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(page 705)

VOL. 77 No. 1972

27 April 1957

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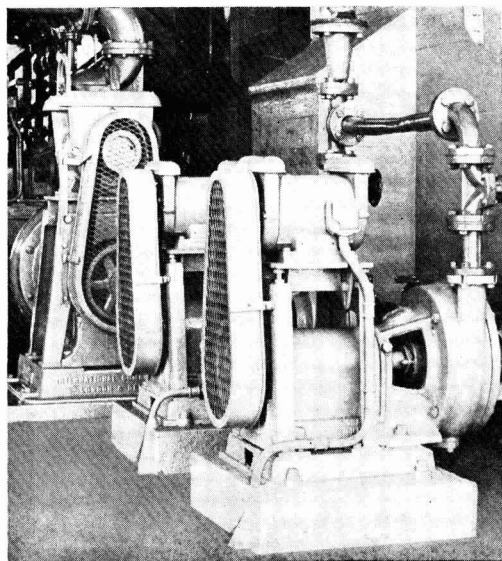
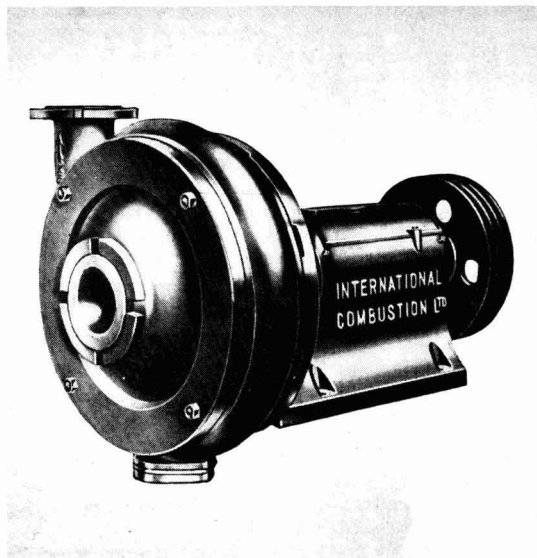
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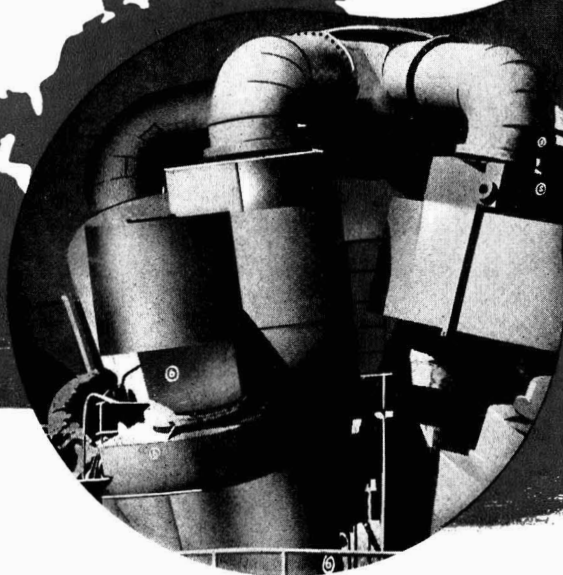
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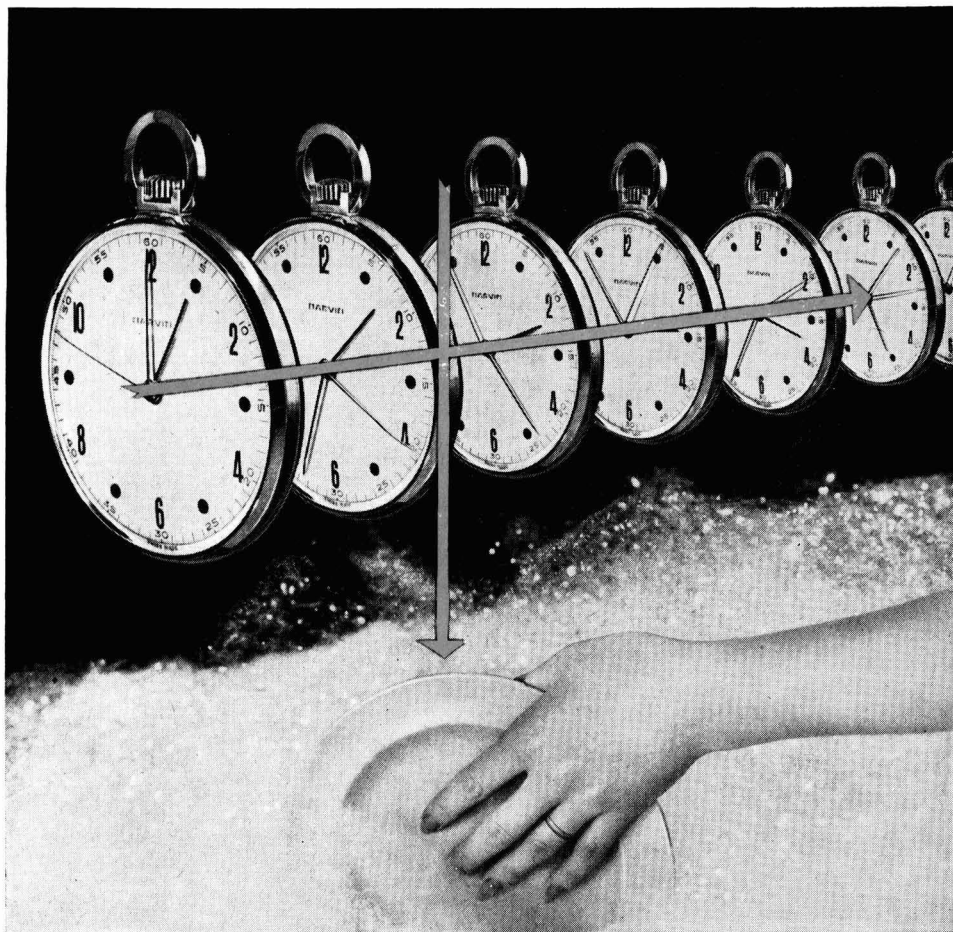


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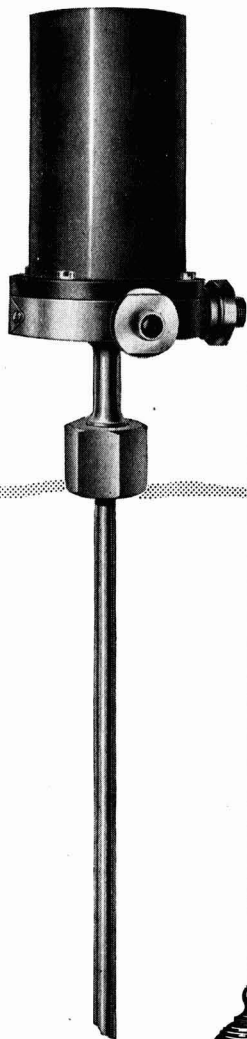
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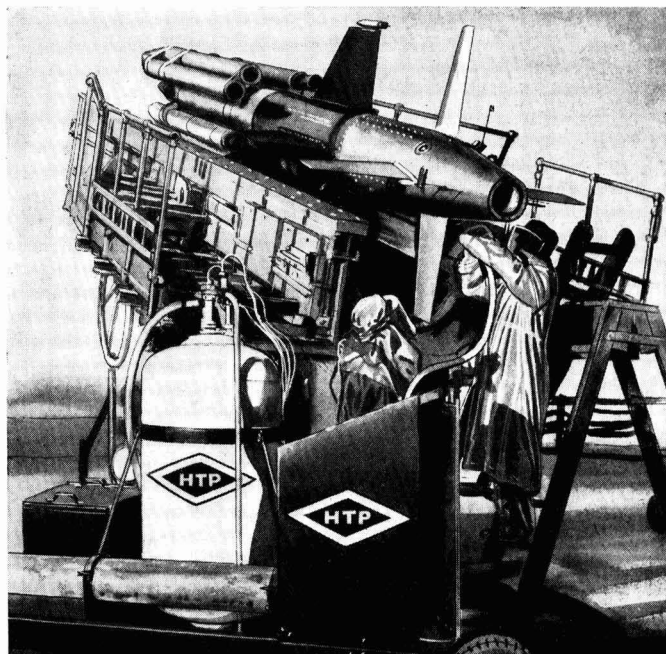
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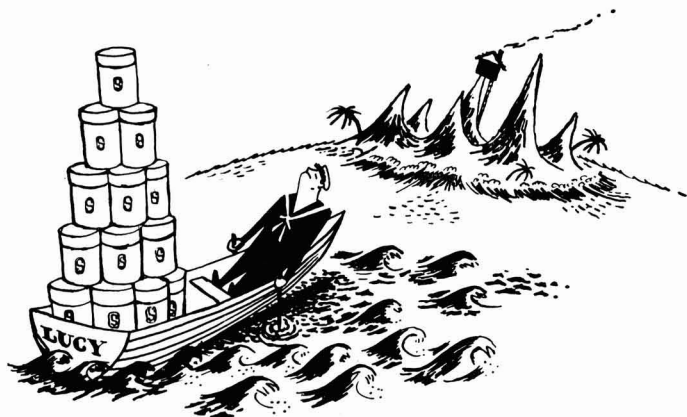
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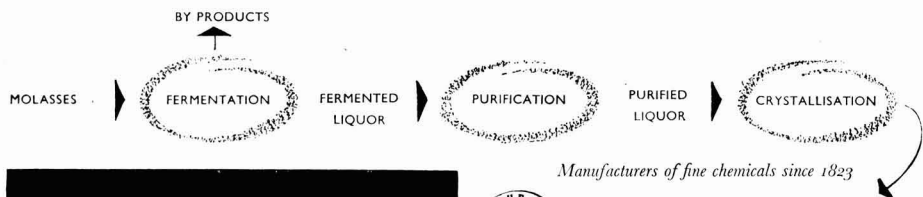
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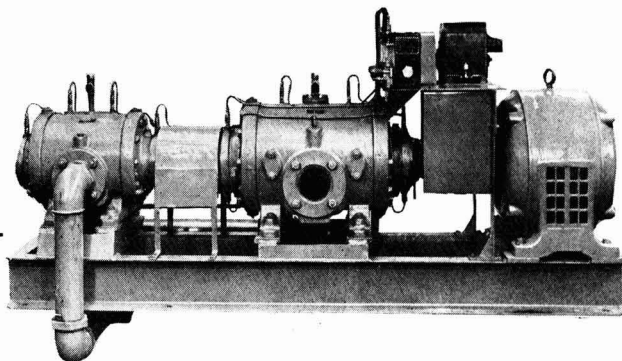
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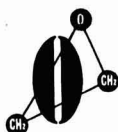
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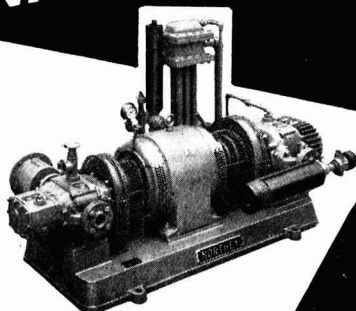
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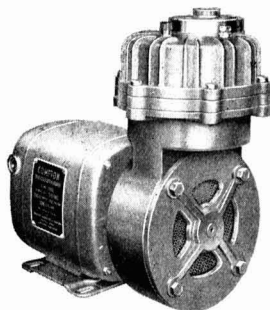
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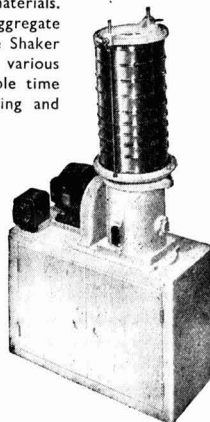
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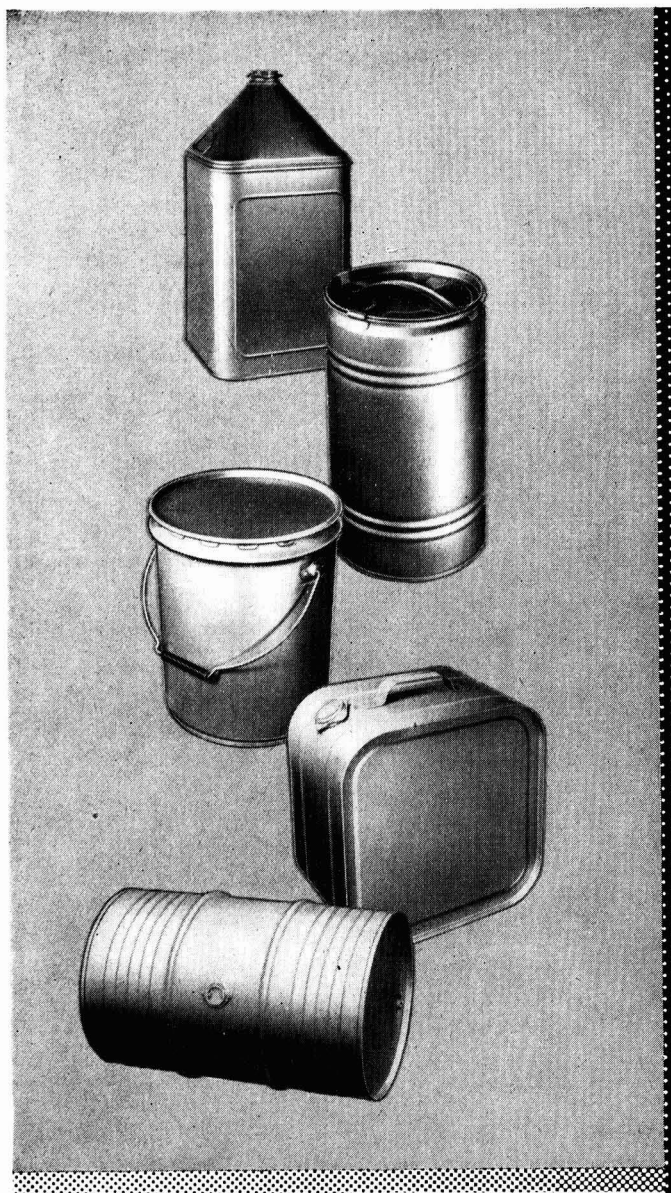


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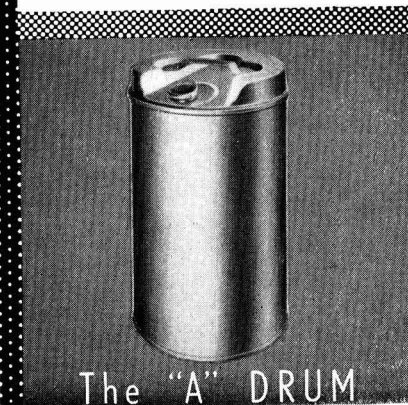
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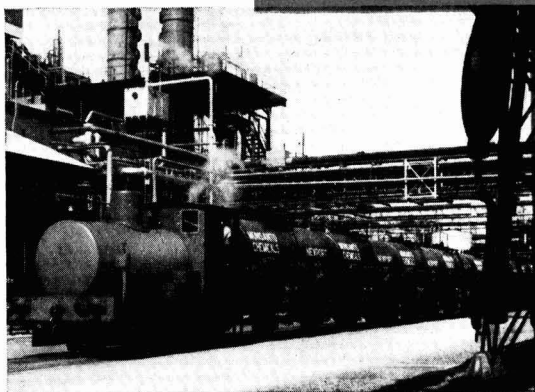
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VOL. 77

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POLLUTION RESEARCH

THAT THERE is a pressing need for greater co-operation between research workers in the chemical industry on air and water pollution, both within the UK and on an international level, is obvious from two reports published last week.

The first of these reports—'Air and Water Pollution: The Position in Europe and the United States'—is published by the European Productivity Agency of the Organisation of European Economic Economy (OEEC) (price 18s, 18s 6d by post, from HM Stationery Office). It will be reviewed in *CHEMICAL AGE* next week.

The second, 'Water Pollution Research, 1956', the annual report of the Water Pollution Research Board, Department of Scientific and Industrial Research (DSIR), is reviewed in page 707 of this issue.

The OEEC report, compiled from the findings of two missions (136 and 145), has been published following a proposal of the OEEC chemical products committee that a team of experts should be sent to the US to study problems of air and water pollution caused by the chemical industry.

Perusal of the DSIR report indicates that development or improvements of methods of treating sewage and industrial wastes have been prominent at the UK Water Pollution Research Board. But even the board feels that the proportion of the effort devoted to industrial problems has been rather low, particularly in view of difficulties being encountered by many manufacturers in treating and disposing of their waste liquors without causing offence.

Closer liaison with organisations representing large groups of industries is suggested as being of great value and the board hopes it will be possible to make suitable arrangements in the near future. In this respect there has been some interchange between the committee on effluent treatment of the Federation of British Industries and the laboratory, while close contact has also been maintained with the trade effluents committee of the Association of British Chemical Manufacturers.

The OEEC report refers to the specialised research centres in the UK which cater for the needs of many types of industries. OEEC mission 136 observes that some US laboratories appear to be undertaking identical types of research, but there is not always the same degree of specialisation as in Europe. It is suggested that the US is not more advanced in basic knowledge relating to pollution problems, although it is noted that the US spends more on research and development, particularly the latter.

Research in the various countries of the world is obviously being duplicated. To avoid this waste of time and money, it is clearly desirable that there should be a better distribution of research work carried out at international level.

This suggestion is emphasised by the OEEC missions, which feel that each organisation could then concentrate more thoroughly and more effectively on the sector for which it is best adapted.

European co-operation on pollution problems may well be worthy of consideration, particularly where international interests are involved, either in connection with research or legislation. This may well come into being,

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for it is hoped that within six months of the publication of the OEEC report a meeting can be arranged by OEEC to which participating countries would be invited to send representatives to discuss the desirability of extending the scope of European co-operation and to make appropriate recommendations. Certainly the report provides valuable guidance for all the countries concerned.

FREE TRADE

THE FBI SURVEY of the projected European free-trade area (see page 705) is the most important document yet published on this subject. For the first time it gives British industry a clear and detailed analysis of the background to the common market treaty signed recently in Rome and to the wider free-trade area in which it is proposed that the UK should participate.

For the first time, the provisions of the Rome treaty have been published in English. Alongside this translation, the survey outlines the recommendations of the OEEC working party and the probable effect of these provisions on UK industry and commerce.

It is clear that the chemical industry—because it is at present among the more heavily protected of British industries—it likely to be harder hit than most if the free-trade area comes into being. While it is right that the difficulties should not be minimised, it would be wrong to take an unduly pessimistic view, for undeniably, the chemical industry is financially in a relatively strong position to withstand the rigours of increased competition from the Continent.

It will immediately receive protection against competition from outside Europe. But a far more positive gain will be the immense market opened up on the Continent. Some chemical manufacturers have already been quick to grasp the potentialities of this new mass market; it would not be unfair to say they are probably those best equipped to take advantage of it.

There is still plenty of time—at least 12 to 15 years—in which firms now more vulnerable can set about examining how they can establish themselves on a more competitive basis. It is quite clear from a reading of the survey, that firms or sections of industry that are unable—or unwilling—to take advantage of the next few years will get little or no help in their difficulties through the invocation of escape clauses. Certainly the Government should consider how it can help in these cases.

Smaller firms in the chemical industry might find it to their advantage to get together and plan a combined production and distribution policy for it is obvious that companies or groups of companies with the most resources will be in the securest position. This is a problem that could well be discussed within the Association of British Chemical Manufacturers. We should also like to see it discussed at open forums up and down the country. Only by such discussion will the industry find the means of taking the best possible advantage of a European free trade area.

RAYON MERGER

MAIN talking point in the City recently has been the proposed merger of Courtaulds and British Celanese, the two largest UK producers of man-made fibres. The UK synthetic fibre industry is still largely based on rayon. Viscose rayon (of which Courtaulds is the largest producer) and acetate rayon (the main producer of which is British Celanese) are stated to account for nearly 90 per cent (by weight) of UK man-made fibre production. Viscose rayon alone is thought to represent three-quarters of all rayon produced.

However, man-made fibre production in the UK has been changing and has given rise, it is understood, to many technical and commercial problems. In order to enable

the industry to improve quality and reduce costs and thus compete more effectively, not only in the home market, but in overseas markets rationalisation of effort has been thought desirable. The proposed collaboration by the two largest UK producers is seen therefore as an attempt to accelerate and channel new developments, be they technical or commercial.

In 1956, UK output of man-made fibres totalled 483 million lb. and the total for 1960 has been estimated at over 600 million. However, whereas in 1950, viscose and acetate rayon accounted for almost all the synthetic fibre output, there will be in 1960 other new synthetics such as nylon, Terylene and other new fibres. Nylon output is now of the order of 30 million lb., and that of Terylene, 20 million lb. Output of Terylene will increase when Imperial Chemical Industries Ltd. new extensions are in operation. British Celanese itself is already producing nylon 6 (Celon) and another company, British Enka, licensed to produce nylon, is likely to produce this also.

Courtaulds are already producing their acrylic fibre, Courtelle, and full production of this fibre is due in 1959 from the new plant at Grimsby which is to open this year.

It will be recalled too that the US company Chemstrand is setting up a plant in Northern Ireland which is to produce about five million lb. of Acrilan in 1959 and 10 million lb. in 1960.

This source of foreign competition and the possibility of further competition from the US due to the agreement between Harbans and the American Viscose Corporation, the largest US producer of rayon and once a subsidiary of Courtaulds, under which know-how will be shared, and patented American Viscose yarns can be produced under licence, are considered to have influenced the Courtaulds-British Celanese merger.

Variations in established fibres are being developed by both Courtaulds and British Celanese. Courtaulds are stated to be rapidly developing production of a 'strong' viscose staple and British Celanese are going ahead with tri-acetate fibre.

Rayon, while still in prominence, and new uses being found for it (such as in carpets), is likely to be over shadowed more and more by the newer synthetics. This brings development costs to the fore for both Courtaulds and British Celanese. E. I. du Pont de Nemours Co. Inc. are stated to have spent something of the order of £16 million on nylon research and development. Combined research and development by Courtaulds and British Celanese should therefore avoid unnecessary expenditure and materially reduce costs.

NEW METAL FINISH

A NEW, bright metal finish for industrial and domestic use is promised from experimental work now being undertaken at the Tin Research Institute, Greenford, Middlesex. When in commercial production, this finish is likely to challenge bright finishes of other metals in such fields.

Research staff of the Institute have found that the addition of a small quantity of wood tar to solutions used in tin plating causes the tin coating to be deposited as a bright finish. Experiments are still going on to discover the constituent of the tar which causes this finish, but sufficient results have been obtained to show that the bright plating process is a practical proposition.

Electrical equipment and instrument parts are among the products which would benefit from this new process. While this development is still in the laboratory stage, results to date were described at the spring conference recently of the Institute of Metal Finishing in a paper presented by three members of the TRI research staff—Mr. S. C. Britton, Mr. A. M. Harper and Mr. A. Mohan.

EUROPEAN FREE TRADE AREA

FBI Survey Gives Details of Rome Treaty Tariffs

THE CHEMICAL industry is among British industries likely to be hit hardest by the projected free trade area. This is because it enjoys a higher than average tariff protection. This point is made in 'European Free Trade Area', a survey for industrialists published by the Federation of British Industries.

The FBI survey is the first detailed analysis of the common market agreement, signed recently in Rome. It includes the time table to which the six Messina countries will adhere when lowering their tariff rates and relaxing quantitative restrictions. The FBI survey makes the point that the proposed free-trade area will, if put into effect, represent a change of course for British commercial policy comparable in significance, though opposite in direction, to the UK's abandonment of free trade in the early 1930's.

This report of the FBI survey summarises the main points of the common market project set out in the Rome treaty; it is followed by a summary of the sections of the survey that deal with the proposed UK participation in a wider free-trade area.

The distinction between 'common market' and 'free trade area' is clearly defined. The first refers to the development of a customs and economic union; a common policy will be adopted so that the movement of goods between the six Messina countries—Belgium, France, Germany, Holland, Italy and Luxembourg—will be as unaffected by barriers between them as is trading in England by the existence of county boundaries.

The 'free trade area' will comprise a wider circle of countries—in the initial stages probably Britain, Denmark, Sweden, Norway, Switzerland, and Austria. Each of these countries will continue to maintain its own tariffs on goods coming from the outside world. It is also possible that within the free trade area, Denmark, Norway and Sweden (Finland at a later stage) may form a Scandinavian common market.

Main Features

Central features of the common market (European Economic Community as it is officially designated) are:

1. Elimination between members of customs duties and quotas on both imports and exports. This is to be achieved progressively during a 12-15-year period (divided into three stages of four years each, with possible deferment of the second stage), according to a prescribed method and timetable.
2. Establishment of a common external customs tariff and a common commercial policy *vis-à-vis* other countries.
3. Abolition between members of barriers to the free circulation of persons, services and capital.
4. A common managed (but not free) market in agricultural products.
5. A common transport policy.
6. Establishment of rules of fair competition.
7. Co-ordination of economic policies.
8. Alignment of legislation in the six countries, where necessary.

9. Harmonisation of social policy (including adopting the policy of equal pay for men and women doing the same job).

10. Creation of a European social fund in the interests of employment.

11. Establishment of a European Investment Bank to create new resources.

12. Association of dependent countries with the Community and the establishment of a development fund.

Under the Rome treaty, tariffs on goods imported from each of the Six will be reduced during the 12-15-year period and abolished by the end of it by the following steps, each of which is a minimum:

Timetable

Stage 1 (4 years): 10 per cent reduction of the original duty on every product within 12 months of the treaty coming into force; 5 per cent reduction of the original duty on every product and 10 per cent reduction of the total customs revenue within the next 18 months; similar reductions within the following 18 months, making at least a 25 per cent reduction of the duty on every product.

This process is to be repeated in the second four-year stage until by the end of it there is at least 50 per cent reduction on every product. By the end of the third four-year stage all remaining duties will be abolished, by a timetable to be decided.

The Six have also agreed to create a common external tariff so that they each levy the same customs duties on goods imported from outside the common market.

Basic principal of this common external tariff is that common duties will be pitched at the arithmetical average of the existing duties. Some of the common tariffs already agreed are listed below:

Not to exceed 3 per cent: Certain mineral products in the crude state; crude metalliferous minerals; peat, coke, gas carbon, coal gas tars, etc.; natural fertilisers; beryllium unwrought.

Not to exceed 10 per cent: Vegetable saps and extracts; agar-agar and other natural thickeners extracted from vegetable materials (other than pectin); fats and oils of fish and marine animals, refined; wool grease and fatty substances, animal oils and fats, degreas, glycerol, spermaceti, etc.;

earth colours, calcined or mixed; oil and other products of the distillation of high temperature coal tar, except phenols, creosotes, etc., pitch and pitch coke, ozokerite, lignite wax, etc., petroleum bitumen, etc., and bitumen mixtures; tanning extracts, except mimosa and quebracho; tannins, syntans; vegetable colouring matter; essential oils, resinoids; miscellaneous chemicals such as artificial graphite, animal black, etc.; tall oil, spirits of turpentine, resin and resin acids and oils; vegetable pitch, etc.; wrought nickel; wrought aluminium; wrought magnesium; semi-manufactured tungsten, molybdenum, tantalum and other basic metals in certain forms.

Not to exceed 15 per cent: Inorganic chemicals; organic and inorganic compounds of precious metals, or rare earth metals, of radioactive elements and of isotopes, with few exceptions such as crude iodine and bromine; selenium and phosphorus; sodium chlorate and potassium chlorate etc.

Not to exceed 25 per cent: Organic chemicals with certain exceptions; synthetic organic dyestuffs; natural indigo colour lakes; artificial resins and plastics materials in liquid, paste etc.

To be admitted duty-free: Nickel and its intermediates; selenium; unprepared beeswax; vegetable waxes; natural magnesium carbonate; crude petroleum.

Fixed at 3 per cent: Crude phenols, xylenols and cresols; 5 per cent: carbon black; 8 per cent: naphthalene, tertiary butyl alcohol; 10 per cent: oxides and hydroxides of iron; potassium; sodium chlorate; 15 per cent: phosphorous; titanium oxide and titanium white.

Other duties already fixed relate mainly to foodstuffs.

Nuclear Research

Euratom.—Under the Euratom treaty signed at the same time, the Six will set up a Community Nuclear Research Centre; disseminate information; notify the commission of projected investments. Supply of ores, raw materials and fissile matter is to be ensured on the principle of equal access to resources and a joint policy. Euratom will own all special fissile matter produced or imported; there will be a common market in nuclear materials. Any European state may apply to join Euratom.

So far as quantitative restrictions are concerned, no new restrictions are to be introduced and members' present free lists are to be made permanent. Quotas existing when the Treaty comes into force are to be abolished at the latest by the end of the 12-15-year period. The FBI survey details the agreed schedule for this reduction.

There are three major escape clauses which will be closely regulated. They cover balance of payments difficulties; acute difficulties for a particular sector or region; and a special exemption for the system of export subsidies and special taxes in the franc zone.

The Rome treaty forbids export quotas and equivalent measures and these are to

be abolished by the end of the first stage. Exemptions or refunds of taxes on export may not be granted except for turnover taxes, excise duties and other indirect taxes. The laws of the Six for such taxes will probably be harmonised. The treaty contains two provisions aimed at preventing dumping and it is pointed out that the abolition of dual pricing will mean that the export price will be the same as for the home market so that the dumper's goods could be returned to his own home market.

LIKELY EFFECT OF FREE TRADE ON UK CHEMICAL INDUSTRY

THE SURVEY also analyses the position of UK industries in relation to a free trade area. It is stated for instance that the British industries most likely to be affected by the area are those that are now most heavily protected, among which is the chemical industry.

The general level of UK *ad valorem* duties on chemicals (other than those covered by Key Industry Duty) is between 17½ and 33½ per cent. KID ranging from 10 to 50 per cent—but generally 33½ per cent—covers all synthetic organic chemicals (other than synthetic organic dyestuffs, colours and colouring matters imported for use as such and organic intermediate products imported for their manufacture), analytical reagents, all other fine chemicals (except sulphate of quinine of vegetable origin) and chemicals manufactured by fermentation processes; certain optical goods including microscopes; scientific and laboratory equipment—beakers, flasks, burettes, measuring cylinders, thermometers, tubing and other scientific glassware and lamp-blown ware, evaporating dishes, crucibles, combustion boats and other laboratory porcelain; instruments—galvanometers, pyrometers, electrosopes, barometers, analytical and other precision balances, and other scientific instruments, gauges and measuring instruments; carbons—arc-lamp carbons, activated carbons and amorphous carbon electrodes.

Revenue Duties

A third category of UK import duties—revenue duties, levied primarily to raise revenue rather than to protect home industry—covers chloral hydrate, colloidion; ether (acetic, butyric and sulphuric); ethyl (bromide, chloride and iodide); hydrocarbon oils; methylated spirits for manufacturing purposes.

The UK Government believes that the system of customs drawback on import duty would be unfair in a free trade area and would tend to distort the pattern of trade. It would be discontinued for exports to the free trade area.

Chemicals and allied products to which quantitative import restrictions apply in the UK include: calcium carbide; dyestuffs and intermediates; laboratory porcelain ware; lithopone and other pigments containing zinc sulphide; scientific and optical glassware and instruments; certain chemicals and pharmaceuticals.

Dyestuffs are still subject to special protection. Import licences are not normally issued unless the dyestuff is not

Restrictive practices are declared incompatible with the common market and are forbidden, except where they may help improve production or distribution, or where they help to promote technical progress. Firms will not be allowed improperly to exploit a dominant position.

The Six are to set up an assembly, a council, a commission, consultative committees, a court of justice and financial organs.

made in this country or unless home supplies are inadequate to meet the users' needs. Synthetic organic dyestuffs are now exempt from import duty.

It is obvious, the survey states, that certain UK industries would be hit hard if the free trade area comes about. But the working party of the Organisation for European Economic Co-operation (OEEC) recommends that the tests for invoking an escape clause in the case of hardship to a particular industry of any country should be very stringent; otherwise the scheme would break down as country after country made special exceptions in favour of particular industries.

Dual Pricing

The OEEC working party recommended that dual pricing should be discontinued. In practice, it probably could not be maintained once export restrictions had been abolished. If, for example, the National Coal Board and the British steel industry were not restricted as to their exports, then the home price of coal and steel would tend to rise to the level of prices prevailing on the Continent, for if they did not the coal and steel industries would tend to give first priority in supplies to continental customers.

It is also recommended that if 'free trade' industries are to compete on equal terms, they must have free and equal access to raw materials produced within the area. But if artificial restrictions are done away with, some industries will have an advantage because of their nearness to the sources of supply.

The survey states that further consideration will have to be given to the means of ending all export subsidies and incentives; to efforts to halt currency manipulation; and to anti-dumping regulations, particularly in the case of quick dumping forays, designed to knock out competitors. For dumping there would have to be a complaints procedure and the right to levy countervailing duties.

Consideration will also have to be given to patents and trade marks and to monopolies and restrictive business practices.

Discussing the action that may be needed in the UK if British industry and commerce are to compete fairly with the continental countries, the survey says 'The taxation of industry and commerce in the UK is already in urgent need of thorough-going reform.' In particular the problem

of making adequate provision for replacement of fixed assets is already acute in view of the present taxation treatment of depreciation. The free trade area may be expected to lend urgency to these problems.

The Government will also have to consider special measures of aid for those firms and industries that will be hard-hit by the increase of imports from the Continent. Firms and industries which consider they stand to lose more than they stand to gain from the entry of the UK into the free trade area are entitled to demand more reassurances on this point than they have yet received.

Register of Restrictive Trading Agreements

THE PUBLIC REGISTER of restrictive trading agreements was opened for inspection on 15 April. Except for week-ends and certain holidays, the register will be open daily from 10 a.m. to 4.30 p.m. It may be inspected on payment of a fee of 1s a day on the 7th floor at Chancery House, Chancery Lane, London, WC2; 9 Wemyss Place, Edinburgh 3; and at 64 Chichester Street, Belfast.

About 1,400 agreements have been received for registration. Agreements covering chemicals and pharmaceuticals total 65.

Research on Metals for Nuclear Energy

A PROGRAMME of research on metallurgical problems arising from the generation of power from nuclear sources has been started by the British Non-Ferrous Metals Research Association.

Announcing this at the association's annual meeting in Birmingham on 24 April, the chairman of council, Dr. Maurice Cook (chairman of the metals division of Imperial Chemical Industries) said that as a first step, with the co-operation of the nuclear power consortia and the Atomic Energy Authority, work was already in progress on the metallurgical properties of thorium and thorium alloys. The metal is of considerable interest for the development of new types of reactors.

This is, however, only one aspect of the association's activities, for the 46 major researches now in progress also include the properties of titanium; the smelting and refining of copper and lead; the engineering properties of aluminium alloys; new types of chromium plate and other finishes for metals; rapid analysis of metals by X-rays, and corrosion and protection.

The steady expansion of the work of the association calls for much new equipment and consequently for more space, and a new laboratory block is to be erected adjacent to the present premises in Euston Street, London.

New Chemical Factory

Clodol Industries Ltd., chemical manufacturers, 37 Lovaine Place, Newcastle-on-Tyne 1, have plans in hand for the construction of a factory on a site at Forth Banks, Newcastle-on-Tyne.

DSIR Report Outlines Work of Water Pollution Laboratory

RESULTS obtained during 1956 are briefly described in the annual report of the Water Pollution Research Board of the Department of Scientific and Industrial Research. This report—"Water Pollution Research 1956"—is obtainable from HM Stationery Office price 4s, by post 4s 3d.

The method for calculating the distribution of dissolved oxygen in the Thames Estuary under given conditions is discussed and there are sections dealing with the oxygen balance in surface waters, the effects of pollution on fish, the treatment of sewage and of industrial wastes and the development of automatic instruments.

In the study of the Thames Estuary the main effort has been directed to the mathematical problem of predicting the distribution of dissolved oxygen in the estuary from a knowledge of the amount of polluting matter discharged, the rate at which it is oxidised, the rate of re-aeration, and the effect of tidal and freshwater flow on mixing of the discharges with estuarine water. The distribution calculated for present conditions agrees, it is stated, reasonably well with the observed distribution and the method of calculation developed, appears to be sufficiently reliable to be used to predict the effect of changes in the polluting load.

Because of the difficulty of making controlled observations in natural water-courses considerable use has been made of an artificial channel having different slopes in its course at the laboratory to study the effect of polluting substances on the rate of absorption of oxygen from the atmosphere by flowing water. Sewage effluent and synthetic detergents were each found to depress the rate of up-take of oxygen by water, the effect being greatest under conditions of turbulence similar to those which might be expected in a placid river flowing in relatively flat country. From results obtained the rate of up-take of oxygen by a river water containing known proportions of sewage effluent and synthetic detergent can be predicted with fair accuracy.

Effects on Fish

Effects of pollution on fish have confirmed the earlier observation that rainbow trout were the most susceptible to lack of oxygen and tench were the most resistant. In one series of experiments a batch of 10 trout required 30 per cent of the saturation concentration of oxygen to survive for 3½ days, whereas a batch of tench tolerated a concentration of only 5 per cent of the saturation value.

Experiments on gas liquor have shown that toxicity of the liquor is due mainly to the ammonia and the phenols contained in it. As the effect appears to be additive, it is considered possible to calculate the toxicity of a gas liquor, and probably also of a coke-oven liquor, from the concentrations of ammonia and phenols determined by chemical analysis.

Composition and treatment of sewage is being studied at the new laboratory by means of a sewer carrying entirely domestic sewage across the site. In experiments on treatment of sewage containing synthetic detergents in small-scale activated-sludge units, the results obtained were somewhat similar to those obtained in pilot-scale percolating filters. At first a high proportion of the synthetic detergent was removed in the activated-sludge units. The proportion then fell to a lower value and later rose again to a fairly steady removal of about 80 per cent of the detergent applied. During most of the experiment 40 p.p.m. or more active agent was added to the sewage and this caused a distinct deterioration in the quality of the purified effluent.

It is reported that the mechanism by which biological film builds up in percolating filters is being studied in a laboratory-scale rotating tube apparatus and in a micro-filter, which can be directly observed and photographed under a microscope. Although organisms typical of percolating filters developed in the rotating tube up to the present the events which have occurred in the micro-filters seem to be different from those which would be expected in full-scale

plant. Experiments in which solutions of peptone have been used have shown that the rate of growth of micro-organisms is greater in these than it is in sewage. The rotating-tube apparatus was primarily designed for studying the biochemical activity of the film, and the distribution of carbon and nitrogen between liquid, film, and atmosphere has been determined before and after passage of settled sewage through the apparatus.

Investigation of the use of anaerobic digestion for treatment of strong organic industrial wastes is being continued. The report states that in a 500-gallon pilot-scale digester treating slaughterhouse waste a reduction of 88 per cent in BOD was obtained by digestion for 36 hours at 33°C. In experiments on the biological destruction of cyanide in percolating filters maturing of a new filter was found to be accelerated if a small amount of organic matter (peptone or sewage) was added to the cyanide solution. Once matured the filters tolerated interruptions in use such as might occur at night, at weekends, and during holidays, if used for treating, for example, plating-shop effluents.

Finally the report gives details of a polarographic dissolved-oxygen recorder in which the dropping-mercury electrode is specially designed to secure stability in operation over long periods. The apparatus performed satisfactorily for seven weeks when used for recording the concentration of dissolved oxygen in the effluent at a sewage-disposal works.

Largest Deoxo Gas Purifier Installed at BOC's Middlesbrough Plant

THE largest Deoxo catalytic gas purifier so far installed in this country went on stream with the start-up recently of the British Oxygen Company's new air liquefaction plant at Middlesbrough.

One of the functions of this new plant is to supply high purity nitrogen to the nearby Wilton works of Imperial Chemical Industries Ltd. After previous ex-

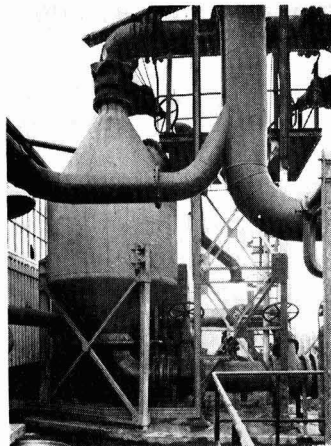
perience with Deoxo gas purifiers, BOC decided to use this process for removal of residual oxygen before piping the pure nitrogen to Wilton.

Although this purifier is the largest of its kind on stream in this country, larger units will be in use shortly and comparable units have been in operation on the Continent for several years. The manufacturers, Baker Platinum Division of Engelhard Industries Ltd., 52 High Holborn, London, WC1, are currently working on designs for purifiers with capacities up to 2,000,000 s.c.f.h.

The Middlesbrough Deoxo is capable of purifying large quantities of nitrogen and according to performance data so far available, the level of oxygen remaining in the gas after purification is well within the guaranteed specification.

This 'D' type purifier is designed for the continuous removal of molecular oxygen from nitrogen by combining it with hydrogen to yield water vapour; the combination is effected over a special catalyst that is highly active at room temperature. The water vapour formed is removed in a standard drier.

Other types of Deoxo purifiers allow for selective combination of oxygen with hydrogen in the presence of carbon monoxide; oxidation of carbon monoxide to carbon dioxide; oxidation of hydrocarbons to carbon dioxide; hydrogenation of carbon monoxide to methane; and selective hydrogenation of acetylene in ethylene.



The largest Deoxo catalytic gas purifier, installed at BOC's Middlesbrough plant by Baker Platinum Division



★ **ENQUIRIES** for 'tennis court' atomic power plants have been received by Humphreys and Glasgow Ltd., London, from authorities and companies all over the world since the company first announced at the end of January that Alco Products Inc., New York, had given them world rights outside the American continent for the sale and development of these small pressurised water reactors. (*'Chemical Age'*, 2 February, page 203).

When this announcement was made, operating costs of between 1½d and 2d a unit and capital costs of £200 a kilowatt were quoted. Mr. Ambrose Congreve, chairman of Humphreys and Glasgow, now states that these plants are expected to produce electricity for only 1d to 1½d a unit, with a capital cost of £150 a kilowatt. These revised figures are based on European manufacturing costs and further reductions may be possible when detailed figures are available in a month's time.

The world's first 'tennis-court' atomic power plant—it occupies an area no greater than a lawn tennis court—has started operating at Fort Belvoir near Washington and will be formally opened by President Eisenhower on 29 April.

★ **SO FAR** two of the six councils on industrial Tees-side have accepted the offer of Imperial Chemical Industries to subsidise houses for their workers (see *Distillates*, 13 April). These are Skelton and Brotton Urban Council and Guisborough Urban Council.

To help overcome housing and labour problems connected with their development projects, ICI offered a subsidy of £20 for 20 years for every house allocated to their key employees.

Some of the councils estimate that even with the subsidy it would cost them £600 over 20 years to provide a house that would be exclusively for ICI workers; responsibility of evicting a worker who left ICI would belong to the council.

★ **A 'TALL STORY'** was the verdict that one reader gave to Alembic's news about the demolition of the 300 ft. stack of British Chrome and Chemicals Ltd., at Rutherglen (*Distillates*, 13 April). Mr. P. K. Potter of the company's Hall Chemical Workers, near Bolton, was quite right to doubt the weight of 25,000 tons ascribed to this tallest works chimney in Scotland. As Mr. Potter says 'Somebody must have got mixed up with the naughts—What a Crash!'

★ **THE 'EXTREMELY valuable work'** that Mr. W. H. Langwell has done for the plastics and polymer group of the Society of Chemical Industry over many years is being rewarded by past and present

members of the group committee. At the annual meeting on Thursday this week they were to present him with a silver tray. Mr. Langwell, formerly with The Distillers Co. Ltd., has served on the committee in various capacities continuously since 1934.

Chairman from 1934 to 1936, Mr. Langwell became hospitality officer from 1943, when the post was created, serving until 1954, since when he has been an ordinary member of the committee.

★ **THE PERIOD** between invention and full-scale production in the chemical and plastics industries has become a forbidding problem. Just how serious it is was described by Mr. P. C. Allen, ICI fibres' director in the April issue of *The ICI Magazine*.

In the case of polythene, it was six years and 'something like a fortune' before the first full-scale plant with an annual capacity of 100 tons started the day war broke out; in the States nylon demanded something like 10 years of development and an expenditure of 27 million dollars plus the services of hundreds of trained minds before it came on the market.

Terylene was first made in a test tube at Calico Printers, Accrington, in the spring of 1941. Nearly 14 years and £13 million later, the product was in full scale production and ICI advertising men

had conjured up that new word 'teryleneity.'

A partial solution, suggests Mr. Allen, is the use of two distinct types of model—firstly the process design model, really a 3-D sketch, and the other the detailed design model; in the case of chemical plant, it might be termed the 'pipe-work' model. It is hoped that stereoscopic photographs of this latter type model will provide the equivalent of blue-prints of portions of the model. It is obvious that this method will cut draughtsman-hours and help produce results much more quickly than by the conventional drawing-board.

THE PHRASE 'or other allied trades' can cover a multitude of activities. It came under judicial review recently in *Fox Chemical Engineering Works Ltd. v. Martin and Another*. The defendants were under an obligation not to use their premises for any purpose other than the business of a plastics manufacturer 'or other allied trades'.

In 1950, defendants turned over mainly from plastics to metal spinning and it was argued that metal spinning was a different genus from plastics manufacturing. His Lordship, however, did not think that this test of association with the end product could be the right construction of the phrase. The test should be to judge the phrase by the machinery, tools and methods used and the workmen employed.

As the same machines were used both for plastics and metal spinning, it was held that plaintiffs had failed to prove that the latter was not an allied trade.

Alembic

Phenolic Resins for Glass Laminates

Good mechanical properties at comparatively high temperatures are claimed for laminates made from a low pressure phenolic resin produced by Bakelite Ltd. The resin (V17085) is a solution in industrial alcohol of a phenolic resin designed particularly for impregnation of glass fibre textiles.

Glass laminates made from the new resin can be used at relatively high temperatures (200-250°C) without serious loss of strength. They will retain full mechanical strength for longer periods at lower temperatures. Maximum temperature is 300°C for short periods only.

UK Drug Exports in 1956 Worth £36m.

LAST YEAR British exports of drugs and medicines amounted to a record of £35,943,000. This is an increase of £58,000 on the previous year. Antibiotics are still the leading product accounting for nearly £7 million. Vitamins accounted for nearly £3 million. Sulphonamide preparations (£1½ million), aspirin and synthetic antimalarial drugs (£1 million each), and barbiturates, insulin and antihistamine drugs also contributed significantly to the total.

Italian Metalurgical Session in London

A HALF-DAY scientific session will be held by the Associazione Italiana di Metalurgia at Church House, Great Smith Street, London SW1, on 29 April, starting at 10 a.m. This session is being held in connection with the joint spring meeting of the Institute of Metals and certain Italian and Swiss societies.

Papers will be presented and discussed in Italian. No tickets are required and visitors will be welcome. Summaries in English will be available.

Safety Exhibition to be Held in Birmingham

FOURTH biannual meeting of the Birmingham and District Industrial Safety Group will be held in Bingley Hall, Birmingham, from 14 to 21 June. Principal feature will be a special exhibit contributed by the UK Atomic Energy Authority.

In addition to the exhibition a two-day conference on the increasing use by industry of atomic energy and its by-products will be held. Papers will be presented by Atomic Energy Authority experts.

1957 BRITISH INDUSTRIES FAIR

Products and Equipment for the Chemical and Allied Industries

THIS YEAR, the British Industries Fair, for the first time in the nearly 40 years of its existence, is concentrated at Castle Bromwich, Birmingham. The Fair opens on 6 May and closes on 17 May.

There is no chemical section at the 1957 BIF as there was at last year's Fair, but being a general or samples exhibition a wide variety of industrial and engineering products on show will interest the chemical and allied industries. Some of these products and equipment, including many new and improved lines, are described in the following preview. In each case, stand numbers are printed in bold type.

Valves and Thermostatic Blenders

Companies of the Charles Winn Group exhibiting will be Charles Winn and Co. Ltd. and Wynn (Valves) Ltd. of Granville Street, Birmingham 1, and Tansley Bros. Ltd., Mill Lane, Kidderminster. Drinking fountains, mixing valves and thermostatic blenders will be shown by Charles Winn and Co. Ltd. (B.229). Wynn (Valves) Ltd. will show ranges of Wynn patent straight-through diaphragm valves for acids, alkalis, oils, slurries, abrasives, etc., and will include new types. Wynn patent fittings of special types for low, medium and high pressure heating installations will also be displayed (D.747).

The Kwikway Trukbin in various types for materials handling in factories, etc., will be shown by Tansley Bros. Ltd. (See CHEMICAL AGE of 9 February, p. 250, for further details of this truck) (D.758).

Industrial Glassware

Products of one of the oldest glass tube manufacturers in Britain, Joseph Towey and Sons, a branch of Towey Industries Ltd., Catherine Street, Aston, Birmingham 6, will be on show. These will include gauge glasses, pressure, vacuum and compound gauges, machined non-ferrous bushes, etc. (D.703).

Sewage Treatment Plants by Hartleys

Hartleys (Stoke on Trent) Ltd., Stoke-on-Trent, will demonstrate by means of a working model their Planette distributor which has been widely adopted throughout the country for small sewage treatment plants for isolated property where main drainage is absent.

The Planette system works automatically with a minimum of attention. Single plants are made to serve from 4 to 350 people and may also take in farm drainage where required. The plant has been tried out and approved by the Ministry of Works and has been recommended by sanitary inspectors and river boards.

Those interested in the subject of sewage disposal equipment and also in the disposal of trade wastes, are invited to call at the company's stand (1331/1230).

Centrifugal and Diaphragm Pumps

Under a recently concluded agreement with the Barnes Manufacturing Co., US, Richard W. Hill and Co. Ltd., 58 London Road, Leicester, are now licensed to manufacture the US concern's full range of self-priming centrifugal and diaphragm pumps. A display of these pumps can be examined on the stand of Richard W. Hill and Co. One of the salient features of these pumps is that they will prime with only one-third of the normal water level in the tank. This, of course, reduces to an absolute minimum the chances of a failure to prime due to solids obstructing the clack valve. All models are stated to lift at depths up to 25 ft. and will handle 25 per cent solids by volume of the liquid being pumped.

The units being manufactured in the UK will be identical with the US types with the exception of prime movers (petrol, diesel, or electric) which will be of British manufacture. The complete range includes capacities of 4,000 to 90,000 g.p.h.

Other types of Barnes pumps are jet prime pumps for wells down to 200 ft. deep, submersibles for wells down to 500 ft. deep, and straight centrifugals (Outdoor) (1315/1214).

Rubber Extruding Machines

A 3½ in. Davis standard extruding machine for rubber, designed and built under licence to highest possible standards, will be shown by Fawcett-Finney Ltd., Berkeley Street, Birmingham 1. The machine has a sectioned-type cast steel cylinder with corrosion resistant removable liner. A double walled barrel is divided into three sections for steam and water heating and cooling. There is an automatic feeder mechanism for feeding strip continuously consisting of a driven toothed feeder roll

and special feeder block. Capacity using typical cold feed rubber is 350 lb./hr.

Another exhibit will be the Osborn automatic hopper loader. This is air operated and suitable for lifting from container to hopper, all free-flowing granular and reground materials. It is complete with vibratory feed, automatic shut-off and re-start mechanisms.

An Osborn heating unit designed for the heat control of moulds as used on injection moulding machines, will be shown. This is an entirely self-contained unit in an enclosed cabinet with water pump, cooling fan, immersion heaters and thermostats. For demonstration purposes this unit will be coupled to a hot plate to illustrate the degree of control available (D.245/144).

New Polyurethane Type Rubber

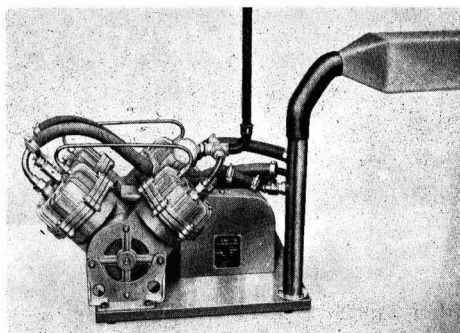
A range of products made by the engineering components' division of the Dunlop Rubber Co. Ltd., Fort Dunlop, Erdington, Birmingham, will be shown in Duthane, a new type of synthetic rubber based on polyurethane. It is reported to have exceptional abrasion and tear resistance, very great tensile strength, excellent bonding properties, and high resistance to oil and petrol. Widely differing rubberlike properties can be developed by varying the manufacturing process.

Components made from it on the stand will include underflow nozzle linings used in wet cyclones for ore classification in the gold/base metal industries (D.623/522).

Diaphragm Compressors

Oil-free air for industry will be a main feature on the stand of Dawson, McDonald and Dawson Ltd., Compton Works, Ashbourne, and various types of diaphragm air compressors and vacuum pumps will be exhibited. Compton diaphragm compressors are designed to deliver absolutely oil-free air as required for atomic research, instrument actuation, aeration and agitation of liquids and powder, supply to protective helmets, salt spray testing, etc. Latest addition to the Compton range is the Compton 4D machine.

Their associate company, Compton

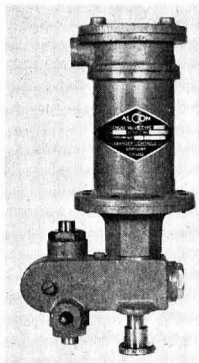


Compton type 4D diaphragm compressor, by Dawson, McDonald and Dawson

Castings Ltd., will exhibit gravity die castings and sand castings in aluminium (C.713).

Valves and Control Devices

Specialists in the manufacture of solenoid and diaphragm operated valves and other control devices, Alexander Controls Ltd., Reddicap Hill, Sutton Coldfield, will be exhibiting a range of solenoid operated valves in sizes from $\frac{1}{2}$ in. to 6 in. bore for use on temperatures up to 400°F and pressures up to 2,000 p.s.i. for use on steam, oil, water and other gases, and liquids. Valves



3-way flame-proof valve, type ACT/F/H for pneumatic control systems by Alexander Controls

will be shown for use in chemical applications with bodies and trim in stainless steel and other materials to withstand corrosive action. A range of three-way and four-way solenoid valves for use on compressed air to actuate cylinders and diaphragms in automation applications will be in operation.

The ALCON range of diaphragm and cylinder operated valves, such as those used to control high pressure hot water at temperatures up to 400°C, play a vital part in nuclear energised power producing units.

All apparatus can be supplied in weather-proof form for outdoor use. Flameproof construction for Group 2 and other gases with Buxton certification is also available as standard construction (C.724).

Steam Water Heater

A representative range of the products of Meynell and Sons Ltd., Montrose Street, Wolverhampton, will be on view, including the Meynell steam water heater, mark IV. It operates on inlet service pressures up to 150 p.s.i. steam and 5 p.s.i. water, or vice-versa, without any reducing valves being fitted. The means of isolating water from steam is positive and hydraulically operated and should the water supply fail for any reason, even if permanently, a complete shut-off of steam is effected. On high-pressure steam the Meynell valves does not act as a steam accumulator and lime deposit is avoided. More than one wash point may be operated and these may be remote from the valve. It is supplied complete with inlet and outlet unions, and although check valves are not required they are available in instances where local regulations make fitting compulsory (B.613).

Infra-red Drying

Infra-red tunnel and panel type units will be displayed by Parkinson and Cowan Industrial Products, Cottage Lane, City Road, London EC1. The gas-fired infra-red tunnel is used for heat processing of small articles and has wide fields of application in paint drying for various industries, drying of plastics powders and metal parts after treatment and for miscellaneous heating, processing and curing in other industries. Similar applications are listed for the company's gas-heated panel units for infra-red radiation.

Of recent development is this company's E/40 type meter for accurate measurement of small volumes of gases (C.513).

Alloys for Heat Exchangers

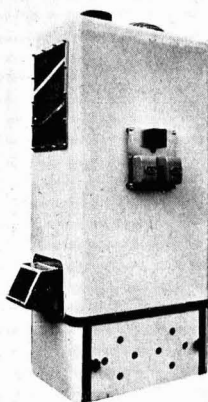
Many alloys for heat exchanger and condenser tubes will be a special feature displayed by the Birmingham Battery and Metal Co., Selly Oak, Birmingham, which they are actively supplying to power stations and oil refineries in most of the main refinery areas of the world. Many tons of such tubes are now in service at Calder Hall atomic power station. An arrangement of 'U' tubes of varying diameters and alloys will be included and a model heat exchanger. A series of condenser plates will also be shown and an extra thick (over 6 in.) tube plate for special oil refinery heat exchanger equipment.

Evaporation tubes for many chemical industries such as sugar refining can be seen (D.514/615).

Oil-fired Boilers

A specially designed range of boilers for oil firing only can be seen on the stand of Perkins CME Ltd., Mansfield Road, Derby. For industrial use there are boilers of up to 500,000 BThU's per hour for hot water and to 2,000/2,500 lb. per hour evaporation at 50 lb. per sq. inch working pressure in the steam gauge. All packaged units can be fitted with selected burners for vaporisation of oil by forced draught or pressure jet.

Also on display will be a prototype new steam boiler of 120 lb. per hour evaporation working at 50 lb. per sq. inch, dimensions being 2 ft. diameter by 5 ft. high.



New steam boiler by Perkins

On show and working will be the Perkins airmatic air heat unit. Ideally suited for heating small workshops, etc., it has an output of approximately 100,000 BThU's per hour at 1,000 c.f.m., and a temperature rise of 100°F (B.213).

Specialised Copper Compounds

On display by McKechnie Brothers Ltd., 14 Berkeley Street, London W1, will be samples and crystals and 'snow' (granulated) Mackechnie brand sulphate of copper 98/100 per cent, samples of Mackechnie brand lithopone 28/30 per cent in dry powder form, samples of MKB electrolytic copper powder N grade, FN grade tamping powder, catalyst grade used in chemical processing copper oxides, brazing paste for furnace brazing and fine copper paste.

A full range of non-ferrous products will be shown by the company's Birmingham and Aldridge metal works, Rotton Park Street, Birmingham 16 (D.500).

Propeller Fans

In company with their associates, The BIF Engineering Co. Ltd., the Midland Fan Co. Ltd., 212 Aston Road, Birmingham 6, will be exhibiting a general range of products which include a water wash spray booth, propeller fans, compression sets, spray guns, air filters and reducing valves, and paint pressure pots (D.712).

PVC Fans

Special fans which have been developed for handling corrosive fumes of all descriptions will be featured by Matthews and Yates Ltd., Cyclone Works, Swinton, Manchester. Of interest will be the Cyclone Turbo p.v.c. fans which are particularly suitable for all types of fume removal plants, i.e., fume cupboards, cabinets, small laboratories or larger complex systems of p.v.c. ducting, hoods and canopies. (See CHEMICAL AGE, 27 October 1956, p. 178) (D.707).

New Barrier Creams

Industrial protective barrier creams and skin conditioning ointments will be the main feature of Rozalex Ltd., 10 Norfolk Street, Manchester 1. The restyled Rozalex dispenser will also be on show. It has been specially designed to issue a controlled and uncontaminated supply of Rozalex when and wherever required.

New barrier creams, which are developments from the continuous research and investigations by this company, can be examined. Each has been designed to combat specific hazards which have hitherto presented problems. There are: Mo 9, a water-resistant cream which provides a definite flexible film with a 'tough' resilient texture. It is particularly suitable for use against organic solvents, and has been shown to have a high degree of efficiency against dye intermediates, plastics materials, printing inks, duplicating inks and carbons, synthetic resins and glues. Cream No. 10 was developed particularly for use when in contact with explosive materials or substances known to have a high rate of toxic absorption through the skin.

Cream No. 11 has been found satisfactory against paints, varnishes, heavy oils, but, as it is water-soluble, it is not suitable for use under 'wet' conditions of work. Cream No. 12 is suggested for use when in contact with pitch, tar or materials which are known to be photo-sensitisers (D.706).

Corrosion Prevention

By means of large coloured murals, Fescol Ltd., North Road, London N7, will show the latest extension of their process—the deposition of hard chromium on components up to 5 in. diameter and 6 tons in weight. (See CHEMICAL AGE, 2 March, p. 384.)

The display will be of particular interest to the chemical industry, where large rolls are subject to corrosion and abrasion. The value of the Fescol process can be judged by examining a Fescol-ised hydraulic ram which will stand beside one untreated. The latter, badly corroded and corded will demonstrate to the maintenance engineer the need for repeated stoppage of plant and re-packing, while the Fescol-ised ram presents a smooth hard non-corrodible surface that will last for many years without re-packing (D.529).

Plating Processes

Finished products which incorporate many of the newly developed plating processes will be available for inspection on the stand of Silvercrown Ltd., 178/180 Goswell Road, London EC1. Various component parts will be shown plated with the company's supersonic bright cadmium solution by means of their special electro-plating equipment (C.406).

Industrial Hand Cleanser

An economical powder-type hand cleanser, which is claimed to combine the effectiveness of a heavy duty cleanser with the mildness of a 'baby' soap, is to be demonstrated by Borax Consolidated Ltd., Carlisle Place, London SW1. Known as Boraxo(Braxo), the cleanser is stated to remove grease, grime and chemicals from the hands, without damage to the skin and without undue removal of natural fats. It is completely soluble and contains no harsh abrasives or organic solvents. In-grained dirt is removed and penetration of oily films is effected by small grains of



Newly styled Boraxo hand dispenser

borax which dissolve slowly during the hand washing operation.

Also demonstrated will be the standard vitreous-enamelled steel dispenser, designed for use with Boraxo, which can be fixed on a wall above a wash-basin or specially fitted to circular wash-fountains. The dispenser embodies a metering device which restricts the amount delivered on operation of the plunger and ensures economy in use (D.718).

New UK Bentonite

A variety of products displayed by the Fuller's Earth Union Ltd., Patterson Court, Nutfield Road, Redhill, Surrey will include Fulbond—clay bond for moulding sands—making synthetic sand, strengthening natural sand and regenerating return sand; for extra green strength in CO₂ sands and in oil- and cereal-bonded core sands. Fulloid, a new high-yield and efficient well-drilling bentonite developed from British deposits and providing a valuable alternative to dollar bentonites, will be displayed.

Activated Fullers' earth—such as Fulmont and other highly activated earths for decolorising oils and non-polar liquids, and as catalysts and carriers of high surface area, will also be shown, as will natural Fullers' earth, a material with adsorbent, absorbent and ion-exchange properties, suitable for clarification and filtration of liquids and dispersions, for carrying insecticides and pigments, and with many other uses (D.326).

Movigraph Charts

Movigraph wall charts will be exhibited by Adapta-Charts Ltd., 129 Hammersmith Road, London W14. These are among the most flexible charts in the world. Basis of the chart is a perforated plastics panel. Into these perforations—there are 2,000 to the square foot—peg signals and other symbols to present a visual record of any state, process or operation. Signals are easily inserted and removed (C.219).

Granulated Aluminium

Speciality of the Oakland Metal Co. Ltd., Oakland Works, Willington, Derby, is various grades of granulated aluminium. These will be exhibited on their stand together with non-ferrous ingots and refractory minerals, such as sillimanite, natural khashi sillimanite, Indian kyanite, and DPA (diaspone-pyrophillite). Zinc-rich paint which is anti-corrosive will also be shown (A.327/226).

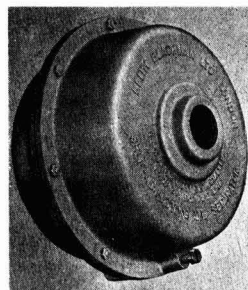
Hydro Rotor Filter

First produced less than two years ago by Keith Blackman Ltd., Mill Mead Road, London N17, the 'KENO' hydro rotor filter has now been much improved as the MK II 'KENO'. The casing is now bifurcated and of square cross section. Also, the water elevating helix is directly driven by a motor mounted in the casing. The eliminator plates are now arranged in two banks fitted at an angle of 45° to the horizontal, one bank at the top of each bifurcated section. Accessible through openings fitted with quick release doors each plate can be removed for cleaning

without removing the entire bank. A set of spare plates is supplied with each unit so that the unit need only be shut down for a brief period for these to be changed and the used plates cleaned at leisure.

Minor improvements are: Easier access to the inside of the unit by means of large inspection doors in the casing; a non-choking open type water helix has been adopted as standard; the ball valve controlled automatic water level make up unit has been re-designed to ensure trouble-free reliable operation; larger drain and overflow connections prevent choking and a supplementary drain or poke hole assists in cleaning any obstruction to the drain connection.

Keith Blackman will also have a display of 'off the shelf' equipment such as fans of various types, industrial gas equipment and the new K B self adjusting oil separator fitted with an annular nozzle automatically



Keith - Blackman self-adjusting oil separator

adjusted to suit the volume passing. There will be a working model of the latest method of cleaning heating surfaces by means of small shot which cascades through heat exchangers to remove unwanted deposits. It does not entail shut downs or damping back (D.276).

Materials Handling

Fisholow 1957 developments will be the theme of Fisher and Ludlow Ltd., material handling division, Bordesley Works, Birmingham 12. All products on show will be incorporated into a working demonstration of a production unit. Amongst the conveyor exhibits will be seen the Flexiroll troughed belt idler type complete with support stands and stringer rails; advantage of this type is no maintenance as all bearings are of nylon and therefore, do not require lubrication; adequate belt support under all load conditions which also permits the belt to trough most suitably for the load carried; elimination of fire risk as there is no metal to metal contact to cause overheating.

The new Flowroll gravity conveyor with patented dome end rollers can be examined as also the Floporter belt conveyor, comprising only five standard components and allowing for a maximum rise or fall of 30 degrees from the horizontal, the Fisholow towline trolley system where the trolley is towed along a predetermined route by a Flowlink overhead conveyor to deliver goods at selected stations; and the Flowscope mobile telescopic gravity conveyor.

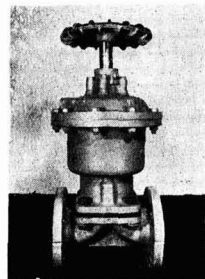
In pallets, the new Flowstack 'V' Line

flat steel pallet, which is based upon the employment of 'V' section cross bearers fusion welded to steel slats, results in a pallet of exceptionally high strength to weight ratio, robust and durable and yet low in cost. Also new is an adjustable pallet rack in which shelving levels are instantly variable by simply re-positioning the shelf carrier brackets into pre-drilled holes—no tools being required. They will take a load of up to 6-tons each rack (D.641/540).

Valve Display

Prominence will be given to the variety of power operated valves produced by Saunders Valve Co. Ltd., Cwmbran, Monmouthshire.

Pressure closing, already available on type 'A' (full flow) valves in $\frac{1}{2}$ in., 1 in., $1\frac{1}{2}$ in. and all sizes up to 8 in., is now extended to type 'K' (full bore) valves in sizes from 1 in. to 6 in. (inclusive). These latter are also supplied with pressure opening heads, a feature of this unit being the automatic closure which occurs when there is any cut, either intentional or accidental, in the operating power.



*Saunders
2½ in. dia-
phragm
valve, type
A, with pres-
sure closing
and emer-
gency hand-
wheel
control*

A further development in these power operated valves is the high pressure closing. This type is made in sizes from $1\frac{1}{2}$ in.—5 in. Both standard and high pressure closing valves can also be supplied with emergency handwheel closure and a $2\frac{1}{2}$ in. high pressure closing valve so equipped will be shown. Detailed data will be available at the stand.

Electrical operation, until recently only available with the larger sizes of valve, is now produced in some of the medium size units e.g. 2 in., $2\frac{1}{2}$ in., 3 in., and an example of one of these units will be in operation on the stand. Actuators of these valves have direct electrical operation with micro switches controlling the open and closed positions. Visual indication of the degree of opening is included in the gear and independent handwheel control is provided.

Examples of the range of plastics valves: Ebonite, HSB (high styrene butadiene base) and Vulcathene (grade II polythene) will also be shown (D.125).

Batch Weighing Scales

Weighing, counting and testing machines will be shown and demonstrated by W. and T. Avery Ltd., Soho Foundry, Birmingham 40. Among the weighing devices, there are two outstanding exhibits.

A drum-filling scale with automatic rate compensation and dial indication, fitted with Roberts patent non-drip valve, will

be demonstrated filling oil into 5 gallon drums. The incorporation of the Avery electronic switch permits push-button control throughout.

Batch-weighing is exemplified in a new adaptable electronic scale for the accurate blending by weight of granular materials, dry powders or the like, which can be fed to the scale by gravity or suitable mechanical means. Material is delivered at a constant pre-determined rate from a moving belt.

Other scales include a ticket-printing non-electric bench scale, a scale for counting-by-weight, and a typical platform scale indicating weight in three standards (D.523/420).

New Metals and Plastics

Two divisions of Imperial Chemical Industries Ltd., metals and plastics, will be exhibiting.

The metals division will show some of the contributions its products are making in the growing sphere of nuclear engineering—condenser tubes, plates and ferrules, Integron integral finned tubing for fuel cans and heat exchange units, and zirconium in various wrought forms.

The division will also have on view titanium and titanium alloy products, with examples of their uses in chemical engineering and condenser tubes and plates in various alloys and bi-metals made for the oil industry.

Kynalok general purpose, troughed and Kynalok secret-fix profiled sheets for roof and wall cladding will be shown and the facility with which the divisions recently introduced Alkalite polythene fittings can be used with polythene tubes will be illustrated.

New developments with particular prominence to Butakon rubber-reinforcing resins for shoe soling applications will be the theme of the Plastics Division. Wearer trials over the past three years have shown that Butakon rubber compositions can be produced which wear three to four times as long as the best leather procurable (D.413/312).

Stainless Steel Products

Stainless steel polished sheets, strip, bar, tubes, section, wire and components produced by Padley and Venables Ltd., Suprex works, Livery Street, Birmingham 5 will be on view as also various finished articles in stainless steel (D.525/422).

Anti-corrosive Fluids

Manufacturers of the anti-corrosion fluids, Plus Gas formula 'A' dismantling fluid (rust remover) and Plus Gas formula 'B' protective fluid, Plus Gas Co. Ltd., 1-11 Hay Hill, London W1 are introducing for the first time a new product which is a tannating process for the preparation of rusted surfaces prior to painting. Known as Plus Gas formula 'E' external metal treatment it is particularly recommended for the treatment of metal surfaces. The tannate/gamma-ferric oxide complex formed by reactions of the tannins with the oxides on the metal surfaces creates an insoluble corrosion resisting film which stands up to the weather for a number of days, even in exposed positions. It is claimed that under cover the coating will remain intact for

several months and inside buildings under normally heated and ventilated conditions the film will last indefinitely. Plus Gas Formula 'E' is non-acid, non-toxic and non-injurious (D.129).

Automatic Chemical Loaders

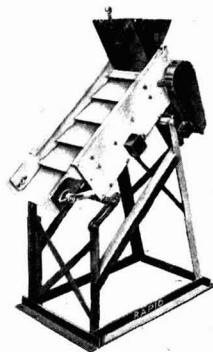
Up to 12 ft. lift-on forks or platform, for sacks, drums and other containers is offered in the new Lodematic range of automatic loaders and stackers, produced by Lodematic Ltd., Clitheroe, Lancs.

Exhibited for the first time is the new Miniloader having wheels similar to a small sack truck; it is only 24 in. wide. Like the Lodematic Auto-loaders, which are available in six models with from 4 ft. to 10 ft. lift, the Miniloader is automatic in operation. On receipt of a chemical sack or similar load, the platform lifts. When transferred to lorry, stack or hopper, the platform descends. The loads are counted, as they are lifted, by counter attachment if desired (D.738).

New Separators

In addition to improved examples of their products, Rapid Magnetic Machines Ltd., Lombard Street, Birmingham 12, will be exhibiting a number of new units.

A conveyor/elevator which automatically conveys ferrous articles magnetically, is designed to reduce handling costs and increase production. Also to be exhibited for the first time will be the new hopper magnet which is included in hoppers, feed chutes, etc. extracts and removes tramp iron.



Rapid vibratory chute type separator for the treatment of fine powders requiring mechanical motion to precipitate the flow, by Rapid Magnetic Machinery

Well known for its pioneering of electromagnetic mineral separators Rapid Magnetic Machines Ltd. have produced the laboratory type 'O' equipment, of interest to mining engineers. Another new separator, type MJ, to be exhibited, is for the treatment of silicates, mildly abrasive powders and small granulated materials, the outstanding design feature being a high throughput coupled with high efficiency.

An example of a new tri-polar suspension

(Continued in page 714)

Overseas News

MONTECATINI'S POLYPROPYLENE PLANT COMES ON STREAM NEXT MONTH

EARLY in May, Societa' Montecatini are initiating commercial production at their Ferrara, Italy, plant of their new plastics material, Moplen. This modification of polypropylene resists temperatures of up to 320°F and it is claimed that even thin sheets of it display a tensile strength comparable to that of steel. Specific gravity is 0.9.

Montecatini state that the material is available in unlimited quantities. In its raw form, it is a white powder and during subsequent processing it is transformed into coloured granules.

Uses for the material include equipment for the chemical industry, machinery and instrument parts, sanitary equipment, textile fibres, veneers and pipes and household wares. The manufacture of products from Moplen is said to require no special machinery.

East Africa's Phosphate Fertiliser Scheme

Under a pilot scheme to be started by the East African Industrial Research Organisation, production of phosphate fertilisers from minerals found at Sukulu, near Torono is to be tried out. The investigations will be carried out in the Organisation's new laboratories in Nairobi.

SA Relaxes Import Regulations on Fertilisers

Subject to certain provisions published in the Union Government *Gazette*, South Africa will now issue import permits freely to registered importers of a number of goods including: fertilisers in bulk, animal, mineral or vegetable, artificial or natural, but excluding phosphatic and nitrogenous fertilisers; and certain scientific apparatus.

Turkey Levies a Tax on Some Chemicals

A new Turkish law provides for the levying of taxes on foreign exchange allocated for various categories of imports. This 'Treasury share' tax will be collected in Turkish liras and is fixed at 40 per cent of the value of the exchange for the manufactured articles mentioned below. Petroleum products bear their share on a weight basis.

Manufactured goods affected include: salt, sulphur, earths, magnesium and beryllium, machinery, etc.

Olin Mathieson Expands Chlorine-Caustic Plant

Olin Mathieson's McIntosh, Alabama, U.S. plant for the production of chlorine and caustic soda, which was built in 1951, has recently been expanded to twice its original size. It is now able to pro-

duce about 250 tons of chlorine and 280 tons of caustic soda a day.

The plant uses 252 Mathieson mercury cells in which a stream of purified salt brine is piped continuously into the cell body where it flows between a graphite anode and a moving bed of mercury which serves as a cathode.

The McIntosh salt dome is said to be one of the largest salt deposits on the eastern part of the U.S. Olin Mathieson owns or leases the entire area occupied by the dome.

Total investment of mercury in the plant is about \$2,500,000. Electricity used amounts to 1,000,000 kW a day.

New Fertiliser Plant for Sicily

Societa' Sincat of the Edison Group plan to build a chemical fertiliser factory in the eastern part of Sicily. This development is connected with the fact that Edison prospectors have recently discovered extensive beds of potassium salts in Sicily.

Mexican Chemical Production Increases

Production of chemicals in Mexico increased substantially in 1956 compared with 1955 as is shown by the following table:

Products	Period compared	Quantities (Tons)	
		1955	1956
Sulphuric acid	Year	124,887	145,000
Sodium alkalis	Year	53,704	64,000
Ammonium sulphate	Jan.-Nov.	58,018	72,139
Superphosphates	Jan.-Nov.	68,086	68,224
Organic fertilisers	Jan.-Nov.	2,524	3,121

Mexican exports of chemicals increased in the same period from 48,900 pesos to 60,900.

Aid for Italian Sulphur Industry

During the financial year 1957-58, the Italian sulphur industry is to receive 2,150,000,000 lire in Government grants. Out of this, 480 million are intended to make good the losses sustained in marketing stocks of sulphur, 170 million constitute grants to mines whose costs are above the level considered normal, and the remainder will be spent on reorganisation and modernisation of the sulphur mines.

Bayer Activities in 1956

In a recent letter to shareholders, Farbenfabriken Bayer AG, Leverkusen, Germany, forecast that their dividend for 1956 would not be less than the 9 per cent paid in 1955. Investment in 1956 was over DM230 million—a small increase on the previous year.

Expansion of capacity in basic chemicals and intermediates has taken large sums of money as have the increases in

size of the company's former plants. The Perlon-fibre installation at Dormagen has been extended and work has continued on the Dralon-fibre plant, which may be in operation shortly. A titanium-white plant, being built at Uerdingen may be in operation by the end of this year.

Increase in turnover by Bayer AG in 1956 of +11 per cent was less than in 1955 (+19 per cent). Sales showed an increase from DM1,400 million to DM1,600 million. Some DM635 million was in respect of exports. Export sales expanded more than home market sales.

In view of extra costs resulting from higher wages and shorter working hours, future prospects are regarded with reserve. Bayer's labour force increased last year by 4.5 per cent (46,826) and wages and salaries rose by about 15 per cent to DM320 million.

Two New Nuclear Particles Postulated

Edward Teller of the University of California has postulated two new nuclear particles. According to this investigator, these are neutral but too short-lived to be detected by present methods. He suggests that they are heavier than pions and he considers that such particles could explain the marked attraction of antiprotons for nuclear matter and would allow a more satisfactory representation of distribution of electric charges and currents in the vicinity of protons and neutrons.

Fertiliser Plant to be Built in Trinidad

A £4 million chemical fertiliser plant will be erected in Trinidad by W. R. Grace and Co., of New York, if the company can make satisfactory arrangements with the government at Port of Spain, Trinidad.

French Prior Authorisations

A revised list of goods eligible for prior authorisations to facilitate import into France includes: synthetic organic dyestuffs (including pigment dyestuffs), synthetic organic products of a kind used as luminophores, optical bleaching agents, natural indigo (except crude natural indigo), certain scientific apparatus and certain plant and equipment.

Foreign Investment in Italy

During 1956, overseas industry invested in Italy an equivalent of 59.3 milliard lire. Of this, 3.2 milliard, was invested in the chemical industry.

Du Pont to Expand Canadian Nylon Plants

Du Pont of Canada announces that it will spend more than \$7,500,000 at its Kingston and Maitland, Ontario, nylon plants over the next year to produce heavy denier nylon yarn in the quantities required by the tyre cord industry and to provide for the growing needs of the textile industry.

The money will provide increased production facilities at Maitland for adipic acid and hexamethylene diamine, the two intermediates from which nylon is made.

to ensure the Kingston plant of adequate raw materials. New spinning equipment and an addition to the plant powerhouse are planned for Kingston.

The expansions are the second series involving the Kingston plant to be announced within the last six months. The company said in October that it was beginning construction of a \$750,000 technical laboratory, addition of facilities for the testing and development of nylon tyre yarn and expansion of the present sales service laboratory.

Big Expansion in Italy's Nitrogen Plant

During the recent meeting of the shareholders of Societa' Montecatini the president of the company, Carlo Faina, pointed out that with the new plants that ENI is building at Ravenna and Edison is erecting at Porto Marghera and other places, the Italian output of nitrogen will total 586,000 tons a year by 1958, which is more than double the present Italian consumption (254,000 tons in 1956).

US Chemical Manufacturers Anticipate Sales Increase

A 10 per cent increase in chemical sales is expected this year by manufacturers of chemicals and related products according to their report to the US Commerce Department; sales in 1956 amounted to \$24.3 billion. Some \$1.8 billion is to be invested in new chemical plants and equipment. Of this sum, 29 per cent will be for replacement and 71 per cent for expansion.

Indian Firm Seeks Chemical Plant from the UK

Eastern Equipment and Sales Ltd., 9 Brabourne Road, Calcutta-1, are anxious to obtain UK agencies in machinery for the manufacture of rayon and chemicals, particularly soda ash, caustic soda and precipitated chalk. The firm particularly wish to obtain synthetic fibre manufacturing machinery and looking a long way ahead, carbide and petrochemical manufacturing equipment.

Italian Sulphur Output

During January 1957, Italian producers delivered to the State Sulphur Board (Ente Zolfi Italiani) 14,098 tons of raw sulphur. Out of this quantity 85.7 per cent was mined in Sicily and the rest in other parts of Italy. Total output was about 16 per cent below the January 1956 figure.

Principal customer for Italian sulphur in January was Tunisia with 6,650 tons; Israel took 4,125 tons, France 3,920 tons and Yugoslavia 640 tons.

New Oil Refinery for Turkey

Plans to build a new 65,000 barrel-a-day refinery in Turkey are in hand by Mobil Overseas Oil Co. Inc., a subsidiary of Socony Mobil Oil Co. Inc. The refinery, scheduled to go on stream in 1960, will be built, as requested by the Turkish Government, by Mobil Overseas Oil Co. Inc., the British Petroleum Co., California Texas Corporation and the Royal Dutch/Shell Group under arrange-

ments recently concluded with the Turkish Government.

Mobil Overseas will have a 37 per cent interest, Caltex 34 per cent, Shell 18 per cent, and British Petroleum 11 per cent in the refinery. The right to operate the refinery will be for a period of 80 years with a right of renewal.

Initial installations will include a crude petroleum distillation unit and a catalytic reforming unit for upgrading naphtha.

Estimated cost of the new refinery, excluding the cost of land, will be equivalent to \$48 million (approximately £17 million) which will be provided by the four companies. Exact location will be determined before the end of June 1957.

Exports of Marine Salt

During 1956, the province of Trapani in Sicily exported 74,572 tons of marine salt or about 24½ per cent more than the 60,630 tons exported in 1955.

New Carbide Bulletin on Primary Amyl Alcohol

A new, 4-page, technical bulletin on primary amyl alcohol (mixed isomers) has been published by Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, US. Physical properties, specifications, shipping data, uses, and physiological properties are dis-

cussed. Primary amyl alcohol consists of approximately 60 per cent pentanol-1, 25-35 per cent 2-methyl butanol-1 and 5 per cent 3-methyl butanol-1. It is made by the 'oxonation' of refined butylenes and, therefore, contains no lower molecular weight alcohols, no residual chlorine, and no secondary or tertiary alcohols.

Canadian Sulphonates Plant Comes On Stream In June

Surpass Petrochemicals expect to bring their new £1 million petroleum sulphonates plant on stream at Scarborough, Ontario, in June.

Not only will the new plant be the first of its kind in Canada, but will be the first plant of its kind in the world to employ a continuous system of production, state the company. Chemicals produced will be used in the fields of lubrication, corrosion control and chemical synthesis.

The plant will have a capacity of 26 million lb. of greases, 7 million lb. of sulphonates, and 5 million lb. of inhibitors.

Benzole Association's AGM

Annual general meeting of the National Benzole and Allied Products Association will be held on Monday 29 April at 2.30 p.m. at the Grosvenor Hotel, Victoria, London SW1.

BRITISH INDUSTRIES FAIR

(Continued from page 712)

magnet technique will be exhibited—a sure safeguard from the ravages of tramp iron which finds its way on to conveyors carrying coal, limestone and similar commodities, with the consequent disastrous effect to crushers. Chute type separators will be displayed in both permanent and electromagnetic form for the extraction of fine and tramp iron from dry materials such as fertiliser, fireclay, powders etc., and also magnetic filters, for use in gravity pneumatic or hydraulic ducts, pipelines etc., for removal of tramp iron from liquids, semi-liquids or dry fibrous products (C.421).

Automatic Tank Gauges

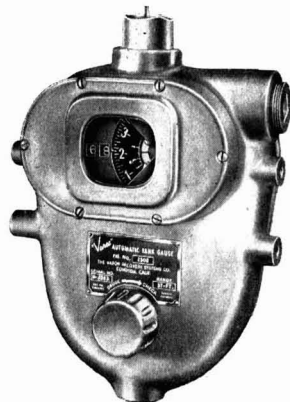
Main items to be featured by Wm. Neill & Son (St Helens) Ltd., are automatic tank gauges which indicate liquid levels to $\pm \frac{1}{16}$ in accuracy in all types of storage vessels up to 60ft high. These gauges incorporate a special negator constant tension spring to maintain an equal pull on the operating float at all times. A practical demonstrating rig of the above will be on show and will be wired up to an electronic remote reading instrument which would in actual service be capable of remote reading the levels in 24 vessels.

Also on show will be a series of flame arresters for safety and fire prevention of inflammable vapours. These arresters have been tested and approved by the leading certifying authorities in the US and comparing them on a size basis the nett free area

through the flame arrester is larger than any other known flame arrester.

There will also be a display of conservation vent valves. These valves function as pressure and vacuum relief valves and are designed to allow the very maximum volume of gas through the valve at very low pressures. Certified flow curves are available for a limited range of settings for each size of valve.

These fittings are being manufactured under licence to the Vapor Recovery Systems Ltd., US (D.336).



Automatic tank gauge

CHEMICAL PIONEERS

6 Muspratt

The sixth article in this series on the pioneers of the chemical industry deals with James Muspratt, the alkali-maker. The author, Dr. D. W. F. Hardie, is well known as a historian of the chemical industry.

JAMES MUSPRATT, son of Evan Muspratt, an artisan cork-cutter, was born in 1793 at 32 Great Strand Street, Dublin. Two of James' uncles, William and Ephraim, also made corks in Dublin; another uncle, James Petty Muspratt, after whom he may have been named, became, in 1825, a director of the East India Co., a position to which he was re-elected in 1830. It appears probable that the Muspratts were comparatively recent arrivals in the Irish capital, having come there from England to ply their trade as cork-makers in a city where important breweries provided a steady demand for their commodity.

Nothing is on record of James Muspratt's schooling; it can only be assumed that it was of the quality available to the son of a working-class family in Dublin at the beginning of last century. At the age of 14 he was apprenticed to the apothecary Micheltree, who in due course dismissed him for insubordination. In 1810 Evan Muspratt died, and in the following year his widow remarried, only to die shortly afterwards. Unemployed and an orphan, James Muspratt, being of a wild and restless disposition, sought relief from sorrow and the uncertainty of his situation in war-torn Spain. As a civilian camp-follower of Wellington's army the penniless Irish lad failed in his impossible ambition to obtain a cavalry commission in the field, although the Navy later enlisted him as a midshipman and promoted him to second officer on a small ship. The stern naval discipline of Nelson's time proved irksome to young James and when his ship lay off Swansea he deserted and made his way back to Dublin.

The returned adventurer became a member of an easy-going group of *aficionados* of the Dublin stage. Among his friends of that period were James Sheridan Knowles, a cousin of the dramatist Sheridan and later a famous Spurgeonesque preacher in Victorian London, and Samuel Lover, miniaturist, and dramatist. His impending marriage to Julia Conner, which took place in Dublin in 1819, and the consequent need to earn a steady income turned Muspratt from the romantic glare of the footlights and pleasant days in the company of literary

friends to drab labour in a backyard chemical works as the partner of Thomas Abbot, drug and general merchant, at 14 Parkgate Street. He did not embark upon this career with any feeling of vocation or enthusiasm: in old age he confessed that he never spent a happy day during the years of his early chemical activities in Ireland.

Muspratt and Abbot were by no means chemical industrial pioneers in Dublin; Josias Gamble, later to be in brief partnership with Muspratt in England, John Kane, and a certain Kenny were already manufacturing vitriol and some derived chemicals there. It may be that Muspratt made some acquaintance with chemical practice at the factories of those other Dubliners. Glauber's salt, hydro-



James Muspratt

chloric and nitric acids, prussiates, sal ammoniac, and turpentine were among the products marketed by Muspratt and his partner. There is some evidence that in this Dublin period Muspratt may have made small quantities of soda by LeBlanc's method. Andrew Kurtz, who was in Dublin in April 1819, having recorded in his polyglot notebook his experiments carried out with *soude de Muspratt*.

In 1822, an Act of Parliament reducing by half the import duty on imported barilla caused consternation among the kelp-using soap-boilers of Merseyside, who derived considerable advantage *vis-à-vis* their London competitors from use of untaxed kelp alkali for part of their soda supply. It may be that Muspratt made a shrewd judgement of the situation, or it may have been merely his natural restlessness that caused him to seek a new scene for his chemical activities in 1822. Already two sons had been born to him and it is possible that this additional strain upon his means was not being comfortably met by his income from the small chemical concern in Dublin.

Whatever determined Muspratt's decision, he could not have chosen a more propitious moment to appear in Liverpool as a manufacturer of soda. Already, as we have seen, soda had been synthesised in London, on the Tyne and on the Clyde; Muspratt was thus no innovator. What was new in Muspratt's operations in

Liverpool was the *scale* on which they were carried on. Liverpool and other towns on the Mersey shores were, in the 1820s, building up a hard soap trade rivalling in size, and soon to surpass, that of London. With such a market within carting distance of his factory gates Muspratt was able to embark upon alkali synthesis on a scale of many hundreds of tons a year. The 112-feet long and 24 feet wide acid chamber he erected at his Vauxhall Road works to supply the vitriol he required, far exceeded in dimensions any hitherto built. In less than a decade Muspratt's two factories in Liverpool and St. Helens had driven natural alkali from the Merseyside soaperies.

From his chemical operations Muspratt rapidly amassed a substantial fortune diminished only by heavy levies in damages paid to farmers and landed gentry for crops and woods destroyed by muriatic acid from his saltcake furnaces. In 1838 Muspratt attempted unsuccessfully to introduce the ammonia-soda process, which in the form improved by Solvay later brought fame and fortune to Ludwig Mond. With his sons, trained in Liebig's laboratory at Giessen, Muspratt embarked also without success on the manufacture of Liebig's chemical fertilisers.

In the 1830s Muspratt changed over entirely to manufacture of white soda ash, instead of the crude, foul-smelling, highly impure black ash with which he had conquered his first local market. With John Tennant, son of Charles Tennant of St. Rollox, he despatched the first cargoes of soda from this country to the United States, and thus opened up a trade which was to take more than half of Britain's chemical production in the years to come. Long before 1850 Muspratt's fortunes were sufficiently established to enable him to flee from his factories to seek in Germany the companionship of his friend Baron Liebig, whom he first met at the meeting of the British Association in Liverpool in 1837. He sought, too, in Italy, the company of artists and other sun-loving fugitives from drab industrial England.

In 1850, harassed by legal processes for damages and conscious of the ebb of the abounding vitality which had enabled him to harvest a fortune in an activity to which he felt no particular calling, Muspratt withdrew from the chemical industry, leaving his sons to carry on the family business in new factories at Flint and Widnes. After the death of his wife in 1857 James Muspratt lived the life of a studious recluse. His granddaughter Hildegarde, in privately-printed memoirs, gives a picture of the alkali-maker, become a kind of ogre to the children, thrashing with a thick stick his grandsons caught in Seaforth Hall orchard. The last ten years of his life were spent as a 'huddled-up old man,' silent before a raging fire in a large upstairs room with two long windows overlooking the river on whose banks he had made the manufacture of alkali 'a matter of national importance.' James Muspratt died on 4 May 1886. He was buried in Walton churchyard beside his wife and the long-dead infant sons he had named after Benjamin Franklin, Robert Owen, and Henry Brougham.

People in the NEWS

● DR. WILLIAM LANE-POTTER, director of the Laboratory Animals' Bureau of the Medical Research Council, has been appointed by the Privy Council to be a member of the Council of the Pharmaceutical Society in succession to Dr. J. A. GILES who has retired.

● MR. J. W. PLATT, a managing director of the Shell Petroleum Co. Ltd., and a principal director of N. V. De Bataafsche Petroleum Maatschappij, the two parent operating companies of the Royal Dutch/Shell Group, has decided to retire from these offices from the end of June 1957, before which date he will have reached the age of 60. He will remain a director of the Shell Transport and Trading Co. Ltd., and a director of the Shell Petroleum Co.

MR. J. P. BERKIN, C.B.E., has been appointed a director of the Shell Transport and Trading Co. Additionally, he has been appointed from 1 July, a managing director of the Shell Petroleum and a principal director of N.V. De Bataafsche Petroleum Maatschappij.

● MR. J. W. BARNABY, secretary of the Imperial Chemical Industries of Australia and New Zealand group who is on a business visit to the UK and Europe, will be Australian delegate to the international congress of business management in Paris in July.

● MR. R. CLIVE WALKER has been appointed managing director of Walker and Martin Ltd., Rose Hill Tannery, Bolton, a company that controls tanneries in England and Scotland, as well as chemical and extract factories. A number of appointments has been made to the boards of subsidiary companies in the leather industry, but there are no changes in the boards of either the Walker Extract and Chemical Co. Ltd., or Arthur Ashworth Ltd., whose main products are pentaerythritol, formaldehyde, hexamine, paraformaldehyde and tanning extracts.

● MR. FORREST F. TIFFANY has joined Olin Mathieson Chemical Corporation as sales manager, Cincinnati-Dallas division for Olin Aluminum.

● SIR ROBERT ROBINSON, a director of Shell Chemical Co., and Mr. J. K. JENNEY, a director of E. I. Du Pont de Nemours, were on board the *Queen Mary*

when she arrived in New York on 23 April. Sir Robert is travelling to Houston, Texas, on company business.

● MR. J. W. NELSON, chemical engineer, has been posted to Toronto, Canada, to the firm of Dominion, Scott, Brown, Ltd., one of the associate companies of the Henry Balfour group. Mr. Nelson formerly represented George Scott and Son (London) Ltd. in the north of England.

● MR. J. A. DORR has been appointed sales manager of the manufacturers' division at Fort Dunlop. He will be responsible for original equipment and is made a member of the Fort Dunlop local board of directors.

● PROFESSOR WILLIAM WARDLAW, C.B.E., professor of chemistry at Birkbeck College, University of London, has been



W. Wardlaw

elected president of the Royal Institute of Chemistry in succession to Dr. D. W. KENT-JONES, who has completed his two-year period of office and now becomes a vice-president, ex-officio, Professor Wardlaw, who has served as a member of council, an examiner and a censor of the institute, is a past president of the Chemical Society. PROFESSOR H. V. A. BRISCOE, DR. J. IORRIS JONES and PROFESSOR R. G. W. NORRISH, F.R.S., have been elected vice-presidents and will hold office with Mr. R. C. CHIRNSIDE, DR. R. B. STRATHDEE, O.B.E., and SIR ALEXANDER TODD, F.R.S. PROFESSOR HAROLD BURTON was re-elected honorary treasurer.

● MR. A. A. DUNCAN has been appointed managing director of National Plastics in succession to Mr. Herbert Bridge who has resigned on medical grounds. Mr. Bridge will remain a director of National Plastics and its associated companies.

● DR. ROGER G. BATES, leader of the US National Bureau of Standards pH standardisation programme, has been awarded the US Department of Commerce Gold Medal for Exceptional Service. The award recognises his 'outstanding contributions to the science of hydrogen-ion measurements in theory and practice and for highly distinguished authorship'.

Obituary

MR. JAMES SHAW, a director of Newalls Insulation Co. Ltd., and the Washington Chemical Co. Ltd., County Durham, has died at the age of 57. He had been at Newalls for 30 years and was elected a director of both firms nine years ago.

LORD STANMORE, formerly deputy chairman of the Triplex Safety Glass Co. Ltd., died in London on Saturday, 13 April. He was 86. Lord Stanmore joined the board of the Triplex company in 1935 and served as deputy chairman from 1937 to 1952 when he retired owing to advancing years.

Chrome Chemicals Plant Planned In Co. Durham

A NEW PLANT for the production of chrome chemicals is planned by British Chrome and Chemicals (Holdings) Ltd., Urray Nook, nr. Eaglescliffe, County Durham. The new plant will probably be sited near the present works at Urray Nook.

In the firm's annual report, to be presented at the annual meeting at Urray Nook on Thursday, 16 May, Mr. E. F. Wright, who has since died, stated that the board is now arranging for the project, which was held up because of restrictions on credit and the issue of new capital.

The report states that the high level of trading on all products was maintained last year until August, when there was a temporary recession in the home markets for chrome chemicals. The recession lasted two months, when demand increased to even higher levels.

It was the board's belief that the firm's plans, especially for the erection of the new plant, would enable them to compete at least on level terms in the proposed Western Europe free trade area.

After considering all aspects of the matter, the board had indicated its support of the Government's proposals, subject to safeguards against unfair competition.

Stockton Companies Extension Schemes

WORK has begun on a £1,200,000 extension scheme at the Stockton-on-Tees works of the Power-Gas Corporation Ltd., and its associated firm, Ashmore Benson Pease and Co. Ltd. Chief features of the new development are a new light machine shop 410 ft. long and 170 ft. wide, a 100 ft. extension to the heavy machine shop, and the construction of a medium machine bay with a 100 ft. span. A new bay 340 ft. by 80 ft. is to be added to the structural shop, and the stockyard is to be extended by 400 ft. to a total of 1,600 ft.

By August next year it is expected that all the producing units except the foundry will have been transferred from the old Parkfield works of Ashmore Benson Pease to the south works.

BWRA to Open New Metallurgical Labs.

NEW METALLURGICAL laboratories for the British Welding Research Association are to be opened at Abington Hill, Abington, near Cambridge, on 23 July at 12 noon by Lord Tedder, Chancellor of Cambridge University.

The opening will be followed by lunch and in the afternoon, guests will be able to see something of the work of the association as well as inspect the new 13,000 sq. ft. laboratory where demonstrations will be given of the latest welding processes and control tests. Arrangements are being made to provide transport either from London or Cambridge for intending visitors.

Commercial News

Newton Chambers will Market New Chemicals this Year

THE POLICY of extending and re-equipping the works and production facilities of Newton Chambers and Co., which gained momentum in 1956, is to be intensified in 1957 according to the chairman, Sir Peter Roberts, in his annual report for 1956. Extensions to the Izal factory are expected to be completed early this year. The chemicals division is to market a number of new lines this year.

These and other projects have involved capital expenditure of more than £500,000 during the year, and at 31 December there were commitments for a further £608,908. Other schemes, now at an advanced stage will require, it is estimated, at least a further £300,000.

Fixed assets have increased by £376,710 to £1,535,411 and stocks and work by £405,574 to £2,770,340. Costs of expansion have been financed out of retained profits and reserves and have necessitated the realisation of certain investments and the holding of Treasury Bills (£148,524 in 1955) and tax reserve certificates (£187,475).

Badische Anilin und Soda-Fabrik

A dividend of 10 per cent for 1956 (9 per cent in 1955) has been proposed for Badische Anilin und Soda-Fabrik. The directors also proposed a rights issue of one for five at an issue price of 115 per cent, carrying dividend rights as from 1 July.

Brandram Brothers

No ordinary dividend is to be paid by Brandram Brothers for the year ending 30 September 1956 (6 per cent). Group loss was £13,323 (£6,855 profit) after tax of £671 (£4,152).

Manchester Oil Refinery

In his annual statement, Mr. Rudolph E. F. de Trafford, chairman, said that Stratton Chemicals Ltd. was a new company formed in conjunction with C. P. Steuber and Co. Inc. of New York, one of the leading American firms specialising in export and shipping of liquid chemicals in bulk. This company had acquired the existing business of Chemtrade Ltd., a firm dealing in the distribution of imported chemicals in the UK market.

A sum of £3,250 subscribed to Petrocarbon Developments Ltd. was a re-investment of capital profits received after the voluntary liquidation of the original company, Petrocarbon Ltd. Petrocarbon Developments, a chemical engineering company, was currently designing and engineering one of the ancillary plants for sulphonates.

The chemical products plant was now

in full production and should make a quite substantial contribution to the profits in the current year.

Sadler and Co.

Group net profit of Sadler and Co. for 1956 was £63,238 (£116,457 after crediting tax repayment £34,507). Interim dividend of 5 per cent has been paid (total 10 per cent), plus 1s per £1 share from profit on investment (nil).

C. and W. Walker

A dividend of 12½ per cent (same) for year to 31 January, has been announced by C. and W. Walker. Group profit was £40,937 (£39,039) after tax of £42,009 (£36,106). To reserves £11,300 (same), forward £60,850 (£57,603).

NEW COMPANIES

MAGNESIUM PRODUCTS LTD. Capital £100 in £1 shares. Manufacturers and producers of and dealers in mouldings, assemblies, accessories and fittings of all kinds from magnesium and any other substances etc. Directors: A. C. Anselm, and Berndt-Ake Hansson, Sundbyberg, Sweden. Secretary: E. E. Mancktelow. Registered office: 512-4 Brixton Road, London, SW9.

LONDON GAZETTE

Notice of Meetings

HUNTER MORDANT LTD., registered office, 24 Basinghall Street, London, EC2, dealers in anti-corrosives. Creditors, 29 April, 11.30 a.m.; contributories, 29 April, 12 noon. Both at Room 401, 4th Floor, Inveresk House, 346 Strand, London WC2.

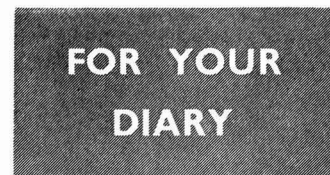
Market Reports

EARLY RESUMPTION SUGGESTED

LONDON The shorter working week has influenced market conditions and new business in most sections has been quiet. Despite that, the volume of home and overseas inquiry in circulation suggests an early resumption of activity. Values generally are maintained on a firm basis but no price changes have been notified at the time of this report.

Strong price conditions and a steady demand for most items characterise the coal tar products market.

MANCHESTER From the point of view of fresh business the Manchester market for heavy chemical products made a relatively quiet opening after the holiday break, but a steady resumption of contract deliveries of the alkalis and



TUESDAY 30 APRIL

Plastics Institute—London: Institution of Chemical Engineers, Savoy Place WC2, 6.30 p.m. Eighth annual lecture: 'Thermoplastics in the submarine-cable industry' by Sir John Dean.

Society of Instrument Technology—London: Manson House, Portland Place W1, 6.30 p.m. 'The preparation and industrial application of diffraction gratings' by L. A. Sayce.

Institution of Chemical Engineers—London: May Fair Hotel, Berkeley Street W1, 11 a.m., 35th annual corporate meeting; 12 noon, President's address, 'Petroleum and the chemical engineer'; 7 p.m. for 7.30 p.m., annual dinner.

Institute of Metals—London: Church House, Great Smith Street SW1, 2.30 p.m. Discussion 'The metal physics of corrosion and oxidation' opened by O. Kubaschewski and C. Edeleanu.

WEDNESDAY 1 MAY

SAC—London: Burlington House, Piccadilly W1, 6.30 p.m. Ordinary meeting on 'The estimation of antibiotic residues in food'. (1) 'Antibiotics and the public health' by J. M. Ross, (2) 'The determination of antibiotics in milk with special reference to penicillin' by N. J. Berridge, and (3) 'The determination of antibiotic residues in the tissues and body fluids of animals' by J. H. Taylor.

Incorporated Plant Engineers—Southampton: Polygon Hotel, 7.30 p.m. 'Liquid petroleum gases' by C. F. Port.

Fertiliser Society—King's Lynn: Guildhall of St. George, 10.30 a.m. 'Some investigations into the application of radioisotope techniques to fertiliser production' by P. Craven.

FRIDAY 3 MAY

SCI (Fine Chemicals Group)—London: Chemistry Lecture Theatre, King's College, Strand WC2, 7 p.m. Annual general meeting followed at 7.30 p.m. by 'The Kolbe and related reactions of carbon dioxide' by J. Idris Jones.

other leading lines has been reported. There has been a satisfactory movement of fertiliser materials, though in some sections there is evidence that the demand has now about passed its seasonal peak. Most of the light and heavy tar products continue to find a ready outlet.

GLASGOW The level of business in the Scottish heavy chemical market has been well maintained for most of the past week, but as was expected, quietened slightly towards the end due to the approaching Easter holidays. In regard to agricultural chemicals, the report is of continued activity both in regard to immediate and forward deliveries. Prices have remained fairly steady.

BRITISH CHEMICAL PRICES

General Chemicals

Acetic Acid. D/d in ret. barrels (tech. acid barrels free); in glass carboys, £8; demijohns, £12 extra. 80% tech., 10 tons, £97; 80% pure, 10 tons, £103; commercial glacial, 10 tons, £106.

Acetic Anhydride. Ton lots d/d, £136.

Alum. Ground, f.o.r., about £25.

MANCHESTER: Ground, £25.

Aluminium Sulphate. Ex-works, d/d, £15 10s.

MANCHESTER: £15 15s to £18 10s.

Ammonia, Anhydrous. Per lb., 1s 9d to 2s 3d.

Ammonium Chloride. Per ton lot, in non-ret. pack, £29 2s 6d.

Ammonium Nitrate. D/d, in 4-ton lots, £31.

Ammonium Persulphate. **MANCHESTER:** per cwt., in 1-cwt. lots, d/d, £6 2s 6d; per ton, in min. 1-ton lots, d/d, £112 10s.

Ammonium Phosphate. Mono- and di-, ton lots, d/d, £106 and £97 10s.

Antimony Sulphide. Per lb., d/d UK in min. 1-ton lots: crimson, 4s 5d to 4s 10½d; golden, 2s 8½d to 4s 1½d.

Arsenic. Ex-store, £45 to £50.

Barium Carbonate. Precip., d/d, 4-ton lots, bag packing, £41.

Barium Chloride. 2-ton lots, £49.

Barium Sulphate (Dry Blanc Fixe). Precip., 2-ton lots, d/d, £35.

Bleaching Powder. Ret. casks, c.p. station, in 4-ton lots, £28 12s 6d.

Borax. Ton lots, in hessian sacks, c.p. Tech., anhydrous, £66; gran., £45; crystal, £47 10s; powder, £48 10s; extra fine powder, £49 10s; BP, gran., £51; crystal, £56 10s; powder, £57 10s; extra fine powder, £58 10s.

Boric Acid. Ton lots, in hessian sacks, c.p. Tech., gran., £74 10s; crystal, £82 10s; powder, £80; extra fine powder, £82; BP gran., £87 10s; crystal, £94 10s; powder, £92; extra fine powder, £94.

Calcium Chloride. Ton lots, in non-ret. pack: solid and flake, £16.

Chlorine, Liquid. In ret. 16-17-cwt. drums d/d in 3-drum lots, £38 5s.

Chromic Acid. Less 2½%, d/d UK, in 1-ton lots, per lb., 2s 0½d.

Chromium Sulphate, Basic. Crystals, d/d, per lb., 8½d; per ton, £75 16s 8d.

Citric Acid. 1-cwt. lots, per cwt., £10 15s.

Cobalt Oxide. Black, per lb., d/d, bulk quantities, 13s 2d.

Copper Carbonate. Per lb., 3s 8d.

Copper Sulphate. F.o.b., less 2% in 2-cwt. bags, £89 10s.

Cream of Tartar. 100%, per cwt., about £11 12s.

Formaldehyde. In casks, d/d, £37 5s.

Formic Acid. 85%, in 4-ton lots, c.p., £86 10s.

Glycerine. Chem. pure, double distilled 1.260 s.g., per cwt., in 5-cwt. drums for annual purchases of over 5-ton lots and under 25 tons, £10 1s 6d. Refined pale straw industrial, 5s per cwt. less than chem. pure.

Hydrochloric Acid. Spot, per carboy, d/d (according to purity, strength and locality), about 12s.

Hydrofluoric Acid. 60%, per lb., about 2s 6d per lb.

Hydrogen Peroxide. Carboys extra and ret. 27.5% wt., £128 10s; 35% wt., d/d, £158.

Iodine. Resublimed BP, under 1 cwt., per lb., 14s 2d; for 1-cwt. lots, per lb., 13s 5d.

Iodoform. Under 1 cwt., per lb., £1 2s 3d; for 1-cwt. lots, per lb., £1 2s 6d.

These prices are checked with the manufacturers, but in many cases there are variations according to quality, quantity, place of delivery, etc.

Abbreviations: d/d, delivered; c.p., carriage paid; ret, returnable; non-ret. pack, non-returnable packaging; tech, technical; comm, commercial; gran, granular.

All prices per ton unless otherwise stated

Lactic Acid. Pale tech., 44% by wt., per lb., 14d; dark tech., 44% by wt., ex-works, per lb., 9d; chem. quality, 44% by wt., per lb., 12½d; 1-ton lots, usual container terms.

Lead Acetate. White, about £154.

Lead Nitrate. 1-ton lots, about £135.

Lead, Red. Basis prices: Genuine dry red, £141; orange lead, £153 15s. Ground in oil: red, £159; orange, £173.

Lead, White. Basis prices: Dry English in 5-cwt. casks, £146 5s. Ground in oil: English, 1-cwt. lots, per cwt., 194s.

Lime Acetate. Brown, ton lots, d/d, £40; grey, 80-82%, ton lots, d/d, £45.

Litharge. In 5-ton lots, £143.

Magnesite. Calcined, in bags, ex-works, about £21.

Magnesium Carbonate. Light, comm., d/d, 2-ton lots, £84 10s under 2 tons, £97.

Magnesium Chloride. Solid (ex-wharf), £16 10s.

Magnesium Oxide. Light, comm., d/d, under 1-ton lots, £245.

Magnesium Sulphate. Crystals, £16.

Mercuric Chloride. Tech. powder, per lb., for 5-cwt. lots, in 28-lb. parcels, £1 3s; smaller quantities dearer.

Mercury Sulphide, Red. 5-cwt. lots in 28-lb. parcels, per lb., £1 9s 3d.

Nickel Sulphate.—D/d, buyers UK, nominal, £170.

Nitric Acid. 80% Tw., £35.

Oxalic Acid. Home manufacture, min. 4-ton lots, in 5-cwt. casks, c.p., about £131.

Phosphoric Acid. Tech. (s.g. 1.700) ton lots, c.p., £100; BP (s.g. 1.750), ton lots, c.p., per lb., 1s 4d.

Potash, Caustic. Solid, 1-ton lots, £93 10s; liquid, £34 15s.

Potassium Carbonate. Calcined, 96/98%, 1-ton lots, ex-store, about £74 10s.

Potassium Chloride. Industrial, 96%, 1-ton lots, about £24.

Potassium Dichromate. Crystals and gran., per lb., in 5-cwt. to 1-ton lots, d/d UK, 1s 1½d.

Potassium Iodide. BP, under 1-cwt., per lb., 10s 3d; per lb. for 1-cwt. lots, 9s 9d.

Potassium Nitrate. 4-ton lots, in non-ret. pack, c.p., £63 10s.

Potassium Permanganate. BP, 1-cwt. lots, per lb., 1s 10½d; 3-cwt. lots, per lb., 1s 10d; 5-cwt. lots, per lb., 1s 9½d; 1-ton lots, per lb., 1s 9½d; 5-ton lots, per lb., 1s 8½d. Tech., 5-cwt. in 1-cwt. drums, per cwt., £9 8s 6d; 1-cwt. lots, £9 17s 6d.

Salammoniac. Ton lot, in non-ret. pack, £45 10s.

Salicylic Acid. **MANCHESTER:** Tech., d/d, per lb., 2s 8½d.

Soda Ash. 58% ex-depot or d/d, London station, 1-ton lots, about £16 8s.

Soda, Caustic. Solid 76/77%; spot, d/d 4-ton lots, £32 6s 6d.

Sodium Acetate. Comm. crystals, d/d, £91.

Sodium Bicarbonate. Ton lot, in non-ret. pack, £17.

Sodium Bisulphite. Powder, 60/62%, d/d, 2-ton lots for home trade, £42 15s.

Sodium Carbonate Monohydrate. Ton lot, in non-ret. pack, c.p., £57.

Sodium Chlorate. 1-cwt. drums, c.p. station, in 4-ton lots, about £85.

Sodium Cyanide. 96/98%, ton lot in 1-cwt. drums, £113 5s.

Sodium Dichromate. Crystals, cake and powder, per lb., 11½d. Net d/d UK, anhydrous, per lb., 1s 1d. Net. del. d/d UK, 5-cwt. to 1-ton lots.

Sodium Fluoride. D/d, 1-ton lots & over, per cwt., £5; 1-cwt. lots, per cwt., £5 10s.

Sodium Hyposulphite. Pea crystals, £35 15s; comm., 1-ton lots, c.p., £32 10s.

Sodium Iodide. BP, under 1 cwt., per lb., 14s; 1-cwt. lots, per lb., 13s 2d.

Sodium Metaphosphate (Calgon). Flaked, paper sacks, £133.

Sodium Metasilicate. D/d UK in ton lots, loaned bags, £25.

Sodium Nitrate. Chilean refined gran. over 98%, 6-ton lots, d/d station, £29 10s.

Sodium Nitrite. 4-ton lots, £32.

Sodium Percarbonate. 12½% available oxygen, per cwt., in 1-cwt. kegs, £8 6s 9d.

Sodium Phosphate. D/d, ton lots: disodium, crystalline, £40 10s, anhydrous, £88; tri-sodium, crystalline, £39 10s, anhydrous, £86.

Sodium Silicate. 75-84° Tw. Lanes and Ches., 4-ton lots, d/d station in loaned drums, £10 15s; Dorset, Somerset & Devon, per ton extra, £3 17s 6d; Scotland & S. Wales, extra, £3. Elsewhere in England, not Cornwall, extra, £1 12s 6d.

Sodium Sulphate (Desiccated Glauber's Salt). D/d in bags, £18.

Sodium Sulphate (Glauber's Salt). D/d, £9 5s to £10 5s.

Sodium Sulphate (Salt Cake). Unground, d/d station in bulk, £6.

MANCHESTER: d/d station, £7 10s.

Sodium Sulphide. Solid, 60/62%, spot, d/d, in drums in 1-ton lots, £33 2s 6d; broken, d/d, in drums in 1-ton lots, £34 2s 6d.

Sodium Sulphite. Anhydrous, £66 5s; comm., d/d station in bags, £25 5s-£27.

Sulphur. 4 tons or more, ground, according to fineness, £20-£22.

Sulphuric Acid. Net, naked at works, 168° Tw. according to quality, £10 7s 6d-£12; 140° Tw., arsenic free, £8 12s 6d; 140° Tw., arsenious, £8 4s 6d.

Tartaric Acid. Per cwt.: 10 cwt. or more, £14; 1 cwt., £14 5s.

Titanium Oxide. Standard grade comm., rutile structure, £182; standard grade comm., anatase structure, £167 (from 1st Feb.).

Zinc Oxide. Max. for 2-ton lots, d/d, white seal, £120; green seal, £113; red seal, 2-ton lots, £115.

Solvents & Plasticisers

Acetone. All d/d, small lots, 5-gal. cans: 5-gal., £125; 10-gal., cans incl., £115.

40/45 gal. ret. drums, spot: Under 1 ton, £90; 1 to under 5 tons, £87; 5 to under 10 tons, £86; 10 tons under, £85. Tank wagons, spot: 1 to under 5 tons (min. 400 gal.), £85; 5 to under 10 tons (1,500 gal.), £84; 10 tons & up (2,500 gal.), £83; contract rebate, £2.

Butyl Acetate BSS. 10-ton lots, £173.

n-Butyl Alcohol BSS. 10 tons, in drums, d/d, £152.

sec-Butyl Alcohol. 5-gal. drums, £159; 40-gal. drums: under 1 ton, £124; 1-10 tons, £123; 10 tons & up, £119; 100 tons & up, £120.

tert-Butyl Alcohol. 5-gal. drums, £195 10s; 40/45-gal. drums: 1 ton, £175 10s; 1-5 tons, £174 10s; 5-10 tons, £173 10s; 10 tons & up, £172 10s.

Diacetone Alcohol. Small lots: 5-gal. drums, £177; 10-gal. drums, £167. 40/45-gal. drums: under 1 ton, £142; 1-9 tons, £141; 10-50 tons, £140; 50-100 tons, £139; 100 tons & up, £138.

Dibutyl Phthalate. In drums, 10 tons, d/d, per lb., 2s; 45-gal. drums, d/d, per lb., 2s 1½d.

Diethyl Phthalate. In drums, 10 tons, per lb., 1s 1½d; 45-gal. drums, d/d, per lb., 2s 1d.

Dimethyl Phthalate. In drums, 10 tons, per lb., d/d, 1s 9½d; 45-gal. drums, d/d, per lb., 1s, 1s 10½d.

Diocetyl Phthalate. In drums, 10 tons, d/d, per lb., 2s 8d; 45-gal. drums, d/d, per lb., 2s 9½d.

Ether BSS. 1-ton lots, drums extra, per lb., 1s 11d.

Ethyl Acetate. 10-ton lots, d/d, £145.

Ethyl Alcohol (PBS 66 o.p.). Over 300,000 p. gal. 2s 11½d; d/d in tankers, 2,500-10,000 p. gal., per p. gal., 3s 1½d. D/d in 40/45-gal. drums, p.p.g. extra, 1d. Absolute alcohol (75.2 o.p.), p.p.g. extra, 5d.

Methanol. Pure synthetic, d/d, £43 15s.

Methylated Spirit. Industrial 66° o.p.: 500-gal. & up, d/d in tankers, per gal., 5s 4d; 100-499 gal. in drums, d/d, per gal., 5s 8½d. Pyridinised 64 o.p.: 500 gal. & up, in tankers, d/d, per gal., 5s 6d; 100-499 gal. in drums, d/d, per gal., 5s 10½d.

Methyl Ethyl Ketone. 10-ton lots, d/d, £140.

Methyl isoButyl Ketone. 10 tons & up, £159.

isoPropyl Acetate. In drums, 10 tons, d/d, £137; 45-gal. drums, d/d, £143.

isoPropyl Alcohol. Small lots: 5-gal. drums, £118; 10-gal. drums, £108; 40-45 gal. drums: less than 1 ton, £83; 1-9 tons, £81; 10-50 tons, £80 10s; 50 tons & up, £80.

Rubber Chemicals

Carbon Disulphide. According to quality, £61-£67.

Carbon Black. Per lb., according to packing, 8d-1s.

Carbon Tetrachloride. Ton lots, £81.

India-Rubber Substitutes. White, per lb., 1s 8½d to 2s ½d; dark, d/d, per lb., 1s 3d-1s 5½d.

Lithopone. 30%, about £55.

Mineral Black. £7 10s-£10.

Sulphur Chloride. British, about £50.

Vegetable Lamp Black. 2-ton lots, £64 8s.

Vermilion. Pale or deep, 7-lb. lots, per lb., 15s 6d.

Coal-Tar Products

Benzone. Per gal., min. 200 gal., d/d in bulk, 90's, 5s; pure, 5s 4d.

Carbolic Acid. Crystals, min. price, d/d bulk, per lb., 1s 4d; 40/50-gal. ret. drums extra, per lb., ¾d. Crude, 60's, per gal., 8s.

MANCHESTER: Crystals, d/d, per lb., 1s 4½-1s 7d; crude, naked, at works, 8s.

Cresosote. Home trade, per gal., according to quality, f.o.r. maker's works, 1s-1s 9d. **MANCHESTER:** Per gal., 1s 2d.-1s 8d.

Cresylic Acid. Pale 99/100%, per gal., 6s 4d; 99.5/100%, per gal. 6s 6d. D/d UK in bulk: Pale ADF, per imperial gallon f.o.b. UK, from 7s 3d; per US gallon, c.i.f. NY, 95 cents.

Naphtha. Solvent, 90/160°, per gal., 6s 1d; heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 4s 11d. Drums extra; higher prices for smaller lots.

Naphthalene. Crude, 4-ton lots, in buyers' bags, nominal, according to m.p.: £20 11s-£33 11s 6d; hot pressed, bulk, ex-works, £40 1s 9d; refined crystals, d/d min. 4-ton lots, £68.

Pitch. Medium, soft, home trade, f.o.r. suppliers' works, £9; export trade, f.o.b. suppliers' port, about £10 10s.

Pyridine. 90/160, per gal., 20s-£1 2s 6d.

Toluene. Pure, per gal., 6s 9d; 90's, d/d, 2,000 gal. in bulk, per gal., 6s.

MANCHESTER: Pure, naked, per gal., 5s 6½d.

Chemical Stocks and Shares

City Expects Record ICI Results, but No Change in Dividend Payment

THE BUDGET gave a strong impetus to stock markets, where industrial shares have recorded a general advance. Main attention centred on shares of companies which should benefit from the tax concession in respect of earnings from overseas assets. But it cannot be deduced that higher profits and increased dividends are in prospect. Costs are still rising, and to meet competition in export markets, prices may have to be cut, which means lower profit margins and a larger volume of exports in order to maintain earnings.

Chemical shares participated in the upward trend of stock markets with Imperial Chemical particularly good in anticipation of the financial results expected towards the end of the month. ICI shares are now 45s 10½d, which compares with 42s 9d a month ago. Sentiment has been helped by the view that the ICI group would probably benefit substantially from the proposed European free trade area. But the present talking point is, however, whether the coming dividend will increase the total above the 10 per cent which has ruled for the past two years. Prevailing assumption is still that it may be decided not to pay more at this stage. The decision will not only depend on the financial results which are expected to show a new record, but also on the directors' views as to the more immediate outlook and on the question of capital commitments. ICI loan stock, which carries the right to convert into ordinary shares on generous terms in the future, has changed hands actively up to a premium of £17½.

Albright and Wilson 5s shares remained under the influence of the financial results and have risen further from 19s 3d a month ago to 21s 1½d, while Lawes Chemical 10s

Xylole. According to grade, in 1,000-gal. lots, d/d London area in bulk, per gal., 6s-6s 8d.

Intermediates & Dyes (Prices Nominal)

m-Cresol 98/100%. D/d, per lb., 4s 9d.

o-Cresol 30/31°C. D/d, per lb., 1s.

p-Cresol 34/35°C. D/d, per lb., 4s 9d.

Dichloraniline. Per lb., 4s 6d.

Dinitrobenzene. 88/99°C., per lb., 2s 1d.

Dinitrotoluene. Drums extra. SP 15°C., per lb., 2s 1½d; SP 26°C., per lb., 1s 5d; SP 33°C., per lb., 1s 2½d; SP 66/68°C., per lb., 2s 1d.

p-Nitraniline.—Per lb., 5s 1d.

Nitrobenzene. Spot, 90-gal. drums (drums extra), 1-ton lots d/d, per lb., 10d.

Nitronaphthalene.—Per lb., 2s 5½d.

o-Toluidine. 8-10-cwt. drums (drums extra), per lb., 1s 11d.

p-Toluidine.—In casks, per lb., 6s 1d.

Dimethylaniline. Drums extra, c.p., per lb., 3s 5d.

shares advanced from 17s 9d to 19s 6d. Monsanto 5s shares have been active around 19s 3d 'ex' rights to the new shares, which were at a premium of 11s 9d. Hickson and Welch 10s shares were firm at 30s 9d 'ex' the scrip issue. Hardman and Holden kept steady at 8s 3d. F. W. Berk 5s shares eased from 7s 7d. to 6s 10½d. British Glues 4s shares moved up to 11s 6d and William Blythe 3s shares eased to 9s 3d. Greeff-Chemicals Holdings 5s shares showed strength at 18s 10½d. Laporte 5s rose from 18s 4½d a month ago to 8½s 9d. Reichhold 5s are steady at 13s 9d and Yorkshire Dyeware and Chemical 5s shares at 9s 3d.

Fisons were good with an advance on the month from 56s 6d to 60s. Anchor Chemical 5s shares held steady at 11s 6d and Ashe Chemical 1s shares at 1s 1½d.

Elsewhere, the shares of The Distillers Co. responded to market talk of higher dividend prospects and were 24s 9d (22s 9d a month ago).

Borax Holdings remained an active feature, and have advanced on the month from 23s 6d to 27s. Coalite and Chemical 2s shares showed firmness at 4s, while British Chrome and Chemicals 5s shares have strengthened from 10s to 10s 9d.

British Oxygen at 37s remained under the influence of the financial results and the chairman's annual statement. United Molasses 10s shares moved up to 43s 9d in response to higher dividend hopes.

Oils displayed activity under the lead of Shell, which responded to the record results and the raising of the tax-free dividend from 15 per cent to 18½ per cent. The shares which are now quoted on New York, were 182s 3d compared with 177s 6d a month ago.



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NEW PATENTS

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

AMENDED SPECIFICATION

On sale 29 May or as soon as possible thereafter.

Carbon black. Cabot, G. L., Inc. **699 406**

ACCEPTANCES

Open to public inspection on 5 June.

Explosive substances in thermoplastic or pourable form. Slater, W. E., Mackenzie, D., and Bailey, W. A. **776 539**
Cyclohexanone. Farbwerke Hoechst AG. [Addition to 739 263.] **776 262**
Light alloy heat exchangers. Imperial Chemical Industries Ltd., Moore, D. C., and Edge, D. A. **776 433**
Regenerative heat exchangers. Hartnell-Beavis, M. C. [Cognate application 4944 and 10834/54.] [Divided out of 776 533.] **776 532**
Azo dyestuffs of the pyrazolone and pyrazole series. Farbwerke Hoechst AG. **776 265**
Counterflow regenerative heat exchangers. Hartnell-Beavis, M. C. [Cognate application 33702.] **776 533**
Aluminous abrasives. Montrose Schleifmittel Establishment. [Cognate application 33726.] **776 435**
Working up of crude benzene. Gelsenkirchener Bergwerks-AG. **776 145**
Continuous production of synthetic lubricating oil. Ruhrchemie AG. **776 436**
Compounds of the pregnane series. Organon Laboratories Ltd. **776 055**
Unsaturated ethers. Ruhrchemie AG. **776 056**
Resinous reaction products. Dunlop Rubber Co. Ltd. [Addition to 742 718.] **776 342**
Finishing metal surfaces. Kent, G., Ltd. **776 147**
Electrolytic disintegration of cemented carbide material. Deutsche Edelstahlwerke AG. **776 045**
Lubricant additives having detergent and dispersant properties. Phillips Petroleum Co. **776 438**
Cleansing preparations for use against radioactive contamination. National Research Development Corp. **776 148**
Armoured plastic tubes and their manufacture. Abeloo, A. **776 150**
Stable beta-containing alloys of titanium. Rem-Cru Titanium Inc. **776 440**
Polystyrene plastics materials. Monsanto Chemicals Ltd. **776 047**
Prevention of galvanic corrosion. Winn and Coates Ltd., and Coates, F. B. [Cognate application 5001.] **776 057**
Disazo dyestuffs. Sandoz Ltd. **776 268**

Hydrocatalytic desulphurisation of petroleum carbons. British Petroleum Co. Ltd., Porter, F. W. B., and Northcott, R. P. **776 247 and 776 248**
Treatment of textile materials comprising fibres of cellulose triacetate. British Celanese Ltd. **776 346**
Calcium carbide. Wacker-Chemie Ges. **776 271**
Fractional distillation of mixtures of liquids. Rutgerswerke-AG. **776 154**
Werner type complexes and compositions containing same. Du Pont de Nemours, E. I., and Co. **776 156**
Metal oxide coatings. Armour Research Foundation of Illinois Institute of Technology. **776 443**
Solvents and softeners for polyesters of terephthalic acid with aliphatic dihydroxy-compounds. Farbwerke Hoechst AG. **776 157**
Organic substances of high molecular weight. British Celanese Ltd. **776 535**
Containers for dispensing fluids. Lyons, J., and Co. Ltd., White, P., and Steele, A. H. V. **776 242**
Polystyrene plastics materials. Monsanto Chemicals Ltd. [Addition to 745 901.] **776 048**
Preparation of terephthalic acid. Chempatents Inc. **776 274**
Very high molecular weight organic substances. British Celanese Ltd. **776 066**
Extraction apparatus. Maschinenfabrik Buckau R. Wolf AG. **776 445**
Oxidation process. California Research Corp. **776 161**
Apparatus for measuring high degrees of dryness. British Insulated Callender's Cables Ltd. [Cognate application 26661.] **776 536**
Production of silica. Monsanto Chemicals Ltd. **776 275**
Vacuum tube balancing networks for metal detection systems. General Electric Co. **776 163**
Modification of polymeric materials. Monsanto Chemicals Ltd. **776 278**
Electrolytic preparation of alginic acid. Torgersen, H. **776 356**
Substituted ureas. Imperial Chemical Industries Ltd. **776 069**
Esters of terephthalic acid. Imperial Chemical Industries Ltd. **776 282**
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Method and apparatus for generating gas. Union Carbide and Carbon Corp. **776 070**
Apparatus for the physical interaction of two media. Munters, C. G. **776 071**
Preservation of tea. Monsanto Chemicals Ltd. **776 166**
Reaction of olefins with perfluoro acids. Esso Research and Engineering Co. **776 073**
Fungicidal compositions. Imperial Chemical Industries Ltd. **776 169**
Devices for delivering measured quantities of liquid. Gaskell and Chambers Ltd. (trading as Non-Drip Measure Co.). **776 454**
Additive compositions for lubricating oils and lubricating compositions containing them. Esso Research and Engineering Co. **776 455**
Germicidal compositions. Monsanto Chemicals Ltd. **776 173**
Chlorination of titaniferous ores. Du Pont de Nemours, E. I., and Co. **776 295**
Biguanides. Aktiebolaget Kabi. **776 176**
Plastics laminates. Celanese Corp. of America. **776 179**

Process for the preparation of salt-carbon dioxide baths. Hesse, E. **776 293**
Polymeric materials. Imperial Chemical Industries Ltd. **776 181**
Cold drawing of titanium or titanium base alloys. Imperial Chemical Industries Ltd., Hands, S., and Humpage, J. **776 371**
Gasoline composition. Socony Mobil Oil Co. Inc. **776 297**
Aromatics, dehydrogenated hydrocarbons and resins. Esso Research and Engineering Co. **776 457**
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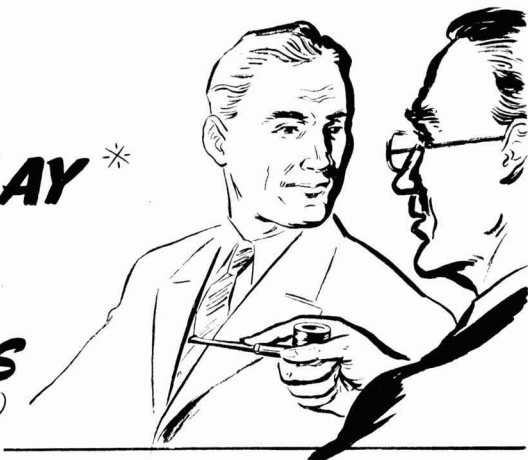
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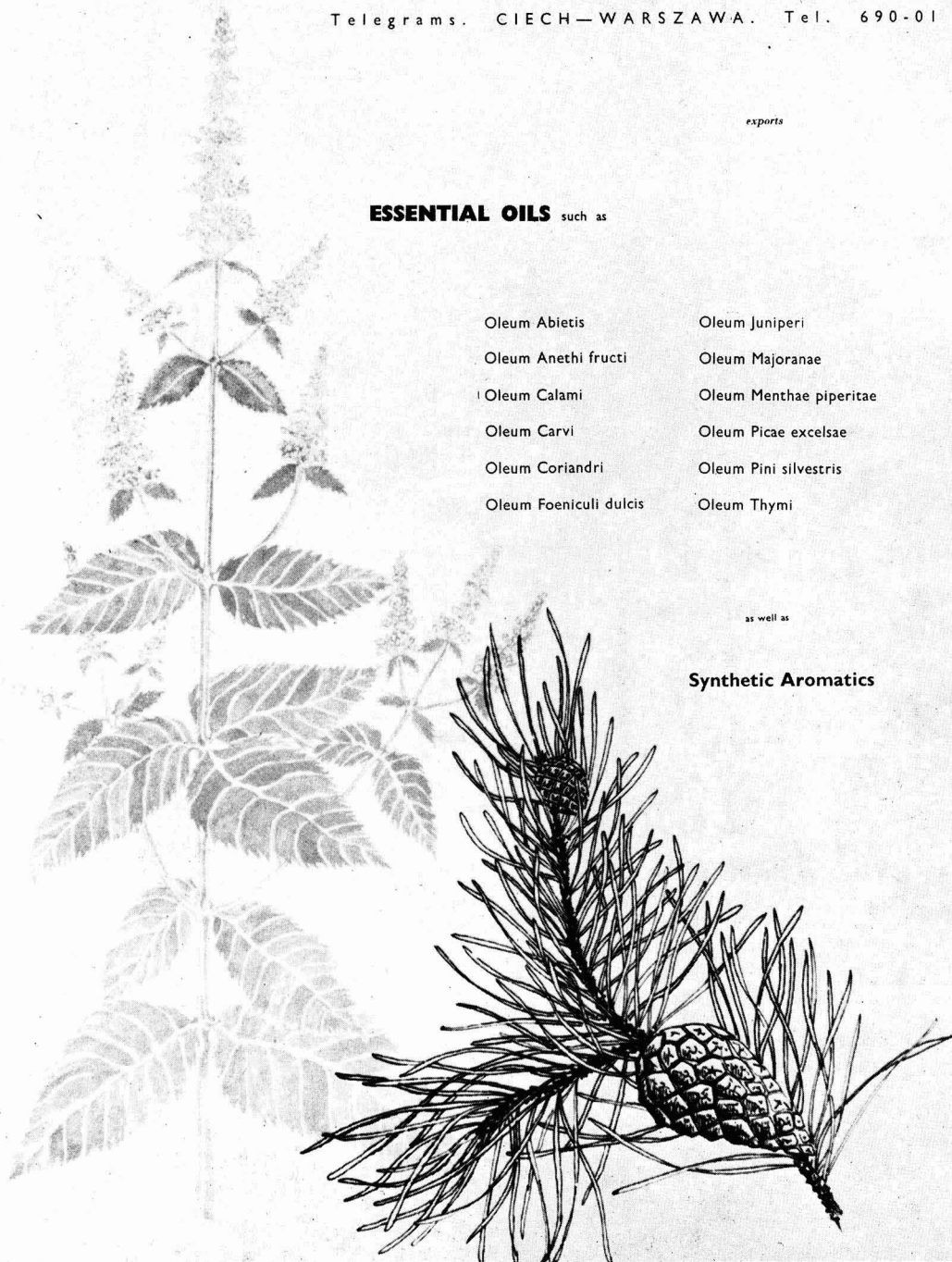
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