work of the National Chemical Laboratory' by Dr. J. S. Anderson.  
**C.S.**—Manchester: Room F1, The Manchester College of Science & Technology, 6.30 p.m. 'Energy transfer between molecules' by Prof. G. Porter.  
**F.S.**—London: Lecture Hall, Geological Society, Burlington House, Piccadilly, W.1. 'Reactions of phosphate in soils; recent research by T.V.A.' by E. O. Huffman.  
**S.A.C.**—Luton: Technical College, 6.30 p.m. 'Analytical research' by Dr. J. Haslem.

### FRIDAY 23 FEBRUARY

- C.S.**—Dublin: The Department of Chemistry, Trinity College, 7.45 p.m. 'Chemical effects of ionising radiations' by Prof. J. Weiss.  
**C.S.**—Newcastle upon Tyne: The Chemistry Department, King's College, 5.30 p.m. 'The production of some antibiotics on an industrial scale' by Dr. I. L. S. Mitchell.  
**C.S.**—Sheffield: Chem. Dept., The University, 4.30 p.m. 'Calabash-curare alkaloids' by Prof. H. Schmid.  
**Inst. Chem. E.**—Glasgow: Royal College of Science & Technology, 7.30 p.m. 'Some chemical engineering problems in coal gasification' by M. C. Goodman & J. M. Solbett.  
**Plast. Inst.**—Birmingham 3: James Watt Memorial Institute, Gt. Charles St., 7 p.m. 'Reinforcements other than by glass' by J. H. Davis.  
**S.A.C.**—Edinburgh: R.S., George St., 7.15 p.m. 'Death from poison' by A. C. Hunt & 'Scientific aspects of crime detection' by I. K. McEllan.  
**S.C.I.**—Cardiff: University College, Cathays Park, 7 p.m. 'Volatilic corrosion inhibitors' by E. H. Evans & R. I. Barraclough.

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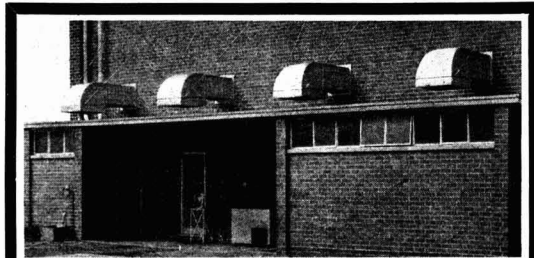
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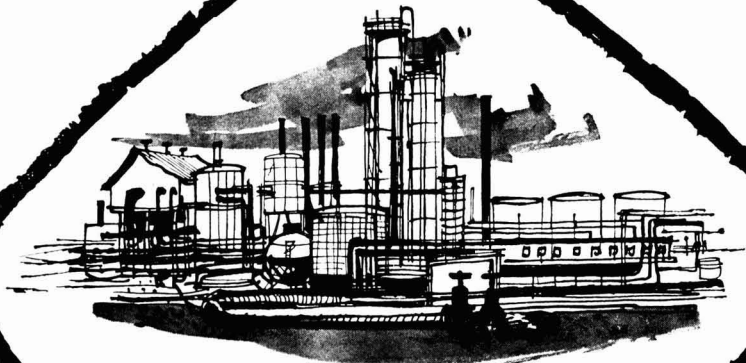
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# NEW PATENTS

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

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

## ACCEPTANCES

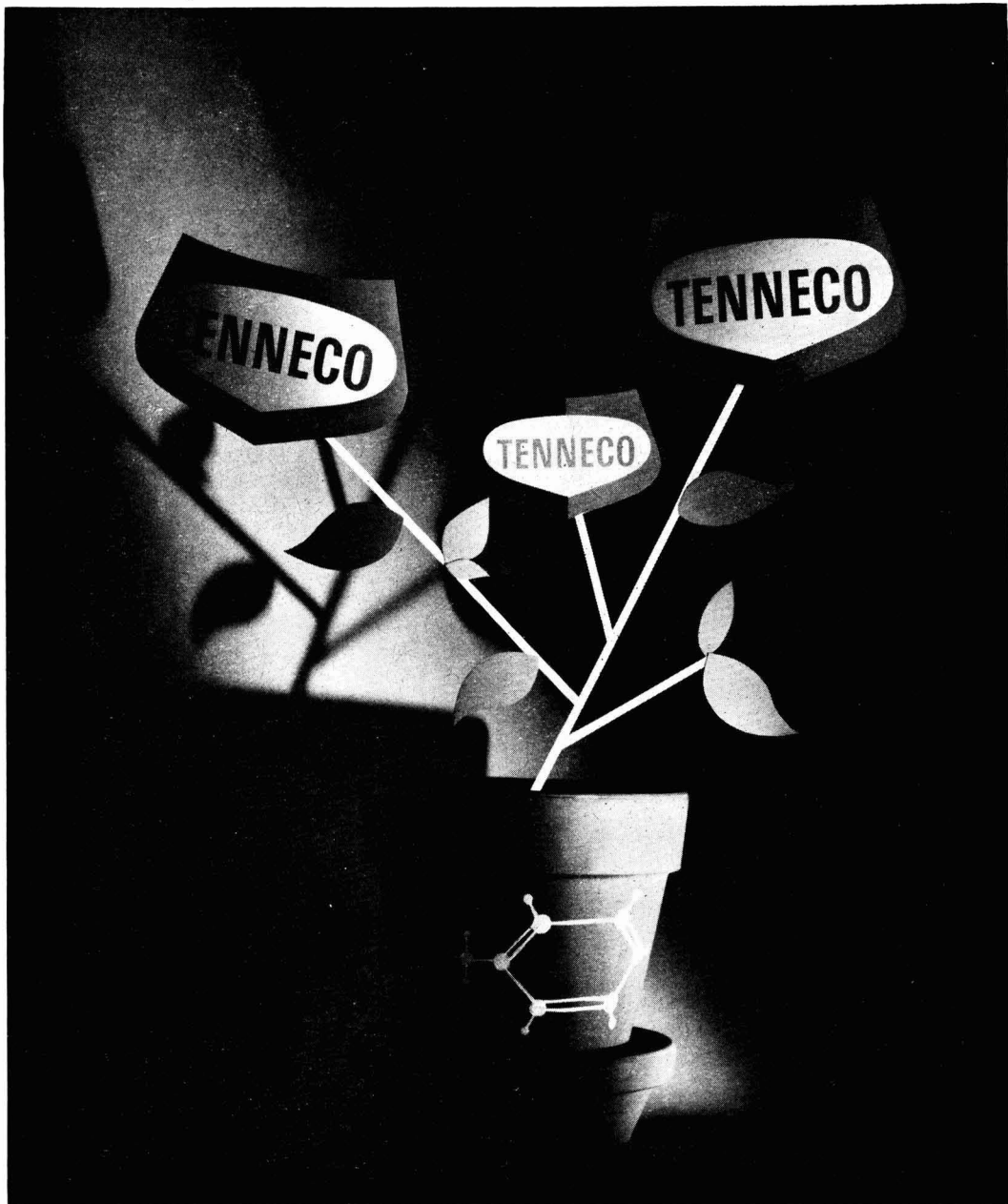
### Open to public inspection 21 March

Insecticidal compositions and methods of production. Aerovap Holdings Ltd. **891 961**  
 Production of linear aromatic polyesters. Gevaert Photo-Producten N.V. **891 781**  
 Separation of low boiling point impurities from hydrocarbons. A.P.V. Co. Ltd. **892 113**  
 Automatic control and operation of chemical or physical processes. Imperial Chemical Industries Ltd. **892 288**  
 Process and apparatus for evaluating the degree of vulcanisation of elastomers. Farbenfabriken Bayer AG. **892 053**  
 Removal of catalyst residues from hydrocarbon polymers. Stamicarbon N.V. **891 965**  
 Lithium chloride production. Scientific Design Co. Inc. **891 784**  
 Lithium chloride recovery. Scientific Design Co. **891 785**  
 Manufacture of  $\alpha$ -3,5-diaminopyrazine-2,6-dicarboxylic acid derivatives and their use as optical brightening agents. Geigy AG., J. R. **892 234**  
 Phenanthridine salts and their preparation. May & Baker Ltd. **892 117**  
 Polyolefins. Ruhrchemie AG. **891 786**  
 Preparation of cellulose products using adhesive silicate compositions. Diamond Alkali Co. **892 118**  
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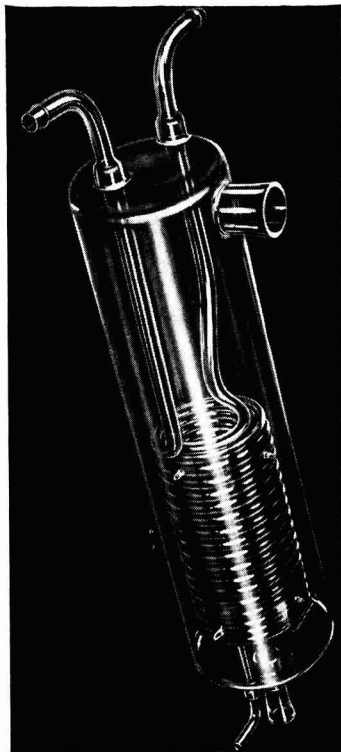
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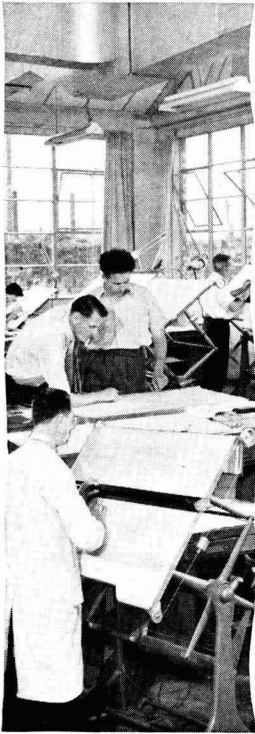
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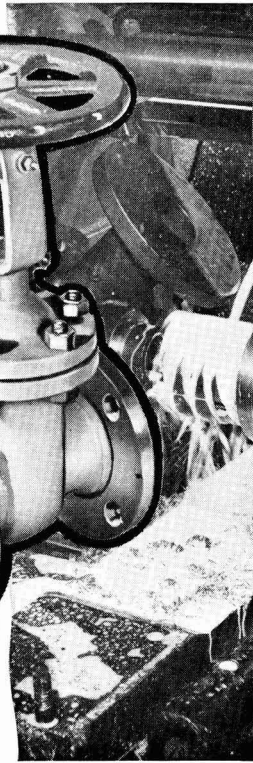
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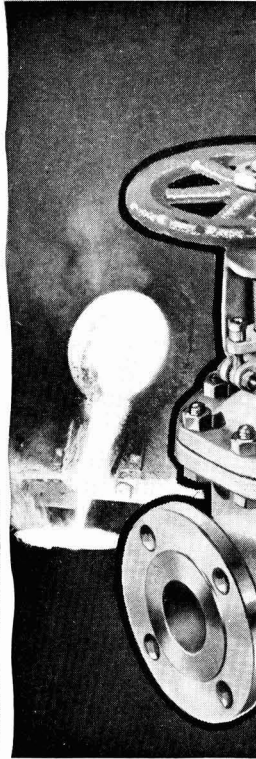
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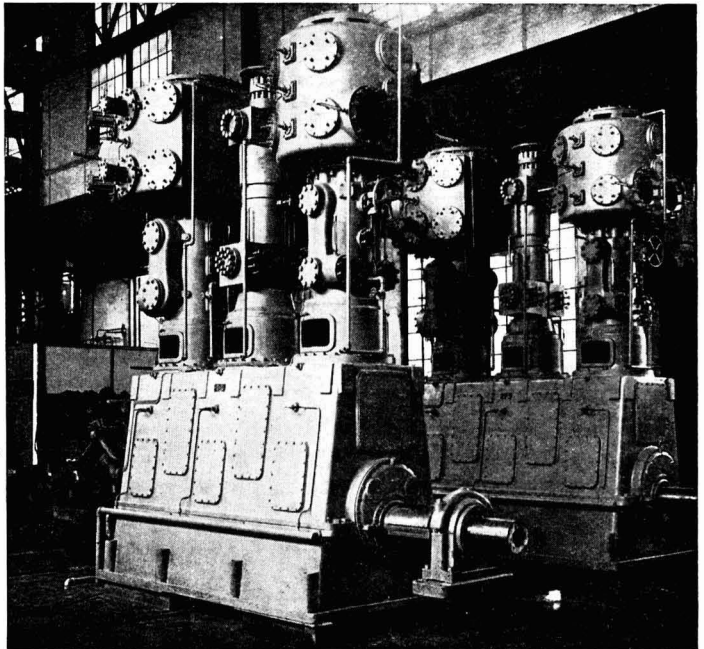
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