

# The Chemical Age

VOL LXIX

22 AUGUST 1953

No 1780

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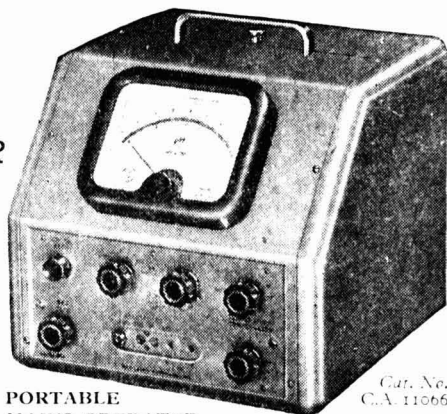
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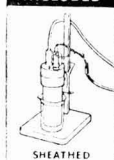
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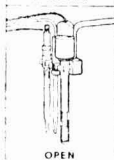


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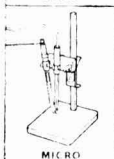
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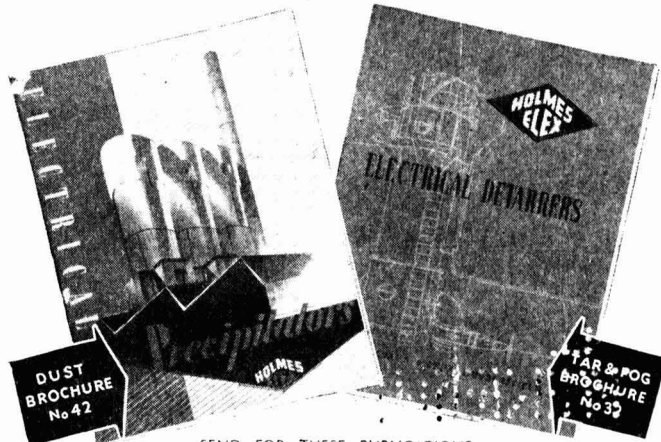
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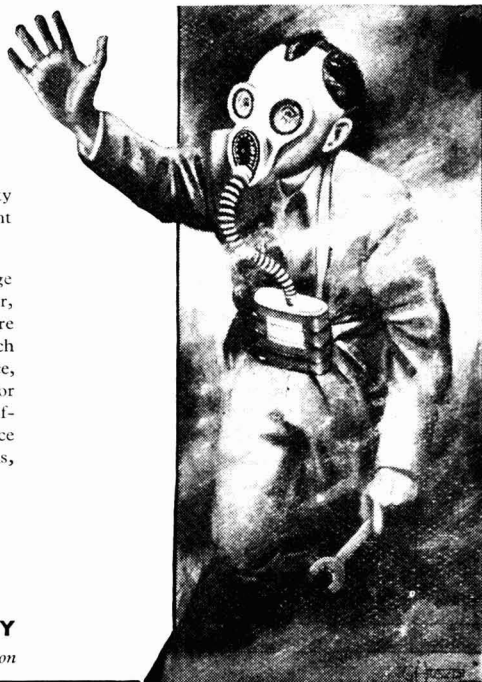
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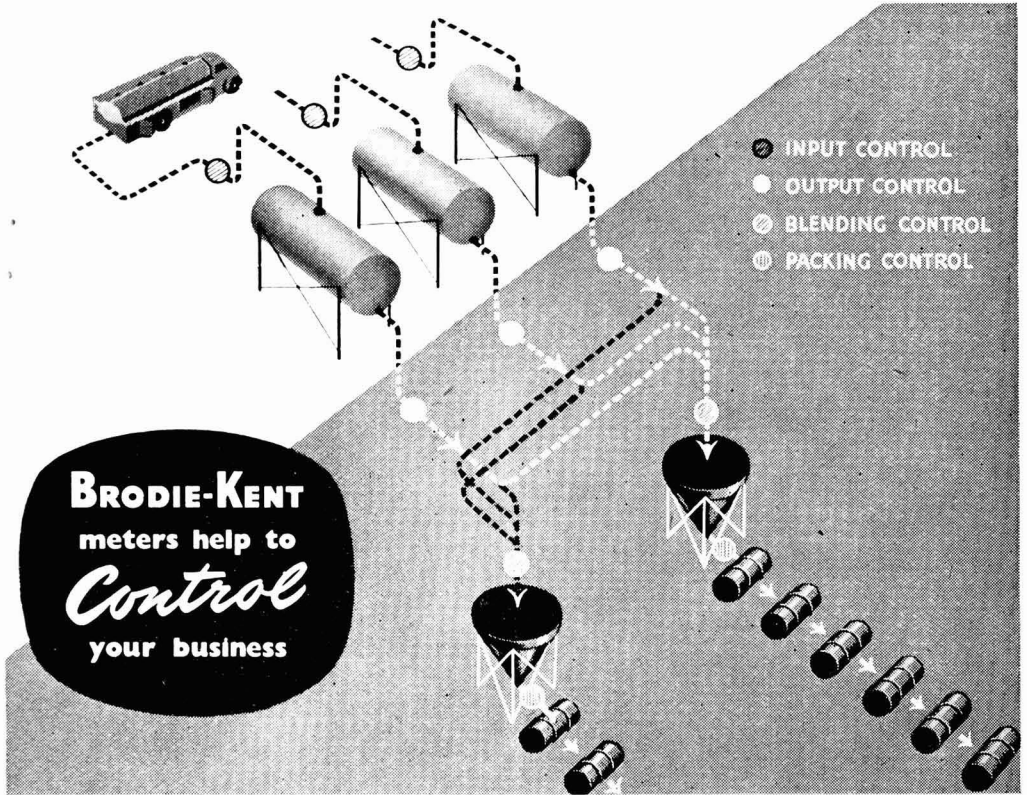
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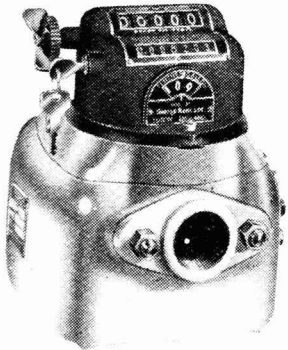
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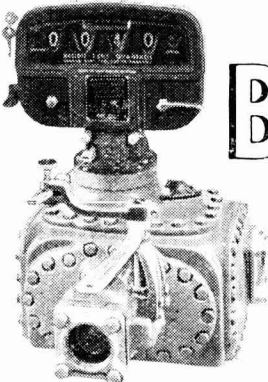


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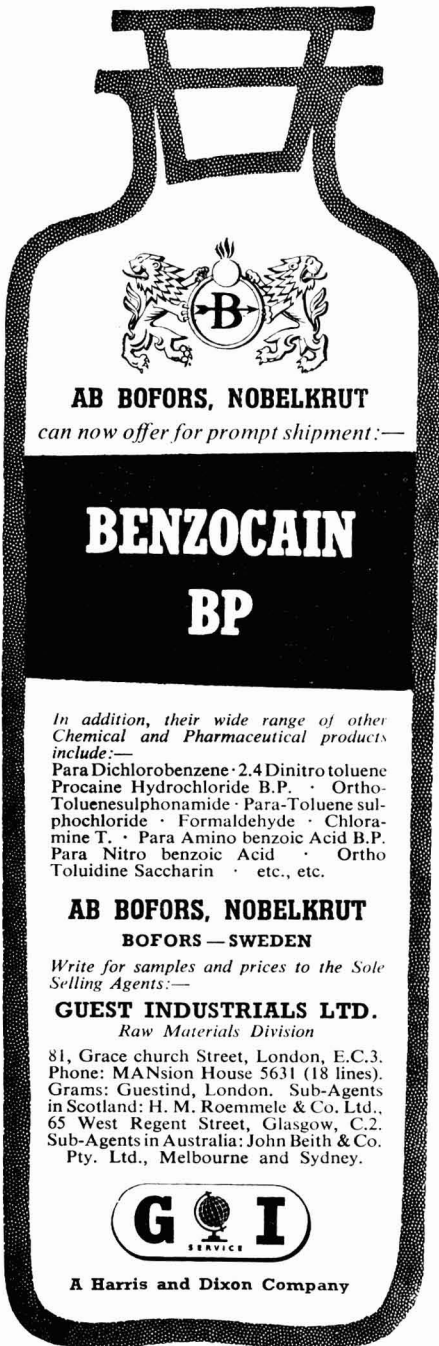
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Volume LXIX

22 August 1953

Number 1780

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## The Friendly Sea

THIS is the time of the year when the marine impulse in British character is unusually dominant, when even the most unlikely looking lovers of the sea are to be found calmly challenging Channel or oceanic tides in nothing more substantial than municipal deck-chairs or trotting out to sea with the utmost faith in the Victorian engineers who left the coastline of Britain quaintly bristling with piers. Calendar-wise, if not always in truth, the sea is not so cruel for the time being. Its violence is diplomatically ignored; its savage tendency to make uninvited intrusions is forgotten. Since even the most austere newspapers recognise this August festival of sand, salt, water, and ozone, perhaps we, too, may dwell upon the kinder qualities of the sea.

It is undeniable that man, so far in his history, has won exceedingly little from the sea and lost a great deal to it. The United Kingdom may occupy a particularly derisive position in the accounts of nations, for the smallness of her land-space limits her reserves and versatility of minerals, and to try to develop instead the ever-replenished flow of assets in the sea

so readily and conveniently around her is a starkly obvious policy. It is not enough to hunt fish, even if—occasionally—up-to-date ships are used. Indeed, this has been overdone, though among the European countries Britain has certainly been the most active both in studying fish population problems and in seeking co-operation to check over-fishing. Today, however, little of the fish we eat comes from our own coastal waters—far too many nets have left far too few fish to grow and breed within short voyages of European coastlines.

We might perhaps regard fish as a fortuitous harvest of the sea and one that we, with other nations, have grabbed but not also fostered. But some day we may be able to utilise the knowledge that already exists—the application of nitrogen and phosphates to breeding beds to ensure that the sea's own reserves of these vital foods for plankton and the like are not quickly exhausted, as now they are in every spring; but what can be done in inland lakes or Scottish lochs is much more difficult in waters that are deeper and internationally fished. It may not prove to be so

difficult to learn how to keep the added nutrients in the right parts of the seas; it will be much more difficult to ensure that co-operative fishing and co-operative sea-fertilising are peacefully allied.

Nevertheless, the harvest of fish that we in fact gather is wastefully handled. Heads and viscera of white fish are discarded at sea; yet preservation processes could convert these offal wastes into oils and feeding-stuffs. Before the war we used to make 70,000 tons of fish meal per annum; now we produce about 50,000 tons. Yet the needs of agriculture have greatly increased. Opportunity and need have not stimulated technological progress, excellent though the research work of the quieter branch of the Ministry of Agriculture and Fisheries is.

Progress, or at any rate the promise of progress, is brighter for that other fortuitous harvest of the seas—seaweed. Now a new seaweed industry is steadily passing out of infancy, not for inorganic but for organic chemicals. Alginic acid and the alginates are being made in at least five factories. But we have yet to solve the problem of collecting our own seaweed, and most of the seaweed used industrially has so far been imported! The former Japanese monopoly of agar from seaweed has now largely been nullified, an agar from our own not so suitable seaweeds having been satisfactorily developed to fulfil most requirements. But there are many other

organic chemicals to be won from seaweed, notably mannitol and laminarin (a base for D-glucose), and their pilot-scale production is already being studied.

The water in the sea is of little value to us, though in the United States of America, where water supply for industry is often a more difficult problem, the use of sea-water for cooling and crude washing tasks is being developed despite the corrosive evils of chlorides. No sea water is more industrially fertile than that of the Dead Sea and the war-destroyed potash industry of Palestine is now being revived; but a solution of such density that no non-swimmer can sink in it is an amiable prospect for the chemical engineer, especially when he can rely also upon solar evaporation for further removal of water. The solution that laps our own shores is much more aqueous, even though each cubic mile contains 23 tons of gold, 26,000,000 tons of magnesium salts, 4,000,000 tons of potassium sulphate, and a good deal more. The production of magnesium from the sea—and with it bromine—has been developed, but the time must eventually come when other elements in the seas are commercially extracted on a large scale. That fractional portion of the sea that now (we hope!) is making friendly contact with hotel-strewn coast-lines contains far more wealth, can it be won, than all the turnover of seaside resorts.

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The annual subscription to THE CHEMICAL AGE is 42s. Single copies, 1s.; post paid, 1s. 3d. SCOTTISH OFFICE: 116 Hope Street, Glasgow (Central 3954/5). MIDLANDS OFFICE: Daimler House, Paradise Street, Birmingham (Midland 0784/5). LEEDS OFFICE: Martins Bank Chambers, Park Row, Leeds, 1 (Leeds 22601). THE CHEMICAL AGE offices are closed on Saturdays in accordance with the adoption of the five-day week by Benn Brothers Limited.

# Notes & Comments

## 2,4-D and MCP

THE remarkably rapid advance of selective, hormone-type weedkillers in farming has from its very beginning been marked by a notable contrast—in America and Canada 2,4-D has been heavily favoured, while in Britain and Europe MCP has been preferred. MCP (2-methyl-4-chlorophenoxy acetic acid) was discovered here a little before 2,4-D (2:4-dichlorophenoxy acetic acid) was developed in the United States of America, so it could be thought that historical priority has something to do with the preference for MCP in Britain. A Canadian observer is probably the best judge of the two different biases, and G. R. Fraser, of a Winnipeg chemical company, performed this task recently at the 1953 convention of the Agricultural Institute of Canada. Phenol, a major raw material for 2,4-D, is more plentiful in the USA; in Europe, *ortho*-cresol, needed for MCP, is the more plentiful. There is, therefore, or has been, a manufacturing preference as one reason for the contrast. Smaller dosages of 2,4-D control weeds, but in Britain the control obtained over semi-resistant weeds by heavier doses of MCP is highly important. This is understandable when it is considered that our cereal crops have much higher average yields per acre, so that further improvement can only come from intensive attention to weed-control and other beneficial operations. In America the greater speed with which 2,4-D kills weeds is rated an important advantage for it saves moisture in soils where moisture is often short. However, the wider tolerance of crops to MCP, so far more fully appreciated in Britain, is gaining greater respect in the USA and Canada, and there are signs that MCP usage will steadily increase. On the other side of the Atlantic MCP is nearly twice as dear as 2,4-D, but the latter has been produced in much bigger volume with consequent reduction in manufacturing costs. Is there an expanding export opportunity for British MCP in the dollar countries?

## Petrochemical Papers

THE Society of Chemical Industry deserves congratulations on publishing the papers on petrochemicals read last spring at a joint meeting of the London Section and the Institute of Petroleum. Not only has publication been speedy, but a special supplement to the Society's weekly journal has been issued, thus ensuring that all these papers are reproduced collectively (dated 10 August, 1953, 72 pp., price 15s.). As well as twelve papers, the discussion has been reported. The only omission, for which no doubt there are good reasons, is the final paper read by Sir Robert Robinson, though this has been given special praise in the preface. The range of the papers is certainly as wide as any student of this new branch of the petroleum and chemical industries could wish—plant design and constructional materials, economics of petrochemical development, synthetic ethyl alcohol and phenol, ethylene oxide, styrene, polystyrene, polythene, butane dehydrogenation, the 4-carbon hydrocarbons, and petroleum products as oil additives. On subjects of broad and topical chemical interest the symposium type of meeting or conference is undoubtedly invaluable; when societies can follow this service of organisation with symposium publication, their contribution to technical progress is, like *Portia's* mercy, twice blessed.

## Titanium Tonnages

AS reported last week (THE CHEMICAL AGE, p. 315) the new contract between the Ministry of Materials and Imperial Chemical Industries Ltd. will bring into being a British output of 1,500 to 2,000 tons of titanium metal per annum. In the USA where two companies, Du Pont and Titanium Metals, are already in commercial-scale production, the current output adds up to about 2,000 tons per year, and it is steadily rising. By the end of the year the rate will certainly be 2,500 tons; by

the end of 1954 something over 5,000 tons is likely. As in Britain, assurance of Government needs and readiness to buy is required before investment in titanium production can be made. Two other companies are prepared to go ahead with plants of 6,000 and 10,000 tons capacities, but the guaranteed assistance of the Defence Procurement Agency is needed first (see *Chemical Week*, 73, [6], 49, [1953]). Assistance would involve capital load, rapid write-off of plant, optional repayment of loan in titanium rather than cash, and cancellation of the loan balance should the magnesium-reduction process become obsolete. This represents almost total insurance of the risks of new enterprise, and would seem considerably in advance of any aid given by the Government here. However, no metallurgical experts in America would back the non-military prospects of titanium demand at thousands of tons a year and at the price that the present process makes inevitable. Titanium must come down considerably—to something like a quarter of its present price—to compete with stainless steel. These new American projects, considerably larger in size than anything at present contemplated here, rest wholly upon defence needs and could not otherwise anticipate existence. A less hostile world, or a new titanium extraction process, and the new plants of today would rapidly enter the white elephant class.

## IN THE EDITOR'S POST

### *A Canadian Subsidiary*

SIR,—We wish to draw your attention to an incorrect statement made on page 284 of the issue of *THE CHEMICAL AGE* dated 8 August, in which you refer to the present activities of this company in Canada.

The manner in which your comment has been framed is most misleading as it implies that this company is a subsidiary of Courtaulds, Ltd., with which concern we have in fact no connections whatsoever.

The facts are that we have established in Canada a subsidiary company under the name of Kemball, Bishop & Company (Canada), Ltd., with premises at Cornwall, Ontario, who are now actively producing

citric acid. Contrary to your suggestion, production commenced several months ago and our friends are now in a position to satisfy all demands of the Canadian market for this material.

You will readily understand the incorrect information you have given may do considerable harm to our interests and we must ask you to give prominence to the necessary correction in your next issue.—Yours, etc.,  
for KEMBALL, BISHOP & CO., LTD.,

N. P. K. HEATON.

Secretary.

Crown Chemical Works,  
Three Mill Lane,  
Bromley-by-Bow,  
London, E.3.

*(We gladly publish the foregoing explanation and apologise for any misunderstanding that may have been created. The paragraph referred to was based on information from a Canadian source hitherto regarded as reliable.—EDITOR.)*

## **KID Exemptions**

THE Treasury have made an Order under Section 10(5) of the Finance Act, 1926, continuing from 19 August, 1953, until 18 February, 1954, the exemption from Key Industry Duty of all the articles exempted from that duty by previous Orders which expired on 18 August, 1953, with the addition of:—

*tert*butyl alcohol, 1:3-butylene glycol, 1:4-butylene glycol, ethylene glycol carbonate (an ethylene glycol ester), pearly essence dutiable by reason of containing dutiable ingredients.

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The Order is the Safeguarding of Industries (Exemption) (No. 6) Order, 1953, and is published as Statutory Instruments 1953, No. 1246. Copies may be obtained (by post 5½d.) from HM Stationery Office, Kingsway, London, W.C.2, and branches, or through any bookseller.

# The Aluminium Industry in India\*

## Plans for Increasing Production

ALUMINIUM is almost the only non-ferrous metal which India can produce in large quantities. In addition to there being extensive deposits of bauxite in many parts of the country, adequate supplies of bulk power (the other important element in the manufacture of aluminium) can be obtained at reasonable rates from the new electric power plants.

There are two aluminium manufacturing concerns in the country: the Indian Aluminium Company, Ltd. (working in collaboration with the Canadian Aluminium Company) and the Aluminium Corporation of India, Ltd., which is owned and operated by an Indian firm. The Indian Aluminium Company started production with imported alumina by utilising hydroelectric power available at Alwaye in Travancore-Cochin. Subsequently the company expanded its operations and constructed an aluminium plant in Muri, Bihar. The alumina produced in this plant is converted into pig aluminium at Alwaye and rolled into sheets and finished goods at Calcutta. The Aluminium Corporation is an integrated plant which produces rolled metal and other finished products from the raw material. It is located at Jaykaynagar near Assansol, close to coal mines, which reduces the cost of its thermal power.

### Four Thousand Tons a Year

The two plants have a total capacity of 4,000 tons of aluminium ingot a year. The rolling mills of the two concerns have an annual rated capacity of 3,500 tons. The capacity of the alumina plants, however, is 14-15,000 tons, which offers scope for stepping-up the production of aluminium. The total production of aluminium of the two units was 3,362 tons in 1948, 3,490 tons in 1949, 3,596 tons in 1950 and 3,849 tons in 1951.

The amount of capital invested in the industry is about £2,300,000 and the industry provides employment for nearly 3,000 workers.

Apart from bauxite and coal, most of the

raw materials required are available only purely or not at all from indigenous sources. Caustic soda and soda ash, for instance, although produced in India, are not produced in sufficient quantities to meet the total industrial demand. Fluorspar occurs to some extent in Madhya Pradesh, but more information than is available at present about its quality and quantity is necessary in order to assess its usefulness for the aluminium industry.

### Imports

Cryolite, aluminium fluoride, carbon blocks and filter cloth have to be imported. Greenland is the main source of natural cryolite, but artificial cryolite is produced in other countries and with the development of the aluminium industry the possibilities of producing it in India will have to be investigated.

Aluminium is imported into India in the form of either ingots or sheets and circles. Imports of ingots in 1948 and 1949 were small—830 tons and 15 tons respectively; but imports went up to over 1,836 tons in 1950 and 3,190 tons in 1951. Imports of sheets and circles have decreased from 6,023 tons and 7,873 tons in 1948 and 1949, to 3,690 tons in 1950 and 3,348 tons in 1951.

Although small quantities of aluminium goods are exported to the Far East, particularly in the form of aluminium ware, there is no export of aluminium in the form of ingots and sheets. In view of the inability of the indigenous aluminium industry to compete with Canada, USA and the UK in the export markets on account of its high cost of production, the scope for developing a large export market in the near future would appear to be small.

The demand for aluminium in different forms has been estimated at between 15,000 to 20,000 tons per annum. The latest estimates, however, place the demand at about 16,000 tons a year, 10,000 tons for utensils, 2,500 tons for ACSR cables, 2,000 tons in industrial sheets and the balance for defence requirements and miscellaneous purposes.

The Panel for Aluminium Industry (1947) had fixed a short-term target of production of 15,000 tons a year to be secured in five

\* Reproduced, by permission, from *Indian Trade and Industry*, published by the High Commission of India.

years, while the long-term target to be secured at the end of 15 years was placed at 50,000 tons per annum. The present demand of 16,000 tons approximates to the short-term target determined by the Panel.

It should no doubt be possible to increase the demand for aluminium by reducing its price, but this is not feasible in the near future. Even in the long run the prospects of India being able to produce this metal at prices comparable to those at which it is being produced in the USA and Canada appear to be remote. With the programme of expansion envisaged by the manufacturers of ACSR cables, their requirements of aluminium would increase by 2-3,000 tons by 1955-56. The amount of aluminium required for utensils may not show any appreciable increase as the price of aluminium is not expected to be reduced considerably during the period under consideration.

Several problems confront the aluminium industry in India. In the first place the scattered character of one of the plants, involving transport of alumina and aluminium ingots over long distances, adds to its cost of production. Moreover, the size of both the existing plants is uneconomic. Thirdly, the inherent refractory nature of Indian bauxite, which moreover costs more to mine and requires more grinding, means that a higher temperature of the digesting liquor is necessary, and this in turn increases the cost of purification and augments the consumption of bauxite per ton of aluminium.

#### Electric Energy Costly

Finally, electric energy, which is consumed in large quantities both for producing alumina and aluminium, is costly in India. For the present these factors militate against the possibility of the industry being established on an economic basis. However, as aluminium is the only non-ferrous metal of which India possesses adequate deposits, it is essential to develop it in spite of its higher production costs.

Both the manufacturing units are fully aware of the need for increasing the capacity of their reduction plants to 5,000 tons per annum. The existing programme therefore consists of two schemes. The Indian Aluminium Company envisages the expansion of the smelter at Alwaye to 5,000 tons to be completed by the end of this year, and proposes to utilise additional power capacity to

become available in the Travancore-Cochin area. It has also planned to increase the rolling capacity of its mill at Belur to 6,000 tons per annum. This scheme is expected to materialise this year, too.

The Aluminium Corporation of India has yet another scheme to step up the production of aluminium ingots to 2,000 tons per annum and to increase the sheet rolling capacity from 500 tons to 3,000 tons. For this purpose it has obtained a loan of £375,000 from the Industrial Finance Corporation. The expansion is expected to be achieved by the end of 1953.

#### Development Programme

The Indian Aluminium Company has recently completed a survey of the possibilities of development of the aluminium industry in the Hirakut area on the basis of the recommendations made in the report of the company's technical mission. It has formulated a phased programme of development on the following lines:—

(a) Establishment by early 1956 of a smelter with an annual capacity of 10,000 tons per annum; and

(b) Expansion of mining of bauxite at Lohar Doga to 80,000 tons and of alumina production at Muri to 30,000 tons per annum by the end of 1958.

During the period between the completion of the smelter at Hirakut and the expansion of Muri works (i.e. in 1958), the requirements of alumina would have to be met by imports.

In view of the above the Planning Commission has made the following recommendation for development of the industry:—

(a) The capacity of the plant of the Aluminium Corporation of India should be increased so as to produce 5,000 tons of ingots per annum.

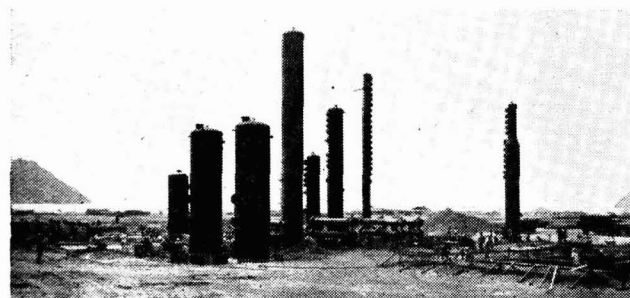
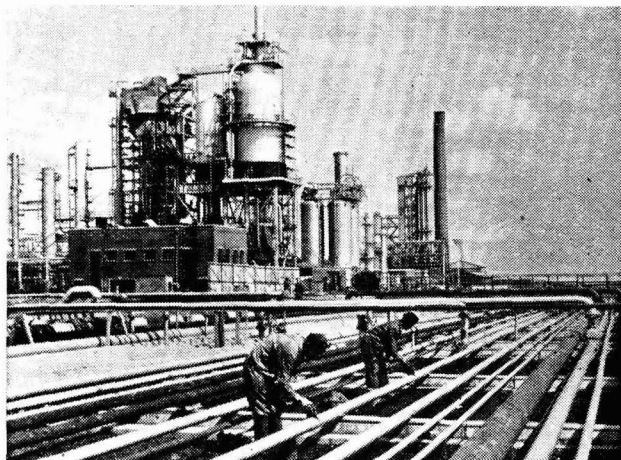
(b) Facilities should be afforded for the implementation of the expansion plan of the Indian Aluminium Company or for any alternative project designed to bring into existence additional capacity for production of 10,000 to 15,000 tons of aluminium per annum.

(c) The petroleum refineries should include in their manufacturing programme the production of calcined petroleum coke required by the aluminium industry, and

(d) Arrangements should be made to ensure regular and adequate supplies of cryolite, which has to be imported.

## New Anglo-Iranian Refineries

*Right: A general view of the new oil refinery under construction for the Anglo-Iranian Oil Company on the Isle of Grain. On the left is the almost completed catalytic cracker and, on the right, the distillation unit. Seen in the foreground is a section of the main pipetrack*



*Left: These towers are of the SO<sub>2</sub> extraction plant, the first plant to be erected at the Anglo-Iranian Oil Company's £45,000,000 refinery now under construction at 'Little Aden,' six miles west of Aden Town. The extraction plant, which will treat kerosine, has a capacity of 360,000 tons a year*

### 'Corronel B'

ADDING molybdenum to nickel, or to nickel containing small percentages of iron, produces alloys strongly resistant to corrosion by hydrochloric and phosphoric acids, and to a lesser extent, by sulphuric acid. The initial work on these alloys was done in the USA and Germany, and in the form of castings the alloys have been produced in this country for some years. Wrought forms are required, however, often for use in conjunction with castings, and those interested in corrosion problems will be glad to know that Henry Wiggin and Company, Ltd., Birmingham, have begun the manufacture of material of this type under the name of 'Corronel B' (which is a trade mark).

Previous work on nickel-molybdenum compositions supplemented by investigations carried out in Birmingham show that corrosion-resistance improves with increased

molybdenum content, and additions of up to 10 per cent of iron at the 30 per cent molybdenum level have no significant influence on corrosion rates. The composition of 'Corronel B' is approximately 66 per cent nickel, 28 per cent molybdenum and 6 per cent iron.

The new alloy can be satisfactorily worked, although it offers greater resistance to deformation than mild and low alloy steels. 'Corronel B' is highly resistant to hydrochloric acid at all concentrations and temperatures.

### Glass Works Fire

When fire broke out in the roof of a large shed at the Kirk Sandall Works of Rockware Glass Ltd. the works brigade assisted firemen from Doncaster and Thorne to extinguish the flames. A hole about 50 ft. by 40 ft. was burned in the roof, but production was not affected.

# Postgraduate Research Scholarships

## *Courtauld's Scientific & Educational Trust Fund Awards*

THE postgraduate research scholarships recently awarded for 1953 by the trustees of Courtauld's Scientific & Educational Trust Fund are the fifth awards made since the formation of the Trust Fund in April, 1948. The object of the fund is to encourage study and research in those branches of natural science which may be thought likely to assist the textile, plastics or other allied industries. The fund provides for the establishment and maintenance of scholarships, and for the supply of laboratory apparatus and equipment for educational and research institutions.

Recipients of postgraduate research scholarships in a branch of science related to the textile, plastics and allied industries (maximum £400 for one year only) are as follows:—

D. W. Bannister, Stretford, Lancs., £400 (renewal of 1952 award for one year), tenable at Oxford; subject of research, fractionation of high polymers by chromatographic techniques.

C. E. Chadwick, Farnworth, Lancs., £400 (renewal of 1952 award for one year), Manchester College of Technology, measurement of the activity coefficients of polyelectrolytes by the isopiestic method.

P. G. Francis, Reading, Berks., £400, Reading University, determination of the second virial coefficient of pure organic vapours and their binary mixtures.

A. J. Head, Balham, S.W.12, £400, Birkbeck College, London, long range effects in saturated organic molecules.

R. M. Hochstrasser, Edinburgh, £400, Edinburgh University, the photoformation of peroxides of rubrene and related compounds.

D. Margerison, Wallasey, Cheshire, £400, Liverpool University, a quantitative study of the size and shape of high polymer molecules.

R. I. C. Michie, Beckenham, Kent, £400, Manchester College of Technology, catalytic degradation of cellulose in the presence of alkali.

Miss E. R. Robertson, Alyth, Perthshire, £400, University College, Dundee, poly-

merisation and co-polymerisation of acrylonitrile and methyl methacrylate.

P. T. Speakman, Leeds, £400 (renewal of 1952 award for one year), Oxford, the oxidation of aldehydes and ketones with alkaline ferricyanide.

B. D. Stead, Coventry, £400 (renewal of 1952 award for one year), Birmingham University, characterisation and isolation of 'block copolymers' of methyl methacrylate and styrene.

R. Stephens, Oldbury, nr. Birmingham, £400, Birmingham University, correlation of the infra-red absorption spectra of saccharides with their structural features.

Those awarded postgraduate research scholarships in textile technology (value £320 for 1st year, £360 for 2nd year), are as follows:—

C. B. Chapman, Bradley, Yorks., £320, Department of Textile Industries, Leeds University, synthesis and properties of branched-chain condensation polymers.

G. E. Cusick, Wythenshawe, Manchester, £320, Manchester College of Technology, electrical resistance and dielectric properties of textile fibres.

A. F. Greenwood, Southport, £320, Department of Textile Industries, Leeds University, retention of solid particles by textile materials.

R. D. Hardisty, Accrington, £320, Manchester College of Technology, some aspects of the thermodynamics of dyeing.

F. K. Hall, Roundhay, Leeds, 8, £100 (renewal of 1951 award for one term), Department of Textile Industries, Leeds University, the setting of textile fibres and fabrics with special reference to nylon and related fabrics, and protein rayons.

H. B. Hallows, Glossop, Derbyshire, £400 (renewal of 1951 award for one year), Manchester College of Technology, the mechanisms of dye transfer during printing.

G. M. Jeffrey, Wibsey, Bradford, £400 (renewal of 1951 award for one year), Department of Textile Industries, Leeds University, the ultrasonic disintegration of keratin fibres for electron microscope examination.



# Titanium in Australia

## Extraction & Treatment the Subject of Research

THE close attention now being devoted to the extraction and treatment of titanium in Australia was stressed in a recent article in the *Financial Times* by their Melbourne correspondent. He wrote:—

' In recent years important discoveries of easily-mined deposits of titanium ore have been made along hundreds of miles of Australia's eastern shoreline. Beach and dune sands containing titanium are already being 'mined' along 50 miles of the southern coast of Queensland, and along beaches in New South Wales, near Byron Bay and elsewhere. Surveys have established the existence of between 40,000,000 and 50,000,000 tons of proved ore, but the quantity in reserve is unknown.

On the east (Pacific Ocean) coast of Stradbroke Island, near Brisbane, deposits are so plentiful that it is necessary only to drive to the beach, back trucks to the dunes, and load black sand for conveyance to the separators working nearby. These comprise 12 ft. high metal spirals that wash out titanium and zirconium concentrates, and return the sand to the beach whitened by the separation.

### Minerals Worth £A2,000,000

Commercial separation of the metal concentrates began during the war. Last year the beach sands yielded 13,800 tons of rutile and 10,500 tons of zircon valued at £A630,000. Since establishment of the industry, more than £A2,000,000 worth of minerals has been recovered from the sands. Most of the output has been sold to the USA for refining there, although a small proportion has gone to Great Britain.

Of several companies engaged in extraction operations on the beaches, the largest—Titanium-Zircon Industries Ltd.—is a subsidiary of Zinc Corporation. Most are Australian-financed undertakings, but there is also an infusion of American capital.

Easy accessibility of known deposits, and ore-extraction without the need of costly plant or a large labour force, give Australia enviable advantages in exploiting, at relatively low cost, the world's best-known reserves of rutile. Possession of these resources has attracted keen American

interest, especially as ilmenite, the chief domestic source of American supplies of titanium, requires the separation of much iron. With rutile, on the other hand, only oxygen has to be separated.

In the Baillieu laboratory at the University of Melbourne, a team of research scientists is making important experiments in extraction processes and treatment of titanium. This venture, went on the author of the article, is a good example of teamwork between the University, the Commonwealth Scientific and Industrial Research Organisation, and Zinc Corporation Ltd., the last-named providing financial assistance.

### Obstacles to Development

Professor H. K. Worner, who has charge of the Melbourne experiments, points out that among obstacles to development of titanium until recent years were chemical difficulties in extraction and treatment of the metal, and only since the war had some of the problems been solved.

Research is being directed in one Melbourne laboratory to improved methods of extracting titanium concentrate from beach sand. Another section of young university scientists is conducting research into production of pure titanium by methods of electrolysis, involving the passing of electric currents through a molten solution.

Another team is working on experiments with titanium alloys. These combine the metal with controlled amounts of oxygen, iron, manganese, chromium and nickel, to produce varying degrees of strength, lightness and heat resistance.

Although on a much smaller scale than the research activities of big USA corporations and institutions interested in titanium, the Melbourne University work has attracted requests for information from the USA, Britain, Sweden, Switzerland, Italy and Germany.

### Canadian Copper Deposits

Indications of good copper deposits have been found on an island in Lake Timagami, about 50 miles north-east of Sudbury, Canada.

# I.C.I. Export Problems

## Effect of Lack of Sterling Purchasing Power

THE possibility of a serious reduction in I.C.I. exports this year is emphasised in the August issue of the *I.C.I. Magazine*. The following is taken from an article dealing with the company's exports in 1952:—

The year 1952 was one of contrasts. For the first time since the war supplies were freely available for export, but imports to important traditional markets were restricted through shortage of sterling or other causes.

During the first quarter of the year large exports were made, but subsequently Australia restricted imports, import licences were no longer forthcoming from India, and the general world textile depression caused a reduction in demand for many chemicals and dyes. Fortunately, however, the demand for fertilisers, assisted in many cases through American dollar aid, remained strong, and as Billingham had additional supplies of sulphate of ammonia available for export full advantage was taken of this situation.

Record exports of sulphate of ammonia, amounting to 437,000 tons, were made in the calendar year. Later in the year there was a revival in demand from China in our traditional soda ash trade, which it should be noted is a non-strategic product and for which the Board of Trade freely granted export licences.

### Record Export Figure

The combination of increased sulphate of ammonia exports and the revival in demand from China offset the depressive factors. As a result the year closed once again with a record export figure of just under £62,000,000, which is nearly £4,000,000 more than in 1951. Billingham Division, of course, contributed most to this result, and Metals Division also had a large increase. Most other divisions, with the exception of Nobel and Alkali Divisions, had reduced exports.

In the governing circumstances, the overall result must be considered satisfactory. It does, however, conceal the fact that I.C.I. exports, alkali in particular, were seriously reduced in the latter part of the year through lack of sterling in Argentina, Brazil and other territories. This situation

has been aggravated in 1953 and a serious reduction in our alkali exports has occurred in the first quarter of this year, as virtually no shipments could be made to these territories.

In 1952 direct exports to dollar markets amounted to USA \$12,400,000, which is a small reduction on 1951. However, there were in addition some large shipments to non-dollar markets which were paid for in dollars. Our dollar exports in 1952 therefore exceeded those in 1951.

The seller's market has, of course, long ended, and we have encountered severe competition from German and other Continental producers. The Japanese also were very active in bidding for USA dollar aid tenders for sulphate of ammonia, some of which they secured at exceedingly low prices which were reported to be below their costs of production. Subsequently they were unable to supply some of the tonnage for the orders they had secured.

British exports today are suffering severely from the lack of sterling purchasing power of a number of traditional markets, particularly Argentina and Brazil. The number of markets affected continues to grow, and recently Egypt and Turkey have been added to the list. All these markets are important traditional markets for I.C.I., particularly for Alkali Division, and unless means are found or devised to enable them to purchase British goods, then I.C.I. exports in 1953 are likely to be seriously reduced.

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### Higher Duty on Capsules

THE Board of Trade has given notice that they are considering an application for an increased protective duty on: 'Capsules, containing more than 75 per cent by weight of lead, of a description commonly used on bottles, jars, cans and similar containers.' Any representations which interested parties may wish to make in regard to this application should be addressed to the Board of Trade, Industries and Manufactures Department, Division 1, Horse Guards Avenue, Whitehall, London, S.W.1. not later than 12 September 1953

# Pilot Plant Erection

## 'Dexion' as a Valuable Structural Material

**P**ILOT-PLANT equipment—particularly that fabricated in glass, which is fast becoming the most popular—is designed to be readily interchangeable. Flasks of 100-200 l. capacity, condensers, pipe-line, all are available with standard gasket fittings or tapers, and in prescribed sizes; heating mantles may be adapted to various shapes and sizes of flask; and all services can be taken by flexible leads to wherever they are wanted.

But when it comes to the actual erection of the plant, there are generally quite a few difficulties. Frames, supports and staging have to be constructed, usually of timber or welded angle, and for this purpose it is necessary to make detailed drawings. Since the plant cannot be erected until the framework has been made, the correct dimensions have to be guessed at, and there must be very few pilot-plant engineers who have not discovered quite a number of discrepancies between the estimated and the required structure. Moreover, when the plant is dismantled, the framework is seldom good for any other set-up, and must be scrapped, or else adapted as well as may be.

### Two Possible Alternatives

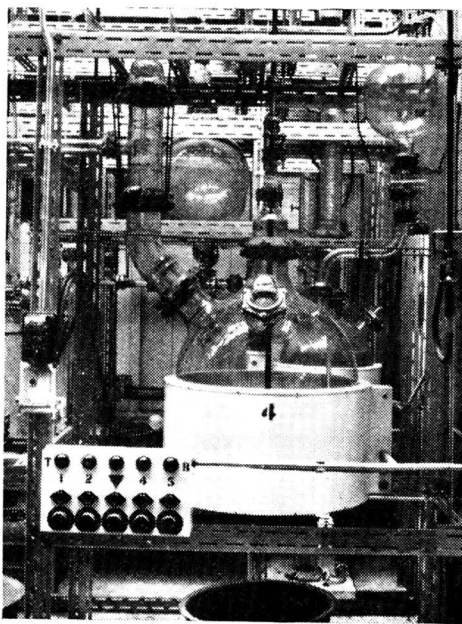
Since the war, however, two possible alternatives have arisen. The first is laboratory scaffolding; but this is hardly robust enough for the heavier pieces of apparatus, and the fixing, both of the scaffolding to itself and of components to the scaffolding, is not sufficiently positive. Excessive vibration can easily loosen the scaffold clamps, with disastrous results.

The other possible construction of plant frameworks is by means of slotted angle, a material which is probably by now at least vaguely familiar to most people. The slots, which are cut out at mathematically designed lengths and distances, enable the pieces to be bolted together at any required orientation. The result, in fact, is a man-sized 'Meccano,' with the advantage often claimed for that product, that any number of different set-ups can be made with the same pieces.

Naturally, the only features of slotted angle which can be patented are the size,

distribution and separation of the slots. Of the several patterns now available, 'Dexion' was the first, and its manufacturers claim that, therefore, it is also the best, combining maximum rigidity with complete adaptability. It is supplied in 10-ft. lengths, either in enamelled mild steel or in aluminium alloy, and is readily cut at the required angle and length by hacksaw, or with the special cutter obtainable from the manufacturers.

The use of 'Dexion' is remarkably simple: even measurement is reduced to a minimum, since the metal is precision-stamped with a diamond-shaped mark at 3-in. distances. The lengths are fastened together at the required points by short bolts, and the disposition of the slots is so designed that there are always two points for the insertion of bolts, no matter what the angle at which the struts meet. The metal cannot, of course, be bent without cutting, but its structural rigidity in the uncut state



*Glassware by Jobling, heating mantle by Stabilag, and framework by Dexion—at Carnegie Chemicals Ltd., Welwyn*

is high. As for waste, even off-cuts of 3 in. can be utilised.

For heavy structures, additional strength and rigidity may be obtained by bolting together two or more pieces of angle, to give channel, 'T,' 'Z,' 'I,' or box sections.

The strength of 'Dexion' steel angle for structural work is shown by the following figures:

	STRUTS			BEAMS		
	3 ft. (lb.)	4 ft. (lb.)	6 ft. (lb.)	3 ft. (lb.)	4 ft. (lb.)	6 ft. (lb.)
Single—						
L-section :	1880	1620	1000	1100	710	420
Double—						
T-section :	4250	4140	3475	3300	2700	1450

Loads for beams are for point loads concentrated in the centre. For normal distribution loads the figures can safely be doubled.

The steel angle is phosphate-treated to inhibit rusting, and stove enamelled, and for structures where weight is secondary to strength, and in conditions which are not highly corrosive, it is a very valuable structural material.

In most chemical work, however, the aluminium alloy will be preferred, and the following data for the alloy give some indication of its possible uses and limitations:

#### DEXION LIGHT ALLOY ANGLE

Composition:	Aluminium	.....	95-96
	Copper	.....	0.15
	Manganese	.....	0.5
	Magnesium	.....	1.5-2.5
	Iron	.....	0.75
	Chromium	.....	0.5

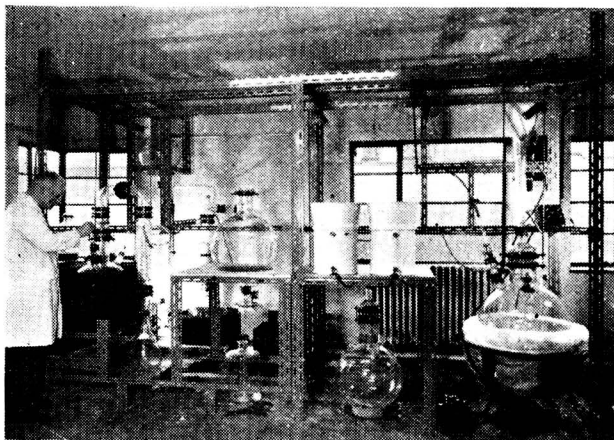
Corrosion: The alloy may be safely used

in contact with the following substances: acetate solvents, acetylene, albumen, anhydrous aluminium chloride, aluminium formate, ammonia, beer, benzene, cane sugar, carbohydrates, coal, margarine, milk, organic dyestuffs, petroleum oils, potassium nitrate, seawater, vegetable oils, wines and spirits, and yeast.

In acid conditions, care must be taken in the use of alloy. The commoner organic acids have little corrosive action: the effect of lactic, acetic, oxalic, citric or tartaric depends upon temperature, concentration and the impurities present, but it is generally slightly below 50-60°. The reaction with formic acid is vigorous even when it is present solely as an impurity in other organic liquors, and contact with this acid should be avoided. Hydrochloric acid attacks at all temperatures and concentrations, nitric reacts vigorously in dilution but less at higher concentrations, and sulphuric reacts more vigorously with rising temperature and concentration. Wet aluminium chloride, lime cements, mercuric chloride, salt solutions and vinegar should also not be allowed to come into contact with the light alloy.

Although the list of chemicals which should be kept from contact with the alloy is quite considerable, it must be remembered that the structure is external to the plant, and only brief and accidental attack, due to sudden overflow or careless handling, is to be expected.

The more use is made of 'Dexion' by the plant engineer, the more uses will occur to him. Besides its employment for erection of pilot plant, 'Dexion' may be used for the

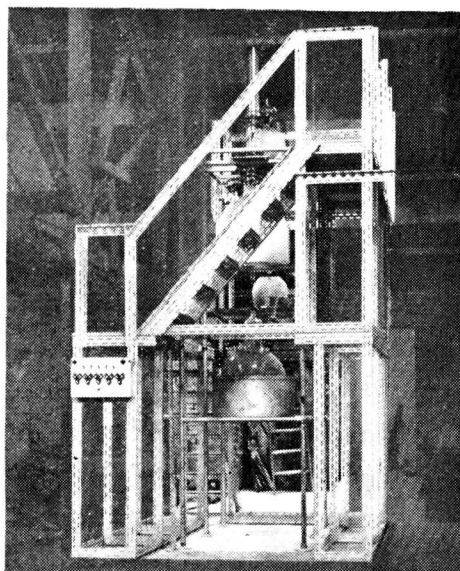


*Where the size of plant components is variable, 'Dexion' is the most readily adaptable form of structure. A production set-up at Therapeutic Products Ltd.*

construction of trolleys, storage racks, gantries, racks for drying cabinets, carboy stands, conveyors, partitions and even building frameworks.

Among Dexion's customers are Government establishments, the Services, and many of the biggest names in industry. Design and service departments are being developed to help customers in the best use of the product, and help is offered in workshop and office layout or work arrangement to save space and money. Outside engineering consultants are employed to give objective advice. They have been known to recommend that an estimate by a customer could be reduced, or even to decide that 'Dexion' was not suitable for the job. This attitude on the part of the manufacturers is an important influence in creating confidence and goodwill.

The accessories available for use with 'Dexion' are steel panels 36 in. by 6 in., hinges, and castors. With the aid of these it should be possible to make, economically and without delay, almost any structure required for the erection, operation or maintenance of chemical plant. It is pleasing to



**'Dexion' provides ready accessibility to this 14 ft. high refining unit at the works of Norman Evans & Rais**

know that, even in post-war Britain, there is still scope for real enterprise and ingenuity.

## Increasing Productivity

VIEWES on the programme to be followed by Local Productivity Committees when they go into action in the autumn were exchanged between representatives of about 40 such committees and members of the British Productivity Council at a recent conference in London.

Objectives of the local committees were summarised by Council spokesmen as follows: (a) To bring together in each area individuals drawn from all levels of industry who are enthusiasts in the pursuit of higher productivity with a view to promoting the prosperity of local industry and all engaged in it; and (b) to facilitate the exchange of experience and 'know-how' between firms and individuals at all levels in the same and in different industries.

The conference was presided over by Mr. Tom Williamson, general secretary, National Union of General and Municipal Workers and a member of the British Productivity Council. In the course of his opening address he said there was much to be learned

by trade unions, operatives and managements as to the methods by which efficiency could be increased and the fullest co-operation of workpeople secured. The Local Production Committees had a great educational task to perform. There was tremendous scope for the interchange of ideas and experience.

## Royal Colours

THE British Colour Council has announced that H.R.H. Princess Margaret, Patron of the Council, has sponsored three colours for the visit to Australasia of H.M. the Queen and His Royal Highness the Duke of Edinburgh. They are Clarence Rose, a soft smoky pink; Ambassador Blue, a muted silvery blue and Royal Blue. Her Royal Highness has selected these colours as high fashion colours knowing that dyestuffs are available for dyeing fabrics and accessories in these colours and appreciating the necessity for speedy and economic production. These colours will be welcomed by the colour-making and colour-using industries.

## Chlorophyll from Lucerne

### Australian Company's Venture

LUCERNE bids fair to become the foundation of a new Australian industry, the extraction of chlorophyll, according to a recent issue of the *Australian Newsletter*, which goes on to state:—

Consolidated Chemical Industries Pty. Ltd., expects to go into large-scale production of chlorophyll by September at its research plant and factory on the outskirts of Sydney. Apart from the chlorophyll, lucerne produces many by-products as the raw material from the farm goes through many chemical processes. Consolidated Chemical Industries chose lucerne because it is readily available in Australia and has a high percentage of chlorophyll.

Lucerne meal from the central west of New South Wales is being used for the chlorophyll and samples sent from the research station to many parts of the world have been given good reports as to purity. When in full production the factory will use 25 tons of lucerne meal every week, giving an output of about 100 lb. of pure chlorophyll.

After the substance has been extracted from the meal it has a protein content of 26-27 per cent, as against 15 per cent in its natural state, and in addition to being used as roughage for stock feed it will be made, with the addition of chlorophyll, into dog biscuits which, the makers claim, will deodorise canine pets.

Another interesting by-product from the processing of the useful lucerne is zanthophyll, the chemical responsible for the yellow colouring of the yolk of an egg. The product can be incorporated in laying-mash to give eggs a rich appearance. At present Australia imports her zanthophyll requirements.

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## Nationalised Industries

### Select Committee's Recommendation

IN a report published last week, the Select Committee on Nationalised Industries recommended the appointment of a permanent committee of the House of Commons with power to examine the reports, accounts and activities of the nationalised industries.

The staff of the proposed committee, it suggested, should include an officer of the

status of the Comptroller and Auditor-General (Sir Frank Tribe), and at least one professional accountant. There should be not more than 21 members, nominated annually.

'Further information as to the general policy and practice' of State-owned concerns should be obtained for Parliament, but the committee should not aim at controlling the work of the corporations. Annual accounts would continue to be audited by auditors appointed by the Ministers concerned, but the auditors would be under obligation to give such additional information as might be required by the proposed committee. The Select Committee arrived at its conclusions on the ground of the inadequacy of the existing facilities for Parliamentary supervision of nationalised industries.

Among those who gave evidence before the Select Committee was Sir Geoffrey Heyworth, chairman of Unilever Ltd., and a part-time member of the National Coal Board. He said:—

'The great public corporations have not yet had time to settle down as integrated bodies. In due course they, like Unilever and other great commercial undertakings, will develop their own internal controls and their own adequate relationships with the outside public. The more autonomous units, the better chance there is for success.'

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## Electricity from Uranium?

IN a short time it will be possible to make experimental reactors that burn only uranium and in due course power will be producible from uranium said the Paymaster General, Lord Cherwell, when he addressed a summer school for young business executives at Oxford last week.

Many people, said Lord Cherwell, thought that in 10 years or so electricity would be produced from uranium instead of coal, but because of the large capital investment involved in electrical generating plants it would be 50 or 60 years before a notable proportion of electricity could be produced in that way.

Emphasising the need for technological universities, he said: 'In this country there is a great deficiency in facilities for people to learn applied science. In every other country in the world are great institutions where technology is taught and developed.'

# Overseas Newsletters

FROM OUR OWN CORRESPONDENTS

## India

It is likely that some big foreign companies will start co-operative development with Indian firms for exploiting the country's resources of beryllium and titanium. This was revealed by the Secretary of the Indian Ministry of Natural Resources and Scientific Research who recently attended a UNESCO meeting for the formation of an international advisory committee on scientific and industrial research. He said that new proposals have been put forward for the development of atomic energy in the country. It may be recalled that India has fair resources of beryl ore and in view of the strategic importance of beryllium in atomic energy, the Government of India have reserved to themselves the right of mining, production and utilisation of beryllium in the country. As regards titanium: though abundant reserves of ilmenite and rutile exist in India, a firm which started producing titanium pigments in Travancore had to close down last year owing to technical difficulties. The new proposals now made may mean fuller exploitation of beryl and reopening of the titanium factory in collaboration with foreign interests.

The Secretary, while abroad, explored the market for the sale of rare earth compounds now produced in quantities at Alwaye by Indian Rare Earths, Ltd., and also observed newer uses developed abroad for these compounds.

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The recent closure of the Ooregum Gold Mining Co., Kolar Gold Fields, has directed topical attention to gold production in India. The following figures relating to gold production during the calendar year 1952 were revealed at the annual meeting of the Kolar Gold Field Mining Companies:—

	Ore treated (tons)	Gold recovered (oz.)
Champion Reef Gold Mines, Ltd.	148,890	66,477
Mysore Gold Mining Co.	207,029	74,729
Nundydroog Mines, Ltd.	228,082	65,165
Ooregum Gold Mining Co.	127,207	34,621

The board of directors of the first three companies declared a dividend of 6 per cent, 5 per cent and 5½ per cent respectively on the

10s. shares of the companies. No dividend was declared for the Ooregum Gold Mining Co.

The Reserve Bank of India estimate the total Indian gold production for 1952 at 252,911 oz., the bulk of it coming from the Kolar Gold Fields and the balance from the mines in Hyderabad State. It may be mentioned that the 1952 production is higher than that of 1950 and 1951 and lower than prewar production, which in 1939 stood at 317,000 oz.

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A seven man committee composed of industrialists and scientists has been appointed by the Government of India to organise work for starting a National Research Development Corporation. The proposal to set up an organisation similar to those in Britain and United States was made by the Council of Scientific and Industrial Research in 1949. The corporation will be constituted as a Government sponsored company under the Indian Companies Act with a long term loan of about R.2,500,000 (£188,000) by the Government of India. The development corporation is expected to fill the gap between research and development. Several processes and machines developed in various laboratories in India will be examined by the corporation and it will also decide the order of priorities. Wherever possible the corporation will arrange practical trials or provide financial assistance to that end. The facilities of the corporation are intended to be available to research laboratories, universities and to private individuals also.

\* \* \*

The Secretary of the Ministry of Production, Government of India, has gone to West Germany to explore the possibilities of financial and technical participation of German iron and steel firms in Indian development. The Government have long had under consideration a proposal to construct an iron and steel factory somewhere in South India with an annual capacity of 350,000 tons of steel. In view of the heavy cost of the scheme, which is expected to be about R 500,000,000 (£37,000,000) the Government decided to welcome outside financial assist-

ance to the extent of half the cost while for the remainder the Government will seek a long term loan from the World Bank.

\* \* \*

The Development Council for heavy chemical industries, acids and fertilisers met in New Delhi recently, for the first time. The Council came into being under the Industries Development and Regulation Act, 1951, and will advise the Government of India regarding the proper development of the heavy chemical industry in the country. The Council will deal with efficiency of existing plants, utilisation of present output, modernisation and expansion of units where necessary and the co-ordinated development of the industry. The Council decided to collect basic information on all aspects of heavy chemical industries in India as a first task.

## South Africa

ONE pound of uranium could now be expected to produce as much energy as several tons of coal, and its value as fuel made uranium a much more valuable material than gold, said Professor A. E. H. Bleksley, of the University of the Witwatersrand, at the science congress in Bulawayo, in July. Atomic energy had now increased a hundredfold the efficiency of uranium as a fuel, he said. In the atomic world of the future uranium, through 'breeding', would be able to produce all the world's requirements of energy and there would be no need to draw on the relatively small reserves of coal. Under such circumstances coal could then be used as the basic raw material in the production of an enormous variety of chemical substances ranging from fuel oils and rubber to nylons and aspirin. When that took place the known deposits of uranium on a large scale would soon be exhausted. The great deposits in the Belgian Congo and in Canada, and the possibly even greater reserves in the gold-bearing ores of the Witwatersrand, were unlikely to provide the world with its energy for very much longer, said Professor Bleksley. In time it would become necessary to make use of the much more widely scattered sources of uranium of low concentration which would require the development of methods of extracting the uranium; this was a problem similar to that involved in gold extraction from the Witwatersrand ores. When that

problem has been solved, the most important source of the world's atomic fuel would probably be the ancient granites, such as the great granite domes of the Matopos.

In the future we may well find that Rhodesia becomes one of the world's foremost uranium producers, since each ton of Matopo granite contains a quantity of uranium, equivalent as fuel to about four tons of coal. Atomic energy, combined with the enormous coal resources of the Wankie field and the water resources of the Zambesi for example, will make possible the development—in the north-western parts of Southern Rhodesia — of a great chemical industry. With unlimited power for pumping, it becomes possible to use the water from the great rivers of Central Africa to irrigate vast areas of what are at present useless tracts of arid country and thus to convert Africa into one of the world's great food-producing areas. With atomic energy at his disposal man may even be able to extend his dominion over the moon and other planets which are the earth's neighbours, and make the age-old dream of space travel become a reality.

\* \* \*

The problem of fixing loose or broken tiles has been solved by a fixing cement made by Glue Paste Manufacturing Co., PO Box 1929, Johannesburg, according to recent statements by the manufacturers, who are selling it under the name of Tilo-fix. It can be used to fix wall or floor tiles, porcelain and earthenware. It is said to be moisture and heat-resistant, quick in adhesion, permanent and very strong.

\* \* \*

The managing director of the new oil-from-coal undertaking, Sasol, told members of the Sales Managers' Association in Johannesburg that he was frequently asked when the corporation was going to produce its cheap petrol. He pointed out that the corporation did not undertake to sell petrol at a low price, although that was what it was supposed to do. The more they were able to get for the other products of the plant the cheaper they would be able to offer their petrol.

\* \* \*

Gypsum Industries Ltd., Gokson House, 52 Commissioner Street, Johannesburg, who have been making a gypsum fireproofing ceiling board, have been experimenting for some time with gypsum plasters, and recently



they placed on the local market 'Rhino-concrete,' which is offered as a repair and patching plaster, particularly easy to use. It is easily mixed to repair damaged plasterwork. A small quantity is mixed with clean water and applied at once to yield a hard, permanent surface that cannot be faulted. It can also be used for spotting nailheads, mending cracks, filling joints, smoothing hollows, and generally making good chipped, stained or flaking plaster. Rhinoconcrete is being sold in 5 lb. packets and in cartons containing a dozen packets.

\* \* \*

Northfield Engineering (Pty), Ltd., Port Elizabeth, have placed on the South African market a new rust-proofing solution known as 'RS1' which is claimed to dispense with the costly processes used in the past. The solution is brushed on to rusty surfaces which have not been proofed and so converts the rust into a rust-inhibiting phosphate coating. This firm states that it has long been known that the phosphate coating of steel provides a useful metal-finishing technique, though the difficulty has been to treat static structures *in situ*. It is claimed, however, that RS1 is a genuine phosphating solution which can be applied *in situ* at ordinary atmospheric temperatures. The method of application is simple. After removing as much rust as possible, the solution is brushed on as though it were a primer coat of paint. Rinsing is unnecessary, surplus solution being wiped off with a damp cloth half an hour after application.

\* \* \*

Work so far completed on the new £7,000,000 oil refinery in Durban of the Standard-Vacuum Refining Company, of S.A.(Pty.), Ltd., includes 75 per cent of the foundations of the combination unit, including the catalytic cracking plant; the SO<sub>2</sub> unit; the blending units; the doctor treating unit (for sweetening petrol or paraffin), and the re-run units. Also completed are the foundations for the cooling tower, the power stations, the chemical storage building, the SO<sub>2</sub> storage building, the tetra-ethyl lead, and the dye and inhibitor buildings. The steel of the condenser structure is up and the contractors have been setting up a number of oil tanks.

\* \* \*

Large organisations like the Public Works Department, municipalities and hospitals go to the South African Bureau of Standards

to assess the quality and suitability of different paint products for specific uses.

Similarly, paint manufacturers have come for tests on raw materials or for tests on certain properties of a product intended for a particular purpose. In some instances where a certain product is being standardised, the coating applied to that product must necessarily be standardised as well. The bedside locker is a case in point. The SABS specification for this article includes a coating which is resistant to alcohol, disinfecting fluids and hot and cold water. From this it is evident that the answer to the questions which are asked about what a paint is required to withstand are so important that neither the manufacturer nor the consumer can afford to be without some guidance in the matter.

The manufacturer, moreover, is protected by standardisation from the unfair competition encountered from the factory which turns out a cheaper paint and claims for it the qualities which are only achieved at a higher cost in ingredients and preparation.

The Paint Laboratory of the Bureau of Standards has established testing methods and also the kind of requirements that a standard paint must meet.

## Australia

A NEW uranium field has been discovered in a remote area of Australia's Northern Territory, 230 miles south of Darwin. The field is known as Coronation Hill because its existence was first discovered on Coronation Day. Government geologists are now preparing to make extensive tests, and hope to begin mining very soon. Messages from Darwin say that the field is extensive and may be as large as the big finds at Rum Jungle, which is in the same region.

Commenting in Canberra on the discovery, the Minister for National Development, Senator Spooner, said the prospects were encouraging, but it was not yet known whether the field was big enough to make its development a commercial proposition. Tests were being made, and when these were concluded, it would be decided what could be done.

The Minister added that the main significance of the Coronation Hill find was that it had been made in an area outside the previously known uranium-bearing region, and

that the uranium had been found close to the surface.

\* \* \*

Experiments carried out by the Radiophysics Division of the Australian Scientific and Industrial Research Organisation have made its Director, Dr. Bowen, confident that large-scale rain making will be carried out in Australia within five to 10 years.

Dr. Bowen said in Brisbane recently that two methods now being used worked every time. They were the dropping of pellets of dry ice into a rain-cloud, and the spraying of its base with water.

The experiments had shown that one cloud could be treated at a cost of about £A25 and give some rain over an area up to 50 square miles. The technique was especially suited to Northern Australia, where monsoon clouds often hung in the sky for long periods because there were no salt particles in the air to turn them into rain.

Dr. Bowen said that scientists were now trying to work out cheaper ways of applying this method so that rain-making could become an economic proposition.

\* \* \*

The Melbourne firm of Mobile Industrial Equipment, Ltd., is to extend its activities to include the manufacture of agricultural and arable industry products developed from scientific research in the USA.

The managing director of the firm, Mr. Herscovitch, said that the products included fungicides, selective weed-killers, seed disinfectants and agricultural sprays which will be of great benefit to primary producers in Australia. They had been produced in the research laboratories of the American company of Dupont Inc., one of the largest organisations in the world.

Mr. Herscovitch said that it was planned to import from the USA only the active ingredients and to process them in Australia. This would involve considerable expansion. Mr. Herscovitch described the new development as one of great national significance.

## New Filtering Elements

### Polytrifluorochloroethylene

**F**UMING nitric acid, hydrogen peroxide, aqua regia and practically all acids, alkalis and organic chemicals can be filtered continuously and efficiently through a new engineering material—porous 'Kel-F' polytrifluorochloroethylene plastic. The fine

structure of the porous plastic permits its successful use as a gas sparging element in corrosive solutions and where severe thermal cycling occurs. The unique chemical and mechanical characteristics of porous 'Kel-F' make it particularly desirable as a venting medium for corrosives containers and electronic equipment used in marine service. It is non-wetting and has zero water absorption.

The new filtering and venting elements are produced in America by the Porous Plastic Filter Company of Glen Cove, New York, from The M. W. Kellogg Company's 'Kel-F' polytrifluorochloroethylene plastic. They are made in disc and corrugated high-area units for pipeline use and in square stock sheets, the circular elements being from  $\frac{1}{2}$  in. to 12 in. diameter, and the sheets, up to 24 in. by 24 in., in  $\frac{1}{16}$  in. and  $\frac{1}{8}$  in. thicknesses with integral rims of solid 'Kel-F' for added strength. The fine pore size of these chemically-inert filters removes particles larger than 5 microns. Water passes through at rates up to 100 gal./min. per sq. ft. of filter area.

A tensile strength of 900 psi. and an elasticity modulus of 18,000 psi. allows virtually unrestricted use of porous 'Kel-F' in flanged or pressure assemblies for pipeline filtration at temperatures up to 200°. Excellent flexibility and toughness eliminates breakage due to careless handling. Dimensional stability at low (-200°) and high (+200°) temperatures and in contact with water are additional features which open up new filtering possibilities.

In gas sparging or 'scrubbing' of corrosive liquids, the toughness of this fluorocarbon diffusion element prevents corrosion and erosion as well as damage due to gas or liquid shock. Pore size remains constant due to the dimensional stability.

Excellent impact resistance and tensile strength, together with chemical inertness of 'Kel-F,' make the porous material an ideal venting 'valve' for shipment containers for violent corrosives such as concentrated hydrogen peroxide. The poor 'wettability' of this material makes it an excellent 'breather' for marine equipment.

### Change of Address

The address of Aktiebolaget Industrietoder has been changed from Noorlandsgatan 7-9 to Nybrogatan 65-67, Postbox 5168, Stockholm 5. (Tel.: 63 09 40.)

# New Source of Sulphur

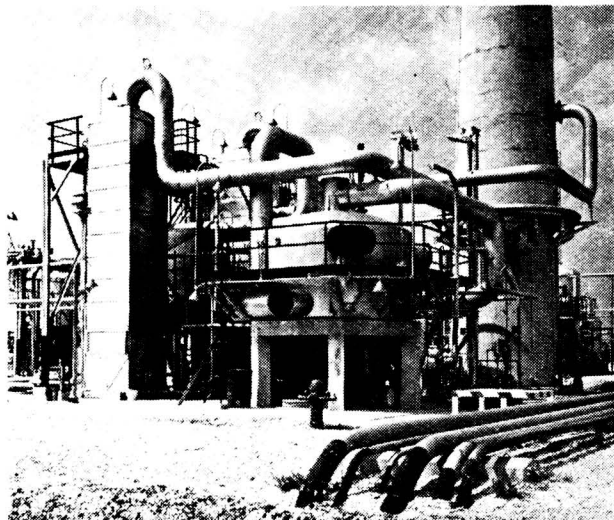
## Recovery From Petroleum Fraction

A NEW source of sulphur has recently been made available to British industry with the opening of a sulphur recovery plant at Esso Petroleum Company's refinery at Fawley, near Southampton.

The plant, which is not a normal feature

tially of burning the gas with air under controlled conditions: the sulphur produced is removed by scrubbing the gas with liquid sulphur, and the unconverted gas is passed over a heated catalyst to complete the oxidation.

*A general view of the new sulphur recovery plant*



of an oil refinery, was installed at Fawley at the suggestion of the Government, in the course of the nation-wide drive to utilise every possible source of sulphur which would not require dollars. With production at Fawley at present running at the rate of 40 tons per day—more than 14,000 tons per year—dollar imports at the 1952 rate could be cut by nearly 4 per cent.

Sulphur occurs in considerable quantities in Middle East crude oil, not as elemental sulphur, but combined. During the cracking process, an appreciable quantity of the sulphur compounds are broken down into hydrogen sulphide, which appears in the light ends fraction.

The gas is removed from this fraction by scrubbing with diethanolamine solution, the remainder of the product being unaffected. After boiling to liberate almost pure hydrogen sulphide, the diethanolamine is recycled for further washing.

The process of converting hydrogen sulphide to elemental sulphur consists essen-

cially of burning the gas with air under controlled conditions: the sulphur produced is removed by scrubbing the gas with liquid sulphur, and the unconverted gas is passed over a heated catalyst to complete the oxidation.

### Metal Export Changes

Under the Export of Goods (Control) (Amendment No. 3) Order, 1953, which came into force on 5 August, semi-manufactures of aluminium and copper, also certain classes of refined and blister copper, may be exported without licence to the Commonwealth (excluding Hong Kong), USA and the Irish Republic; and licences are no longer required for exports of fully manufactured aluminium goods and certain metallic compounds, with the exception of exports to China, Hong Kong, Macao or Tibet, which remain subject to individual scrutiny in accordance with S.I. 1951 No. 1060.

# Italian Chemical Production

## Difficult Situation Aggravated by Increasing Imports

**E**XAMINATION of the published production figures has shown that by the end of 1952, there was a net retrogression in the field of Italian chemical products with an index of 147 as against 153 in 1951. The course of the imports and exports shows also some important increases and decreases. Imports in 1952 recorded a 10 per cent increase in quantity and a 6.5 per cent increase in value, in comparison with 1951; while exports show (with one satisfactory exception for fertilisers) a 9.5 per cent diminution in quantity and a 16.9 per cent reduction in value.

This difficult situation has been further aggravated during the first months of 1953. The official statistics on this subject have only just been published, and consequently observations must be limited to the first three months of the present year, the figures for which clearly show the dangerous situation in the Italian chemical industry.

### Imports & Exports Data

The following are the data concerning the imports and exports of chemical products in the first three months of 1952 and 1953 (derived from table 8 of the Statistics on Commerce with Foreign Countries, dated March 1953). Imports: 782,383 metric quintals in 1952 as against 877,915 (an increase of 15 per cent) in 1953; value: 15,540,000,000 lire in 1952, as against 15,905,100,000 (a decrease of 2.34 per cent) in 1953. Exports: 2,449,400 metric quintals in 1952, as against 2,341,610 (inc. 4.50 per cent) in 1953; value: 14,722,300,000 lire in 1952, as against 13,455,300,000 (dec. 8.61 per cent) in 1953.

The situation appears still more critical when the regularity of the commerce with the foreign countries is considered. Some cases are particularly interesting.

Hydrosulphite imports in 1952 represented about 49 per cent of the output in that year, while the imports in the first three months of 1953 already represent 20.38 per cent of the output registered in the whole preceding year. As to perborate, 1952 imports represented 41.7 per cent of the output while the imports in the first three months of the present year represent 11.81 per cent of the

whole 1952 output and 84.83 per cent of the whole 1952 import. The imports of sodium and potassium bichromates in the first three months of the present year have already attained an amount corresponding to 92.67 per cent of the whole 1952 import.

### Peculiar Situation

Analogous figures are available for thio-sulphates, magnesium sulphate, sodium sulphate, barium carbonate, acetone, camphor, butyl alcohol, hydroquinone, permanganate, etc.

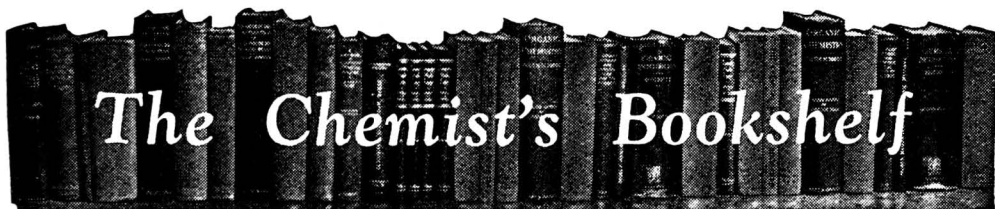
In the dye industry the situation is peculiar owing to the present commercial trend toward the import of concentrated products, a circumstance which makes an evaluation of the purchases abroad difficult. A first indication is however given by the activity in the Italian industry, which shows a grave diminution.

On the whole, the quantity imported during the first three months of 1953 represents 30 per cent of the corresponding figure in the whole preceding year. In these circumstances the Italian chemical industry cannot work out any programme for future improvements or even for maintaining the present position.

Italian industrialists complain that the Government hesitates about granting the reimbursement of IGE on the products of normal and traditional exportation (this tax is at present reimbursed only for a strictly limited number of products), while they point out that, for instance, the French Government has granted exporters a 15 per cent reimbursement.

### Policy Revision Sought

They seek a revision of the national liberal policy, at least for the products particularly damaged by the present situation; it is moreover necessary to give a character of stability to the customs' tariff, applying the duties established through international agreements, adjusting the others to the exigencies of the considered industry and eliminating the 10 per cent supplementary reduction, which has contributed, together with the so-called transitory customs' duties, to the instability of the Italian customs' tariff.



## The Chemist's Bookshelf

LUBRICANT TESTING. By E. G. Ellis. Scientific Publications (Great Britain), Ltd., Wellington, Shropshire. 1953. Pp. 232. 37s. 6d.

An extremely lucid treatment is presented on lubricant testing in a very logical sequence. There are ten chapters in all. Chapter I deals with fundamental properties such as specific gravity, including its use for characterisation purposes in the viscosity gravity constant and diesel index, refractive index, specific refraction, colour, and surface tension. No attempt is made to describe test methods in detail, since these are readily available in publications such as "Standard Methods of Testing Petroleum and its Products" published by the Institute of Petroleum. Every effort is made, however, to explain the significance of these properties, as for example, surface tension as a criterion of wetting or spreading.

Fluidity is considered in Chapters II and III. In the former, Newtonian flow is dealt with theoretically, followed by descriptions of the various types of instruments used for measuring viscosity. Viscosity temperature relationships, the use and origin of viscosity index for evaluating lubricating oils, blending and behaviour of oils at low temperatures are also included. Non-Newtonian flow is presented in the next chapter with particular reference to greases. Here again the different types of equipment in common use are clearly described.

Quality, as determined by water content, acidity and ash, is discussed in Chapter IV. In particular, the interpretation of results is stressed; for example, the ash content of a used oil may be high as a result of metallic wear, or it may be high as a result of chemical action following oxidation of the oil in service.

The behaviour of oils and greases is considered in Chapter V and VI by reference to properties determined by empirical methods, and which cannot be classified as funda-

mental in the same manner as, say, surface tension. These include cloud point, pour point, melting point, flash point, volatility, spontaneous ignition temperature and demulsibility, and carbon residue, oxidation, and use of antioxidants.

Composition of oils and greases, used or unused, can be extremely important, when diagnosing service troubles, or in developing new products. The author illustrates in Chapter VII how an analysis might be made and stresses the importance of keeping a balanced outlook on the results. For instance, if the acidity of a used oil is high it should be expected that other products normally produced during oxidation should also be present.

The remainder of the book deals with investigation of behaviour in working conditions. Starting in Chapter VIII, an introduction is first presented on friction and principles of lubrication, including films, boundary lubrication and extreme pressure lubrication. This is followed in Chapter IX by a description of frictional tests and apparatus used for greases, particularly anti-friction bearing rings, torque measurement at high and low temperatures, the effect of continued shearing, water resistance, etc. Finally, in Chapter X, the development of engine tests and the evaluation of lubricating oil by reference to wear, bearing corrosion, ring sticking and sludging are considered and the common English and American tests described.

A number of useful appendices are included at the end of the book covering some of the testing equipment, and giving useful technical data, while each chapter has an appended bibliography.

This book is a valuable contribution to petroleum technology and should find widespread use in all branches of industry. It will initiate the uninitiated and not be put casually on one side by the experienced oil chemist, salesman or engineer.—E.J.C.

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# HOME

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## Leather Trades' Chemists

The annual conference of the Society of Leather Trades' Chemists will be held at Leeds University on 4 and 5 September. During the dinner on the first evening a presentation will be made to Professor D. Burton, M.B.E., to commemorate his 30 years as hon. treasurer of the Society.

## New Vermiculite Factory

A new factory has been opened at Rutherglen, near Glasgow, by Vermiculite (London) Ltd., to manufacture a full range of vermiculite products for industry in Scotland. This is the fourth factory operated by this group and is intended to facilitate their Scottish coverage.

## Iron and Steel Compensation

According to the Iron and Steel Corporation's final accounts, which have now been submitted to the Minister of Supply, the Corporation paid £2,250,000 to the Finance Corporation for Industry as compensation for loss of option rights on the equity capital of steel companies which were nationalised on 15 February, 1951.

## Fire at Naphtha Plant

What was stated to be one of the biggest fires in West Cumberland for many years occurred last week at the naphtha plant of the United Coke and Chemical Company at Lowca, near Whitehaven. Flames reached more than 80 ft. Firemen had to prevent blazing molten naphtha cascading over a cliff on to the main Whitehaven-Workington railway line 60 ft. below the plant.

## Acid Tankers Crash

Two tankers, each carrying more than 1,000 gal. of sulphuric acid, overturned within a few minutes at different spots near Immingham, Lincolnshire, last week. Both were going to Fison's Limited, Immingham. Employees of the firm, who were following one tanker in a works bus, threw the tanker driver into a dyke to wash off the acid which poured over his arms and shoulders when he was trapped in the cab. He was taken to Grimsby Hospital with burns. The other driver escaped injury.

## More Iron and Steel

Statistics issued by the British Iron and Steel Federation show that although steel output in July was affected by normal holidays it reached 276,000 tons—the highest figure ever recorded for July and comparing with 273,800 tons a week in July, 1952. Pig iron production averaged 202,400 tons a week, compared with 201,600 tons in July, 1952.

## Electric Heating Devices

With reference to the article on 'Safe Heating Using Electric Heating Mantles,' by Mr. Alec Webster, which was published in THE CHEMICAL AGE for 27 June, 1953, we are informed that the device for dropping an electric heating mantle from the vessel by the use of a specially designed stand was developed by Isopad Ltd., with the co-operation of Dr. M. A. Phillips. It may be obtained in various sizes from that firm.

## Chelsea Polytechnic Course

A special course of lectures and practical work on 'The Chemistry and Microscopy of Food, Drugs and Water,' based on the syllabus of the examination for the Fellowship of the Royal Institute of Chemistry (Branch E), will be given for first-year students at Chelsea Polytechnic, Manresa Road, London, S.W.3, on Tuesdays and Thursdays, 6-9 p.m., beginning 29 September. The course will extend over two complete sessions. Mr. R. G. Minor, lecturer in charge, will attend on 23 September, 6-8 p.m., to advise prospective students.

## Dust and Steam

Reference to Dorman Long and Company's proposals for dealing with dust and steam from their Cleveland works was made at a meeting of Eston (Yorks) Planning Committee. A Government inspector's report stated that the firm's coke-oven plant proposals contained many desirable features to prevent smoke and grit escaping, but it was suggested that further efforts could be made to prevent pollution. The report pointed out that there were no known methods of completely eliminating dust and steam during the quenching of hot coke.

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# • OVERSEAS •

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## Canadian Tungsten

As a result of a recent examination of the Otto tungsten property in the Yellowknife district, the Tungsten Corporation of Canada has decided to exercise its option and to stake additional protective claims.

## Oil from Coal in South Africa

Mr. Louw, Minister of Economic Affairs for South Africa, has announced that the productive capacity of SASOL, the State oil-from-coal project at Sasolburg, Orange Free State, has been enlarged from the 30,000,000 gal. of oil products a year originally planned to a minimum of 70,000,000 gal.

## New Uranium Fields

The Australian Government's special uranium detection aeroplane, which has equipment enabling it to pinpoint positive recordings of uranium located in its flights, is reported to have discovered two new uranium fields in the Northern Territory. Described as the most potentially promising since Rum Jungle, they are 150 and 250 miles respectively from Darwin.

## Trinidad Iron Ore

It is reported that iron ore deposits in Trinidad are to be thoroughly investigated by the Government to determine their extent and quality. The decision was taken a short while ago in the light of an application for a mining licence to mine ore in the Northern Range. The Government decided to defer consideration of the granting of a licence until proper assessment of the iron ore deposits had been made.

## Utrecht Autumn Fair

A total of 2,550 firms will be represented at the Utrecht Autumn Fair to be held from 1-10 September. The international character of this event is evident by the fact that 1,359 of these firms are of foreign origin. Products from 21 countries will be exhibited. The most important foreign participants are West-Germany with 572 exhibits, Britain with 251 exhibits, France with 97 exhibits, Switzerland and 96 exhibits, USA with 88 exhibits and Belgium with 76 exhibits.

## Ceylon Lifts a Ban

It has been officially announced that Ceylon has lifted the ban on the export of scrap iron. It is considered that little if any will find its way to Communist countries, the export controller having discretion to refuse a licence for the export of strategic materials, including scrap metal.

## Aluminium in West Germany

Taking into account the aluminium plants in Toeing, Luenen, and Grevenbroich, construction of which is practically completed, the German aluminium industry has reached pre-war production capacity. Annual production is calculated at 120,000 tons, which is considered sufficient to cover domestic demand for some years to come. In 1952 Germany produced 5.2 per cent of total world aluminium production, as compared with 4.1 per cent in 1951.

## Copper Ore in Norway

Copper ore deposits found at Grimsdal in Folldal, South East Norway, are expected to yield at least 1,000,000 tons of copper ore, according to the manager of the Folldal Verk, the company working the mines. New finds at Soendre Geitryggen, on the other hand, have proved to be less extensive than expected, totalling only about 400,000 tons. Geophysical measurements have proved, however, that ore deposits may be found at several other places in the vicinity and these will be explored later.

## Canadian Plastics

First Canadian commercial production of styron plastic sheet is scheduled for early next year, by which time the new unit of Dow Chemical of Canada Ltd., now under construction at Sarnia, Ontario, is expected to be in operation. The new unit is to cost in excess of \$500,000 and is the twelfth to be built there by the company since the first unit went on stream in 1947. The styron plastic sheet is made from a polystyrene formulation developed by the company. It will be produced in flat sheet in a variety of sizes, thicknesses and colours.

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## PERSONAL

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THE DUKE OF EDINBURGH has consented to open the Platinum Metals Exhibition which the Institution of Metallurgists is holding at Grosvenor House, London, S.W., on 19 October.

SIR ERNEST SMITH, who has been chairman of the Industrial Coal Consumers' Council since its formation six years ago, has been reappointed to that office for the period ending July 1956, and Mr. H. T. Norton has been reappointed deputy chairman.

Although reaching retiring age towards the end of this year, MR. PAUL RYKENS is to remain a member of the boards of Unilever Limited and Unilever NV, and chairman of the latter company, but after the end of this year his services will be on a part-time basis only.

MR. W. ADRIAN KING and MR. J. G. WOODS have been appointed vice-presidents of Mathieson Hydrocarbon Chemicals Division, Mathieson Chemical Corporation, Baltimore. Mr. King, who went to Mathieson earlier this year from the American Cyanamid Company, also continues as director of sales of the division. Mr. Woods continues as director of operations, which includes supervision of the division's plants at Doe Run, Kentucky, and Niagara Falls, New York. He served as manager of the Doe Run plant from its completion in 1951 until April, 1953.

MR. G. C. R. ELEY, C.B.E., who has accepted an invitation to become a director and deputy chairman of The Brush Electrical Engineering Company, Ltd., is a director of the Bank of England, chairman of British Drug Houses Ltd., and a director of a number of important companies. MAJOR NOEL E. WEBSTER, O.B.E., M.C., M.I.M.E., who has also joined the board of The Brush Electrical Engineering Company, Ltd., has had much experience of the engineering industry and is president elect of the Institution of Mining Engineers. He is a member of Lloyds and holds directorships with a number of well known industrial concerns.

DR. FRANCIS F. JARAY, of Martley, Worcestershire, has resigned his position as technical director and his seat on the board of Tanks and Linings, Limited, and has established himself as a consulting engineer specialising in the planning and supervision of general development work, the development of corrosion-proof materials and their use in, and the design of, chemical plant and equipment, pickling plant, acid storage and recovery, and the like.

MR. RALPH C. PHILLIPS has joined the Chemical Research and Engineering Division of Mathieson Chemical Corporation in Baltimore as a staff engineer. He will serve as a special assistant to the division's president, Dr. C. F. Prutton, on work being carried out by Mathieson for the United States Government. Mr. Phillips was formerly chief, Propellants, Explosives and Chemicals Division, Ordnance Ammunition Centre, Joliet, Illinois. Previously he was assistant director of industrial relations at Continental Steel Corporation, Kokomo, Indiana. He is a graduate in chemistry of Purdue University.

MR. HERBERT B. LARNER, formerly of the M. W. Kellogg Company, has been elected president of Chemurgic Process Corporation, of College Point, Long Island, New York, which is engaged in the design, engineering and construction of chemical and other processing plants for concerns in the chemical, soap, fatty acid, food, pharmaceutical and other industries in the USA and Canada. While with the M. W. Kellogg Company, Mr. Larner initiated the programme of research and pilot plant development that produced the well-known Solxol process, an advanced method for continuously decolorising, refining and separating fats and oils by means of solvent extraction in propane solution into new and improved products used in the food, meat packing, vegetable oil, soap, paint and other industries. Previously, when associated with S. B. Penick & Company, of New York, he conducted the marketing of vitamin concentrates, vitamin-containing fish oils, hormones, and fine chemicals.



MR. H. W. VERNON, B.Sc., F.R.I.C., who has been appointed a director of W. J. Bush & Company Ltd., joined the company at the age of 20 in 1916, after taking his degree at Manchester University, and as a result of the examination became a Mercer Research Scholar. For the next five years he conducted special studies on behalf of the company at Oxford University under the supervision of the late Professors W. H. Perkin and N. V. Sidgwick. On returning to the London headquarters of the company in 1922, Mr. Vernon entered upon his duties in the research laboratory, with which he has been associated ever since. In 1932 he assumed additional responsibility for general chemical development, culminating in 1948 in his appointment as chemical superintendent supervising the technical operations of the company's three UK chemical factories.

MR. H. B. MCAUSLAN has been appointed resident representative of The Brush Group in India, Pakistan and Burma and will be travelling to India to take up his new duties at the end of August. He has been made a director of Associated British Oil Engines (Export) Ltd., ABOEX, National Oil Engines (Export) Ltd., NOEX and Brush Export, Ltd. Mr. McAuslan's new duties are the supervision of ABOEX and NOEX agents in the Indian sub-continent, Pakistan and Burma, and of Brush Export agents in Pakistan and Burma. He will be responsible to Mr. J. P. Ford, managing director of ABOEX, NOEX, and Brush Export. Mr. McAuslan joined the National Gas and Oil Engine Company, Ltd., as general sales manager in 1950. Since 1952 he has been a director of Associated British Oil Engines (Marine), Ltd. Mr. A. L. CRAMB has been appointed manager in India and will be responsible for the branch office in India of The Brush Electrical Engineering Company, Ltd., Loughborough, with the status of a local director (in India). He remains a director of Brush Export, Ltd. Mr. Cramb joined the group in August, 1946, as technical manager in India for The Brush Electrical Engineering Company, Ltd. In November, 1950, he became sales promotion manager in India, Pakistan, and Burma for Brush Power Engineering and in July, 1951, he was appointed representative in India, Pakistan and Burma for the Brush group.

MR. JAMES HENRY HALLIDAY, F.R.I.C., has been appointed by T. Wall & Sons, Ltd., ice-cream and meat-products' manufacturers of London, Manchester and Edinburgh, chief analytical chemist at their London laboratories. Mr. Halliday will be responsible to the chief chemist, Dr. S. M. HERSCHDOERFER, for the analytical control of raw materials and finished goods and will be concerned also with other work affecting the general improvement and development of the firm's products.

Mr. Halliday, who was born at Boothstown, near Manchester, was educated at Leigh Grammar School, at Rugeley Grammar School, and at the College of Technology, Manchester, and Chelsea Polytechnic, London. After spending five years at the Government Laboratory, Clement's Inn Passage, London, W.C., where he was concerned mainly with the Department of Foods, Mr. Halliday in 1939 joined the late Dr. H. E. Cox and became chief assistant in his activities as public analyst and consulting chemist. In 1950, Mr. Halliday joined H. J. Heinz & Co., Ltd., for whom he undertook research and investigatory work. During the war, Mr. Halliday was commissioned in the Royal Army Ordnance Corps.

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## Obituary

DR. HORST COLLIN, principal of F. J. Collin, Dortmund, originators of the 'Collin' polysulphide process for the recovery of sulphur, died suddenly on 11 August, aged 46. Dr. Collin was associated with Advanced By-Products and Coke-Oven Developments, Ltd., of London and Birmingham, in connection with the application of his system to British industry.

The death has occurred after a short illness of Professor Dr. techn. Dipl. Eng. ALFRED LUSZCZAK (48), Editor of the *Oesterreichische Chemiker-Zeitung*, the monthly journal of the Society of Austrian Chemists. He worked first very successfully in the chemical industry and was later appointed head of the chemical branch of the Austrian Patent Office until he became editor of the chemical journal, which he revived after it had been suspended during the war. This journal was renewed by Professor Dr. Luszczak in a much enlarged and improved form.

# Publications & Announcements

SHAREHOLDERS who attend the annual meeting of Oldham & Son, Ltd., battery and electrical equipment manufacturers, Denton, Manchester, at the head office on 27 August, have been invited by Mr. John Oldham, chairman of the company, to inspect the company's new department for the manufacture of Fibrak battery separators. A strong believer in 'seeing for oneself,' Mr. Oldham has made this welcome move as a result of realising that the new process to be explained to those shareholders who are interested is not only technically complex, but is a matter of basic importance to the company's prosperity.

\* \* \*

CLOSE co-operation between the chemist and the engineer has enabled New Era Industries (Tottenham), Ltd., to produce the first all-plastic fluorescent lighting fitting. The result is a fitting made of rigid PVC which is almost unbreakable, is extremely light in weight and in acid, corrosive or irritant atmospheres is proof against deterioration. Moreover, ageing increases its whiteness. The spine incorporating the control gear, together with the reflector, is produced as one jointless moulding. Contrary to what usually happens when a new line is introduced, the cost of the PVC fitting is not in excess of old-type fittings. It compares well with the price of stove-enamelled fittings and is approximately 25 per cent cheaper than vitreous enamelled fittings.

\* \* \*

THE General Electric Company Ltd. has developed a 9kW immersion heater that provides, at little installation cost, a simple means of converting to electric heating industrial water tanks and cylinders at present heated by solid fuel or gas. A weather-proof cover with a 1 in. conduit entry is fitted to the heater, which is supplied with a jointing gasket. The brass head of the immersion heater carries three heavily tinned heating element tubes, brazed in position, from which the cartridge elements can be easily withdrawn without draining the container. The construction of the embedded elements ensures that the heating spirals are protected from oxidation, and operate at a temperature calculated to provide a trouble-free life.

The three elements are connected in 'star'; the immersion heaters are therefore suitable for operation from a 3-phase A.C. supply with neutral, and from a single-phase A.C. or 2 wire D.C. supply. Earthing facilities are provided.

\* \* \*

HAVING been instrumental in developing Pure Chemicals Limited so that it now occupies an established position, Mr. N. A. Hornstein has obtained his release from the position of managing director and is now devoting himself to the formation — under the auspices of Kirkby Chemicals Limited, Kirkby Trading Estate, Nr. Liverpool—of an organisation specifically designed for the production of evaluation quantities of organic chemical compounds — say from 100 grms. to 28 lb.—irrespective of whether further quantities will ever be required.

\* \* \*

THE 39th edition of Quin's Metal Handbook is up to its usual high standard as an international reference manual. It is considerably larger than any of its predecessors, comprising 750 pages relating to prices, production, consumption, exports, imports, brands and stocks of a very wide range of ferrous and non-ferrous metals. Wherever possible, latest available figures have been incorporated, many statistics relating to the United Kingdom being given to the end of 1952, with those of other countries, where available, to the end of September, 1952. Price data for lead, zinc and iron and steel have been extended to continental countries, while details of brands have been revised and brought up to date, and now include a list of brands recognised by the London Metal Exchange up to the time of going to press. The multi-lingual dictionaries of technical terms relating to iron and steel and non-ferrous metals have both been expanded, while the reference sections on copper and copper alloys, aluminium, etc., and the data on the manufacture of iron and steel have been re-written. An interesting new feature is a large scale diagrammatic inset in colour showing the process of zinc production. Priced at £1 5s., this new edition may be obtained from the publishers, Metal Information Bureau Ltd., Birkett House, 27 Albemarle Street, London, W.1.



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# Law & Company News

## Commercial Intelligence

The following are taken from the printed reports, but we cannot be responsible for errors that may occur.

### Mortgages & Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described herein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages or Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary but such total may have been reduced.)

A. BOAKE, ROBERTS & CO. (MANUFACTURING), LTD. (now Boake, Roberts & Co., Ltd.), London, E., chemical manufacturers. (M., 22/8/53.) 27 April, deed of guarantee and collateral security (dated 17 April, 1953), for securing outstanding debentures of A. Boake, Roberts & Co., Ltd., amounting to £20,400; general charge.

## New Registrations

### Halus Minerals Ltd.

Private company. (522.653.) Capital £1,000. Discovering, preparing and manufacturing and selling of veterinary medicines, specifics and remedies. Directors: F. C. Edwards, D. N. Cooper. Reg. office: Borehamgate House, Sudbury, Suffolk.

### Epsilon Industries Ltd.

Private company. (522.648.) Capital £1,000. Chemical engineers, etc. Subscribers: G. J. Boyes, A. W. Paterson. First directors are to be appointed by the subscribers. Solicitors: Simmons & Simmons, 1 Threadneedle Street, E.C.2.

## Company News

### Philblack Ltd.

Although Philblack Ltd. operated at a loss for the first ten months to 31 March last, the company has since been operating at a profit, according to a statement issued by the directors in connection with the annual meeting which is to be held on 7 September. This result was due to increased sales of Philblacks, modifications

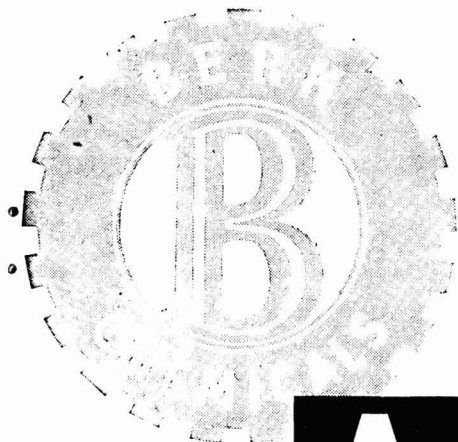
in operating technique, and a temporary reduction in royalties. The directors consider that the company should operate profitably from now on. Trading loss for the past year was £13,232, compared with £103,456, after charging £163,950 (£162,871) depreciation on fixed assets, etc. After charging interest on notes and bank overdraft, and crediting investment income, the loss was £117,469 (£199,614), increasing the debit balance carried forward to £315,040.

## Market Reports

LONDON.—There is again little of fresh importance to report on home market conditions for industrial chemicals, and the demand in most sections remains fairly active with supplies adequate for current needs. The export demand for chemicals continues on a fair scale despite keen competition. Prices generally are unchanged and quotations display a firm undertone. As reported last week the basis price for lead oxide and litharge was increased to £126 15s. as from 11 August. No reports have been received of any effect on the copper compounds of the reopening of the free market in copper. In the coal tar products market there has been a steady call against contracts with the price position unchanged.

MANCHESTER.—Trading conditions on the Manchester market for heavy chemical products, so far as the home trade is concerned, are gradually getting back to normal and the next week or two should see the disappearance of the seasonal setback resulting from the holidays. A fair movement of supplies of a wide range of chemicals to the textile and allied trades has been reported during the past week and a reasonably good outlet is being found in a number of other directions. Shipping business during the week has been on a fair scale. In the tar products market, creosote oil, benzole, toluol and xylol are among the bright spots.

GLASGOW.—As was expected, owing to the resumption of the majority of factories after the holiday recess, business this week has been quite brisk and the indications are that it will continue to remain so for some little time. Little or no change in the export market.



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40, Queen Street, Belfast, N.I  
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# CLASSIFIED ADVERTISEMENTS

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## SITUATIONS VACANT

*The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive, or a woman aged 18-59 inclusive, unless he or she, or the employment, is exempted from the provisions of the Notifications of Vacancies Order, 1952.*

**EXPERIMENTAL OFFICERS AND ASSISTANT EXPERIMENTAL OFFICERS** in various Government Departments. The Civil Service Commissioners invite applications for pensionable posts. Applications may be accepted up to 31 December, 1953, but an earlier closing date may be announced either for the competition as a whole or in one or more subjects. Interviews will generally be held shortly after the receipt of the completed application form.

The posts are divided between following main groups and subjects: (a) Mathematical and Physical Sciences; (b) Chemistry and Metallurgy; (c) Biological Sciences; (d) Engineering subjects; and (e) Miscellaneous (including, e.g., Geology, Library and Technical Information Services).

**AGE LIMITS.** For Experimental Officers, at least 26 and under 31 on 31 December, 1953; for Assistant Experimental Officers, at least 18 and under 28 on 31 December, 1953. Extension for regular service in H.M. Forces.

Candidates must have at least one of a number of specified qualifications. Examples are: Higher School Certificate, General Certificate of Education, Scottish Leaving Certificate, Scottish Universities Preliminary Examination, Northern Ireland Senior Certificate (all in appropriate subjects and at appropriate levels), Higher National Certificate, University Degree. Candidates taking their examinations in 1953 may be admitted. Candidates without such qualifications may be admitted exceptionally on evidence of suitable experience. In general, a higher standard of qualification will be looked for in the older candidates than in the younger ones.

#### **INCLUSIVE LONDON SALARY SCALES:**

Experimental Officer: £681-£838 (men); £586-£707 (women).

Assistant Experimental Officer: £274-£607 (men); £274-£511 (women).

Starting pay according to age up to 26. At 18, £274; at 26, £495 (men), £467 (women). Somewhat lower in provinces.

Further particulars and application forms from **CIVIL SERVICE COMMISSION, SCIENTIFIC BRANCH, TRINIDAD HOUSE, OLD BURLINGTON STREET, LONDON, W.1**, quoting No. S94-95/53. Completed application forms should be returned as soon as possible. 21283/176/EH/a

## SITUATIONS VACANT

**DEVELOPMENT** Department of Heavy Chemical Manufacturer (largely inorganic) has the following vacancies for **CHEMICAL ENGINEERS**:

(a) **CHEMICAL ENGINEER**, qualified, some experience desirable; age preferably 24-28. Salary dependent on qualifications and experience, but not less than £600.

(b) **PROJECT LEADER**, qualified A.M.I.Chem.E., or equivalent, several years' industrial experience. Age preferably 28-32. Salary dependent on qualifications and experience, but not less than £800.

Replies, which will be treated in strict confidence, to **BOX No. C.A. 3248, THE CHEMICAL AGE, 154, FLEET STREET, LONDON, E.C.4.**

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**FORTY** Riveted **RECEIVERS**, 8 ft. 6 in. long, 5 ft. 9 in. diam., 76 lb. w.p.

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**R**OTATING PAN MIXER by **ARTOFEX.** Two **PANS,** 47 in. diam. by 22 in. deep; 2-sack capacity. Human arm type blades. Fast and loose pulley drive. £100 ex-works.

One Ditto by **T. COLLINS, BRISTOL.** Two **PANS,** 47 in. diam. by 24 in. deep; 2-sack capacity, with automatic feed. Chain drive to 5 h.p. motor. £85 ex-works.

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Belt driven **DISINTEGRATORS** by **HARRISON CARTER.** Size 00 and 2½.

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**1—Johnson FILTER PRESS,** 46 plates, 32 in. square, centre feed, bottom corner open delivery.

**Wood FILTER PRESS,** fitted 69 ribbed plates, 2 ft. 8 in. square, with top centre feed and bottom enclosed delivery channel.

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**1—30 in. and 2—36 in. Ditto** with enclosed motors, 400 volts, 3-phase, 50 cycles.

**Heavy Cake CRUSHING MILL,** 2-pair high, by Nicholson, for cake up to 3 in. thick, rolls 30 in. long, top with coarse teeth 9 in. diam., bottom, with finer teeth 12 in. diam..

**5—sets A.A. CRUSHING ROLLS** for linseed, cottonseed, etc., 48 in. long, belt driven, with feed hopper, side frames, baseplate and striking gear.

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Several 30/40 gallon second-hand available for immediate delivery. Any can be fitted with mixing gear as required.

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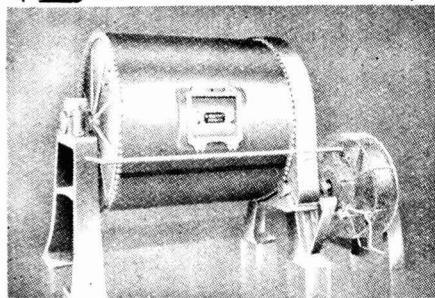
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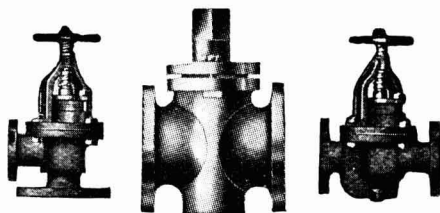
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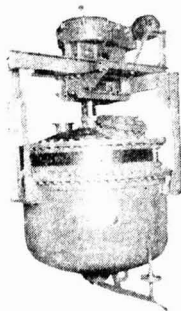
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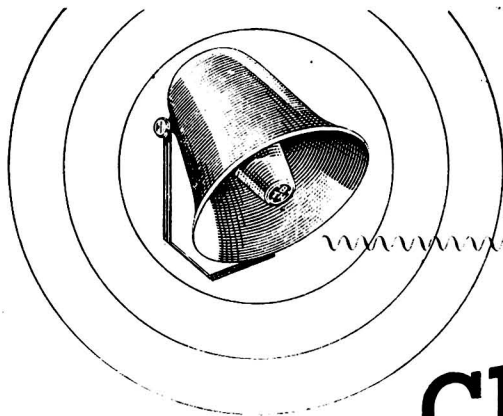
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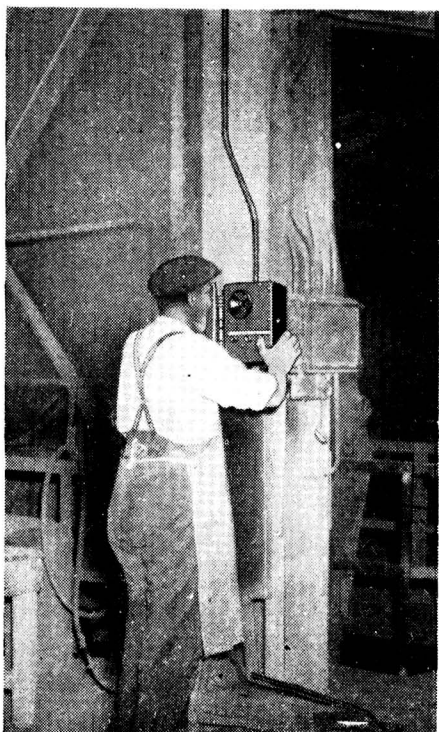
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