Chemical Age

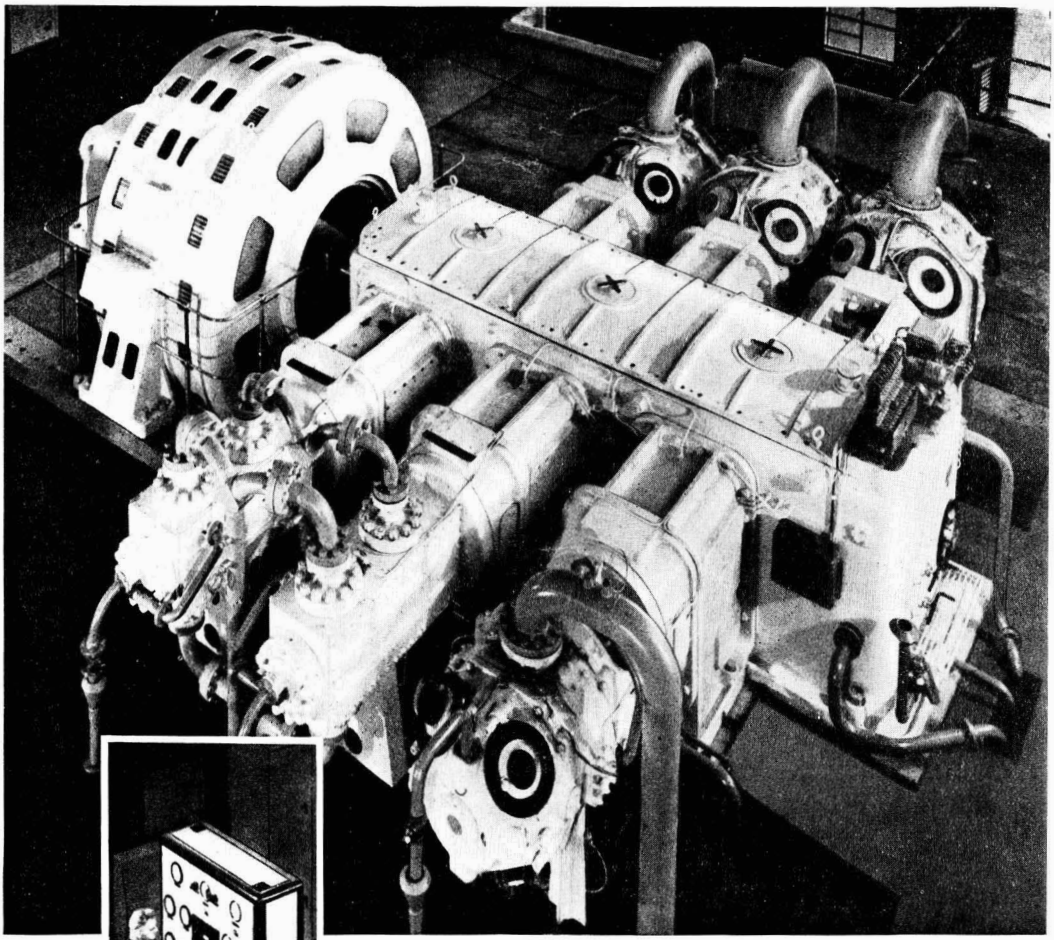
Scientific Russian (page 489)

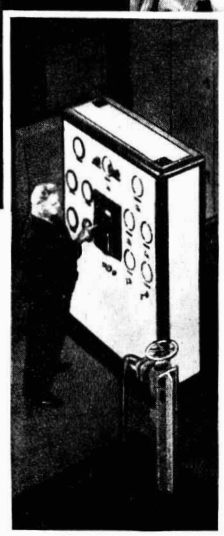
Survey of Chemical Projects (page 493)

VOL. 84 No. 2150

24 September 1960

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY





COMPRESSORS FOR INDUSTRY

One of a number of Brotherhood six crank five stage compressors supplied to The British Oxygen Company Ltd. Each compressor has a capacity of 8,670 m^3/hour, delivery pressure 185 atmospheres, driven by 3,050 H.P. synchronous motor.

Brotherhood compressors are designed to customers' exact requirements.

PETER BROTHERHOOD LTD.

PETERBOROUGH ENGLAND

Compressor and power plant specialists for nearly a century

P.3629

A

INDEX TO ADVERTISERS

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

(Continued on page 448)

INDEX TO ADVERTISERS

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

STOCKDALE

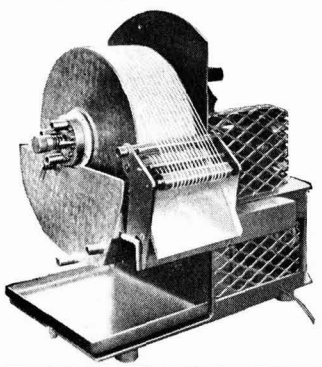
CHEMICAL ENGINEERING News

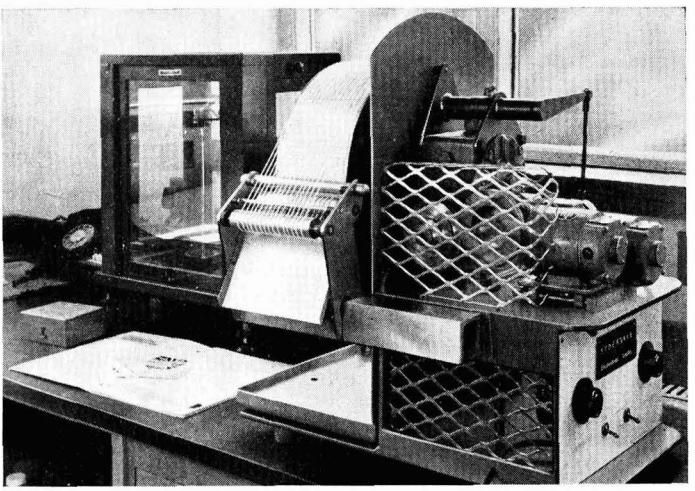
POYNTON CHESHIRE No. 15

NEW LABORATORY FILTER CUTS RESEARCH TIME

With the continuing development work being carried out by the Filtration Division of Stockdale Engineering Limited, a demand has been created for a flexible, compact rotary vacuum filter which can be used for fundamental process investigations.

A new laboratory rotary vacuum filter, having a nominal filtration area of one sq. ft., is illustrated. The standard drum filter can be provided with string, knife or pre-coat discharge mechanisms, together with wash/compression assembly. The drum and trough can be easily dismantled by removal of the valve head, and a disc filter and trough fitted in its place, using the same drive. The whole unit occupies only 5 sq. feet of bench area.

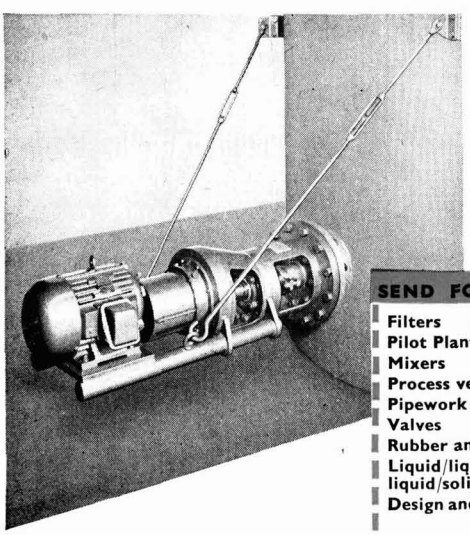




PARTICULAR FEATURES INCLUDE:-

- Panel construction with twelve separate drainage members for maximum flexibility, with easy cloth fixing so that cloth characteristics can easily be tested.
- Variable speed control on both filter and agitator.
- Flexible face valve suitable for use with varying degrees of submergence.
- The filter is constructed with all contact parts in FMB, complete with FMB drip tray, and ready for immediate operation on connection to power source and vacuum system.
- Complete packaged filtration stations can be supplied, with accessories, including receivers, vacuum and extraction pumps, trolley or table mounted with filter, or filter can be supplied as a separate unit for use with existing laboratory facilities.

U.K. side entry MIXERS for LARGE TANK/LOW VISCOSITY LIQUID BLENDING



A Stockdale engineered S.E.G. installation will provide the most mixing for your money because each mixer is sized according to your needs. Blending time, elimination of stratification, power requirements, and optimum positioning are considered in detail.

Units are available in most materials of construction fitted with conventional stuffing boxes or mechanical seals. The mixer featured in our illustration is a U.K. type S.E.G.S. 5 H.P. mixer complete with "Shut-off" device to permit re-packing of stuffing box under full head of liquid. Standard units available from 1 H.P. to 25 H.P.

SEND FOR INFORMATION ON:

- Filters ... ... ☐
- Pilot Plant Service ... ... ☐
- Mixers ... ... ☐
- Process vessels ... ... ☐
- Pipework ... ... ☐
- Valves ... ... ☐
- Rubber and lead lining ... ... ☐
- Liquid/liquid extractors and liquid/solid extractors ... ... ☐
- Design and erection services ... ... ☐

Please tick as required

STOCKDALE ENGINEERING LTD.,
POYNTON, CHESHIRE. *Tel. Poynton 2601.*

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Company .....

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Address .....

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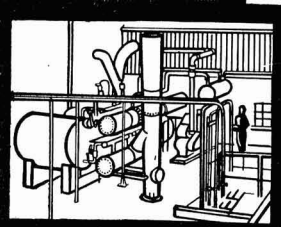
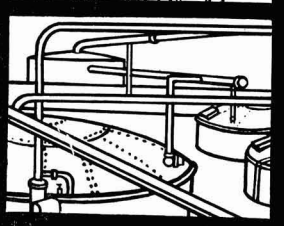
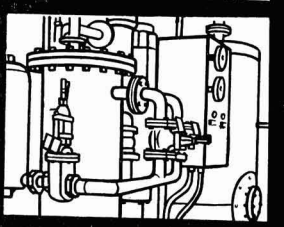
Position .....

S.C. 10 9







SOLVENT RECOVERY

We reclaim volatile solvents lost from industrial processes by adsorption or counter current washing.
Solvent purchase costs usually reduced by up to 90%
Free technical survey and advice.

DUST AND MIST

Dust collection and filtration of air or gases. The CECAFILTER Continuous action at high efficiency improves performance of drying, grinding and pulverising applications.
Acid mist removal by electrostatic mist precipitators.

CARBON DI-OXIDE

Adsorption systems for the purification and drying of CO_2 from fermentation processes.
Complete plant can be offered including alcohol recovery and CO_2 liquefaction with or without dry ice production.

AIR AND GAS DRYING AND PURIFICATION

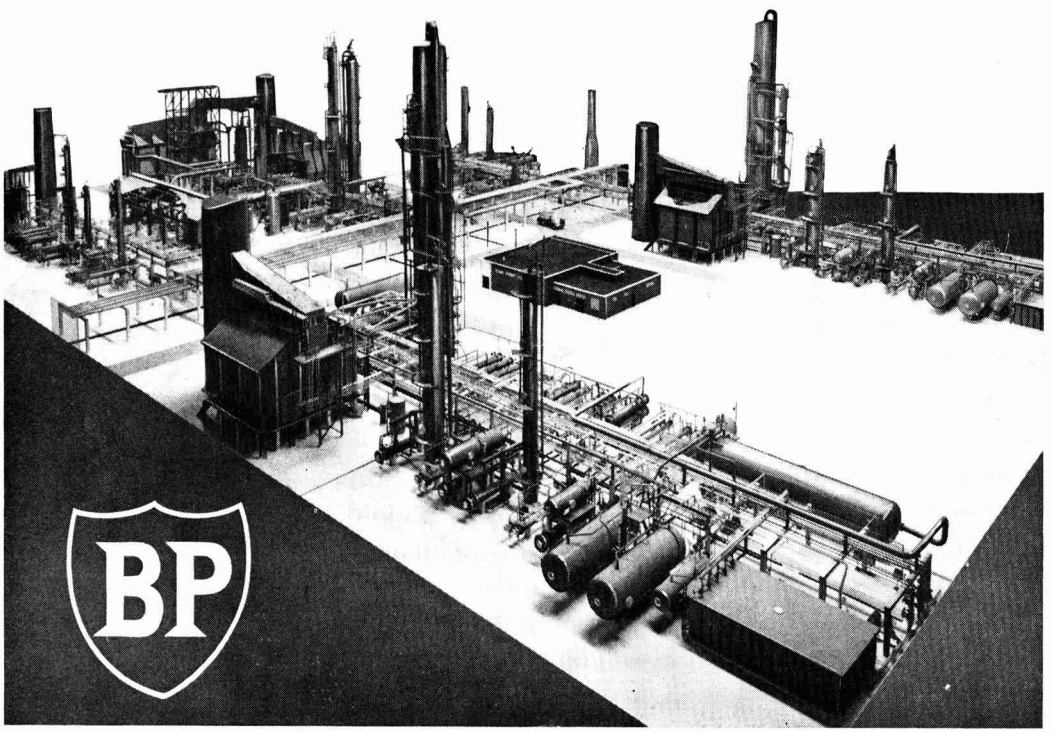
We design and build plant for all problems of moisture and contaminant removal by adsorption in the gaseous phase. Multi-adsorber units at a wide range of operating pressures. Low operating costs.
Methods include all types of solid desiccants.

CECA

THE BRITISH CECA COMPANY LIMITED

175 PICCADILLY, LONDON, W1 *Tel: HYDe Park 5131*

A 3-D DESIGN FOR A 100,000 B.P.S.D. REFINERY



For an increasing number of Kellogg clients in the chemical and petroleum refining industries, scale models are proving a many-sided solution to the economics of engineering and constructing new production facilities. This is especially true in regard to piping — a major investment in any process plant.

Built by Kellogg's designers, these three-dimensional blueprints largely eliminate planning studies and piping key plans, improve designs, facilitate approval, promote faster construction and reduce operating costs. They supplement conventional drawings of overall layout and piping. The models themselves are also used on the job site to save time in explaining construction details to workers and for use in training operators to run the plant. The model shown above is now at Dinslaken, Germany, where it is being used by the BP Benzin und Petroleum A.G. to explain constructional details to their labour forces. In the near future it will be used in the operator-training programme.

Kellogg engineers will welcome the opportunity to explain how the Kellogg 3-D model technique can be of assistance to you in planning and engineering new plant.

Kellogg International Corporation

KELLOGG HOUSE · 7-10 CHANDOS STREET · CAVENDISH SQUARE · LONDON W.1

SOCIETE KELLOGG PARIS · THE CANADIAN KELLOGG COMPANY LTD · TORONTO
KELLOGG PAN AMERICAN CORPORATION · BUENOS AIRES · COMPANHIA KELLOGG BRASILEIRA
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Subsidiaries of THE M. W. KELLOGG COMPANY NEW YORK

B

SCIENTIFIC DESIGN

extends its leadership in

PHTHALIC ANHYDRIDE

plant design

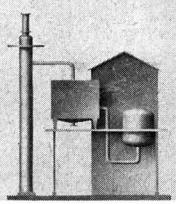
Scientific Design's new phthalic anhydride plant for a leading European company offers these new important features:

- Design for ortho-xylene but fully convertible to naphthalene.
- Lowest priced phthalic anhydride plant available.
- Simplest plant to operate.
- High yields.

Based on successful, full scale operation of the Witco Chemical Company plant, Chicago, SD phthalic anhydride plants, including that for Staatsmijnen in Limburg, Geleen, Holland, incorporate these advanced design and process features:

- Most efficient dry condensation system with many new mechanical innovations.
- Improved residue handling.
- Highest purity phthalic anhydride.
- Precise reaction control—maximum yield.
- Extremely simple treating and distillation.
- Safe, completely monitored operation.

European company contracts for first SD phthalic anhydride plant using ortho-xylene as initial feedstock.



SCIENTIFIC DESIGN COMPANY, INC.

Leader in Design, Development, Construction of Chemical Plants

EXECUTIVE OFFICES: TWO PARK AVENUE, NEW YORK 16, NEW YORK

THE SD GROUP:

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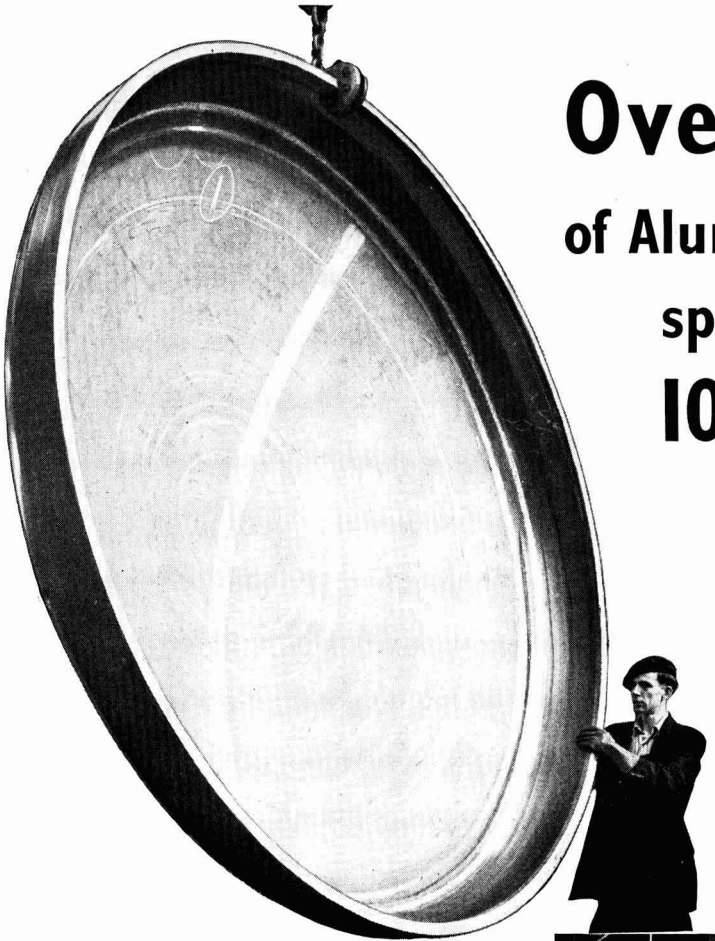
SD Plants Ltd., London, England • Catalyst Development Corporation, New Jersey

Société Française des Services Techniques S.a.r.l., Paris, France



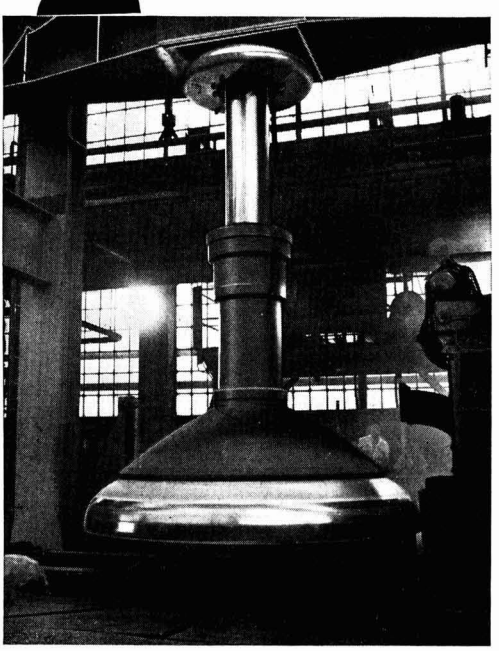
Over a Ton of Aluminium Alloy spun to 10 ft. i/d x $1\frac{5}{8}$"

One of a number produced for pressure vessels to hold liquid air, this 10 ft. aluminium end was spun by Harveys on the Rotarpress. The 12 ft. flat discs needed for spinning these ends, which are believed to be the largest spun aluminium ends produced in this country, were formed by butt-welding two plates of aluminium alloy together.

The Rotarpress is one of the large-capacity units in Harveys Heavy Fabrication Department. It produces ends up to 15 ft. diameter and is adaptable over a wide range of knuckle radii and depths.

The contours of semi-ellipsoidal ends produced by the spinning process enable plate thickness to be reduced, and in most cases tool costs are eliminated. Enquiries are invited for ends only or for complete

FABRICATION OF PRESSURE VESSELS.

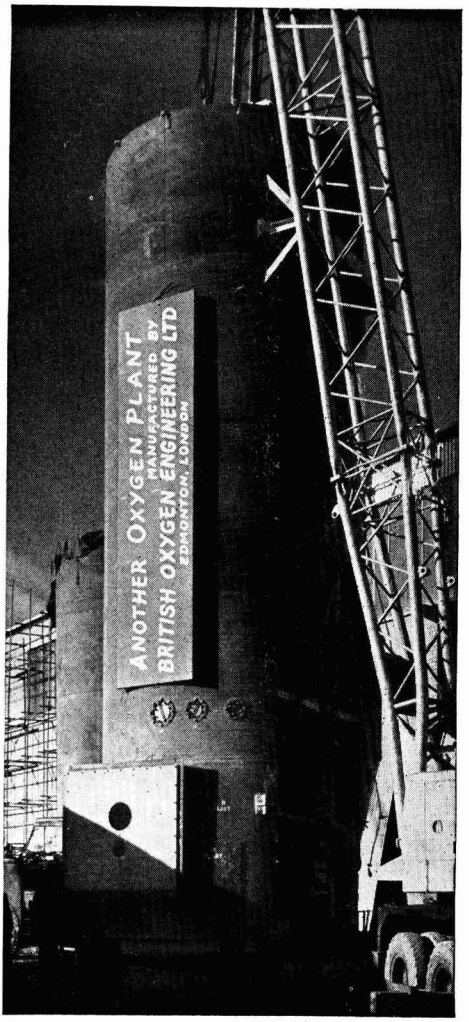


HARVEY

G. A. HARVEY & CO. (LONDON) LTD.

Woolwich Road, London, S.E.7. GREenwich 3232 (22 lines)

Other Harvey facilities: FABRICATIONS UP TO 120 TONS IN ONE PIECE · HEAVY MACHINING AND FITTING · HEAT TREATMENT AND RADIOGRAPHY · STEEL PLATE AND SHEET METALWORK · PERFORATED METALS · WOVEN WIRE · WIREWORK HF/7



One of the air separation units, weighing 24 tons, is lifted into position.

At Westfield they'll be using

200 tons of OXYGEN a day

Gasholder for nitrogen—a by-product of the Westfield air separation plant—which is used for purge and pressure tests.

. . . and BOE made the air separation plant

To provide an eventual daily output of 30 million cubic feet of town's gas from low grade coal, the Scottish Gas Board's new plant at Westfield will consume up to 200 tons of oxygen a day. This is Britain's first large gasification plant to employ the Lurgi process in which bulk oxygen is reacted with coal and steam under pressure. The complete oxygen plant including storage for 550 tons of liquid oxygen was designed and constructed by British Oxygen Engineering Limited. By building this in 'packaged' units, erection time on site was cut considerably.

If you need oxygen, nitrogen or other atmospheric gases it will pay you to consult British Oxygen at the project stage. They offer impartial advice on the economics of alternative sources of supply, by pipeline, storage on site or plant installation.

When plant installation is decided on, BOE offer the following service:-

- Pre-sales consultation through all stages of plant design, construction and commissioning.
- Staff training in plant operation and maintenance.
- After sales service and collaboration.

Messrs. Humphreys and Glasgow Limited, contractors to the Scottish Gas Board.

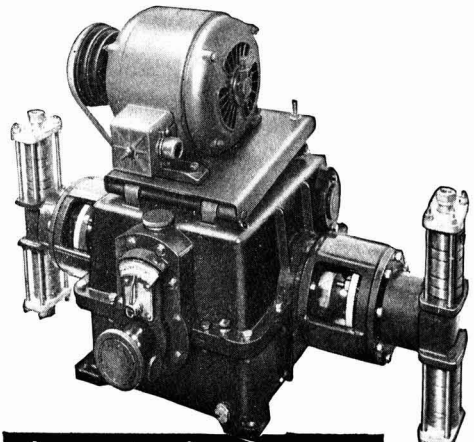
For air separation plant–first consult

British Oxygen Engineering Ltd

160 PICCADILLY LONDON W1 HYDe Park 3051 A BOC COMPANY

BOE MAKE *complete air separation installations for oxygen, nitrogen and rare gases · Transportable oxygen plants · Gas purification systems · Low temperature engineering plant · They also supply liquid oxygen pumps and vaporisers · Gas compressors · Gas and liquid storage systems*

TGA BOE8



A metering pump

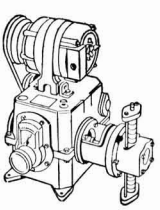
for Precision, Versatility, Durability

Metripump Type "G"

This Metripump is a precision, variable stroke metering pump of the positive displacement type, the length of stroke of which can be varied from zero to maximum either whilst the pump is in operation or at rest. A wide range of pump heads is available in different materials and with different designs of valve gear.

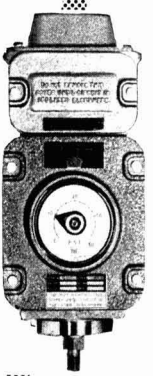
There is no substitute for experience in recommending metering pumps for specific problems.

Metering Pumps Limited



21 The Mall, Ealing, London, W.5.
Telephone: EALing 6264 (PBX)

SAFETY in industry with the K.D.G.



flameproof pressure switch

This pressure switch is absolutely safe for use in an inflammable atmosphere. The switch has Buxton approval for Groups 1, 2 and 3, and has a very wide range of applications. It may be used with corrosive or non-corrosive liquids or gases and ranges are available from 2-5000 p.s.i. with full scale adjustment of switching point.

K.D.G. produce a wide range of instruments for the Indicating, Recording, and Controlling, of Temperature, Tank Level, and Pressure.

Detailed, illustrated literature is immediately available on request.

CRAWLEY K·D·G LONDON

K.D.G. INSTRUMENTS LIMITED
Manor Royal, Crawley, Sussex
Telephone: CRAWLEY 25151

London Sales Office:
100 FLEET STREET, E.C.4.
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Who are you supposed to be?

A Shell Chemical's chemist.

What are you making?

S.B.A. . . . secondary butyl alcohol.

Do Shell make secondary-what-you-said?

I'll say they do—and they have a super delivery service.

SHELL CHEMICAL COMPANY LIMITED

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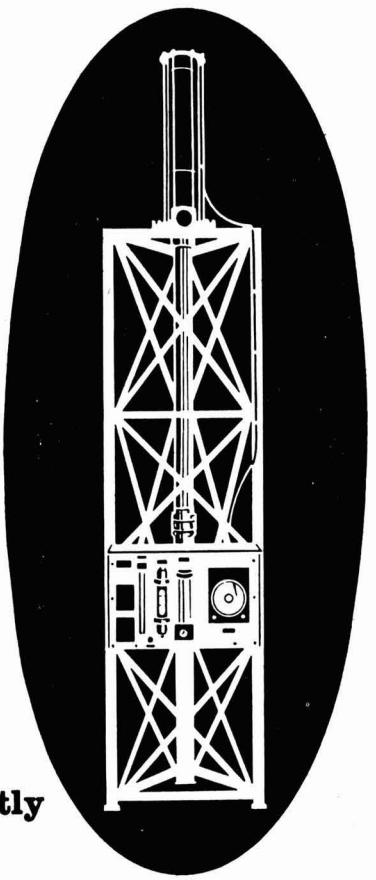
GLASGOW	Royal London House, 48-54, West Nile Street, Glasgow, C.1. Tel: City 3391
BELFAST	16-20, Rosemary Street, Belfast, Northern Ireland. Tel: Belfast 26094
DUBLIN	33-34, Westmoreland Street, Dulbin, Republic of Ireland. Tel: Dublin 72114



eliminate circulating pumps and intermediate storage tanks

produce hydrochloric acid efficiently with

KARBATE ABSORBERS

TRADE MARK

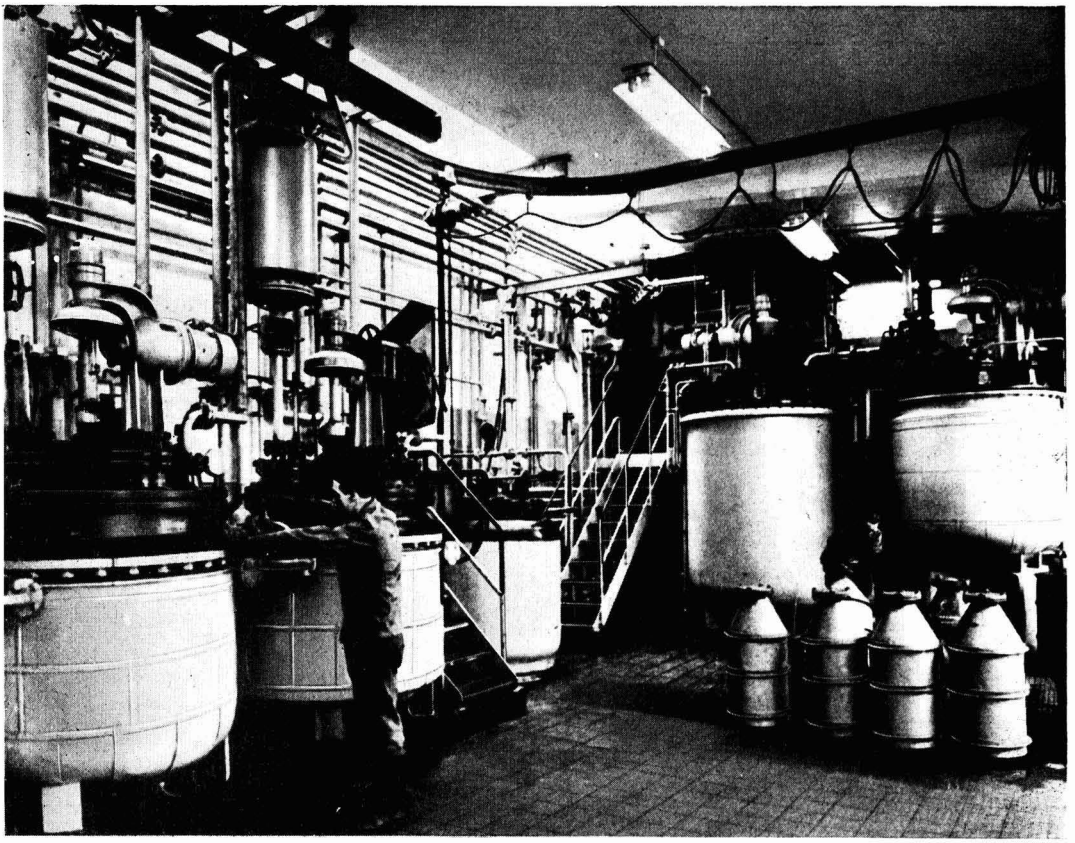
Using a gravity-flow design, KARBATE Impervious Graphite Falling-Film Type Absorbers eliminate circulating pumps and intermediate storage tanks. There is no deterioration from corrosion because KARBATE Impervious Graphite is inert to all concentrations and temperatures of hydrochloric acid normally found in industry. The product acid requires no further cooling. These absorbers incorporate design features specifically adapted for absorption of hydrogen chloride and similar gases. They offer high capacities and combine low initial cost with minimum maintenance. Excellent design makes them compact and easy to install.

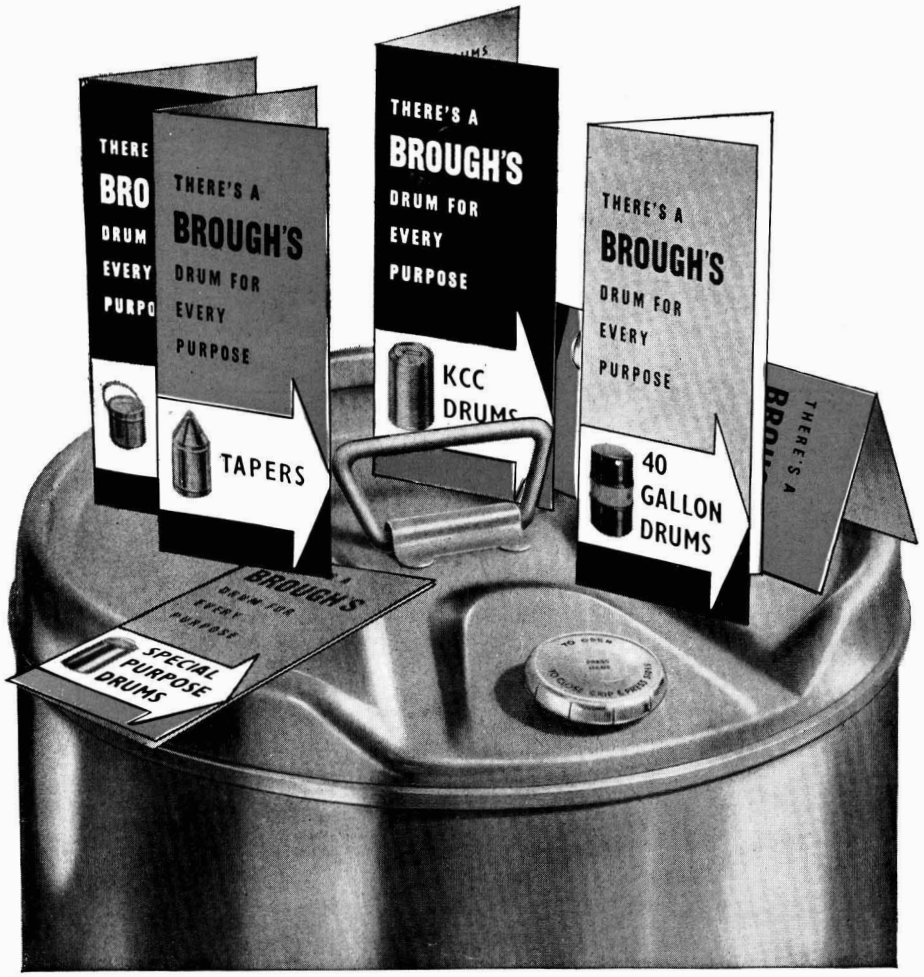
Designs and all equipment for systems to produce anhydrous hydrogen chloride with a purity suitable for vinyl chloride production are also available.

For more information on KARBATE Hydrochloric Acid Equipment or the complete line of corrosion-resistant KARBATE Equipment for your specific needs, write to British Acheson Electrodes Ltd., at Wincobank, Sheffield (Telephone: 348831).

KARBATE
TRADE MARK
IMPERVIOUS GRAPHITE

The term KARBATE is a registered trade mark





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D

NATURE'S CATALYSTS (3)

Green grow the Carbohydrates

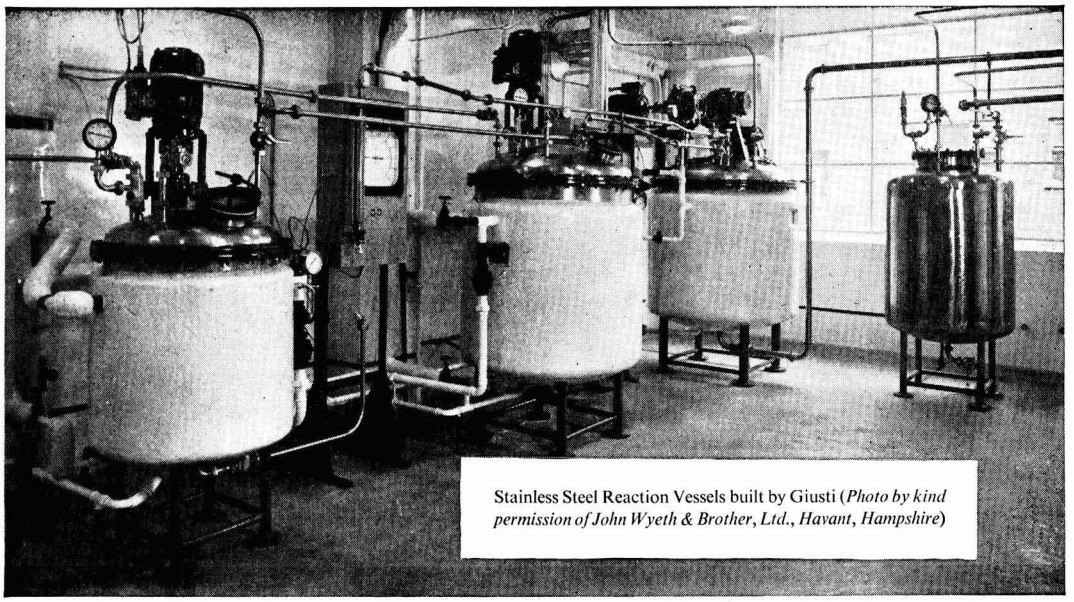
Without chlorophyll, life as we know it could not exist. It is the chief pigment in all green vegetable matter, and plays a vital catalytic role in photosynthesis, the process in which water and carbon dioxide combine in the presence of sunlight to form carbohydrates. Animals need carbohydrates but cannot synthesize them, and so depend ultimately on plants and their chlorophyll to provide these food materials.

By making possible a whole range of processes not found in nature, man-made catalysts play a correspondingly important role in modern chemical industry. Many such processes depend on I.C.I. catalysts, made available as the result of fundamental and practical research in I.C.I. laboratories.

Full information on I.C.I. CATALYSTS is available on request.

IMPERIAL CHEMICAL INDUSTRIES LIMITED ICI LONDON, S.W.1.

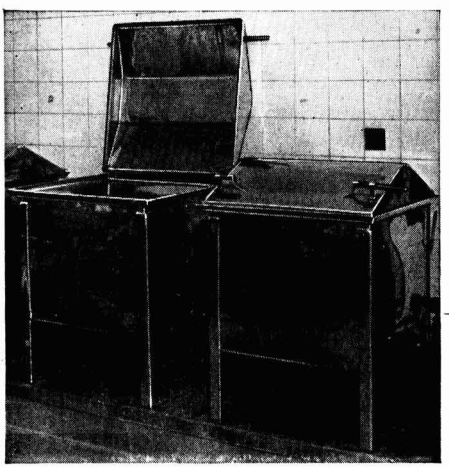
B272



Stainless Steel Reaction Vessels built by Giusti (*Photo by kind permission of John Wyeth & Brother, Ltd., Havant, Hampshire*)

HIGH EFFICIENCY— LONG-LASTING

stainless steel plant by



GIUSTI

Our experience of stainless steel fabrication has been built up over a generation. Practically no job is too specialised for us to produce quickly and at a competitive price.
Also Giusti quality *endures*—another point worth remembering when you next require plant or vessels—either from stock or to your own specification.

A recent photo of stainless steel sterilizers made by Giusti and supplied to the M.W.B. Bacteriological Laboratories 25 years ago. (*Photo by courtesy of the Metropolitan Water Board*)

GIUSTI

VESSELS TO A STANDARD OR SPECIALS TO ORDER

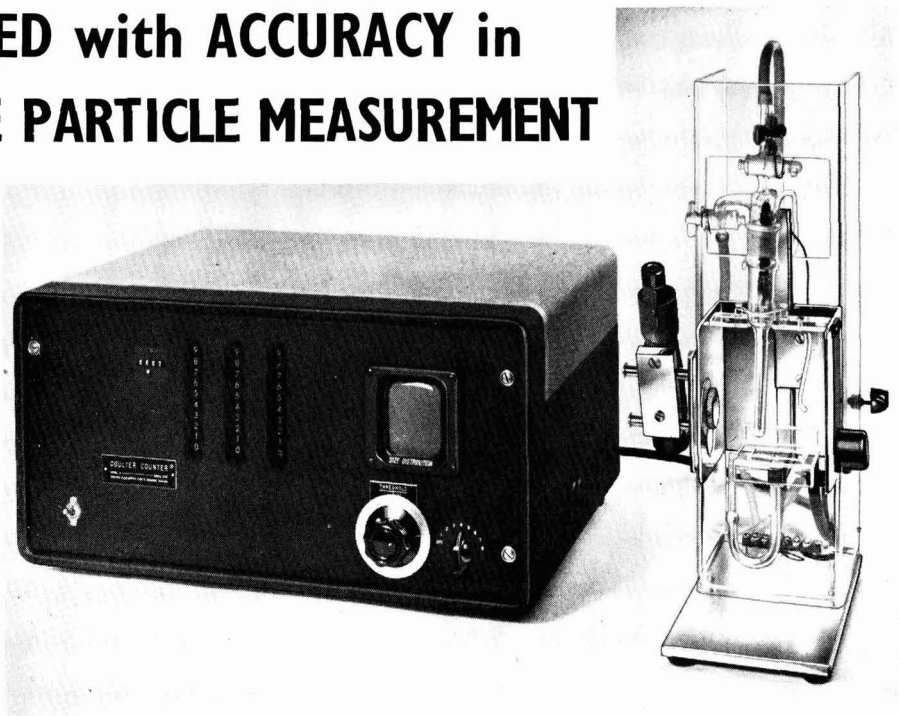
T. GIUSTI & SON, LTD

Belle Isle Works 210/212 York Way Kings Cross London N7 NORth 5021

Now manufactured in Britain!

COULTER COUNTER

achieves a previously unattainable SPEED with ACCURACY in FINE PARTICLE MEASUREMENT



The Coulter Counter represents a major advance in the technique of analysis measurement. In all those industrial applications where fine particle measurement is used for research or quality-control, this instrument offers a speed and accuracy previously unattainable. In many cases it has made possible dynamic production control where this had been out of the question. In the Coulter principle a dilute suspension of particles in electrolyte is drawn into a small aperture through which an electric current is passed. Each particle changes the resistance in the aperture proportionally to its volume. The resultant series of pulses are amplified, scaled and counted. A proved success in America, where today over 800 Coulter Counters are being used in medicine and industry, this instrument is now available in Britain. Full details and technical literature will be sent by return. Please write to the manufacturers:

- ★ *Response is linear with particle volume.*
- ★ *Calibration is direct. Simple preparation of the sample is readily reproducible.*
- ★ *High sensitivity (d^3 response) and statistically particle counts with very low "point scatter".*
- ★ *The size range (0.5μ to 300μ and up) covers particle diameters of countless materials vitally important in a wide range of industries.*

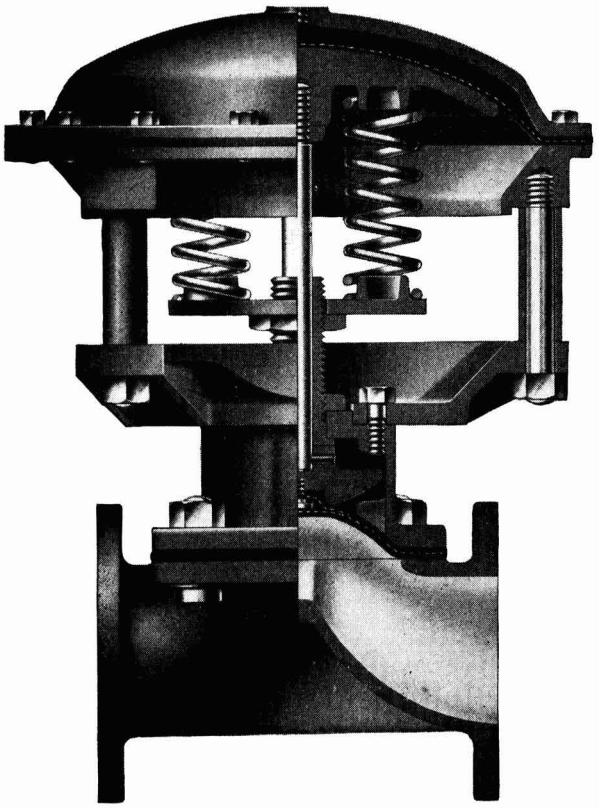
PRESENT APPLICATIONS OF THIS VERSATILE INSTRUMENT INCLUDE

Food Processing, Textiles, Crystals, Minerals and Lubrication

COULTER ELECTRONICS LTD., 4 AURIOL MANSIONS, EDITH ROAD, LONDON, W.14

Telephone: FULham 8033

Patents have been granted or applied for in the following countries :— United Kingdom, Germany, France, Holland and most other countries in the world.



DIFFERENT

. . . to make possible otherwise impossible controls

With power actuation, remote and automatic control and the constant development in diaphragm composition much more will yet be accomplished.

SAUNDERS DIAPHRAGM VALVES

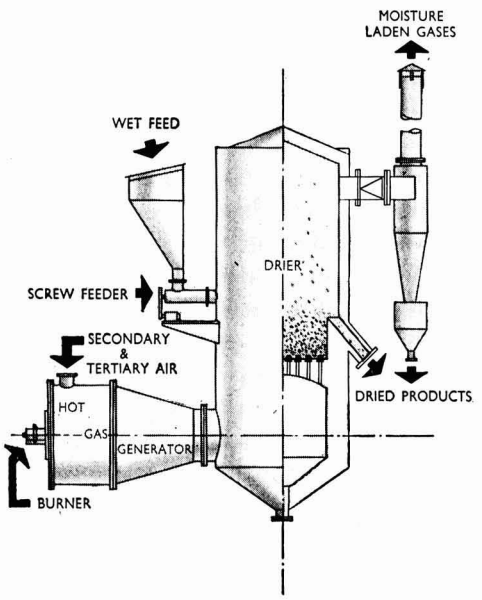
The snowball growth of chemical engineering is in no small measure due to the Saunders Valve. Many products and processes which are today commonplace were impracticable before the advent of Saunders Diaphragm closure and isolation.

SAUNDERS VALVE COMPANY LIMITED

DIAPHRAGM VALVE DIVISION

CWMBRAN · NEWPORT · MONMOUTHSHIRE · Telephone: Cwmbran 3080

E



FLUID BED DRIER

Fluid Bed Applications

Exothermic and endothermic reactions under controlled temperature conditions of ± 10° F. readily achieved in FluoSolids reactors, when handling granular solids.

Drying and cooling operations also carried out, employing the same fluid bed principles.

Units obtainable for large or small throughputs.

Over 150 FluoSolids units in use throughout the world.

ROASTING:	Iron sulphides Copper sulphides Zinc sulphides Residues Hydrates	*CALCINING:*	Limestone Fireclay Phosphate rock Dolomite	*DRYING:*	Coal Limestone Silicates Ores Hydrates

DESIGN, SUPPLY AND COMMISSIONING OF COMPLETE PLANTS

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SEPTEMBER 24 1960

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IN THIS ISSUE

Annual subscription is: home, 52s 6d, overseas, 60s, single copies 1s 6d (by post 1s 9d)

CHEMICAL AGE

BOUVERIE HOUSE · 154 FLEET STREET · LONDON · EC4

CHEMICAL PLANT PROJECTS

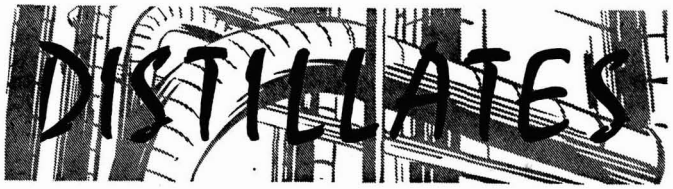
PROJECTS for new and extended chemical plants that were either sanctioned, completed or in hand during 1960 make an impressive list, as can be seen from the exclusive CHEMICAL AGE survey in pages 493 to 500 of this issue. In those cases where the capital expenditure involved has been announced by the companies concerned, investments total £100 million. But for more than half of the projects listed— including some major schemes—no investment figures have been published. Taking into account capacities, where these have been given, and bearing in mind the nature of the products, these further projects, at a conservative estimate, can be valued at a further £90-£100 million. This gives a total figure of about £190-£200 million.

So far as 'project news' is concerned, 1960 has been the busiest year the British chemical industry has ever seen. In addition to the projects listed in our special survey—and some have not previously been announced —it is known that a number of companies have other major expansion schemes in hand, which will be announced in the next few months. A number of such new plants are in fact already under construction, but for one reason or another, the companies concerned are not yet prepared to reveal their plans.

A study of the CHEMICAL AGE survey will disclose what appears to be a marked preference on the part of British companies, particularly in the petrochemical field, to use the services of the U.S. contracting companies, through their U.K. subsidiaries. In addition, of course, many of the major chemical producers continue to be responsible for their own design, engineering and construction work. Such companies include Albright and Wilson Ltd., Associated Chemical Companies Ltd., Distillers Company Ltd., Imperial Chemical Industries Ltd., Laporte Industries Ltd. and Monsanto Chemicals Ltd.

While the specialist contracting firms are, as usual, still busily occupied on projects both at home and abroad, the fact that 1960 has not produced more major contracts for purely British contracting organisations is a matter of concern to the industry. It is obvious that the wise counsel of the two speakers at the 1959 annual dinner of the British Chemical Plant Manufacturers' Association, both of whom called for closer working on the part of chemical producers and plant firms, has yet to bear fruit (C.A., 7 and 14 November, 1959).

In the meantime, interest in the coming months is likely to be focused on those projects on the Soviet 'shopping list', which have not yet officially been placed. These include a 10,000 tons/year nylon 66 unit; a 35,000 tons/year p.v.c. plant; a 180 tons/year pyrrolidone plant, plus plants for: 10,000 tons/year melamine, 20,000 tons/year synthetic glycerin, 1,000 tons/year ethyl urea, 5,000 tons/year synthetic fatty alcohols, 5,000 tons/year fatty acid alkylamides, together with plants for sodium tripolyphosphate and carbon black.



★ THE U.2 incident and the indignation in the U.S. at the Russian handling of this—culminating in the hostile reception that Mr. K. received on Monday in New York—have had no effect on the exchange of scientific literature between Russia and the U.S. In fact during the past year *Chemical Abstracts*, published by the American Chemical Society, handled almost 2,000 scientific publications in Russian.

Soviet chemical literature now accounts for 20% of the 9,000 scientific, technical and trade periodicals which *Chemical Abstracts* receives from 85 countries. Societies in the U.S. and in this country are offering for sale cover-to-cover translations of Soviet chemical publications. These are, of course, very costly and I strongly advise those of my readers who wish to keep abreast of work in the Soviet chemical industry and industrial chemistry to follow Professor Perry's 'Scientific Russian Without Tears', serialisation of which begins in CHEMICAL AGE this week.

This is an excellent series by a man who has used his chemical industry background to write a number of textbooks on scientific Russian. For those who wish to take their studies of Russian a step farther, the Linguaphone Institute, 287-289 Regent Street, London W.1, have a series of 16-double sided 45 r.p.m. discs which are backed by a correspondence course.

★ THAT isotope applications are not only growing in variety, but also rapidly emerging from the experimental stage to standard industry practice was made clear at the radioisotope conference held in Copenhagen by the International Atomic Energy Authority. Evidence of growing interest on the part of industry was cited by Dr. John Putman of the Wantage Research Laboratory, who pointed out that less than a quarter of British participants were from the A.E.A., the majority coming from other government establishments, universities, technical institutions, and industrial firms.

Scientists from a U.K. petroleum research group reported on methods of using radioisotopes for measurement of sulphur content in refinery streams. Continuous measurement by radioisotope techniques would offer considerable financial reward to oil refineries which are at present dependent on relatively slow measurements in the laboratory.

Among other industrial applications discussed were the use of isotopes for testing the wear of rubber tyres, for the detection of leaks in hermetically sealed components and for continuous measurement of the gas flow in a pipe. A considerable part of the discussions was devoted to the use of isotopes in various branches of chemistry and keen interest was expressed in improvements in techniques of analysis by making a substance artificially radioactive.

★ MY belief that many British chemical companies, under the delusion that all publicity is harmful, are preventing chemical contracting and plant companies from gaining useful publicity for their achievements, is strongly reinforced in a letter received from one of the leading British contractors.

My contact says "It is a source of lasting regret to us that clients in the chemical industry do not like publicity for the work you are doing for them and although we have a number of very interesting jobs around the country and abroad, which we would dearly love to publicise ourselves, we have specifically been prevented from doing so."

The companies concerned should take a realistic view. Not only are the contractors justified in claiming publicity for their achievements, but with so many equipment firms involved in any given contract, the ink has hardly time to dry on the contract before word has gone round the trade. Companies should also remember that information departments and market survey sections are a part of every big firm today; it is extremely unlikely that a large project can be kept quiet once the contractor has been appointed. In fact, most large projects are known long before this stage.

★ IT WAS in 1850 that the editor of the *Lancet* set up an Analytical Sanitary Commission to study food adulteration. Following the publication of the commission's findings a Parliamentary Committee was appointed in 1855, their report led to the passing of the 1860 Act the centenary of which is being celebrated this week (see also p. 485).

The Act permitted the appointment of analysts but it was not until a further Act of 1872 that their appointment became compulsory. Food research now covers three main fields, production of the raw material, food processing, and the effect of food on the consumer.

Having now safeguarded our food against the hazards which concerned the early workers in this field, analysts are now faced with a new form of adulteration. For instance strontium 90 in diet largely consists of the recently deposited fall out, which is entrapped directly on plants. But contamination of farm land is not the only way in which radioactivity can enter into food. The entry of radioactivity into fish or other marine animals from dilute radioactive effluents discharged into rivers has also to be considered.

Such releases can be strictly supervised and the rigid adherence to safeguards justifies the view that the purity of human food is not endangered from this source.

★ COSMETIC chemists of a century ago seem to have known as much about hair colour restorers as those of today. The Consumers' Association, which has recently tested eight products claimed to restore colour to grey hair, reports that in five the main active ingredients were lead and sulphur. Restorers advertised nearly 100 years ago also used the lead and sulphur formula.

Contrary to its usual practice the association made no special recommendations as to which product was the most effective because it was found that none of the preparations restored the previous colour to hair, but imposed a new colour resulting from the chemicals in the preparations.

Apart from lead and sulphur, main ingredients also included resorcinol, bismuth tartrate and sodium thiosulphate, and silver nitrate. Additives covered a wide range including sodium acetate, glycerin, ammonium chloride, alcohol, perfume, rose water, paraffin ointment base, sodium chloride and ammonia water.

Vanity being what it is, the Consumers' Association report is not likely to have much effect on sales figures.

★ POST-WAR experience has shown that the most powerful weapon in penetrating and holding overseas markets is a technical advantage in a product provided that the price is reasonably competitive. It is interesting to note that in the field of condensing of potable and other liquids the A.P.V. Company, of Crawley, is obtaining remarkable success with its plate evaporator. Greatly increased attention is being given throughout the world to the condensing of liquids at the point of production so as to reduce transport and packaging costs.

The A.P.V. plate evaporator employs a new principle of construction and operation which results in reduced first and installation costs, simpler operation and a marked improvement in the product quality. These advantages have tipped the scales in overseas markets including the highly competitive U.S. market. I am told that in the short time that this evaporator has been available orders have been received for more than 50 complete installations for overseas countries in addition to the many in the U.K.

Alembic

Learn Scientific Russian with Prof. Perry

THIS WEEK, CHEMICAL AGE starts the serialisation of Professor J. W. Perry's 'Scientific Russian Without Tears' (see page 489). From the large number of letters received since this series was first announced, it is obvious that it will be followed with as much interest here as it was in the U.S. when published by the American Chemical Society. By studying this series, readers will soon be able to read scientific Russian well enough to follow at first-hand the important advances that are currently being made in the chemical industry and in industrial and academic chemistry in the U.S.S.R.

To make sure of receiving extra copies and to avoid multilating their existing CHEMICAL AGE'S, readers are urged to complete the form in page 334 of CHEMICAL AGE, 27 August, thereby reserving an extra copy. This form should be returned as soon as possible to the Manager at 154 Fleet Street, London E.C.4.

New Paint Research Laboratories

EXTENSIONS to the premises of the Research Association of the British Paint, Colour and Varnish Manufacturers was opened at Teddington this week. The extension, the Jordan Laboratory, is for the purpose of furthering the development of new types of paint which have been made possible by the new materials now available.

About half of the £150 million worth of paint expected to be produced this year will go to industry, but the greater use of paint in the home is responsible for a large part of the increase in Production—30% since 1954.

50 on Unofficial Strike at A.C.C. Works

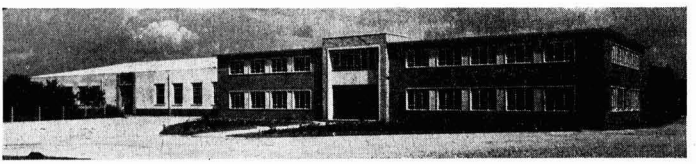
Fitters and electricians employed at the Urlay Nook works of Associated Chemical Companies Ltd., last week stopped work in support of their claim for higher wages for working in unpleasant conditions. The fitters had threatened strike action some weeks ago, but this was deferred while the issue was discussed between their union—the A.E.U.—and the employers. Subsequently the fitters rejected an agreement reached between their union and the company and decided on unofficial strike action. They were joined two days later by members of the Electrical Trades Union. Fifty men are involved.

Seven-minute Blaze at I.C.I. Plant

A fire broke out last week in the Gaskell Marsh section of the Widnes works of Imperial Chemical Industries Ltd., where experimental work is carried out. The first was extinguished in about seven minutes and damage was confined to the roof of the building. Production was not affected.

Project News

New Vinatex Factory Due in Production in November



New factory built for Vinatex Ltd. at New Lane, Havant, Hants, for the manufacture of Vinatex vinyl compounds, Vinatex p.v.c. pastes, and the recently-introduced Vinacoat p.v.c. sintering powders. For some time it has been increasingly difficult to satisfy world demand for these products from Carshalton. Now Vinatex Ltd. will be able to meet all foreseeable demands when the new factory is in full production early in November. The most modern plant is being installed, together with extensive control and technical service laboratories

Sea-water Evaporation Plant at Guernsey

● THE £275,000 sea-water evaporation and distillation plant built at Guernsey for the States of Guernsey Water Board by **G. and J. Weir Ltd.**, Glasgow, will produce 500,000 gall. of fresh water daily. The new plant, the first of its kind to be set up in the temperate zone, will be opened by Mr. R. A. Butler, Home Secretary, on 22 October.

Blaydon Coke-oven Batteries Relit

● Two batteries, comprising 38 coke-ovens, which have been rebuilt at Derwenthaugh coke-works, Blaydon-on-Tyne, have been relit, by the **National Coal Board,** and after the drying-out process has been completed within a few weeks, will go into full production. In 1959, Durham coke-ovens carbonised 3,300,000 tons of coal, and produced 2,300,000 tons of coke, 143,000 tons of tar, 28,000 tons of ammonium sulphate, 8,700,000 gallons of crude benzol, and 20,000 million cu. ft. of gas.

45,000 Tons/year Aromatics Plant for French Esso

● AN aromatics plant, costing £2.5 million and with an output of 45,000 tons/year, is to be installed at the Port-Jérôme refinery of the **French Esso Standard Co.** It is due on stream in the first half of 1962. Also to be installed at the same refinery is a hydrogenation unit for lubricants. Costing £870,000 and with a 200 tons/day output, it is due in production in the third quarter of 1961.

Mekog to Install Large N.P.K. Factory at Pernis

● A FERTILISER plant with an annual capacity of 160,000 tons is to be built on the Pernis refinery site, near Rotterdam, by **N.V. Mekog,** a joint subsidiary of Hoogovens and the Royal Dutch-Shell group. The new plant will manufacture fertilisers based on nitrogen, phosphorus and potassium. Due for completion in 1962, it will produce mainly for export.

Water Cooling Towers for Richard, Thomas and Baldwins

CONTRACTS worth over £800,000 have been placed with Film Cooling Towers (1925), Richmond, Surrey, for various types of water-cooling towers. These include a contract for concrete natural draught water cooling towers for Richard, Thomas and Baldwin's new steel works now under construction at Llanwern, near Newport, Mon. At the same works two multi-cell induced draught water cooling towers are being supplied for the oxygen plant from British Oxygen Engineering.

I.C.I. Silicon Production to Rise to 10,000 Tons/year

● EXTENSIONS to the high-purity silicon production on Merseyside of the **I.C.I. General Chemicals Division,** referred to in p. 496 of our special survey of U.K. chemical plant projects will raise capacity to a total of 10,000 tons a year. Earlier it had been announced that 1960 capacity would reach 8,000 tons a year. The 10,000 tons/year figure will be reached by October 1960.

Obituary

With the death on 20 September, in a Melbourne hospital, of **Mr. George Richard Nicholas,** the pharmaceutical industry loses one of its most outstanding figures. Mr. Nicholas, who was 76, was the chemical genius behind the fabulous Aspro 'empire', since it was he who first produced, during the first world war, the pain-killing tablets whose name has become a household word. Together with his brother Alfred (also deceased) who supplied the administrative ability, he built up the prosperous Aspro-Nicholas concern.

Explosion Risk in Ammonia Compressor Houses Overcome, Says Chief Inspector

SOLUTION to the problem of explosion risk in large ammonia compressor houses, where it is not practicable to provide electric motors of flameproof construction, is reported in the 1959 Annual Report of the Chief Inspector of Factories, published by H.M.S.O. at 7s. Recent tests have shown that the atmosphere becomes intolerable when the ammonia concentration approaches 0.5 to 2%. There is, however, no real explosion risk until concentrations reach 15% and consequently workpeople would be compelled to evacuate the room before an explosion would occur.

It has been proposed, therefore, to provide in compressor houses which are continually manned a push-button control enabling all power—except for ventilation and emergency lighting which would be fully flameproof—to be cut off from the danger area when workers are forced to evacuate the room. Suitable automatic detecting equipment is being developed for cutting off power in large unmanned automatic plant.

More Accidents Reported

The Chief Inspector had to report that the downward trend in the number of accidents shown in the last three years has suffered a reversal. There were 174,071 accidents in 1959 as opposed to 167,697 in 1958, although it is encouraging that this rise has been accompanied by a decrease in the number of fatalities.

In the chemical industries, there was a total of 10,036 accidents, of which 38 were fatalities, and, as might be expected, burning accounted for a large number of the accidents. A comparison of frequency rates in 1958 and 1959 shows an increase for the latter year—0.97 as against 0.94 in 1958. This trend is apparent in most industries. There has been no slackening in the efforts of the accident prevention movement, but the level of industrial production has risen considerably during 1959 and the increase in accidents may be partially explained by the number of people employed and the hours worked.

The chemical industry was responsible for a high proportion of the dangerous occurrences in 1959 (131 out of 1,146), the number being surpassed only by the general and electrical engineering and electrical generation industries. The majority of the dangerous occurrences in the chemical industry were due to the collapse or failure of cranes or other devises used for the movement of goods or persons; to explosion or fire causing damage to structure of room or machinery; and, to a lesser degree, to explosion or fire causing serious suspension of work by effecting the room in which persons are employed.

In 1959, there were 206 accidents due to gassing. This total follows the trend of the continued decrease in this type of accident evident since 1945, although the proportion of fatalities has increased. Carbon monoxide poisoning is responsible for the highest proportion of these accidents.

Among the developments in the chemical industry covered in the report, is the increasing practice of giving internal coatings to hollow vessels to protect them from rust. This form of protective coating involves the use of toxic compounds which may be harmful to workers exposed to them in a confined space. These conditions exist in certain nuclear power reactors where some parts, inaccessible after erection, need to be rustproof, and the space within the vessel is restricted by pipes and other apparatus. A case of workers suffering from over exposure to carbon tetrachloride, the suspending medium of the rustproof coating, was brought to the notice of the Inspectorate.

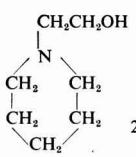
Effective ventilation is essential where toxic volatile substances, generally inflammable, are used as in the case of applying epoxy resins to the interiors of tanks of ships and road and rail tankers. Somewhat similar problems also arise in the manufacture of rubber cylinders intended as "oil-barges". In this process the strips of synthetic rubber are cemented together with a compound containing toxic flammable solvents.

A process recently developed enables low-porosity bricks to be manufactured from native silica, imported silica being used previously. The process involves the use of ammonium nitrate and other chemicals which give rise to risk from ammonia, oxygen, nitrogen tetroxide, and nitric oxide. The risks to health and explosion hazard are effectively controlled by enclosing the ganister grinding mill in a cubicle fitted with a Castell safety lock and with adequate mechanical ventilation.

New Drug Intermediate Available from Robinson Brothers

EXPECTED to find its chief use as a drug intermediate is 2-piperidinoethanol (N-(2-hydroxyethyl)piperidine) now available in experimental quantities from Robinson Bros. Ltd., Ryders Green, West Bromwich.

With the structural formula as shown, 2-piperidinoethanol behaves as a tertiary aliphatic amine and as an alcohol. Its amine characteristics are shown in the formation of salts and quaternary compounds, such as the hydrochloride, picrate, methiodide and the formation of crystalline complexes with cupric chloride and bromide.



2-Piperidinoethanol

As an alcohol, the compound forms esters with acids; several ester hydrochlorides have been investigated as drugs, particularly as anaesthetics and antispasmodics. Several methods of esterification are available and have been investigated by various workers. Straight-forward esterification, using acid catalysts, has been employed, for example with 2,4-dichlorbenzoic acid. By this means, both the mono- and di-esters have been produced from △ 4-tetrahydrophthalic anhydride.

Alternatively, if the hydrochloride of the ester is required and not the free ester, esterification may be carried out under milder conditions with, for example, benzoyl chloride or 2-thenoyl chloride.

A third method is by alcohol interchange with a lower ester of the acid, and the reaction of 2-piperidinoethanol with isocyanate gives esters of the corresponding carbamic acids.

The toxicity, L.D. against white mice, of piperidinoethanol is to said to be 556 mg./50 kg. by intravenous injection and 189 mg./kg. by the intraperitoneal route.

I.A.E.A. Conference on Radioisotopes in Denmark

A CONFERENCE on the use of radioisotopes in the physical sciences and industry, organised by the International Atomic Energy Agency with the cooperation of the United Nations Educational Scientific and Cultural Organisation, was opened in Copenhagen on 6 September. At the inaugural ceremony, the Prime Minister of Denmark, Mr. Viggo Kampmann, said that the growing interest in the meetings of the Agency showed the importance which nuclear scientists attached to the organisation. Professor Niels Bohr, chairman of the Danish Atomic Energy Commission, thought that in view of the vastness of the field of radioisotopes, the Agency had been wise in the restriction of the conference to the physical sciences and industry.

The second week of the conference was devoted to the use of isotopes in the various branches of chemistry, from their use in analysis to determine very small amounts of material to their use in research for studying the mechanism of various chemical reactions.

РУССКИЙ ЯЗЫК

SCIENTIFIC RUSSIAN WITHOUT TEARS

Part I—The Alphabet

★

By

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★

'Scientific Russian Without Tears' first appeared under the imprint of the American Chemical Society, and is now being serialised in 'Chemical Age' in six parts with the permission of that Society.

★

Professor J. W. Perry's interest in the Russian language originated when he was a chemist for the National Aniline Division of the Allied Chemical and Dye Corp. Realising that much useful information related to current patent disputes was appearing in Soviet journals, he taught himself the language and eventually wrote several well-known and popular texts including 'Chemical Russian Self-Taught' (Chemical Education Publishing Co.) and 'Scientific Russian —A Textbook for Classes and Self-Study' (Interscience).

FEW of us have escaped learning a little Russian recently—even though we may not think much about it. Perhaps спутник is not obvious as the Russian for a certain type of widely discussed celestial object. But some Russian words are easy enough. For example, атом is completely obvious and комета (comet) is almost as easy. Many more, in the Russian scientific and technical literature, are completely obvious or not very difficult—once we have the alphabet under control. In fact, it's surprising to observe how many Russian words need only be pronounced half-way correctly to be understandable. Difficulties that plague us in German—the wrong-way word order, separable prefixes, scrambled phrases, the 'with the by Holtzapfel invented apparatus achieved accuracy' sort of thing—aren't to be found in Russian. But let's not get ahead of ourselves. First the alphabet, then phrases and sentences.

About a fourth of the letters are the same as ours. Just listing them is enough—and the differences in pronunciation won't prove troublesome until we feel the urge to chatter Russian like a Moscow native.

Capital	*Small*	
A	a	—a as in *f*a*r*
E	e	—e as in *ch*e*st*
K	к	—k as in *k*ettle
M	м	—m as in ste*m*
O	o	—o as in *f*o*re*
C	c	—s as in *s*ite (or c in *c*ity)
T	т	—t as in *t*all

Another fourth of the alphabet comes directly from the Greek, and should be fairly familiar.

Capital	*Small*	
Г	г	—(gamma) g as in *g*o
П	п	—(pi) p as in *p*en
P	p	—(rho) r as in *r*ose
Ф	ф	—(phi) f as in *f*ast
X	x	—(chi) kh as in *Kh*arkov

But the Greeks don't quite agree with the Russians in shaping certain letters. Note these three:

Capital	*Small*	
Б	б	—(beta) b as in *b*ench
Д	д	—(delta) d as in *d*eep
Л	л	—(lambda) l as in *l*ong

RUSSIAN ALPHABET

Capital	*Small*	*Transliteration (Chemical Abstracts)*	*Name of letter*
А	а	a	a
Б	б	b	be
В	в	v	ve
Г	г	g	ge
Д	д	d	de
Е	е	e	ye
Ж	ж	zh	že
З	з	z	ze
И	и	i	i
Й	й	ĭ	ĭ krátk ª ya (short и)
К	к	k	ka
Л	л	l	elj
М	м	m	em
Н	н	n	en
О	о	o	o
П	п	p	pe
Р	р	r	er
С	с	s	es
Т	т	t	te
У	у	u	u
Ф	ф	f	ef
Х	х	kh	kha
Ц	ц	ts	ce
Ч	ч	ch	če
Ш	ш	sh	ša
Щ	щ	shch	ščа
Ъ	ъ	’	tvjórdª y znák (hard sign)
Ы	ы	i	yiri
Ь	ь	y	mjákhk ª y znák (soft sign)
Э	э	e	é abarótn ª ya
Ю	ю	yu	yu
Я	я	ya	ya

And then there are four letters that look familiar but receive quite different pronunciation. Learning the Russian word 'врун' pronounced 'vrun' and meaning 'liar' does it for these letters.

Capital	*Small*	
В	в	—v as in *v*ent
Р	р	—r as in *r*ose
У	у	—u as in l*u*nar, or perhaps better 'oo' as in b*oo*k
Н	н	—n as in *n*et

When several of the врун ('vrun') letters are involved, a little care in pronunciation is advisable. Thus, нонан is not an expression of amusement or boredom, but 'nonan' denoting C_9H_{20}, nor does ново mean a knight of the road but rather 'new' or 'newly'. Here the pronunciation 'novo' is to be related to the root of such English words as 'novice', 'novelty', 'renovate', etc. A little practice may be needed before words like вакуум, антенна, ротор, and конвертер are quickly recognised as 'vacuum', 'antenna', 'rotor' and 'converter'.

So now we have two-thirds of the Russian alphabet. Quite enough to enable us to recognize—by the crudest sort of pronunciation—a considerable number of Russian words. Here are a few examples. The list could be extended to include many more.*

Russian	*Transliteration of Russian*	*English*
абсорбер	absorber	absorber
анод	anod	anode
аппарат	apparat	apparatus
арсенат	arsenat	arsenate
атмосфера	atmosfera	atmosphere
борат	borat	borate
бромат	bromat	bromate
бутан	butan	butane
вектор	vektor	vector
грамм	gramm	gram
группа	gruppa	group
дублет	dúblet	doublet
канал	kanal	canal
кетон	keton	ketone
конденсат	kondensat	condensate
константа	konstanta	constant
меркаптан	merkaptan	mercaptan
металл	metall	metal
молекула	molekula	molecule
мотор	motor	motor
неопрен	neopren	neoprene
номенклатура	nomenklatura	nomenclature
ом	om	ohm
оксалат	oksalat	oxalate
оператор	operator	operator
параметр	parametr	parameter
паста	pasta	paste
пентан	pentan	pentane
пентен	penten	pentene
планета	planeta	planet
продукт	produkt	product
протон	proton	proton
ракета	raketa	rocket
реостат	reostat	rheostat
сатуратор	saturator	saturator
секунда	sekunda	second (time interval)
спектрограф	spektrograf	spectrograph
структура	struktura	structure
субстрат	substrat	substrate
сфера	sfera	sphere
таутомер	tautomer	tautomer
температура	temperatura	temperature
терпен	terpen	terpene
фенол	fenol	phenol
фокус	fokus	focus
формула	formula	formula
фотон	foton	photon
фронт	front	front
характер	kharakter	character
хлороформ	khloroform	chloroform
хромосома	khromosoma	chromosome

*For additional examples, see Chapter 1, in 'Scientific Russian', Interscience Publishers, New York.

In this list, the Russian nouns ending in -a are feminine in gender. All the others are masculine. This makes a difference in the endings for various cases. All nouns here listed are in the nominative singular case.

Getting back to спутник for a moment, the и is, of course, an 'i', The word itself is completely Russian—the stem, пут, means 'road' or 'path'. The prefix, с-, means 'with' and the suffix, -ник, denotes a person or thing that performs some action. But спутник doesn't mean 'fellow traveller'. To indicate a limited degree of an action, the Russians often use the prefix по-. So 'fellow traveller' comes out as попутчик.

Rubber-based Coating Resists Salt Spray at Dounreay

FINDING a suitable protective coating for the 'Sphere' at the Dounreay establishment of the U.K.A.E.A. proved a tricky problem for, situated slightly west of John O'Groats and within a hundred yards of the sea, the sphere—which composes the mild-steel housing of a fast breeder reactor—is subjected to driving rain at high wind force, fairly frequent sea mist and constant deposition of salts.

It is stated a five-coat system of chlorinated rubber paint specially developed by Tretol Ltd., The Hyde, London N.W.9, has successfully withstood these rigorous conditions since it was applied during the latter half of 1959. The same coating is to be used on similar structures at Dounreay.

According to Tretol, the coatings previously tried out, under the control of the U.K.A.E.A., covered virtually every known type of anti-corrosive composition—including fairly recently developed materials such as epoxies, neoprenes, vinyls, etc., in addition to the more traditional types of paint such as bituminous, alkyds, and chlorinated rubbers. These were all applied to the external surface facing the sea and observations of the performance of these varying systems, which amounted to over 30 different types of compositions, was maintained over a long period.

Originally the sphere was protected with metallic zinc spray to a thickness of approximately 0.004 in., but the constant build up by precipitated salts made it apparent that additional protection was very necessary if the high initial cost of the metallic zinc coating was not to be frittered away within a short space of time. The contractors carrying out the subsequent painting in conjunction with the paint manufacturer were faced, therefore, with the very difficult problem of removing as much as possible of the salt deposits before painting.

U.K. Reactor Instruments at Stockholm Exhibition

A LARGE number of instruments related to reactor control and development, with a display of the industrial uses of radio-isotopes, were shown at the Commercial Exhibition, held in the Osterman Marble Halls, Stockholm, 10-17 September. About one-third of the total space was occupied by a self-contained British section, the centrepiece of which was the U.K. Atomic Energy Authority stand which provided a central point for the 15 British firms which had their own stands grouped round the Authority's exhibit. The exhibition was visited by Sir William Cook, A.E.A. member for development and engineering.

Visitors received by Sir William on the British stand included Professor S. Brohult, president of the Royal Swedish Academy of Engineering Sciences; Mr. H. Brynielsen, managing director of A.B. Atomenergi; Dr. S. Eklund, head of Physics Division, A.B. Atomenergi; Mr. O. Gimstedt, managing director of the Atomkraft Consortium, and M. Andre Mouterat of the French organisation A.T.E.N.

Earlier, Sir William had opened a scientific exhibition held in the Royal Institute of Technology, Stockholm, which was arranged in conjunction with the four-day instruments and measurements conference opening on 13 September.

I.A.E.A. Rules for Transport of Radioactive Materials

INTERNATIONAL regulations for the safe transporation of radioactive materials were approved by the governors of the International Atomic Energy Agency at their meeting in Vienna on 13 September. The regulations are to be revised at suitable intervals.

The regulations were strongly recommended by the board to member States and organisations concerned as a model for relevant national legislation and as applicable to the international transport of radioactive substances. They will be recommended to the U.N. Committee of Experts for Further Work on the Transport of Dangerous Goods. The regulations apply to the shipment of radio-isotopes for scientific, industrial and medical purposes as well as to fissionable materials and large radiation sources.

U.K. Salt Production in 1959

U.K. PRODUCTION of salt in 1959 is estimated at 5,533,000 tons (compared with 5,572,000 tons in 1958 and 5,583,000 tons in 1957) by the U.S. Bureau of Mines in Vol. 51, No. 3 of *Mineral Trade Notes*. The U.K. is placed fourth in the list of the world's salt producing countries, following the U.S. with 25,193,000 tons in 1959; China, 14,330,000 tons; and the Soviet Union 7,200,000 tons.

The figures for China and the U.S.S.R. are estimates as is the world total of 88,900,000 tons for 1959 (82,200,000 tons estimated for 1958).

Food Minister Opens Pure Food Exhibition

TO be able to do anything about the adulteration of food, it must first be possible to detect it. This necessity which has brought about the steady development of analytical techniques to the highly efficient procedures of today, was reiterated by the Minister of Agriculture, Fisheries and Food, Mr. Christopher Soames, C.B.E., when speaking at the opening of the Pure Food and Drink Exhibition at Charing Cross Underground Station on Tuesday.

The development which has been achieved in the 100 years since the 1860 Act for the Prevention of the Adulteration of Articles of Food and Drink was passed, is clearly shown by the exhibition which consists of two laboratories, an 1860 analytical laboratory with its often inaccurate apparatus and the efficient, streamlined modern laboratory, showing some of the techniques of up-to-date analysis.

In 1860 the chief instrument for the examination of foodstuffs was the microscope, which was used, for instance, for detecting the adulterating chicory in coffee. The work of the public analyst of those days consisted to a large extent of ensuring that the water content of milk, cyder and spirits was not too high. For this purpose, a range of different types of hydrometers was used, including an instrument called a lactometer. The more refined descendent of the lactometer can be seen in the 1960 laboratory, and the determination of the water content of spirits is of course still of importance.

It is in other analyses that the more spectacular advance is seen: in the determination of sugar by polarimeter, an instrument in its infancy in 1860; the detection of the presence of antibiotics in canned meat and the determination of vitamins in foods; the identification of oils by refractometer; the modern techniques of paper and column chromatography for the identification of colouring matter, sugars and amino acids. All these techniques and others are demonstrated at the exhibition which is open to the public until 8 October.

The three-day conference was officially inaugurated by Lord Waldegrave, Parliamentary Secretary to the Ministry of Agriculture, Fisheries and Food at the Royal Institution in Albemarle Street, on Wednesday. The papers read were 'The 1860 act and its influence on the world food', J. H. Hamence; 'Pure food and the Commonwalth', J. G. Mallock; 'Pure food for the people—the manufacturers' contribution', E. B. Hughs; 'International aspects of pure food and pure food legislation', N. C. Wright; 'National problems—Canada', C. A. Morrell; 'National problems—U.S.A.', G. B. Larrick; 'National problems—Australia', F. H. Reuter; and 'The integration of food research', A. C. Frazer.

Plastics Materials Sales Show 'Modest' 12% Annual Increase

NET sales of plastics materials in the second quarter of 1960, at 143,100 tons, were slightly below the record level of the first quarter, but were about 12% higher than in the corresponding quarter of 1959. This is a modest rate of annual increase compared with the very high rate, averaging about 26%, that was maintained during the 12 months to end-March, 1960. Manufacturers' stocks rose sharply during the quarter, by 10,000 tons, to a total of 76,100 tons, indicating that the level of production was slightly higher than in the first quarter. Thermoplastics accounted for almost all of this increase in stocks.

Sales of thermoplastic materials in the second quarter, at 88,600 tons, were just under 12% higher than a year ago: in the 12 months to end-March, 1960, sales of this group of materials were expanding at a much higher rate, averaging about 31% above a year earlier. At 54,500 tons in the second quarter, sales of thermosetting materials were 13% higher than in the corresponding period of 1959, a rate of increase which is not much less than the average for recent periods. Sales of phenolic and cresylic plastics contributed less to expansion in this group than has been usual in recent quarters.

Exports of plastics materials (excluding waste and scrap) in the second quarter were 42,300 tons; the same as in the first quarter of this year, and nearly 15% higher than in the second quarter of 1959. This again is a lower rate of annual increase than in recent quarters. Imports during the quarter rose to the very high level of 25,900 tons.

The figures were compiled by the Board of Trade from returns from over 160 firms known to have been manufacturing plastics materials. Firms making cables who manufacture plastics materials from purchased resins are excluded. Materials for use as textiles are also excluded.

Further Rise in U.K. Consumption of TEL

U.K. consumption of tetraethyl lead in the seven months, January to July, totalled 14,463 tons, compared with 13,542 in the same period of last year.

Overseas News

Benzene Plans will Raise Imperial Oil's Petrochemical Investments to $46 Million

THE $5 million benzene plant to be built at Sarnia, Ontario, by Imperial Oil Ltd. (see CHEMICAL AGE, 10 September, p. 391) brings to $46 million the money Imperial Oil has spent on petrochemical facilities since 1955 when it first formed a petrochemicals department. The first plant, a $5.6 m. detergent alkylate unit, went into operation at the end of 1957.

Since then, Imperial has built a $28.5 m. plant to produce ethylene, butadiene, and butylene, and a $4 m. plant to make naphtha specialities. All of the petrochemicals produced by Imperial Oil are chemical raw materials. Some are used by the company in its own oil refining operations, but most are sold to Canadian and foreign chemical companies for processing into finished materials.

The new Sarnia benzene plant's capacity of 30 m. gall./year is about double the present benzene capacity in Canada, and is equal to about 150% of total estimated consumption of the chemical in Canada this year.

There are already five benzene plants operating in Canada, of which four are based on coke oven gases produced as a by-product of steel operations, and one is a petrochemical operation plant. Two other petrochemical operations. In addition to Imperial Oil's proposed unit, are being built by other companies.

Demand for benzene, one of the largest volume industrial chemicals used in Canada, is rising rapidly and has far outstripped domestic production.

Trade sources estimate that Canadian industry this year will consume 20 million gall. of benzene, compared with production of only 12.5 m. gall. Consumption has increased by one-third since 1957.

Two U.S. Producers Cut TML Prices

A 4 cent per lb. cut in the price of tetramethyl lead by the Ethyl Corporation, following bringing into full production of their Baton Rouge plant, was acompanied by an E.I. Du Pont de Nemours statement that they would match this reduction. Du Pont have introduced Tetramix, a new anti-knock compound comprising TML, tetramethyl lead, triethylmethyl lead, diethyldimethyl lead and ethyltrimethyl lead.

Italian TEL Plant for Mexico ?

A group of Italian industrialists is reported to have offered the Pemex State-controlled chemical organisation of Mexico the erection of a plant there for the production of tetraethyl lead. Investments for the plant would be in the region of 10,000 to 11,000 million pesos. A company would be formed with Pemex as majority and the Italian group as minority shareholders. This latter idea has been the subject of much applause in Mexico, and it is anticipated that the plan will go ahead. Former similar United States plans had been turned down on the grounds that the Americans wished to be majority shareholder in any operating company.

Austria's First Methanol Plant

Austria's first methanol plant is being built by the local firm Oesterreichische HIAG-Werke AG at Fischamend. With an initial annual capacity of 10,000 tonnes, the plant will make Austria independent of methanol imports.

Scandinavia's First Synthetic Resins Plant

A start has been made at Lilla Edet in Sweden on Scandinavia's first synthetic resins plant. The plant, which will cost some Kr.5 million to build, is a project of the newly-formed A/B Hercules, a Swedish subsidiary of the Hercules Powder Co., of the U.S. Production is expected to start at the Lilla Edet plant at the turn of 1961/62.

Huber, U.S., Plan Carbon Black Expansion

The J. M. Huber Corporation, of the U.S., are to expand their annual carbon black capacity by the introduction of new production plant at Baytown, Texas. The expansion, which will bring annual output from 27,000 to nearly 45,000 tonnes, will be completed by the end of the current year.

Nitrogen Plant for Rhodesia

The building of a nitrogen plant in Salisbury (Rhodesia), at a cost of £9 million, may start within 18 months. According to K.W. Spilhaus, managing director of African Explosives and Chemical Industries (Rhodesia) Ltd. earlier this month, all plans and estimates for the factory have been completed. It will produce nitrogen, for both fertilisers and explosives. Spilhaus said it was only a matter of waiting for economics to be just right, but he expected the plant to be well established and in full production by about 1965.

Danish-Norwegian Link-up in £5m. Fertiliser Project

A £5 million plant to produce nitrogenous fertilisers is to be built at Grenaa, Jutland, by a new company formed jointly by Dansk Svovslyre (Denmark) and Norsk Hydro (Norway), along with the Dansk Andelsgodnings Forretning—the Danish farmers' co-operative fertiliser buying organisation. The plant, scheduled to be in production by 1963, will produce 75,000 tons/year of nitrates and 20,000 tons/year of fluid ammonium products.

The new company will be known as the Dansk-Norsk Kvælstoffabrik I/S. Norsk Hydro will supply 20% of the capital and the two Danish partners, 40% each. The new plant's production is directly proportionate to the fertilisers hitherto supplied to Denmark by Norsk Hydro.

It was reported in CHEMICAL AGE, 17 September, p. 422, that Dansk Svovslyre and Norsk Hydro were jointly concerned in a project to manufacture fertilisers using by-products of the new oil refinery now being built at Kalundborg.

G.A.F. Sale a Stage Nearer

The trade committee of the U.S. House of Representatives has given its backing to a Bill for the sale of the General Anilin and Film Corporation, at present held by the U.S. authorities under the wartime Enemy Aliens Act. The committee stipulates, however, that any money raised from the sale of the company by the U.S. Government should be held until the Interhandel claim is finally settled. Interhandel are the Swiss trading company who claim an interest in the corporation and opposes the Government's right to sell it. The Bill now comes before the Senate legal committee for consideration.

Mobil to Build Multi-million Benzene Plant in Texas

Mobil Chemical plans to produce benzene in a multi-million dollar plant to be constructed at Beaumont, Texas. Initially the new facility will yield more than 30 m. gall. of benzene annually. Toluene will also be produced.

Mobil Chemical, an operating division of Socony Mobil Oil Co., said that the benzene plant would be a part of its expanding chemical complex in the Beaumont area.

Construction of Norway's First Refinery Proceeds Apace

Norway's first oil refinery, which is being built by the Esso group at Slagen, near Oslo, is expected to take up production as planned this November. Daily throughput will be 6,000 tonnes of crude. As production will be considerably greater than national demand, a proportion of the output will be exported to Sweden and Denmark.

Snia Viscosa to Produce New Polymerisate in Italy

The Italian synthetic fibre producer Snia Viscosa announces the development of Dialux, a new transparent polymerisate based on styrene and itaconic acid. The product is similar to polyacrylmethacrylate, though with better mechanical resistance and less heat sensitivity. The polymerisate is to be produced by Snia Viscosa at its Trieste plant.

New Chemical Plants in the U.K.

Featured in this exclusive *Chemical Age* table are large-scale expansion and modernisation projects, as well as smaller schemes, involving a total investment of well over £150 million. This survey includes chemical plants opened in the U.K. since the table was last published in September 1959, as well as those now under construction or in the planning stage. Notes are given in the final column on the stage of construction.

COMPANY	PROJECT	DATE
A.C.C. (Brotherton) Ltd.	Wakefield plant for organic chemicals for plastics and pesticides trades. Designed and constructed by A.C.C. (Brotherton)	Commissioned June 1960
A.C.C. (Chrome & Chemicals) Ltd.	100 tons/day contact sulphuric acid plant at Eaglescliffe. Main contractors: P. G. Engineering Ltd.	Commissioned May 1960
Abbott Laboratories Ltd.	£1.5 million development project at Queenborough, Kent. Contractors: C.A.S. (Industrial Developments) Ltd.	For completion by about end-1961
Acheson Dispersed Pigments Co. Ltd.	25,000 sq. ft. extension to Dukinfield, Ches., pigment plant	In hand
Albright & Wilson (Mfg.) Ltd.	Extension to oil additives concentrate plant at Oldbury	Due for completion 1960
	New £500,000 plant for production of Calgon water softener at Kirkby. Engineering by A. & W. Central Engineering Department	Due for completion in 1961
Alchemy Ltd.	Medium-sized plant for production of maleic anhydride. Contractors: Petrocarbon Developments Ltd.	Due in production end-1960
Anderson, James, & Co. (Colours) Ltd. (Member of Geigy Group)	Organic pigments plant at Paisley	Completed
Appleby-Frodingham Steel Co. (branch of United Steel)	First U.K. benzole defronting unit to produce nitration grade boiling-range benzole and toluole, 2° xylole and 160/190° naphtha continuously from crude coke-oven benzole. Scunthorpe throughput is 5.5 million gall./year. Contractors: A.P.V. Company Ltd.	On stream early-1960
	£750,000 tonnage oxygen plant at Scunthorpe	Due in production second-half 1960
Associated Lead Manufacturers Ltd.	£750,000 extension to antimony works at Wallsend	Completed July 1960
Beecham Group Ltd.	£1.5 million antibiotics factory at Worthing	Due in production by end-1960
Beryllium Consolidated Ltd.	Beryllium plant at Avonmouth	Due in production by end-1960
Blythe, William, & Co., Ltd.	Modified sulphuric acid plant at Hapton, on stream again after shutdown, is first outside West Germany to use B.A.S.F. fluidised bed roaster	In production early-1960
British Celanese Ltd.	Three sulphuric acid concentration units at Spondon. Main contractors: Constructors John Brown Ltd.	Completed
Boots Pure Drug Co. Ltd.	£2½-£3 million five-year rebuilding programme at Island Street Works, Nottingham, with priority for pilot plant block	In hand
British Drug Houses Ltd.	£750,000 three-stage development project for B.D.H. Laboratory Chemicals Division, Poole. Contractors: John Laing & Son Ltd.	Stage 1 completed. Full completion expected in 1962
British Enka Ltd.	Production of polyamide and nylon yarns	Planned
British Geon Ltd.	£2 million extension to Barry p.v.c. plant. Construction to be supervised by D.C.L. Engineering Division. Contractors for monomer plant: Power-Gas (design, engineering and supply)	For completion mid-1961
British Hydrocarbon Chemicals Ltd.	Extension to double butadiene capacity at Grangemouth. Main contractors: Fluor Engineering & Construction Co. Ltd.	For commissioning in 1961
	Plant at Grangemouth for methanol. Main contractors: Chemical Construction (G.B.) Ltd.	For commissioning in 1961

COMPANY	PROJECT	DATE
British Hydrocarbon Chemicals Ltd. (cont'd.)	Plant at Grangemouth for ethylene dichloride. With two projects above, is part of £5 million development scheme. Main contractors: Lummus Co. Ltd.	For commissioning in 1961
	Cumene, phenol and acetone plant at Grangemouth for 13,000 tons/year phenol. Cumene unit designed by Scientific Design; phenol-acetone unit by D.C.L. Main contractors: Stone & Webster (Engineering) Ltd.	In operation March 1960
	No. 3 ethylene and propylene plant at Grangemouth with 70,000 tons/year capacity, raising total olefin capacity to 130,000 tons/year. Main contractors: Stone & Webster (Engineering) Ltd.	In production June 1960
British Oxygen Research & Engineering Ltd.	First U.K. liquid helium plant at Mordern with capacity to meet all U.K. demands from research and industry	In production summer 1960
British Petroleum Co. Ltd.	Isle of Grain solvents plant for volatiles specialities in naphthalene-gasoline range. 30,000 tons of solvents a year. Main contractors: Constructors John Brown Ltd., Motherwell Bridge & Engineering Ltd., and George Wimpey & Co. Ltd.	In hand
British Titan Products Ltd.	250 tons/day sulphur-burning contact sulphuric acid plant at Billingham. Contractors: Chemical Construction (G.B.) Ltd.	Commissioned early-1960
Carbide Industries Ltd.	50,000 tons/year carbide plant at Maydown, N.I., built to supply acetylene needs of Du Pont neoprene works. Main contractors: British Oxygen Engineering Ltd.	In production May 1960
Carless, Capel & Leonard Ltd.	Expansion at one of Hackney Wick distillation plants to raise capacity for aromatic solvents by about 4 million gall./year. Engineering by Carless, Capel & Leonard staff	On stream September 1960
Clayton Aniline Ltd.	£6 million modernisation and development scheme at Manchester	Completion due by 1964-65
	New dyestuffs plant under above scheme. Main contractors: Humphreys & Glasgow Ltd.	Completed mid-1960
Coalite & Chemical Products Ltd.	Plant for solid chemicals, will raise existing outputs, particularly for catechols	Due in production end-September 1960
Colvilles Ltd.	Blast furnace gas cleaning plant at Ravenscraig with capacity for 15 million cu. ft./hour of gas. Contractors: Head Wrightson Iron and Steel Works Engineering Ltd.	Due for completion by mid-1961
	Two further coke-oven batteries, to raise coal-processing capacity at Ravenscraig to 1.75 million tons/year, with associated by-products recovery plant. Main contractors: Woodall-Duckham Construction Co. Ltd.	Due in production by end-1962
Consett Iron Co. Ltd.	Two Kaldo and two L.D. oxygen units (worth £700,000) to produce 750,000 tons/year of steel. Contractors: Head Wrightson Iron and Steelworks Engineering Ltd.	On stream end-1960
Courtaulds Ltd.	10 million lb./year extension of Courtelle acrylic fibre plant at Grimsby to raise capacity to 22 million lb./year	Due in production early-1961
	10 million lb./year expansion of Courtelle acrylic fibre plant to bring Grimsby total capacity to 32 million lb./year	Preparatory work in advanced stage for completion late-1961, or early-1962
	Carbon tetrachloride plant at Trafford Park. Construction by Courtaulds	In hand
	Plant at Aber Works for production of bleached sulphate pulp. Initial output of 50,000 tons/year	Due in production by end-1960
Cray Valley Products Ltd.	£100,000 extension to synthetic resin plant at Machen, Mon., to raise capacity by 50%	Completed
Croid Ltd.	Initial stage for production of emulsion glues at Newark-on-Trent. One of first U.K. plants for polymerisation of p.v.a. and other emulsion glues.	Completed
	Extension to above plant which is working a three-shift day	In hand
Crosfield, Joseph, & Sons Ltd.	Further extension to Warrington plants will extend soap-making production	Planned
Cyanamid of Great Britain Ltd.	£430,000 melamine plant at Gosport with capacity for 6 million lb./year	Due in production about end-1960
	Large-scale fermentation plant at Gosport pharmaceutical laboratories	In hand

COMPANY	PROJECT	DATE
Distillers Company Ltd., The Chemical Division	£2 million acetic acid plant at Hull to use new D.C.L. process will be first in Europe. Main contractors: Lummus Co. Ltd.	Due on stream early-1962
	Phthalate plasticisers plant at Hull	In full production
Distillers Company (Biochemicals) Ltd., The	Three-storey production building as part of modernisation and expansion of capacity at Speke, including general extension of tabletting storage, etc. Cost: buildings and air-conditioning, £170,000; plant and services, £280,000. Contractors: D.C.L. Engineering Division, and Sir Alfred McAlpine & Son Ltd.	Completed July 1960
Distrene Ltd.	Extension to polystyrene capacity	Completed
Dow Agrochemicals Ltd.	£1 million plant at King's Lynn to produce Dowpon, first stage of large-scale agricultural chemicals project. Contractors: Constructors John Brown Ltd.	Completed June 1960
Du Pont Co. (United Kingdom) Ltd.	50 million lb./year neoprene plant at Maydown, N.I. Designed and constructed by Du Pont	On stream May 1960
	20% increase in Maydown neoprene capacity	Planned
Durham Chemicals Ltd.	Plasticiser plant at Birtley	Commissioned February 1960
East Midlands Gas Board	Frodingham desulphurising unit with 5 million cu. ft. day capacity at Basford Gasworks. Contractors: Henry Balfour & Co. Ltd.	In hand
Esso Petroleum Co. Ltd.	2nd steam cracker (£5.5 million) at Fawley to produce ethylene, propylene and butadiene. On completion will be largest of its kind in Europe; part of ethylene will be piped to I.C.I., Severnside. Contractors: Foster Wheeler Ltd.	Due for completion by end-1961
	£4.3 million butyl rubber plant at Fawley with 30,000 tons/year capacity. Will meet all U.K. needs and give export surplus. Contractors: Not yet appointed	Due for completion 1962-63
	Fawley-Severnside pipeline to take ethylene to I.C.I. ethylene oxide plant	Planned
	Plant for production of lube-oil additives to replace smaller unit, raising capacity by 2½ times to 11,000 tons/year. Contractors: Foster Wheeler Ltd.	Due on stream early December 1960
Evans Medical Ltd.	New virus division at Speke comprising tissue culture department, egg culture department and virus research laboratories. Contractors: William Neill & Son (St. Helens) Ltd.	Due for completion by end-1960
Farmers Co. Ltd.	50 tons/day sulphuric acid plant at Brigg. Main contractors: Simon-Carves Ltd.	In hand
Fine Dyestuffs & Chemicals Ltd.	First installation on 13-acre site at Winsford, Ches., will be used initially for various specialty chemicals, dyestuffs intermediates and oxidised waxes. Contractors not yet appointed; project at present handled by Cremer & Warner	Due for completion by mid-1961
Fisons Fertilizers Ltd.	£1 million extensions to Immingham works to raise phosphoric acid capacity and to make ammonium phosphate for first time and to speed materials handling. To be engineered by Fisons	Phosphoric acid extension due for completion June 1961
Forth Chemicals Ltd.	Extension to styrene monomer and toluene plant to expand styrene monomer capacity to 50,000 tons/year. Contractor: Monsanto Chemicals Ltd. Engineering Department	Due for completion in 1961
Garton Sons & Co. Ltd.	£1 million new works at Battersea to double production of glucose and other products, including dextrose monohydrate	Completed
Goulding, W. and H. M., Ltd.	200 tons/day sulphuric acid plant at Dublin. Contractors: Simon-Carves Ltd.	Due in production mid-1961
	£2 million project at Cork, including £1 million contract with Simon-Carves Ltd. for sulphur burning contact sulphuric acid plant with 70,000 tons/year 100% acid capacity and plants for production of 200,000 tons/year superphosphates and compound fertilisers	Completed
Graesser, R., Ltd.	Continuous tar acid distillation plant at Sandycroft with feed rate of 500 g.p.h. of crude tar acid. Contractors: Newton Chambers & Co. Ltd.	On stream February 1960

COMPANY	PROJECT	DATE
Guernsey Gas Light Co. Ltd.	Otto continuous catalytic reforming plant producing town gas from commercial methane. Contractors: Simon-Carves Ltd.	In production June 1960
Hedley, Thomas, & Co. Ltd.	£58,000 extension to West Thurrock soap and detergents process unit. Main contractors: Holland & Hannen & Cubitts (Great Britain) Ltd.	Due for completion end-1960
Hedon Chemicals Ltd.	Modification to vinyl acetate plant at Hull. Main contractors: D.C.L.	Due for completion early-1961
Howards of Ilford Ltd.	Stage 2 of rebuilding and enlarging aspirin production facilities (stage 1 completed in 1959)	Due for completion early-1961
	Major expansion of sorbitol capacity by 1,500 tons/year. Contractors: L. A. Mitchell Ltd.	Due for completion early-1961
	No. 1 phthalic anhydride plant producing 3,000 tons/year by Ftalital process. Contractors: Chemical Engineering Wiltons Ltd.	In full operation early-1960
	No. 2 phthalic anhydride plant producing 3,000 tons/year. Contractors not disclosed	Planned for operation autumn 1961
	New cyclic ketones plant of considerably increased capacity working improved processes for production of Sextone (cyclohexanone) and Sextone B (methylcyclohexanone). Capacity 2,000 tons/year. Contractors: W. J. Fraser & Co. Ltd.	Due for completion early-1961
	New plant of increased capacity for plasticisers: cyclohexanol and methylcyclohexanol phthalate ester plasticisers. Capacity 1,000 tons/year	For completion early-1962
Imperial Chemical Industries Ltd.		
Alkali Division	Modernisation of Winsford, Ches., salt mine	Completed autumn 1960
Billingham Division At Billingham	Ammonia-from-oil project with 60,000 tons/year capacity	In production
	Plant for sodium fluorosilicate raises total capacity by over 50%	Completed
	Extension to Drikold plant	In production
	Extension to argon plant	Under construction
At Heysham	Methanol extensions to raise capacity by over 30,000 tons/year. Engineered by I.C.I.	In full production, March 1960
	Extension to Heysham methanol plant by further 45,000 tons/year. Engineering to be handled by I.C.I.	Due on stream 1962
At Severnside	£10 million project to produce 100,000 tons/year ammonia plus associated plants for urea and fertilisers	Due on stream 1962; site preparation started
Dyestuffs Division	Major Fleetwood plant for production of diisocyanates	In hand
	£10 million plant with capacity of 15,000 tons/year for production of nylon 6 polymer. First U.K. nylon 6 plant	In hand
Fibres Division	Further extension of Terylene capacity at Wilton to raise output to 50 million lb./year	Due for completion 1960-61; major parts already in production
	Terylene fibre plant at Kilroot, Co. Antrim, N.I.	Planning stage
General Chemicals Division	New £1 million perchloroethylene plant at Runcorn with 20,000 tons/year capacity	Due for completion mid-1961
	Chlorine and caustic soda plant extensions at Runcorn and Fleetwood. Total increase of chlorine capacity, 80,000 tons/year	Sanctioned in 1960
	Plant to produce and pack liquid fluorine in development quantities at Runcorn	To be commissioned shortly
	Second closed carbide furnace at Runcorn with 85,000 tons/year capacity	Due for completion mid-1961
	Phosgene plant at Fleetwood with 10,000 tons/year capacity	Due for completion early-1961
	£3 million acrylonitrile plant	In production early-1960
	Extensions to high-purity silicon plant to raise capacity to 4,000 lb./year	Completed end-1959
	Extensions to silicon plant, raising capacity to 8,000 lb./year	Completed 1960

COMPANY	PROJECT	DATE
Heavy Organic Chemicals Division		
At Severnside	Plants for 35,000 tons/year of ethylene oxide, ethylene glycol and derivatives. Scientific Design to design EO plant; others to be designed by I.C.I. Feedstock will be piped from Esso, Fawley	Due in production end-1961
At Wilton	New plant for propylene oxide and propylene glycol, following raising of propylene output to 80,000 tons/year	Commissioned early-1960
	Extension of ethylene capacity, by modification of olefin plants, from 111,000 tons/year to 140,000 tons/year, with corresponding orders of increase in capacities for propylene, butadiene and other C_4 hydrocarbons	In hand
Metals Division	£1 million wrought beryllium plant at Kynock Works, Witton. Capacity is between 7 and 10 tons/year	Commissioned end-1959
Nobel Division	Nitroglycerine plant based on injector process and centrifugal separation developed by Nitro Glycerin Aktieboleget, Sweden	In routine production
At Ardeer	Nitric acid plant, using intermediate pressure ammonia oxidation process (I.O.P.); capacity sufficient to replace existing ammonia plants	Completed June 1960
	Second nitric acid concentration plant by magnesium nitrate route	Due for completion end-1960
	Extensions to silicones plant	In hand
At Dumfries	Methyl cellulose plant	Construction now completed
Plastics Division	Plant to produce polyvinylidene chlorine copolymers. Site not named	In production by early-1961
At Dumfries	Major plant for production of Melinex polyester film	Due for completion by end-1960
At Hillhouse	10,000 tons/year expansion to vinyl chloride polymers plant, raising capacity to 80,000 tons. Parallel extension to p.v.c. compounding capacity. To be engineered and built by I.C.I.	Due for completion mid-1961
At Wilton	10,000 tons/year Propathene polypropylene plant. Contractors: Constructors John Brown Ltd.	Due in production before end-1960
	No. 4 polythene plant. Total polythene capacity will increase to 105,000 tons/year during 1960	In production
	50% extension to Perspex capacity	Completed early-1960
Imperial Smelting Corporation Ltd.	Extensions at Avonmouth to Isceon fluorocarbon plant (brought into operation in 1959)	Due for completion before end-1960
	Extensions to hydrofluoric acid plant at Avonmouth	Due for completion before end-1960
International Synthetic Rubber Co. Ltd.	Expansion of SBR synthetic rubber output from 70,000 to 90,000 tons/year. Contractors: P. G. Engineering Ltd.	Due for completion by end-1960
	First large-scale U.K. plant to produce high-solids SBR latex at Hythe. Capacity is 3,500 tons/year, which may be doubled by end-1960	In production May 1960
Johnson, Matthey & Co. Ltd.	Production of cadmium pigments and colours to be transferred to new Kidsgrove, nr. Burslem, site from the two Burslem works	In hand
Lancashire Tar Distillers Ltd.	Naphthalene refinery at Cadishead. Main contractors: Chemical Engineering Wiltons Ltd.	In hand
	Pyridine extraction unit of 5 tons/day capacity	Completed
Laporte Acids Ltd.	Ferric chloride plant at Leeds	In hand
Laporte Chemicals Ltd.	First U.K. plant for sodium chlorite at Luton. Construction by L.I.L. engineers	Completed
Laporte Titanium Ltd.	£3.5 million development scheme at Stallingborough to raise titanium oxide output from 30,000 tons/year to 50,000 tons/year.	Due for completion in 1962
	Stallingborough project includes 300 tons/day sulphuric acid plant. Main contractors: Simon-Carves Ltd.	Due for completion in 1961
Lawes Chemical Co. Ltd.	Expansion to fertiliser capacity	Planned
Marchon Products Ltd.	Extension to Whitehaven fatty alcohol plant to raise capacity by more than 50%	Due in production before end-1960
Merck Sharp & Dohme Ltd.	£700,000 pharmaceutical works at Hoddesdon, Herts, as part of 10-year expansion programme. Products include steroids, oral diuretics, etc.	Completed May 1960

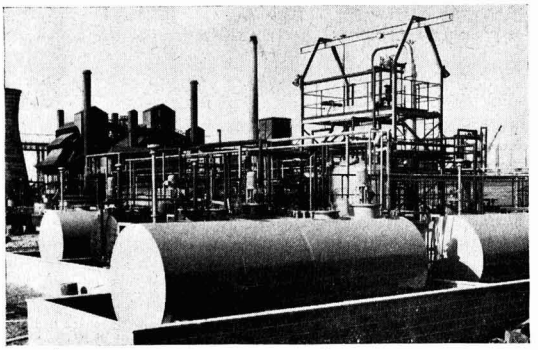
COMPANY	PROJECT	DATE
Midland Silicones Ltd.	Silicone fluid production unit to more than double existing fluid product capacity at Barry. Constructed by Midland Silicones	For completion in 1960
	New primary chlorosilane plant at Barry with considerable increase in capacity. Constructed by Midland Silicones	To be completed in 1961
	Additional distillation plant capacity for certain chlorosilane intermediates. Constructed by Midland Silicones	To be completed in 1961
	New plant for manufacture of silicone emulsions representing very considerable increase on present capacity	To be completed in 1961
Monsanto Chemicals Ltd.	Extensions to Fawley high-pressure polythene plant at Fawley, raising capacity from 10,000 tons/year to 15,000 tons/year	Completed
	Maleic anhydride plant at Newport, Mon., with 15 million lb./year capacity. Contractors: Scientific Design Inc.	Due for completion December 1960
	Plant for ultra-pure silicon at Ruabon. Contractors: M.C.L. Engineering Department	Due for completion in 1960
	Plant for foamable polystyrene at Newport, Mon. Contractors: M.C.L. Engineering Department	Due for completion October 1960
	Plant for impact polystyrene at Newport, Mon. Contractors: M.C.L. Engineering Department	Due for completion December 1960
Morson, Thomas, & Son Ltd.	£35,000 solvent recovery plant at Ponders End works. Contractors: Autodrome, Elliotts, John Dore, Jennings Brothers	Completed April 1960
Murex Ltd.	Tantalum/niobium plant at Rainham; capital outlay £400,000	Fully operational spring 1960
Murgatroyd's Salt & Chemical Co. Ltd.	£1.5 million extension of facilities for production of chlorine and caustic soda by installation of further battery of mercury cells powered by semi-conductor rectifiers. To raise capacity for liquid chloride by 50%. Project managers: D.C.L. Engineering Division; main contractors: W. J. Fraser & Co. Ltd.; mercury cells, Frederich Uhde GmbH; rectifiers: Westinghouse Brake & Signal Co. Ltd.	Due for completion in late-summer 1961
National Adhesives Ltd.	Additional polyvinyl acetate emulsion plant at Slough. Contractors: Blaw Knox Chemical Engineering Ltd.	Completed mid-1960
National Coal Board	£1 million extension to Phurnacite plant at Aberdare, to raise total output by 160,000 tons/year to 800,000 tons/year, by installing extra battery of ovens—making five. Coal handling, briquetting and by-product plant for crude tar, concentrated ammonia liquor and gas to be extended to deal with extra needs. Main contractors: Disticoke, Paris	Due for commissioning by December 1961
	Gibbons Ruhrgas Vertex slagging producer at Manvers Main Coking Plant to make 17,000 therms of producer gas a day at a coal consumption of 125 tons/day. Gas will be used for coke oven underfiring to release rich coke-oven gas for sale. Capital cost about £600,000. Main contractors: Gibbons Brothers Ltd.	Due for commissioning August 1961
North Eastern Gas Board	Natural gas reforming plant at Whitby, N. Yorks., with capacity of 1.25 million cu. ft./day. Designed, engineered and installed by Power-Gas	Completed September 1960
North Thames Gas Board	Naphthalene plant at Beckton. Main contractors: Chemical Engineering Wiltons Ltd.	In hand
	£225,000 pilot Rummel twin-shaft slagging gasifier at Bromley. (2 million cu. ft. blue water gas/day). Contractors: Simon-Carves Ltd.	For completion mid-1961
North Western Gas Board	First U.K. gas dehydration plant at Preston. Capacity, 5 million standard cu. ft. of gas/day. Main contractors: W. C. Holmes	Installed April 1960
	Single-unit automatic MS gas reforming plant at Crewe to gasify light distillate; capacity 2.2 million cu. ft. of 450 B.Th.U. gas a day. Contractors: Woodall-Duckham Construction Co. Ltd.	Due in production by early autumn 1961
	Onia-Gegi catalytic reforming plant at Partington with designed output of 12 million cu. ft. /day of town gas. Contractors: Humphreys & Glasgow Ltd.	Due for completion by January 1962
Northern Gas Board	Concentrated ammonia liquor and wet purification plants at Hendon. Contractors: Simon-Carves Ltd.	Completed
	Catalytic oil-gas plant at Darlington with capacity of 2 million cu. ft./day. Designed, engineered and installed by Power-Gas	Completed

COMPANY	PROJECT	DATE
Parke Davis & Co.	14,750 sq. ft. floor area building at Hounslow to house plant for production of hard gelatine capsules. Fully air-conditioned with separate control of capsule manufacture, filling and banding, giving conditions suitable for all processes. Main contractors: Truett & Steel	Due for completion in 1960
	Building at Hounslow for pilot plant processes in connection with product development	Due for completion in 1960
Plastanol Ltd.	Additional production capacity for synthetic resins at Belvedere, Kent at estimated cost of £30,000. Main contractor: Hygrotherm Engineering Ltd.	Due for completion by February 1961
Port Talbot Chemical Co. Ltd.	First U.K. hydrorefining plant to refine coke-oven crude benzole to pure benzene. Crude capacity is 4.5 million gall./year. Contractors: Distillation section: R. & J. Dempster Ltd.; Lurgi hydro-refining unit and installation: Simon-Carves Ltd.	Due in production by end-1960
Reichhold Chemicals Ltd.	Extension to phthalic anhydride plant	Completed end-1959
	New plant to double capacity for polyester resins, at Speke	Due on stream end-1960
Richard Thomas & Baldwins Ltd.	140 coke ovens at Newport, Mon. to carbonise 2,860 tons/day dry coal plus tar recovery (650-700 gall./week), crude benzole (4,500-5,000 gall./week) and sulphate of ammonia (150 tons/week) plants, at Newport, Mon. Contractors: Simon-Carves Ltd.	In production September-October 1961
Richardsons Chemical Manure Co. Ltd.	'Very substantial' plant at Belfast plant to make concentrated complete fertilisers	In production by 1962
Robinson Brothers Ltd.	Plant for manufacture of N-methyl morpholine	On stream spring 1960
Scottish Agricultural Industries Ltd.	£1 million reconstruction of Sandilands, Aberdeen, fertiliser works to produce C.C.F. products	Due for completion mid-1962
	£500,000 basic slag works at Scunthorpe, Lincs., with capacity for 120,000 tons/year high grade slag	Due in production spring 1961
Scottish Gas Board	£6 million Lurgi pressure gasification plant at Westfield. To supply new high pressure grid with 15 million cu. ft. gas/day. Main contractors: Humphreys & Glasgow Ltd. in association with P. G. Engineering Ltd.	Stage 1 to be completed 1960-61 (15 million cu. ft. gas/day); stage 2 by 1962-63 (30 million cu. ft./gas/day)
Scottish Tar Distillers Ltd.	Extension to Falkirk plant for extraction and refining of naphthalene. Contractors: Chemical Engineering Wiltons Ltd.	Due for commissioning early-1961
Shell Chemical Co. Ltd.	Polyolefins plant at Carrington, nr. Manchester for production of high- and low-density polythene and polypropylene. Main contractors: Matthew Hall & Co. Ltd. and George Wimpey & Co. Ltd.	Due for completion in 1961
	Styrene monomer plant with 18,000 tons/year output at Carrington. Main contractor: Matthew Hall & Co. Ltd.	On stream 1960
	Extension to Carrington polystyrene plant, raising output to 18,000 tons/year. Main contractors: W. J. Fraser & Co. Ltd.	Completed 1960
	Direct oxidation ethylene plant at Carrington. Main contractors: Kellogg International Corp.	Completed 1960
	Stanlow-Carrington pipeline. Main contractor: A. Monk	Completed 1960
	Plant for U.K. production of polyisoprene	Planned
Shell Refining Co. Ltd.	Micro-crystalline wax plant at Stanlow	In continuous production since March 1960
Sheppey Glue & Chemical Works Ltd.	Compound fertiliser granulation plant at Queenborough, Kent, will use 'fluidised bed', believed to be first in U.K. fertiliser industry. Rate capacity is 8-10 tons/hour of granular product or 2.5 times greater than previous plant capacity. Designed by own staff and mainly constructed by them	In production 1960
South Eastern Gas Board	Benzole recovery and desulphurising plant at Isle of Grain works. Segas works. Main contractors: W. C. Holmes & Co. Ltd.	On stream early-1960
	Plant for recovery of crude tar acids and crude tar bases from naphthas and creosote oils at Greenwich Tar Works. Output of crude tar acids will be about 600,000 galls./year and tar bases, nearly 30,000 gall./year. Main contractors: Whessoe Ltd.	Due for completion December 1960

COMPANY	PROJECT	DATE
South Western Gas Board	Frodingham desulphurising unit at Exeter with 8 million cu. ft./day with dry contact sulphuric acid plant supplied by P. G. Engineering Ltd. Contractors: Henry Balfour & Co. Ltd.	In hand
South Western Tar Distilleries Ltd.	Phthalic anhydride plant at Totton Works, Southampton, with capacity of 3,000-4,000 tons/year. Constructed by company in co-operation with Saint-Gobain, Paris	Commissioned August-September 1960
Southern Gas Board	Three gas dehydration plants at Southampton, Reading and Hilsea. Main contractor: Simon-Carves Ltd.	In production
	Catalytic oil-gas plant at Reading with capacity of 7 million cu. ft./day. Designed, engineered and installed by Power-Gas	Completed
Steel Company of Wales Ltd.	£1 million plant to produce 566 tons/day of 90% purity oxygen. Contractors: British Oxygen Gases Ltd. who will operate the plant	Due in production by January 1962
Steetly Co. Ltd.	Dolomite quarry and process unit at Whitewell, nr. Worksop. Project cost is £1.6 million	Operating in April 1960
Stewarts & Lloyds Ltd.	Oxygen plant at Corby with 200 tons/day output, first tonnage unit to be owned and operated by U.K. steelmaker. Contractors: Air Products (Great Britain) Ltd. in association with Butterley Group	Completed mid-1960
Sto-Chem Ltd.	Synthetic rubber latices to be produced in £1 million plant in Midlands with 8 million lb./year capacity	To be completed by autumn 1961
Thompson & Capper Ltd.	Increased facilities at Speke for tabletting service covering tablets for pharmaceutical industry and general industrial tabletting. Extra space will be made available for production and packing by building of new office block. Main contractors: Worthingtons (Contractors) Ltd., Liverpool	Due for completion September 1960
Thorium Ltd.	Extension to thorium nitrate plant	Completed
United Coke & Chemical Co.	Contract for battery of 43 coke-ovens and demolition of derelict battery, together with new by-products recovery and benzole plants. Main contractors: Woodall Duckham Construction Co. Ltd.	Due for completion by end-1962
U.K. Atomic Energy Authority	Second primary separation plant to service fuel elements at Windscale Works. Main contractors: Mitchell Construction Co. Ltd.	Due for completion in 1963
Uclaf Ltd.	Extra pure silicon production unit at Stratford, London E, using Pechiney process	In hand
Union Carbide Ltd.	£3 million Hythe plant for ethylene oxide, ethylene glycols, polyethylene glycols, glycolethers, ethanolamines, polyethylene glycol ethers, etc. Capacity is 45 million lb./year of products. Main contractors: George Wimpey & Co. Ltd.	Commissioned and on stream February 1960
	Extension to polythene plant at Grangemouth. Capacity to be raised from 10,000 to 13,000 tons/year. Main contractors: George Wimpey & Co. Ltd.	Due on stream end-1960
Vinatex Ltd.	New plant for p.v.c. compounding at Havant	In production July 1960
Walker Chemical Co. Ltd.	Development scheme for Bury and Bolton chemical plants includes units to make new of chemicals	First plants due in production by end-1960
West Midlands Gas Board	£6.5 million 40 million cu. ft./day high-pressure coal gasification plant, inc. tonnage oxygen units, Lurgi plant, and plants for by-products, gas treatment and enrichment, etc. Site: Coleshill. Contractors: Woodall Duckham Construction Co. Ltd.	Full gas production towards end 1963
Whiffen & Sons Ltd.	Additional works space at Willow Works, Loughborough made available by erection of new office block	Process equipment installation in hand
Yorkshire Dyeware & Chemical Co. Ltd.	Expansion of existing Hunslet plant	Planned

Project Progress, 1960

Contractors Have Busy Year at Home and Overseas



Completed solvent recovery unit at the Ponders End works of Thomas Mason and Son Ltd., taken from the south-east corner of the site. In the foreground is a 10,000 gall. raw methanol tank

Major Overseas Contracts for P.G. Engineering

IN addition to several interesting projects being carried out in the U.K., including a plant to reform natural gas which will be the first of its kind for this application in this country, **P.G. Engineering Ltd.** (associate of the Power-Gas Corporation Ltd.) have been awarded a number of large contracts overseas during the past year.

A plant for the production of polystyrene with rated capacity of 5,000 tons/year is to be supplied for V/O Techmashimport, Moscow. The process design is supplied by B.X. Plastics Ltd., who have recently installed a new unit of this type. Engineering and equipment supply is being carried out by P.G. Engineering.

Brockville Chemicals Ltd., of Canada, have awarded a contract to P.G. Engineering Ltd. and their associated company Power-Gas Canada Ltd., Montreal, for the complete design, construction and commissioning of a hydrogen plant at their new works now being erected near Maitland, Ontario. The plant will produce 15 million cu. ft. of hydrogen daily, mainly for ammonia synthesis, using as a feedstock natural gas delivered by pipeline from Western Canada. It will consist of Texaco partial oxidation units operating at about 400 p.s.i.g. and carbon monoxide in the Texaco gas will be converted to hydrogen and carbon dioxide in a P.G. design of pressure conversion plant using P.G. catalyst; CO_2 will be removed from the converted gas by the Benfield hot potassium carbonate and monoethanolamine absorption processes.

The plant is scheduled for completion early in 1961 and the value of this contract is about $1.8 million.

In addition P.G. Engineering have received a contract from Fertilisers and Chemicals, Travancore Ltd., South India, for a Texaco partial oxidation gasification plant to produce carbon monoxide and H, followed by high pressure CO conversion, removal of CO_2 and residual H_2S by water scrubbing. Initially the plant will process naphtha, but is laid out so that if fuel oil is to be used the additional acid gas purification plant can be added. One of the interesting features of this plant is that carbon produced in the Texaco generator is recovered and recycled.

The Stockton company, with associates in South Africa, Ashmore, Benson, Pease and Co. Africa (Pty.) Ltd., is also carrying out an order valued at over £1 million for the Rhodesia Broken Hill Development Co. Ltd. The order is for a zinc and lead I.V. furnace which will be installed at Broken Hill, Northern Rhodesia, and the contract includes the engineering, procurement and construction of the whole of the plant within the furnace area covering foundations, plant and equipment. Process design is being supplied by Imperial Smelting Processes Ltd. and on completion at the end of 1961 the plant will be one of the first four operating in the world.

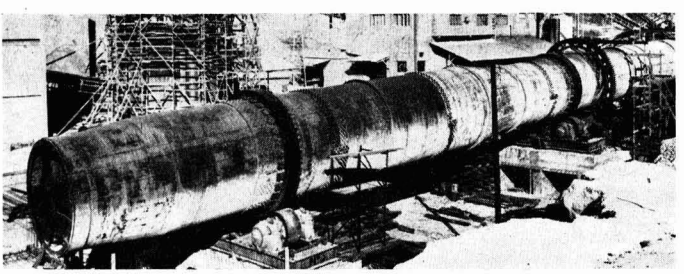
It was announced in the CHEMICAL AGE 1959 survey of U.K. chemical projects that the company had signed an agreement with the Vetrocoke Co. of Italy to install plant using the Giammarco-Vetrocoke process. Earlier this year the company received a contract from Japan, for the design and engineering of process plant to treat ammonia synthesis gas, which included this process. The plant is designed to deal with about 500,000 cu. ft. of synthesis gas an hour and consists of a P.G. high pressure carbon monoxide conversion unit, using P.G. manufactured catalyst specially developed by the company for high pressure use, followed by hydrogen sulphide and carbon dioxide removal in a two-stage plant employing the Vetrocoke process.

Engineering will be carried out at Stockton-on-Tees and completion of the contract is planned for early next year. The contract was obtained through the company's associates in Japan, Mitsubishi Chemical Machinery Manufacturing Co. Ltd.

P.G. Engineering, together with Humphreys and Glasgow Ltd., and Simon-Carves Ltd. have formed Chemical Works Projects Ltd., a joint company, to supplement their normal activities by undertaking contracts for large fertiliser and chemical projects overseas. The joint company, thereby, will be able to call on extensive resources.

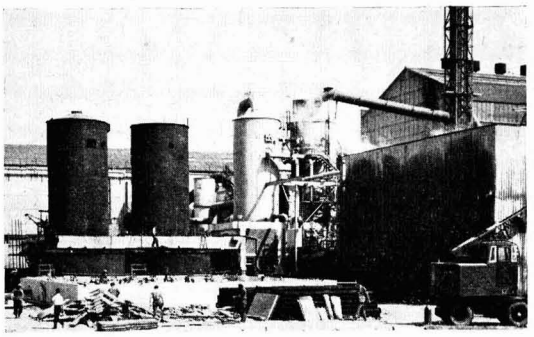
In April of this year formation of Parsons Powergas, with headquarters in London, was announced as a joint enterprise by the Ralph M. Parsons Co., engineers-constructors, of Los Angeles and P.G. Engineering Ltd. Complete engineering and construction of petroleum, petrochemical and related plants will be performed by Parsons Powergas, backed by the combined resources and experience of the parent companies.

180-ft. Rotary Kiln for Israel



Under a recent contract, Edgar Allen and Co. Ltd., Sheffield 9, have supplied this rotary kiln, 180 ft. long by 9 ft. and 10 ft. 6 in. in diameter, to the Lime and Stone Production Co. Ltd., Haifa, a member of the Solel Boneh Group in Israel. The contract also covers pre-heater, grate cooler and ancillary equipment, for the exploitation of Israel's quarries. The plant is to be sited at their Shfeya Quarry, near Haifa, to deal with an input of 13 tons/hour of limestone, which is at present rejected as unusable in their existing process. Photo by courtesy of the Lime and Stone Production Co.

Project Progress



Work in progress on the new sulphuric acid plant that Simon-Carves are erecting at Stallingborough for Laporte Titanium Ltd

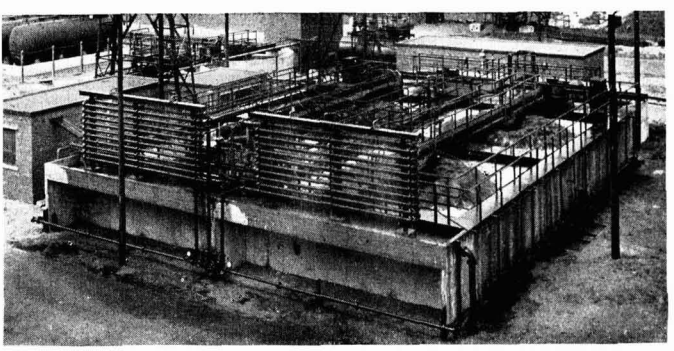
Simon-Carves Occupied with Contracts at Home and Overseas

SIMON-CARVES LTD., Cheadle Heath, Stockport, who recently formed a biological effluent advisory service with Monsanto Chemicals Ltd. (CHEMICAL AGE, 13 August, p. 235), are busily occupied with numerous contracts in hand. Contracts recently completed include biological effluent treatment plants for Richard Thomas and Baldwins Ltd., at Ebbw Vale, and John Summers and Sons Ltd., at Shotton. Also recently completed are a continuous catalytic reforming plant for the Guernsey Gas Light Co., and a sulphuric acid plant for Hindustan Steel Ltd.

Three sulphuric acid plants are in hand in the U.K. and four overseas. The largest are a 300 tons/day unit for Laporte Titanium Ltd., at Grimsby, and a 200 tons/day unit for W. and H. M. Goulding, Dublin. In the 50 tons/day class, Simon-Carves are working on plants for the Farmers' Company, Brigg, Jayshree Tea Gardens, India, the Phosphate Co., India and Andhra Sugars, India. They have a 22 tons/day plant in hand for the Dutch State Mines.

Fertiliser factories in hand are an extension to the Marine Works, Cork, of W. and H. M. Goulding, and a complete compound unit for East India Distilleries and Sugar Factories. Other chemical plants in hand are the supply of U.K. materials and erection of Lurgi benzole hydrorefining plant at Margam for the Port Talbot Chemical Co.; high-pressure polythene plants for Petroleos Mexicanos and Yugoslavia; coke-oven by-products plants for Hindustan Steel Ltd., at Durgapur, and for the Australian Iron and Steel Co., at Port Kembla; and a pilot Rummel twin-shaft slagging gasifier for the North Thames Board.

Biological effluent treatment plants are in hand for Richard Thomas and Baldwins at their Spencer Works, Newport, for Texas Instruments Ltd., Bedford and for Hindustan Steel at Durgapur.



Biological plant by Simon-Carves, for the treatment of coke-oven effluent at the Shotton steelworks of John Summers and Sons Ltd.

B.A.S.F. Order 809 Leonard Thermostatic Mixing Valves

An order for 625 of their Leonard thermostatic mixing valves was recently received by **Walker, Crosweller and Co. Ltd.,** Cheltenham, from Badische Analin und Soda Fabrik, Ludwigshafen. Since 1 February 1960, B.A.S.F. have ordered a total of 809 Leonard thermostatic mixing valves, which represents a sterling value of above £12,500.

Courtaulds Start Delivery Under £15 M. Soviet Contract

DELIVERIES have started under the three complete plant contracts that **Courtaulds Ltd.,** 16 St. Martin's-le-Grand, London E.C.1, secured in April 1959 for delivery to the Soviet Union. The projects, worth a total £15 million, are being handled by Prinex Ltd., a Courtaulds subsidiary. They call for complete plant and machinery for an acrylic fibre factory using the Courtelle process, an acetate yarn factory and a viscose tyre cord factory.

This summer, Courtaulds secured a £2 million contract from Yugoslavia for the supply of a complete plant and machinery for an acrylic fibre factory, also using the Courtelle process. Deliveries are to start next year and the factory is scheduled to be in operation in 1962. Plant and machinery are being supplied through Luna Ltd., a Courtaulds subsidiary.

C.J.B. Install over 100 Kittel Plates in U.K.

AMONG a wide variety of projects carried out during 1960, **Constructors John Brown Ltd.,** C.J.B. House, Eastbourne Terrace, London W.2, supplied a number of plants to Pakistan oil mills for bleaching, deodorising and hardening of edible oils. Considerable progress has been made at Shiraz, Iran, with a fertiliser plant. C.J.B. are responsible for all the gas transmission lines, for gas purification and for the erection of the complete fertiliser factory which includes ammonia synthesis, urea, nitric acid and ammonium nitrate.

In the U.K., the company successfully completed the first production plant for Dow Agrochemicals Ltd., while excellent progress has been made with the Propathene polypropylene project at Wilton for I.C.I. Construction here has been ahead of schedule and I.C.I. have already announced that the plant should be in production before the end of this year.

C.J.B. state that an increasing number of columns are being supplied with Kittel plates. More than 100 Kittel installations are now operating in the U.K., covering distillation at high vacuum, atmospheric and elevated pressures, and gas scrubbing.

Compressors and CO_2 Plant by Lloyd and Ross

NEW plant and equipment which **Lloyd and Ross Ltd.,** 58 Victoria Street, London S.W.1, representatives of Maschinenfabrik Esslingen, have supplied or are supplying includes an ethylene compressor for use in this country and three sets of helium compressors against a Ministry of Works contract.

Three CO_2 plants working on the fuel system have been supplied for the Middle East and the Mediterranean area and in the case of the former, the plant was designed so that virtually no cooling water is required. A recently completed contract was for a liquid CO_2 plant for Ceylon. The firm is currently supplying a 5 tons/day dry ice plant for the Far East, based on the recovery of fermentation CO_2.

Xylol and *p*-Xylene Pipe Contracts for Shaw-Petrie

AMONG projects completed in 1960 by **Shaw-Petrie Ltd.**, pipework contractors, North Hillington, Glasgow S.W.2, were the fabrication and erection of a 4-in. N.B. xylol main between Teesport and the north-east area of I.C.I. Wilton Works, via the Billingham-Wilton link route. Also for I.C.I. Billingham, Shaw-Petrie handled fabrication and erection of 6-in. steam traced paraxylene, complete with condensate pipework.

At the I.C.I. Nobel Division plant, Dumfries, the firm fabricated and erected mild steel and p.v.c. pipework for the new methyl cellulose plant. For the same division, but at Ardeer, mild steel and stainless steel pipework was fabricated and erected and titanium pipework erected in connection with the nitric acid concentration plant. In addition small vessels and tanks were fabricated. For the Dyestuffs Division at Grangemouth, the firm fabricated and erected steam piping.

Other contracts include: Donaldson Bros., Alloa, 2-in. aluminium branch line; Monsanto Chemicals, Grangemouth, fabrication of a set of 5% chrome, 0.5% moly. pipework; H. and E. Lintott, stainless steel radiant heater for Monsanto; George Wimpey at Grangemouth, fabrication of mild steel and stainless steel pipework for Union Carbide's polythene plant; William Butler, Aberdeen, fabrication and erection of pipework for second paper size unit; Matthew Hall and Co. Ltd., fabrication of mild steel and stainless steel pipework for Shell Chemical at Carrington.

5,000 ft. Effluent Line for Monsanto

Surface Protection Ltd., 18 London Street, London E.C.3, are primarily engaged in the internal coating of pipelines in situ by means of the American Pipeline process, which has been used to coat many thousands of miles of oil, gas, water and products lines in the U.S. By this method up to 20 miles of underground pipeline can be cleaned and coated in one operation by forcing first acids and solvents and finally epoxy coating material along the line between specially designed rubber plugs under differential pressures.

A recently completed project involved the coating of about 5,000 ft. of 18 in. chemical effluent sea out-fall pipeline for Monsanto Chemicals Ltd., Newport, S. Wales. The line was coated after welding in two 2,500 ft. sections with three coats of Copon Arocoat (coal-tar epoxy) manufactured by their associates, E. Wood, Ltd. The line was subsequently pulled into the sea by Land and Marine Contractors Ltd., and the two sections were joined together by means of a stainless steel sleeve.

The firm is at present engaged on a similar project at the new Spencer Works of Richard Thomas and Baldwin Ltd. This involves the coating of approximately 8,000 ft. of 18 in. chemical effluent out-fall line with three coats of Copon epoxy resin.

Project Progress

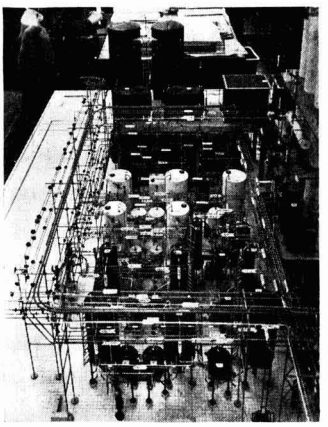
Whessoe Engineer Tar Oils Plant with Piping Models

A SPECIAL feature in the handling of the contract for a tar oils plant placed with **Whessoe Ltd.**, Darlington, by the South Eastern Gas Board for Ordnance Wharf is the use by Whessoe of scale models of equipment layout and piping for speed and convenience. The basic design of this continuous process plant for the extraction of tar acids and bases from coal tar fractions is by the Gas Board, while engineering design, procurement and erection are being handled by Whessoe.

The plant handles a benzole fraction, a naphtha fraction, and three creosote fractions, which are products of continuous tar stills. All fractions are washed for tar acids but only the first two are washed for bases, as the market does not warrant recovery of higher bases.

The extraction step is being carried out in a series of counter-current mixer/separator stages, the mixing being performed by a centrifugal pump circulating through a small vessel with the throughput passing to a separator. The extracted tar acids in soda solution, are purified by a benzole wash and steam distillation and passed to three carbonating (springing) towers in series. The tar acids are separated for sale and the carbonate solution for recycling.

The bases are extracted in similar mixer separators, 'sprung' in a further vessel with 20% ammonia solution and dried for sale, while the ammonium sulphate solution formed is sent for fertiliser preparation.



Whessoe's piping model of tar oils plant

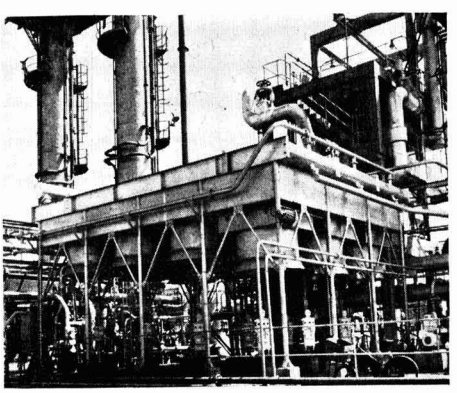
For maximum economy, the soda solution is causticised and recycled in the circuit. The process using burnt lime is carried out in a building where the maximum use has been made of mechanical handling of lime and spent carbonate cake to reduce labour to a minimum.

The incoming burnt lime is received in rail containers and stored in a lime hopper from which batches are weighted into skips and then transferred by electric hoist to the causticiser. The reacted batch is filtered free of calcium carbonate on a rotary vacuum filter.

Heat Exchangers for Acrylonitrile Plant

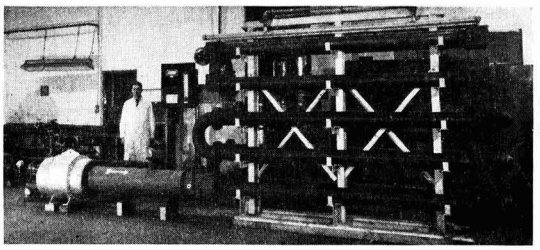
HEAT Exchange Division of **Wellington Tube Works Ltd.**, Tipton, designed and manufactured heat exchangers for a number of important chemical projects during the year, including notably the acrylonitrile plant at the Cassel Works of I.C.I.'s General Chemicals Division, and the Westfield coal gasification plant for the Scottish Gas Board.

During the year air-cooled heat exchangers became established as a major project, these being used both for direct cooling of products, and for cooling in closed water circuits.



Air-cooled condenser supplied by Wellington Tube Works to an I.C.I. factory

Project Progress



Latest Kestner spray-type sulphur burner

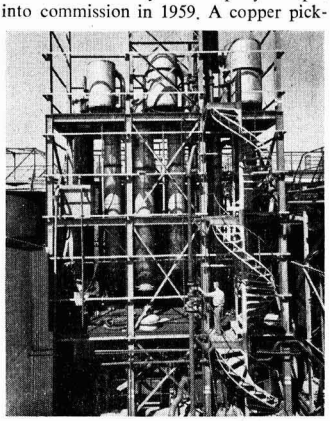
KESTNER'S BUSY YEAR IN CHEMICAL PLANT FIELD

THE period 1959-60 has been one of exceptional activity in all departments of the **Kestner Evaporator and Engineering Co. Ltd.,** 5 Grosvenor Gardens, London S.W.1, both at home and abroad, and the following notes describe briefly some of the interesting projects which have been completed in this period.

Drying Plant. Pneumatic Thermo-Venturi (T.V.) dryers have been installed for handling a variety of materials including starch, foundry sand, and streptomycin. An interesting development is the introduction of a continuous pneumatic cooling system in the plant which enables sensitive materials to be dried and subsequently cooled in a continuous system. Discharge temperature of the dry product can be brought to below 40°C.

Six large spray dryers have been built, four for making sodium sulphate salt at a rate of 2 tons/hour of dry salt and two for ferrous sulphate producing about 4 tons/hour each. These were provided with oil fired air heaters working at a high temperature and giving a high efficiency of 9.5 lb./hour evaporation per lb. oil burnt.

Pickling and Recovery Plant. The first large scale plant in Europe for pickling titanium rod, tube and sheet was designed, built and erected by the company and put into commission in 1959. A copper pickling plant was erected and started up in South Africa which included 10 Kestner electrolytic copper recovery cells each of 4 tons capacity.



Kestner triple effect climbing film evaporator commissioned in South Africa for the concentration of precious metal refinery wastes

Fluid Handling. The oustanding success of the Kestner patent glandless acid pumps is exemplified by an order for over 100 J. Type pumps for a new artificial fibre plant. These pumps are made of Keebush. An order for 50 similar pumps made of Tantiron (high silicon iron) was placed by a heavy chemical manufacturer.

A new design of horizontal acid pump was introduced this year; it is supplied either with an orthodox stuffing box or with packless glands.

Evaporators. Kestner evaporators have been supplied to a wide range of industries, notably for handling acid liquors where the use of Keebush and impervious graphite is predominant. These acid evaporators are now being built in multiple effect utilising Keebush for the second and subsequent effect calandria shells. In South Africa a triple effect climbing film evaporator has recently been completed and commissioned for the concentration of precious metal refinery wastes.

The plant used in the manufacture of acrylic fibre in this country includes Kestner high vacuum crystalliser and evaporator producing ½-ton sodium thiocyanate crystal per hour.

Process Heating Equipment. Kestners have constructed a complete plant for the manufacture of polyester resins, the reaction kettles being heated and cooled by the Kestner patent Perolene fluid heat transmission system. The plant in question is designed for the manufacture of 6,000 tons/year of polyester resin.

Chemical Process Plants. A plant for the production of sulphurous acid has recently been installed by Kestners in Australia which incorporates the latest Kestner patent spray type sulphur burner.

The Kestner Johnson patent process for the production of precious metal nitrates has been installed in a number of U.K. factories producing bismuth nitrate and silver nitrate. One of the features of this system is the complete absence of noxious, gaseous or liquid effluents from a process which has always caused difficulties in this respect.

Stone and Webster Complete B.H.C. Plants

FOLLOWING completion last year of a Rigidex polyethylene plant for British Hydro-carbon Chemicals Ltd. at Grangemouth, **Stone and Webster Engineering Ltd.,** 20 Red Lion Street, London W.C.1, completed two further projects for B.H.C.—the cumene-phenol-acetone plant and their No. 3 ethylene unit.

Stone and Webster have also been busy with overseas contracts and so far this year have completed the following plants, which are now in production: ethylene and ethanol plants for Erdolchemie, GmbH., Germany; ethylene plant for Naptachimie, S.A., France; ethylene plant for Sincat, S.p.A., Italy; titanium oxide pigment plant for British Titan Products Ltd., Canada; plastics tile factory for Armstrong Kork, GmbH., Germany; ethylene facilities for the Maersk Refinery, Copenhagen; ethylene plant for A.N.I.C., Italy, for Cobenam, S.A., Antwerp, and for the Dutch State Mines at Geleen.

A further U.K. project completed has been an edible oil plant for Lodens and Microline Ltd., London.

Two Overseas Contracts for Petrocarbon

THREE projects handled by **Petrocarbon Developments Ltd.,** 76 Jermyn Street, London S.W.1, this year included a very high-purity nitrogen plant for the U.K. Atomic Energy Authority, which has been completed. A 4,000 tons/year polystyrene plant for Zaklady Chemiczne Oswiecim, Poland, is scheduled for completion this year.

Petrocarbon Developments are also licensors and process engineers for the ethylene/aromatics plant for Leuna Werke, East Germany. With a capacity of 40,000 tons of ethylene a year, this project has Humphreys and Glasgow Ltd. as contractor and is now in the design stage.

Davenport Cooling Towers for I.C.I. Works

THIS year celebrating their Golden Jubilee, the **Davenport Engineering Co. Ltd.,** Harris Street, Bradford, have specialised in the cooling of water and other fluids.

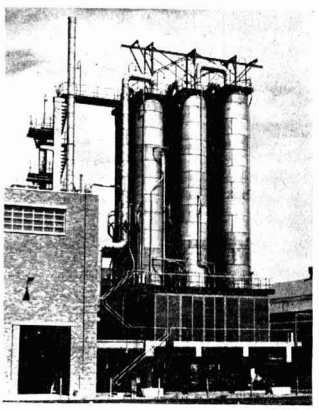
A reasonable proportion of their business is undertaken for and on behalf of the chemical industry.

"Quite large orders" have recently been completed at the Wilton Works of I.C.I. in connection with the Terylene and Propathene projects. Also for I.C.I., projects have been executed during the year for the Dyestuffs, General Chemicals, Nobel and Billingham Divisions.

Orders are being fulfilled for Courtaulds Ltd. in connection with their synthetic fibre manufacturing processes, while British Oxygen Engineering Ltd., Marchon Products Ltd., and British Titan Produces Ltd., are among other firms with whom Davenport have regular dealings. Many contracts are also being handled for overseas markets.

High-level Lifting Runway Aids Packing of Nitric Acid Towers

HIGH-LEVEL lifting runway for use at the new I.C.I. Nobel Division nitric acid plant at Ardeer has been completed by **British Electrical Repairs Ltd.**, 64a Bridge Street, Manchester 3. In the final stages of weak nitric acid production, there are six stainless steel cylindrical absorption towers, about 100 ft. high. The towers are topped by



Nitric acid plant with high-level lifting runway by British Electrical Repairs

platforms at three different levels and each has an opening on top for subsequent coupling to feeder trunking and for the initial purpose of allowing access for the packing of each tower with thousands of ceramic rings. The rings had to be raised in bulk up the outside of the towers.

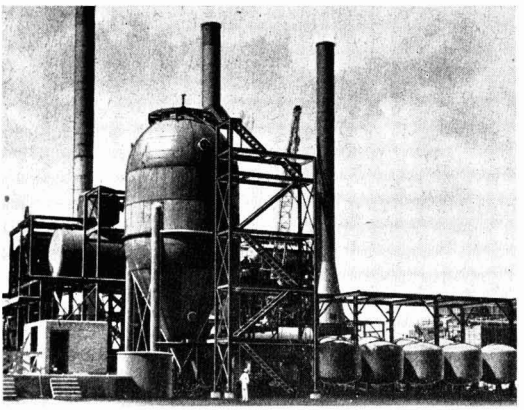
Loading of the towers manually was considered uneconomic and hazardous so a scheme was prepared whereby a 46 ft. long runway supported by three goalpost structures was landed on the platforms 100 ft. up. As there were three different port opening positions, the goalpost bases were seated on double channel transverse runners so that, as each group of towers was filled, the whole runway structure could be moved horizontally across to the next set of ports.

The runway structure was erected in two parts at ground level and each part was raised and sited on the platforms by means of a 120 ft. Jib Mobile Crane. A travelling electric hoist unit traversed the runway, raising bulk loads of ceramic rings weighing ½ ton to platform level, and lowering smaller quantities in "kit-bag" shaped containers into the towers, B.E.R.L. proof load tested the apparatus before it was handed over to I.C.I.

Gilbarco-Firth Cleveland Gauge

The level detecting system of the Gilbarco-Firth Cleveland electronic automatic tank contents gauge has been granted an intrinsic safety certificate No. I.S. 3096 (hydrogen/ethylene/pentane classes by H.M. Factory Inspectorate.

Project Progress



Hot lime-Zeolite softening plant by Head Wrightson Processes

Belco Water Treatment Plant by Head Wrightson Processes

A HOT lime-Zeolite softening plant for the A.T.A.S. oil refinery is currently being engineered by **Head Wrightson Processes Ltd.**, 20-24 Old Street, London E.C.1, for Foster Wheeler. On completion, it will be similar to the plant illustrated.

With their experience in the design and supply of Fin-Fan air cooled heat exchangers and cooling towers, H.W.P. have gained considerable experience on water handling problems and recently reached an agreement with the Belco Industrial Equipment Division of Bogue Electric Manufacturing Co., New Jersey, U.S., under which they will supply these water treatment processes throughout the world, excluding the U.S.

A complete range of water treatment plant is available including simple gravity and pressure filters, cold and hot lime process softeners, ion exchange plant, etc. Belco have developed special designs for clarators, deaerators, hot process softening and demineralisation. For the special requirements of transistor manufacture Belco have developed and installed a demineralisation plant with a guaranteed water quality of 10 million ohms or better. The achievement of this quality water on a production basis is believed to be unique.

Redler Contracts for Handling Powders and Granular Products

REDLER plant is used extensively in the chemical industry for handling powdered and granular materials in bulk and the following plant in hand this year represents much less than half those on which **Redler Conveyors Ltd.**, Dudbridge Works, Stroud, Glos, have been engaged. Of the list, six plants represent repeat orders.

For W. J. Bush and Co. Ltd., plant for chemical powder elevating at 1-ton/hour has been supplied. Fisons Fertilizers Ltd. have ordered plant handling fertiliser compound (elevating at 30 tons/hour) and ground phosphate rock (conveying at 75 and 25 tons/hour). An extension to existing plant for James Laing and Son Ltd. handles starch and dextrine at 2 tons/hour, while for Laporte Titanium Ltd., controlled bin discharging by a Moore discharger is designed for titanium oxide powder. Bulk storage, circular bin discharger and circuit conveyor handles 3-tons/hour of starch for Reckitt and Sons Ltd., while for the United Sulphuric Acid Corporation Ltd., plant has been supplied to convey cement dust at 1-ton/hour.

Features of Redler equipment are the small amount of space needed, quiet operation and 'en masse' handling which avoids degradation of particle size. Equipment is dust-tight, largely eliminating the danger inherent in moving toxic substances between processes and the loss of costly materials or their contamination by dust. Sealing is possible to the extent that inert gases can be introduced and materials handled in the purged condition.

Kellogg Complete Shell Ethylene Plant

THE only chemical plant now under construction by **Kellogg International Corporation** in the U.K. is an ethylene unit for Petrochemicals Ltd., the Shell Chemical subsidiary. This is now being prepared for commissioning at Carrington, near Manchester. When completed early in 1961, the Socony Mobil Oil Co's 380 million lb./year ethylene plant at Beaumont, Tex, will be the world's largest ethylene pyrolysis and purification plant. It was designed by Kellogg, who are handling construction.

Project Progress

NEW FERTILISER PLANT RAISES OUTPUT 250% AND USES UNIQUE FLUID BED

THE new compound fertiliser granulation plant commissioned recently by Sheppy Glue and General Works Ltd. at their Queenborough, Kent, site is an outstanding example of enterprise. Not only is the rated capacity at 8-10 tons of granular fertiliser an hour 2.5 times greater than in the plant it supersedes, but a unique 'fluidised bed' process is employed.

The whole plant was designed by Sheppy Glue's own technical and engineering staff and the plant was also mainly constructed by their engineering department, with the exception of certain specialised plant and equipment which had to be obtained from outside sources. The project was vetted by two consultants well known in the fertiliser industry and was submitted to work study experts for close scrutiny before the final drawings were approved.

Cooling and De-dusting

The fluidised bed is believed to be the only one of its kind in use in the British fertiliser industry. It cools the fertiliser coming from the dryer and removes dust from the compound before its final grading.

The board's decision to replace the old granulation plant centred mainly round their desire to make use of the many improvements that had recently taken place in connection with the production of granular fertilisers. Allowance was also made for the trend towards more concentrated types of fertiliser. Before the war the N.P.K. ratio was on average, 1:3:1, with a total plant nutrient concentration of some 20%; the present ratio averaged 1 : 1.25 : 1, with a concentration of some 30-40%. The new plant was also deemed essential for the production of highly concentrated fertilisers and to produce the fertilisers of a composition sought in Kent and Sussex.

Another telling factor was the fact that the former plant could not cope with the increasing call for granular fertilisers.

Process. Main materials are superphosphate, sulphate of ammonia, muriate of potash, magnesium and various organic raw materials, such as steamed bone flour, etc. In some cases urea and ammonium phosphate and certain trace elements are also used, and, further, at customers' request, pesticides such as aldrin, etc., can be included.

Superphosphate, used in either compound fertilisers or as straight granular or powder form, comes from Sheppy Glue's own production unit, while sulphuric acid for solubilising phosphate rock comes from their 'chamber' acid plant. Phosphate rock, sulphate of ammonia and muriate of potash arrive by ship at the company's wharf and are conveyed by overhead belts direct into the fertiliser department for storage in bulk.

An electrically-operated high-lift shovel takes superphosphate, sulphate of ammonia, potash, triple superphosphate, etc., from storage to hoppers at the pre-grinding units at a height of some 14 ft. After grinding to the required size and sifting they are stored in seven individual hoppers, ready for processing.

Ground and sifted material is drawn off into a travelling, weighing hopper which allows the operator to draw off the required quantity of each raw material. When ingredients required for a batch are accumulated and weighed into the weighing hopper, the hopper empties into a lifting skip that conveys the material into a double-screw mixer, which ensures that the ingredients are thoroughly mixed prior to granulation.

The mixed material is passed to the conditioner which wets the mixed ingredients with water sprayed at 200°F; the moistened fertiliser is subjected to a rolling action in the conditioner so that small granules are formed before passing to the drying stage. An oil-fired furnace supplies the dryer with hot air at a certain temperature to reduce the moisture content to as low a percentage as possible, thus ensuring good storage qualities.

The dried fertiliser, still in a very hot condition, is passed into the 'fluidised bed' which as mentioned cools and de-dusts the fertiliser. This is effected by the fertiliser particles dropping in a downward stream while large quantities of air are passed in the opposite direction. The granular fertiliser has, in fact, to float for a certain period in this 'bed.' The fine dust thus removed is returned to the fertiliser mixer through plastics pipes and air separators for recycling.

Cooled and de-dusted fertiliser is then conveyed to a sieving unit, which removes both fine and over-size particles, the former also being returned for recycling. Over-size particles pass to a cracker mill, while the finished product passes along belts that convey it to bagging and weighing units. The bagged material is then conveyed to storage sheds that are fitted with lifting units to ease loading to lorries.

The process aims at producing material (a) of as even and near-spherical particle size as possible; (b) from which, as far as possible, all dust has been removed; and (c) with the lowest possible moisture content.

A.P.V. Unit Produces Defronted Benzole for ¼d. Per Gallon

THE A.P.V. continuous defronting unit, which the Chemical Engineering Division of the **A.P.V. Company Ltd.,** Manor Royal, Crawley, have installed as part of projects undertaken for the Appleby-Frodingham Steel Co. and the Lincolnshire Chemical Co. is a low-cost high-yield method of defronting benzoles to give products with as little as 1 p.p.m. of carbon disulphide for ¼d per gallon. It can also be used to process other feedstocks such as aromatic condensates derived from naphtha cracking or water-immiscible streams containing light overheads which are to be removed.

When the A.P.V. continuous defronter is used in conjunction with A.P.V. rectification and acid washing units, crude benzoles may be refined to give a complete range of high quality products from benzene to naphtha and indene.

The unit consists mainly of a defronting column which can be followed by a dehydrating column. These may be combined with batch or continuous fractionation and chemical treatment units. All standard defronting units are supplied fully instrumented and complete with control panel, specially closed cooling water circuit and necessary switchgear, starters and motors.

Experimental work carried out using a 1% solution of carbon disulphide in benzene showed that the sulphur content of this synthetic crude benzole could be reduced to as low as 0.0001% w/w of carbon disulphide with steam consumption equivalent to 0.30 lb. per lb. of feed.

A.P.V. defronting units used in two full-scale benzole refining plants, designed and erected by the company, were found in practice to operate with equally successful results between 30% and 100% of maximum throughput and the carbon disulphide content of the defronted benzole fraction could be reduced to any selected concentration in the range of 1 to 200 p.p.m. Loss of benzene at the top of the column was as little as 0.1% w/w of crude feedstock.

Throughput (sp.gr. 0.888), g.p.h.	S as CS_2 in feedstock % by wt.	Overhead take-off rate % of feed by volume	CS_2 sulphur in defronted crude % by wt.	Steam consumption* lb. per gall. of feed	Cooling water consumption* gallons-per-gallon, of feed
1,000	0.48	1.0 containing 13.0% of benzene	0.0002	1.58 inc. steam for dehydration	3.1
700	0.64	1.2	0.0003	2.02	—

* Steam consumption can be further cut, where using a continuous benzene column in conjunction with defronting unit, by re-using waste heat for benzene column.

George Scott to Make U.S. Molecular Still in U.K.

George Scott and Son (London) Ltd. have entered into a new agreement with Arthur F. Smith, of Rochester, New York State, U.S.A., for the manufacture and sale of molecular distillation equipment of commercial size, with heating surfaces from 4½ sq. ft. upwards.

The Scott-Smith molecular still, which operates at very high vacuum with the lowest possible heating temperature and very short contact time, is stated to be particularly suitable for distillation, purification and deodorising of heat-sensitive materials of relatively high molecular weight, such as vitamins, hormones, sterols, plasticisers, etc.

Arthur F. Smith Co., who manufacture and market this equipment in the U.S., have also appointed other licensees in France, Germany and Italy.

George Scott have already installed a prototype plant with a 12 in. diameter still in their new research and development centre at Leven, Fife, where tests have been started on various materials.

Rectifiers for Chlorine-Caustic Production

SILICON and germanium rectifiers by **Westinghouse Brake and Signal Co. Ltd.**, 82 York Way, London N.1, have found increasing application in the past year in the field of high-power supplies for the electrochemical industry, notably for the electrolytic production of chlorine and caustic soda. Compared with earlier means of power conversion, semiconductors allow a higher efficiency and reliability to be obtained, and especially when allied with the Westinghouse technique of direct water cooling of the rectifier itself, allows marked saving of space to be effected.

The following are typical of plants recently supplied or in hand for this process: 1.35 Mw for Australian Newsprint Mills (through Krebs and Co., Zurich) using a germanium rectifier; 3.6 Mw for Rumianca Ltd., Italy, using a silicon rectifier; 3.3 Mw for Travancore-Cochin Chemical Co., India, using a silicon rectifier; and 10 Mw for Murgatroyds Salt and Chemical Co., Cheshire, using a silicon rectifier.

Audley Valves for Chemical Projects

LARGE contracts for lubricated taper plug valves have been secured by **Audley Engineering Co. Ltd.**, Newport, Shropshire, from a number of firms in the U.K., including equipment for the I.C.I. Dyestuffs Division plant at Burn Naze for the production of isocyanate, the polyolefin plant at Carrington for Petrochemicals Ltd., the Dow Agrochemicals plant at King's Lynn, the Howards of Ilford phthalic anhydride plant, and the silicone fluid and resin plant for Midland Silicones at Barry. A contract for valves for coke ovens, etc., has also been placed by Richard Thomas and Baldwins Ltd.

Project Progress

A.E.I. Orders for Polyolefins Plant May Reach £750,000

AMONG the successful contract negotiations of **Associated Electrical Industries (Rugby) Ltd.** has been that for the Shell Chemical Co.'s new Carrington plant. The exact amount of A.E.I. equipment to be used is still under discussion, but so far 70% of requirements has been finalised. This includes all the motors, switchgear, transformers, cables and telephones, and the majority of the lighting fittings. It is estimated that about £750,000 worth of electrical equipment will be required.

A.E.I. are also supplying two 350-h.p. and two 400-h.p. motors to Shell International Petroleum for driving gas oil and transfer pumps at Stanlow refinery. The pumps these motors will drive will be associated with the 30-mile pipeline now under construction between the refinery and the Carrington works of Shell Chemical.

In the same branch of the chemical industry, George Wimpey and Co. have ordered a squirrel cage motor for Union Carbide, to drive a centrifugal scrubber water pump at Fawley. George Wimpey also require two 350-h.p. salient pole synchronous motors for driving hydraulic oil pumps in difficult site conditions at a new works in India, also for the production of plastics materials.

I.C.I. have been responsible for a number of A.E.I. contracts. Ten rectifiers were commissioned during the year, eight of which were pumpless mercury arc units and the remaining two germanium units. They are operating on electrochemical duty where the nature of atmospheric conditions makes corrosion a danger. Nobel Division have placed orders for equipment for the alkali cellulose plant at the Dumfries works.

Other contracts received by A.E.I. include an order from South African Explosives and Chemical Industries for a 280-kW germanium unit for chlorine production, and one from Associated Ethyl for an installation engaged in the production of bromine from sea water.

U.K. Chemico Have 12 1960 Projects in Hand

TWELVE 1960 projects are in hand by **Chemical Construction (G.B.) Ltd.**, 9 Henrietta Place, London W.1. In the U.K. Chemico are main contractors for the Grangemouth synthetic methanol plant for British Hydrocarbon Chemicals Ltd. New gas plant projects include a 106,000 c.f.m. gas cleaning plant, through Gutehoffnungshutte for Richard Thomas and Baldwins Ltd.; a 500 c.f.m. P-A venturi gas scribber for Minworth Metals Ltd., Sutton Coldfield; a 4,760 c.f.m. S-F venturi scrubber and a P-A venturi scrubber for McKecknie Brothers Ltd., Widnes; an 8,000 c.f.m. P-A venturi scrubber at Croydon for Woodall Duckham Construction Co. Ltd.; and two S-F venturi gas scrubbers (4,120 c.f.m. and 3,726 c.f.m.) for J. G. Stein and Co. Ltd., Linlithgow, through Dorr-Oliver.

Abroad, Chemico are handling a 358 tonnes/day sulphur-burning sulphuric acid plant for the Greek Ministries of Industry and Co-ordination at Ptolemais. Two plants are in hand at Vlaardingen, the Netherlands—a 100,000 tonnes/year sulphuric acid plant and a sulphuric acid refinery sludge unit, both for Albatros Sulphuric Acid and Chemical Works. Also in Holland, at Ijmuiden, a gas reforming and CO conversion plant is being supplied to Mekog.

Adarsh Chemicals and Fertilizers Ltd., Bombay, have ordered sulphuric acid and superphosphate plant. At Berre, France, a 4,000 c.f.m. P-A cyclonic scrubber is in hand for Bataafse Internationale Chemie Maatschappij. A 30,000 c.f.m. P-A venturi scrubber has been ordered by Power Gas France Ltd.

G.E.C. Rectifiers for Argentine Chlorine Plant

FOR the Cellulosa Argentina Plant in South America two 4,200-kW General Electric Co. Ltd. rectifier equipments have been installed. They have a total output of 12,000 amps, and are used for the production of chloride by an electrolytic process. Constant current is maintained by grid control of the rectifiers in conjunction with an on-load tap-changing in the transformers.

For International Paints Ltd. two G.E.C. semi-conductor rectifier equipments have been commissioned, each rated at 100 kW, 1,500 amp. One uses germanium diodes and the other silicon diodes.

S/S Pipe Contracts for Sheffield Firm

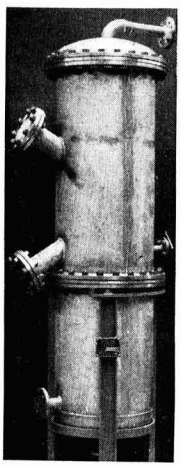
STAINLESS steel pipework, fabricated by **W. G. Jenkinson Ltd.**, 156-160 Arundel Street, Sheffield 1, from solid drawn tubing and from rolled or welded sheet, has during the year been supplied to Courtaulds for their Soviet projects and Woodall Duckham for contracts on the Isle of Grain. Lead shieldings supplied to G.E.C., Hawker Siddeley, De Havilland, Head Wrightson and the Atomic Energy Authority, incorporate special features to provide expansion gaps and to prevent cavitation and voids. This has been achieved by the use of sheet lead wrought up to 6 in. thick and by homogenous bonding techniques.

Other activities include plastics tube and vessels, aluminium, copper, lead and stainless steel vessels for the chemical industry, with mild steel supporting structures and vessels.

TRENDS AND DEVELOPMENTS IN EQUIPMENT INDUSTRY

Porous Ceramic Tubes

Faced with the problem of the removal of insoluble particles, colouring matter and a gelatinous impurity from an aqueous solution of crude sodium oxalate, **Aerox Ltd.,** Cotswold Works, Chalford, Stroud, Glos, constructed an adsorber unit in which three operations



Aerox unit for filtration of sodium oxalate

of filtration—filtration by means of a bed of filter aid, supported on Aerox Pyrolith porous ceramic tubes, to remove the solid and gelatinous impurities; passing through a bed of activated carbon to remove the colouring matter; and a final stage of filtration to prevent the carry over of fine particles of activated carbon—were carried out in a single column.

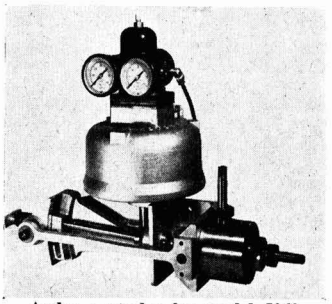
The unit, recommended for the flow rate of 30 g.p.m. at a working pressure of 50 p.s.i., was an Aerox stainless steel adsorber type. The bottom section consists of a pre-filter aid bed supported by Pyrolith grade G.31 filter assemblies each consisting of two tubes; the centre section contains the activated carbon adsorbent; and the after-filter at the top consists of Pyrolith grade G.28 tubes of the same size as the first stage.

Chemical Pump in Titanium

A submerged centrifugal chemical pump made by **Appleton and Howard Ltd.,** Salisbury Street, St. Helens, in titanium supplied by I.C.I., was delivered to I.C.I. during the year. A. and H. believe that it is the first time a pump of this type has been made in the U.K. The pump was designed for handling 99.8% nitric acid and has a speed of 1,440 r.p.m. Flow rate is 500 gall./hour at a 60 ft. head. Submerged length of pump is 6 ft. 8 in.

New Audley Valves

Two new valves were introduced by the Control Valve Division of **Audley**



Audco control valve model 5060

Engineering Co., Newport, Shropshire, during the year. The first is the Audco control valve model 5060, a valve designed for the research and development engineer capable, say the makers, of controlling extremely small flows at pressures up to 50,000 p.s.i. It is claimed that the wide rangeability plug and seat together with an adjustable stroke range of .005 in. to .150 in., in combination with a Domotor operator, assure high pressure operation comparable to established low-pressure techniques.

The second valve, the split body single seated diaphragm valve model 1650, is intended to supplement the Audco Domotor control valves for simpler applications which do not justify a positioner.

Dust Control Plant

Manufactured by **Keith Blackman Ltd.,** Mill Mead Road, London N.17, are 3 new types of equipment for the control of fumes and dust. The Tornado-Fischer automatic self-cleaning filter is designed for cleaning air that contains, for example, dust from carborundum, cement, chemical products, coal, fertilisers, lime and stone. The operation is centrally and automatically controlled from one main panel regardless of the number of filter chambers used.

Fine industrial dusts and fume particles of sizes down to 0.1 micron in diameter, such as dust, smoke and fume emissions from ceramic plants, open hearth and blast furnaces, sulphuric acid, cement works, etc., can be trapped by the Tornado-Solivore Venturi scrubber. The equipment, which has a low resistance to gas flow thus minimising power consumption, works on the principle that when dust-laden air or gas is saturated with water vapour and this treatment is followed by a sudden expansion, the particles of dust act as condensation nuclei and thus the dust is removed.

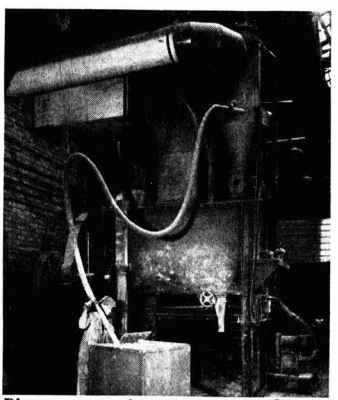
Beckman Instruments

An instrument which is said to measure the oxygen content of air or other gases with speed, accuracy and convenience, is the Beckman model D2 portable oxygen analyser developed by **Beckman Instruments Ltd.,** Queensway, Glenrothes, Fife, Scotland. The instrument which uses no chemicals, works on the principle of the magnetic susceptibility of oxygen.

The gas to be analysed surrounds a dumbbell-shaped test body consisting of two small, hollow glass spheres suspended by a quartz thread in a strong magnetic field. Depending on the difference between the magnetic susceptibilities of the glass spheres and the gas which the spheres displace, the test body is subjected to a magnetic force which causes it to rotate in and out the magnetic field until it reaches an equilibrium position. The angular position of the test body is indicated on a scale calibrated to read oxygen content directly.

Bivac

Central vacuum cleaning plant has been supplied to two of I.C.I.'s projects by **Bivac Air Co. Ltd.,** Beehive Works, Portwood, Stockport. The equipment for the polythene extension at Wilton was completed in March 1960 and the Terylene extension contract in August of this year. Vacuum cleaning plant has also been supplied to other firms and organisations, including three power stations and a flue dust removal unit for Peter Spence and Sons, Widnes. Pneumatic conveying plants, also manufac-



Bivac pneumatic conveyor at Cooper, McDougall and Robertson

tured by Bivac, have been supplied to a number of firms. Among others, Albright and Wilson have ordered an air filtration plant which was completed in April and pneumatic chemical handling plants have been supplied to Cooper McDougall and Robertson, Ciba Laboratories, and James Anderson and Co.

Polyslip Dry Bearings

Bound Brook Bearings Ltd., a Birfield Group company, have introduced a new dry bearing which they say has four to five times the performance merit of the earlier Polyslip materials, which are being superseded by Polyslip 1M.

Polyslip 1M consists of a special porous bronze matrix produced by the powder metallurgy technique and having pores at the working surface impregnated with a mixture of p.t.f.e. and

lead additive. The 90:10 bronze matrix provides rigid strength, the lead low wear rate, and the p.t.f.e. low surface friction between extremes of temperature. The bearings are suitable for use where high temperatures are involved, their use being limited only by the oxidation resistance of bronze and the thermal properties of p.t.f.e.

Polyslip 1M bearings are recommended for use where there are oil solvents, in extremes of temperature, where dust is a problem, where oil and grease can spoil the finished product and where lubricants suffer chemical reaction.

Reverse Jet Dust Filter

A new development in dust filter equipment which the makers feel will interest the chemical and allied industries, is the B.D.V-Flo reverse jet dust filter of **Bramigk and Co. Ltd.**, 15 Creechurch Lane, London E.C.3. This filter consists of a multivee-panel construction employing a wool-felt filter medium in flat sheet form. Behind each vee-segment is a specially designed reverse air injector nozzle and back plate which uses, without moving parts, a force of air only slightly greater than that created during filtration and which is sufficient to ensure an efficient cleaning action.

Bramigk are also the sole U.K. agents for Bauermeister turbo mills, for which they have a test laboratory at Harwich.

Arca Control Equipment

One of the latest additions to the **British Arca Regulators Ltd.**, Sisson Road, Gloucester, range of control equipment is the Uniflow 800 series barstock valves. These valves are diaphragm operated and are available in sizes from ¼ in. to 1 in. and for pressures up to 60,000 p.s.i. They are of the direct or reverse acting type and have been designed for service in the petroleum, chemical and process industries and are suitable with a wide variety of semi-corrosive media.

Other recent additions to the Arca range are: the Arca liquid level controller, designed to maintain a required level in either an open or closed container: Arca temperature transmitter which produces an adjustable air pressure signal of 3/15 p.s.i., corresponding to the measured temperature and has a temperature range of −100°F to +1,250°F; and Arca pneumatic controller designed as a receiver controller for use with pneumatic transmitters.

Shredders and Pulverisers

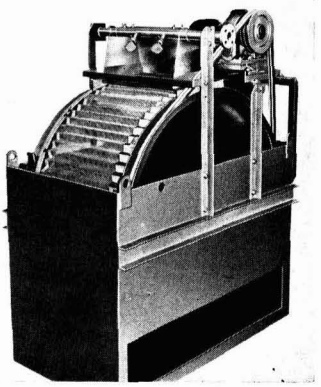
During the past year **British Jeffrey-Diamond Ltd.**, Wakefield, York, have supplied a number of shredders, pulverisers and crushers to the different branches of the chemical industry both at home and overseas.

B. J-D. swing hammer pulverisers have been supplied to a number of U.K. firms for the production of granular fertilisers. A new type of pulveriser was introduced to the fertiliser industry, the P-type, a machine basically similar to the standard types but involving a number of features making them particularly suitable to the production of fertilisers.

Among contracts fulfilled abroad have been the provision of shredders to the synthetic rubber industry in both the U.S.S.R. and Australia.

Water Screening Unit

A new design of self-contained automatic water screening unit is available from **F. W. Brackett and Co. Ltd.**, Hythe Bridge Ironworks, Colchester. This range of screens is particularly designed for use in chemical and similar works,



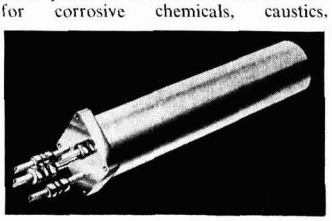
Self-contained automatic water screening unit by Brackett

where dirty water has to be screened before discharge to sewers or other means of disposal. The screens can also be used to recover valuable solids from effluents.

The screens, which are entirely weatherproof and can therefore work both in and out of doors, are available in three sizes of screen diameter: ABE 4 ft. 6 in.; BIT 7 ft. 6 in.; and CEB 10 ft. In each size there is a choice of size of hole.

Crane Heat Dissipater

Among new products from **Crane Packing Ltd.**, Slough, Bucks, is the Thredseal tape, a method of sealing threaded connections manufactured from p.t.f.e. The material can be used for corrosive chemicals, caustics,



Crane Packing's heat dissipator

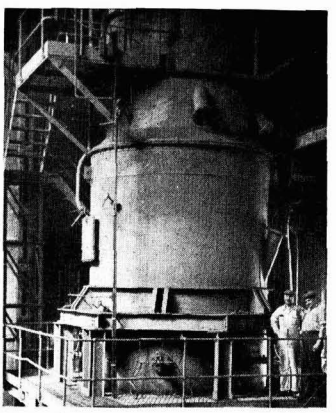
hydraulic fluids, aromatic fuels, etc., and on threads of virtually any material. Also introduced this year are Cranpac styles 1040 and 1041 mechanical packings, suitable for use with a wide range of liquids and gases, including those of a highly corrosive nature.

A heat dissipator of compact design and with a capacity of 10,000 B.Th.U. per hour has been developed from an integral part of a cooling system for mechanical shaft seals operating at high temperatures. The liquid to be cooled is circulated through a seamless stainless steel tube element which is encased in a stainless steel shell.

Clay Calciner

A multicompartment calciner and cooler was recently commissioned for clay calcination from **Dorr-Oliver Co. Ltd.**, Norfolk House, Wellesley Road, Croydon, Surrey. All compartments operate with fluid beds and the unit is an addition to other fluid bed units already operating in the same plant.

Units have been devised for handling



Part of the multicompartment calciner supplied and commissioned by Dorr-Oliver

ferrous sulphate monohydrate filter cake after 50% of the acid present in waste pickle liquor has been extracted by submerged combustion. A two-compartment fluid bed unit decomposes the monohydrate cake into iron oxides and sulphur dioxide gas, using the hot gases from the decomposition chamber to dry the monohydrate filter cake, to a free-flowing powder, before the hydrate is introduced for decomposition to the chamber below. A gas strength of over 14% SO_2 is obtainable and some 0.465 tons H_2SO_4 and 0.4275 tons iron oxide could be reclaimed, per ton of the monohydrate cake roasted, at a cost of between £3 and £4 when the monohydrate cake is valued at £2 per ton.

Rostenite Lining Process

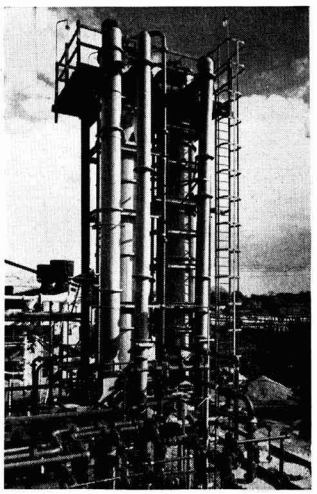
A new insulating material produced by **Darlington Chemicals Ltd.**, Darlington, is Darlington 85% 'super-magnesia,' which is chemically bonded together for high mechanical strength and resistance to wetting and vibration. The manufacturers say that it is rot-proof, odourless and fireproof and cannot corrode metals. This insulating material is available in preformed pipe sections for pipes from ½ in. to 8 in. internal diameter, as flat slabs, and as radiused slabs for pipes up to 30 in. diameter. Sections are available up to 2 in. thick and slabs up to 2½ in.

Also introduced by Darlington is the new Rostenite lining process which has

been developed to provide reliable stainless steel sheet linings for tanks and vessels that would normally have to be made entirely from stainless steel. The lining can be applied equally well to an untreated surface as to one where an existing lining has broken down or is in need of repair.

P.V.C. Pipes and Fittings

Manufactured by **B.T.R. Industries Ltd.**, Herga House, Vincent Square, London S.W.1, in normal and high impact grades Silverflow p.v.c. is available in pipe sizes up to 8-in. internal diameter



Wash towers for the chlorine absorption plant of Murgatroyd's Salt and Chemical Co. use B.T.R. Silverflow p.v.c. pipes and fittings for the handling of sodium hypochlorite liquor

and in standard lengths of 20-ft. with corresponding sizes of fittings. All fittings are of the heavy-duty type and are rated for working pressures of 150 p.s.i. and up to 60°C. B.T.R. Silverflow p.v.c. pipes and fittings are moulded by the unique Hendry process, developed by Tube Turns Plastics Inc., U.S., with whom B.T.R. have an exclusive licence agreement for manufacture in the U.K. The Hendry process makes possible the production of normal and high impact p.v.c. components of greater density and improved dimensional stability than conventional methods.

Multi-point Controllers

Xactrol multi-point potentiometer recorders, series 2050, newly introduced by **Ether Ltd.**, Tyburn Road, Birmingham 24, are designed for the accurate measurement and recording of temperatures in the range −200°C to +2,000°C. They are equally suitable for measuring and recording other variables, such as speed, strain, pressure and hydrogen-ion concentration, plus any other quantity that can be expressed as an electrical signal.

Calibration accuracy, on the 6 in. chart, is 0.5% of span; sensitivity is 0.2% of span. There are two, three or six recording points and chart speed is 1 in. or 2 in., with other speeds available. The printing cycle is 6 sec. per point.

Electronic Control Systems

Dewrance and Co. Ltd., Great Dover Street, London S.E.1, are now manufacturing under licence to the U.S. firm Robertshaw-Fulton Controls, the complete range of Microsen process control equipment. This includes the Microsen balance, a measuring and transducing device by which measurements of process conditions are changed into corresponding amplified output signals; miniature chart recorders; transmitting potentiometer; level transmitters and electro pneumatic transducers.

Three major international contracts are at present being carried out by Dewrance and Co.: they are at Pemex, Mexico; Latina, Italy; and Kellogg, Turkey. Under these contracts Dewrance consolidated safety relief valves, Dewrance Duragauges, Microsen recorders, pressure gauges, etc., are being supplied.

Plant Viscometer for Quality Control

Ferranti Ltd., Hollinwood, Lancs, are currently developing a plant viscometer for quality control. This instrument will utilise ultrasonics to record continuously and control automatically the viscosity in a process plant. No further details are available on this long-term project.

The company has introduced recently a new automatic flow curve recorder for the Ferranti-Shirley cone and plate viscometer, an instrument for studying the anomalous flow behaviour of the more complex fluids. The modification enables the automatic plotting of non-Newtonian flow curves of shear stress against the rate of shear, thus cutting out the need for manually constructing graphs. It also provides a suitable means of standardising the test procedure.

Waste Heat Recovery

A new system of heat recovery, assembled from a range of fully interchangeable components, has been designed by **Freeman, Taylor Machines Ltd.**, Necton Street Works, Syston, near Leicester. Known as the Caloreff, this plant has been designed to achieve maximum rates of heat transfer under a wide variety of operating conditions.

This is said to be the first time that a complete plant of its type has been available, capable of accepting waste, heated effluent, however corrosive, from any number of points, recover a large percentage of the contained heat and discharge cooled effluent at a temperature usually suitable for the appropriate drains.

Heat exchange is effected by shell and tube heat exchangers, of which one basic size is used, applied in either series or parallel, dependent upon temperatures and rates of flow, etc.

Savings achieved by the system are claimed to be considerable, capital costs usually being recovered in well under three years.

Controlled Rate Feeder

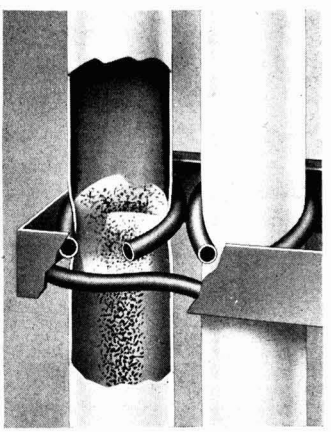
New plant introduced by **Wm. Gardner and Sons (Gloucester) Ltd.**, Bristol Road, Gloucester, includes a new invention for controlled rate of feeding of materials difficult to handle in continuous processes. The feeder will handle any commodity from asbestos fibre or straw to rubber crumb at a controlled rate with an accuracy by weight of ±1% or better. Plants have been supplied for formaldehyde granules, rubber crumb and wet starch.

The feeder comprises a bunker formed of a U-shaped trough, inside which is fitted a ribbon-type agitator of special design. The agitator rotates at a slow speed preventing the material from bridging over the discharge opening; it also makes possible complete discharge from an opening on the side of the bunker instead of at the base.

On discharge the material collects in an expansion chamber, the bottom of which consists of the upper conveying section of a belt feeder. Because a rate fitted across the belt to control forward level of the material as it is fed out by the belt would cause backing-up with difficult material, a rotary trimmer is arranged at a predetermined distance above the belt. The trimmer comprises a series of tensioned wires which form a circular cage. These wires form a 'live' gate which regulates the height of the material on the belt and, as they rotate upwards, they remove from behind the gate point any material which might back-up and prevent steady feeding.

High-efficiency Bag Filters by W. C. Holmes

Holmes-Retroflux bag filters, developed by Standard Filterbau G.m.b.H., Munster, are being manufactured under licence by **W. C. Holmes and Co. Ltd.**, Turnbridge, Huddersfield. The system is particularly suitable for applications where high dust burdens occur or for

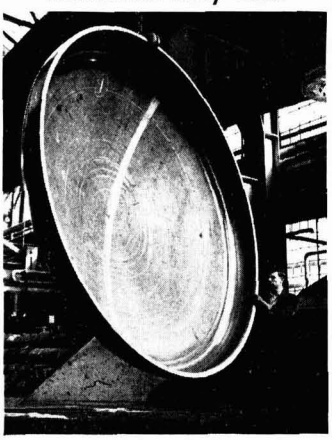


Sectional view of the Holmes-Retroflux bag filter, showing the hollow frame and jet tubes around two filter bags. Each frame can clean the complete length of up to 36 bags

dusts of an adhesive nature. An efficiency in excess of 99% is guaranteed for all particles, including those of submicron size.

The use of high velocity air jets to dislodge continuously dust collected on the inner surface of the filter bags dispenses with any rapping or shaking mechanism and separate compartments. The jets are specially shaped and finished to avoid damaging the fabric. Each bag is continuously and efficiently cleaned over its entire surface area and the jet of air which passes through the fabric is measured in thousands of feet per minute.

Aluminium Alloy Ends



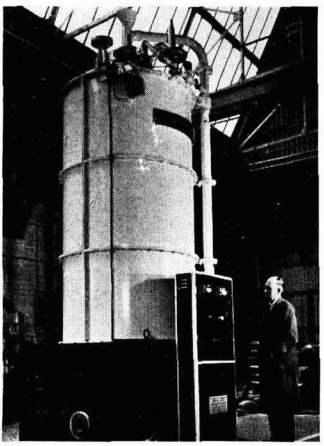
Rotarprest aluminium alloy ends for pressure vessels which will contain liquid air, recently supplied by G. A. Harvey and Co. (London) Ltd., Woolwich Road, London S.E.7, are believed to be the largest produced in the U.K. The ends have an inside diameter of 10 ft. and are $1\frac{5}{8}$ in. thick. Each end was spun from two plates (BA28-N.P.5/6) butt welded to form a flat disc, 12 ft. in diameter

Chemical Plant by Incandescent

Chemical Plant Division of the **Incandescent Heat Co. Ltd.**, Cornwall Road, Smethwick, manufactures evaporators, crystallisers, filters, spray dryers and flash coolers to the designs of the Swenson Evaporator Co., Harvey, Ill. It also designs and manufactures heat exchangers, air heaters, combustors and high-pressure chemical plant.

The division is currently constructing a single-effect phosphoric acid evaporator for an extension to a fertiliser works and two viscose spin bath evaporators. Air heaters completed this year include a model to raise 3 lb. of air per second from 85°F to 700°F at 110 p.s.i.g., using butane as fuel, and two heaters to raise 1.5 lb. of air per second from 0° to 500°C at 350 p.s.i.g., with town gas as fuel.

The Gas Atmospheres Division has established a carbon dioxide process and built pilot plant to process flue gas from oil-fired boiler installations. Edible quality CO_2 is extracted from the gases which have an SO_2 content of 0.03



Incandescent high-pressure air heater

p.p.m., and an H_2S content of 0.002 p.p.m. A plant has been developed for the production of pure nitrogen for use where the presence of a truly inert gas is essential. Apart from inert gases, impurities in the nitrogen are in the order of (dry gas analysis): oxygen, 10 p.p.m.; CO_2, 20 p.p.m.; H, 20 p.p.m.; dewpoint is down to −200°F.

Mancuna Fibre Filters

A new type of fibre filter developed by the I.C.I. General Chemicals Division and manufactured and sold under I.C.I. licence is available from **Mancuna Engineering Ltd.**, Denton, Manchester. Two types are available—Mancuna-Mistex and Mancuna-Fumex, and these, together with results of experimental work, are fully described in a booklet. Mancuna-Mistex is a dry type of equipment and Mancuna-Fumex an irrigated form of the fibre filter. Filter elements are of Terylene.

Manesty Rotapress

The newly developed Rotapress high-speed rotary tablet machine is available from **Manesty Machines Ltd.**, Speke, Liverpool. Of the double rotary type, the machine is offered in three series '55' 7/16 in. maximum tablet diameter with maximum possible output of 5,280/minute, $6\frac{1}{2}$ tons pressure; series '45' $\frac{5}{8}$ in. maximum diameter, 4,320 tablets/minute maximum, and $6\frac{1}{2}$ ton pressure; and series 29, with 1 in. maximum diameter, maximum output of 2,784/minute and pressure of 10 tons.

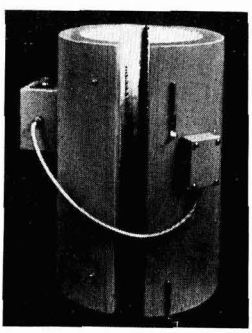
Drive is from a back-mounted motor and is taken by Vee-belt and a 2:1 ratio variable-speed pulley through a clutch and flywheel on to a layshaft. Through a 2:1 ratio reversible pulley, the layshaft drives a Holroyd 5 in. centre verticle reduction gear. Final turret drive is by replaceable internal helical gearing. Special features are pressure loading and an overload release.

Isomantles for Rustyfa Tyre Project

Melting tanks, storage containers and special pressure vessels required for the Rustyfa tyre project for the Soviet Union have been engineered by Simon Handling Engineers Ltd., and those needing heating to precise temperatures have been supplied with Isomantles by **Isopad Ltd.**, Barnet By-Pass, Boreham Wood, Herts.

Equipment fitted with Isojackets include injection pressure vessels. Temperature of the heating surface is regulated by automatic controls that are actuated by thermocouples, control heads for which are mounted on a central panel. In addition thermostats of the liquid expansion type are fitted to each heating jacket. The sensing bulb is attached to the heating surface as illustrated, while the control head is fitted to the outer metal casing. The thermostats give audible warning if temperatures fall below the required level.

Where injection vessels will be used with alternative ingredients the heating jackets have two low-temperature alarm units. Isopanels are being used for the

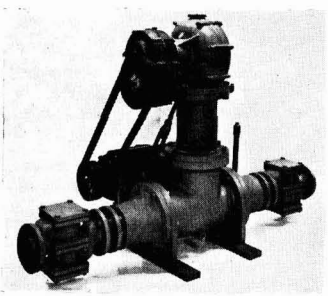


Isoped heating jacket; bulb of the liquid expansion thermostat is fitted to the heating surface

heating of melting tanks and Isotapes keep pipelines at the specified temperatures. For the same project, special weighing equipment is fitted with Isojackets to maintain temperature during weighing.

Merrill Pumps

The size 50 capacity glandless self-priming tube diaphragm pump of **Merrill Pumps Ltd.**, Dronfield, near Sheffield, has a 5 in. bore flexible tube diaphragm of Hypalon that is housed



Merrill size 50 pump

in a horizontal pulsation jacket iron casting; the diaphragm is hydraulically contracted and dilated by the piston pump supported on the pulsation jacket. The split external valve boxes can be straight through or handed right or left. Four of Merrill's 50 g.p.m. pumps to work against discharge pressures of up to 90 p.s.i. have been supplied to the Bradwell-on-Sea atomic power station.

Hypalon-lined sleeve diaphragm valves for handling chlorine liquors has been sent to Finland.

Leakproof CO_2 Extinguisher

Following several years of experiments, **Nu-Swift Ltd.,** Elland, Yorks, have introduced a leakproof, strike-knob, 5 lb. carbon dioxide fire extinguisher which is mainly intended for fighting inflammable liquid fires and fires involving electrical equipment indoors. It has a mean range in still air of 11 ft., CO_2 being expelled for 8 seconds at 65°F, through a novel type of discharge diffuser. Designed for fire fighting at close quarters, in the hands of an inexperienced operator it can put out a 6 sq. ft. inflammable liquid fire; in the case of an experienced operator the corresponding figure is 9 sq. ft.

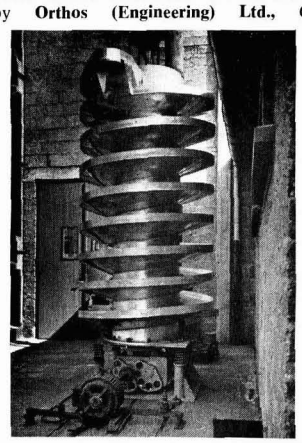
G.P. Pump Handles Aerosol Gasses

The G.P. (general purpose) pump of **Orr Products,** Stroud, Glos, is said to have become standardised by I.C.I., Cooper, McDougall and Robertson and other firms for pumping liquefied gases in aerosols. The fact that the pump cannot be contaminated has led to its use in a wide range of applications in the processing industries. The standard design of pump is made in a number of different metals for a variety of applications.

Outputs range from 600 to 30,000 g.p.h. with maximum pressure at 50 p.s.i. or a total head equal to 115 ft. of water. Operating temperature is up to 130°C.

Helical Vibro-conveyor

New plant items that are being introduced to the U.K. from the Continent by **Orthos (Engineering) Ltd.,** 62 Coventry Road, Market Harborough, Leics, include the Schenck helical lift vibro-conveyor for cooling, Clough bunker cushions, Eirich counter-current mixer, Eirich inclined pan pellitiser, Haas compressed air screen dryer and the Alexanderwerk dry pelletiser.



Schenk helical-lift vibro conveyor for cooling

The Schenck spiral virbo-elevator, developed from the conveyor model, is designed to elevate highly abrasive, hot and dusty materials, chemically aggressive matter, etc. This versatile handling plant can be used for cooling, drying, spraying, aerating, grading or other processes. It is capable of elevating coarse limestone up to 400 mm. trough at a feed rate of 175 cu. ft./hour to a height of over 20 ft. The drive unit consists of centrifugal force exciters that produce high-frequency vibrations which are transmitted to the trough structure.

The Clough bunker cushion, which can be fitted in most types of bunkers or silos to break up bridging or funnelling, consists of an iron base plate and a soft rubber diaphragm which can be inflated to a hemispherical shape by compressed air at from 2 to 4 atm. pressure.

Portable Deminrolit

The new Mk. 6 portable Deminrolit unit, introduced by the **Permutit Co. Ltd.,** Permutit House, Gunnersbury Avenue, London W.4, is a regenerable mixed-bed ion-exchange unit capable of producing 12 gall. of pure demineralised water. Average analysis of the water is: residual dissolved solids, less than 1 p.p.m.; silica, 0.05 p.p.m.; CO_2, nil; electricity conductivity, less than 1.0 micro-ohms; pH value, 6.5-7.0.

The model is therefore suitable for small process needs requiring pure water to B.P. specification 1958. No plumbing or special fittings are needed and a tester is provided to indicate demineralised water quality.

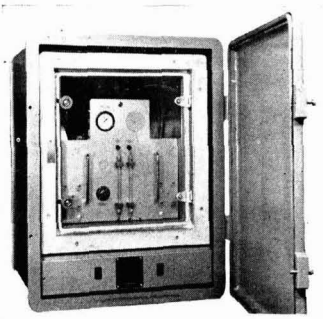
Polypenco P.T.F.E.

Products available for the chemical industry from **Polypenco Ltd.,** 68-70 Tewin Road, Welwyn Garden City, Herts, include Polypenco nylon 66 p.t.f.e. and K.51 Penton. Polypenco Fluorsint is a new p.t.f.e. developed to improve the mechanical and thermal properties of p.t.f.e. without materially affecting its unique chemical and electrical properties. Fluorsint bearings can operate at up to 500°F without degradation and with minimum distortion under load.

Polypenco K.51 Penton, a chlorinated polyether, is inert to almost all alkalis, solvents, chlorides and inorganic acids, except fuming nitric and sulphuric. This quality, together with mechanical strength and heat resistance, makes it particularly suitable for use as bearings, valve seats, seals, gaskets, gears, cams, washers, impellers, agitators and other parts that operate under severe corrosive conditions.

Pye Process Analyser

Full scale production is now under way by **W. G. Pye and Co. Ltd.,** Granta Works, Newmarket Road, Cambridge, of the first British industrial gas chromatograph. Pye have also introduced a more comprehensive range of industrial pH equipment and are extending their pH advisory service which will now advise on the control of industrial plant by pH measurement.



Pye process analyser showing oven and chassis front panel

The process analyser was developed in association with I.C.I. Billingham Division and the complete instrument comprises four units: analyser unit, electrical unit, control unit and recorder unit (Honeywell). This equipment, using a highly sensitive Argon ionisation detector, makes possible critical analyses in the p.p.m. range on a continuous basis. The conventional stability found in other gas chromatographs is retained.

The sample, automatically drawn from a sample stream, is eluted through the packed column by the argon carrier gas and the components separated. A d.c. electrical signal is transmitted to the control unit as each component passes through the detector. An appropriate attenuator is automatically selected in the control unit for each component and resulting signal transmitted to the recorder.

Torrance Attritors

The attritors manufactured by **Torrance and Sons Ltd.,** Bitton, near Bristol, are reported to be finding newer uses. In the latex industry for instance, this equipment is used for the dispersion of sulphur in water and is said to have cut considerably orthodox ball milling times. Other uses include the grinding of ferric oxide and dispersion duties in the electronics industry.

Material processed can be inspected continuously and additions and corrections to formulae can be made at any time without stopping the machine. Performance of the pilot size unit is said to compare very closely with that on the larger production units.

Russell Liftip

The mechanical Liftip, manufactured by **Russell Constructions Ltd.,** Russell House, Adam Street, London W.C.2, is suitable for elevating and tipping drums, sacks, or containers, of a dimension up to 30 in. wide to a height unsupported of 12 ft., or to a supported height to customers' requirements. Loads can be raised and tipped to a height of 4 ft. 6 in. in 12.5 seconds. A tipping angle of 20°

(Continued on page 522)

PROCESS PLANT

DESIGNED, FABRICATED,

ERECTED, COMMISSIONED

Formaldehyde manufacture

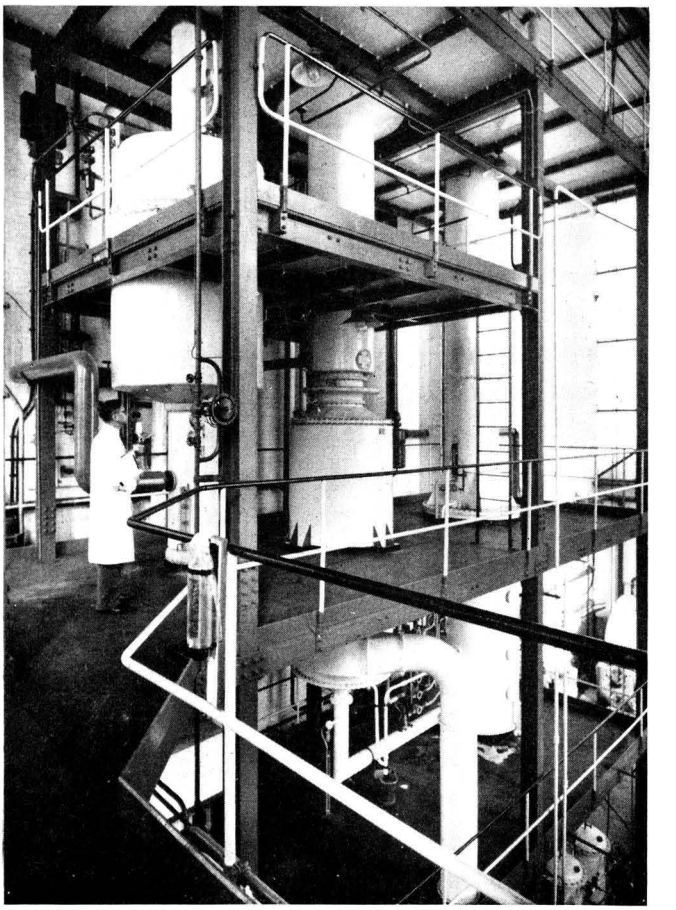
Synthetic Resin manufacture

Continuous Evaporation

Distillation

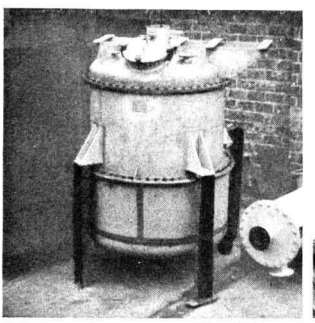
Solvent Recovery Etc.

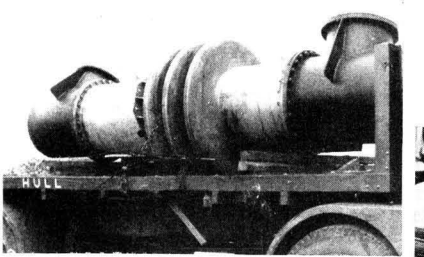
Nitration (Meissner)



Formaldehyde Plant supplied to CIBA (ARL) Ltd.

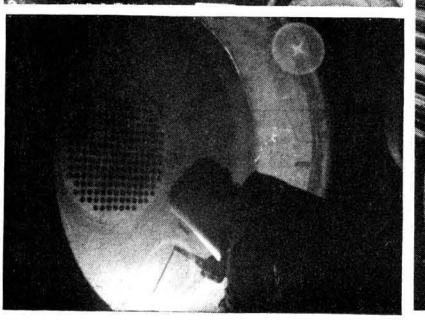
FABRICATION IN STAINLESS, NICKEL ALUMINIUM

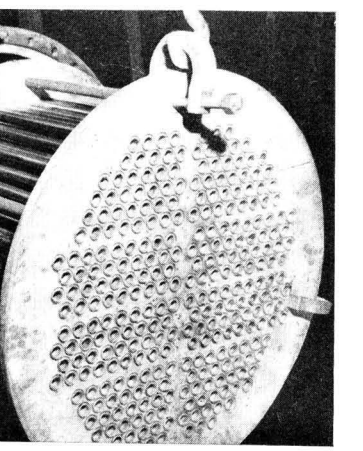




Class I Welding undertaken.

Works approved by
Lloyds, U.K.A.E.A.
Ministry of Supply
and other authorities.





LEONARD SMITH (ENGINEERS) LIMITED

PEOPLE in the news

● **Dr. J. S. Rowlinson,** senior lecturer in the University of Manchester, has been appointed to the University Chair of Chemical Technology, tenable at the Imperial College of Science and Technology.

● **Mr. A. D. Berk** has retired from the board of F. W. Berk and Co. As previously announced, **Mr. C. H. Tanner** has succeeded Mr. Berk as chairman.

● **Mr. D. Roberts,** who, as stated last week has become general manager of Sto-Chem Ltd., the company set up jointly by Witco Chemical and United States Rubber to produce synthetic rubber latices in the U.K., is also managing director of the new company. Before formation of the new company, he was manager of manufacturing for Witco's U.K. operations.

● **Mr. W. Kerr** will head the sales force of Albright and Wilson (Mfg.) Ltd. in Northern Ireland, headquarters of which will be the new office just opened in Belfast (see p. 520). Mr. Kerr, who is 38, taught science at Kilmarnock Academy before joining the company in 1955.

W. Kerr

● **Mr. P. A. Raine, F.R.I.C.,** chief chemist of the Crown Cork Co. Ltd., Southall, Middx, and vice-chairman of the London Section, Royal Institute of Chemistry, has been nominated to succeed **Mr. F. C. Hymas** as chairman at the annual meeting which will be held at Shell Mex House, London W.C.2, on 15 November. **Dr. J. E. Salmon,** head of the Chemistry Department at Battersea College of Technology, has been nominated to succeed Mr. Raine as vice-chairman.

● Two new directors have been appointed to the board of the I.C.I. Alkali Division, on the merger of the Salt Division with Alkali on 1 January 1961. On that date **Mr. E. H. Sale,** who has been managing director of Salt Division, will become a joint managing director and **Mr. E. K. Willing Denton,** commercial director of Salt Division, a director of Alkali Division.

● The Distillers Co. Ltd. announce the formation of a development division in its Industrial Group under **Dr. H. M. Stanley** as controller, who will be located at 21 St. James's Square, London S.W.1. The following appointments have also been made: **Mr. C. E. Hollis,** manager, central research department, Great Burgh, Epsom, Surrey; **Mr. G. P. Armstrong,** manager, licensing department; **Dr. H. W. Ashton,** manager, planning department. The main responsibilities of the new division will be the direction and co-ordination of the company's research, forward planning and licensing activities, particularly in the fields of chemicals and plastics.

● **Mr. Stuart Douglas** has been appointed director of the British Man-made Fibres Federation from 1 November, a few days before his 45th birthday; in succession to **Mr. A. J. C. Walters, C.B.E.** He joined the federation as assistant director in 1950, and three years later became deputy director and moved to London to take charge of the federation's growing activities there.

● **Mr. J. H. Ward, A.R.Ae.S., M.P.I.,** has been appointed to the board of Durapipe and Fittings Ltd. During the past three years, he has been with the company as works manager, and in this position has been closely associated with the development of a large range of thermoplastic pipes and fittings. Mr. Ward was previously with Lacrinoid Products as works director.

● The **Earl of Courtown,** head of the office administration department of I.C.I., has been elected president of the Institute of Office Management. He succeeds **Viscount De L'Isle.** Lord Courtown has been a member of the Institute for 25 years, and before the war was a member of the Council.

DIARY DATES

MONDAY 26 SEPTEMBER

S.C.I.—London: 14 Belgrave Sq., S.W.1, 5.30 p.m. 'Interpretation of mechanisms of insecticidal action', by Dr. E. H. Colhoun.

WEDNESDAY 28 SEPTEMBER

O.C.C.A.—London: Manson Hse., 26 Portland Pl., W.1, 7 p.m. 'Unsaturated polyesters for surface coatings', by W. F. Jenkins, A. Mott and Dr. R. J. Wicker.

THURSDAY 29 SEPTEMBER

S.A.C.—Chester: Blossoms Hotel, 7.15 p.m. 'Applications of X-ray spectrometry in the oil industry', by R. W. Toft, and 'Identification of substances of low volatility by pyrolysis/gas liquid chromatography', by Dr. G. C. Hewitt and B. T. Whitham.

S.C.I.—Bristol: Lecture Theatre, Chemistry Dept., University, 6.30 p.m. Fourth Robert Horne Memorial Lecture: 'Extraction of metals and the chemistry of metals', by Prof. F. D. Richardson.

S.C.I.—London: Royal Institution, 21 Albemarle St., W.1. Two-day symposium on 'Powders in industry: properties and principles of application'.

Soc. Instrument Tech.—Chester: Blossoms Hotel, 7 p.m. 'Automatic titrimetry' by D. A. Patient.

FRIDAY 30 SEPTEMBER

Inst. Metal Finishing—Sheffield: Grand Hotel, 7 p.m. 'Plating shop effluent treatment', by W. Lowe.

S.A.C.—Bangor: University College of North Wales, 7.15 p.m. 'Techniques and scales of analysis', by Prof. R. Belcher and Prof. C. L. Wilson.

S.A.C.—Caithness: Lecture Theatre, Dounreay, 9.45 a.m. Joint meeting with Polarographic Soc. and Caithness Technical Soc.

S.C.I. with R.I.C.—Macclesfield: Tenants Hall, I.C.I. Pharmaceuticals Division, Alderley Park, 2 p.m. Half-day symposium on 'Drugs for the treatment of hypertension'.

WATER CONSERVATION EXPERTS' RECEPTION

A new system using cetyl alcohol to reduce evaporation losses were announced recently at a reception given by Price's (Bromborough) Ltd. ('Chemical Age', 10 September, p. 389). At the reception, l. to r., J. Arnold Fox, chairman of Price's (Bromborough) Ltd., W. W. Mansfield, C.S.I.R.O., Australia, B. R. Hook, sales director of Price's (Bromborough), and P. Best, deputy head, technical division, Rio Tinto Management Services (U.K.) Ltd.

Commercial News

- British Oxygen Group Reorganisation
- Aspro Acquire Graesser Salicylates
- Lawes Plan to Raise Fertiliser Capacity
- C.I.L. Directors See Difficulties Ahead

British Oxygen

Six subsidiaries of the British Oxygen Co. Ltd. will cease to trade after the close of business on 30 September, when B.O.C. will take over their trading, businesses and assets. British Oxygen will then resume trading in its own name from 1 October. The wholly-owned subsidiaries concerned in this reorganisation are: British Oxygen Gases Ltd., British Oxygen Engineering Ltd., Quasi-Arc Ltd., Sparklets Ltd., A. Charles King Ltd. and British Oxygen Research and Development Ltd.

Graesser Salicylates

The privately-owned business of Graesser Salicylates, Sandycroft, near Chester, has been acquired by Aspro-Nicholas Ltd., because of their fundamental interest in salicylates. Acquisition price was £200,000. Graesser Salicylates are to continue as a going concern with Mr. F. R. Graesser-Thomas, founder of the company, remaining as chairman. Mr. N. H. Graesser will continue to be associated with the business as president.

Lawes Chemical

Plans are being prepared by Lawes Chemical Ltd. to increase the productive capacity of the factory and work has recently started on the erection of a second large storage and loading bay at Barking. Mr. F. A. Perkins, chairman, says that the trading position in the current year justifies an optimistic outlook with increased productivity and turnover enabling the group again to lower selling prices for the 1960-61 season. The year ended 30 June was an excellent trading year for the company.

Metropole Industries

Metropole Industries Ltd. have acquired the whole of the capital of Fibrenyle Ltd., manufacturers of plastics containers. Metropole already have a substantial investment in the packaging industry through J. Billig and Sons Ltd., who produce metal cans and drums. Billig and Fibrenyle will have the same sales organisation and customers' research service. The total consideration paid to the vendors is £70,000 in cash.

Newton Chambers

Interim dividend of Newton Chambers and Co., ironfounders, engineers and chemical manufacturers, is to be raised by 2% to 8% in respect of 1960. The directors propose to increase the authorised capital from £3 million to £3.5 million, to sub-divide the £1 ordinary shares into units of 5s. each, and to offer to ordinary holders rights on a one-for-eight basis, details of which will be announced shortly.

From results to date it is expected, subject to no unforeseen circumstances arising, that the board will recommend a dividend at a total rate of 20% for 1960. A total of 17½% was paid for 1959.

Stainless Steel Plant Ltd.

A.P.V. Co. Ltd. have acquired an interest in the business of Stainless Steel Plant Ltd., of Cleveleys, near Blackpool, which has been fabricating plant and equipment in stainless steel, mainly for food processing, for several years. Management will remain and the company will continue to operate as before.

John and E. Sturge

The directors of John and E. Sturge Ltd. announced on 15 September that they have declared a second interim dividend of 3% less Income Tax for the year ending 31 December, 1960, payable on 31 October, 1960.

B.P. Benzin und Petroleum

B.P. Benzin und Petroleum AG, of Hamburg, the German subsidiary of British Petroleum and 50% owner of the Erdölchemie GmbH petrochemical concern, Dormagen-on-Rhine, plan to increase their capital from DM300 million to DM350 million. Main reasons for the increase are the investments needed for the company's new Dinslaken refinery and the expansion of the Rhine-Lippe port at Wesel.

Canadian Industries Ltd.

While Canadian Industries Ltd. showed a gain in the first six months this year, directors have expressed pessimism about the Canadian economic picture as a whole. At Vancouver, B.C., for a directors' meeting, Mr. Peter C. Allen, president, and Mr. Leonard Hynes, vice-president, said there could be a serious unemployment problem this winter, adding that "if business does not pick up in the next six months there will be trouble."

Mr. Allen noted that C.I.L. sales were up 10% and net profits ahead 24% in the first six months of this year.

Dow Chemical

Sales of Dow Chemical for the quarter ended 31 August, $191,681,368, showed an increase over the same period of last year. Sales for September are expected to be the highest for any month in the history of the company. However, profits for the quarter are down on last year.

Donau-Chemie AG

The Viennese chemical producers, Donau-Chemie AG, report a 1959 net profit of Sch.3,500,000 after a year in which turnover rose 14%. A dividend of 4% (same) is to be paid. The company's production programme sees a capacity expansion of 50% in the current year and the construction of new trichloroethylene and perchloroethylene production plants has been started.

W. R. Grace and Co.

Half-yearly report of W. R. Grace and Co., U.S., reveals that net income rose to $7,866,000, or $1.57 a share, from $7,247,000, or $1.51, a year earlier. Including Grace's equity in undistributed earnings of non-consolidated subsidiaries and 50% companies, per share profits were $1.75 against $1.73. The company reported first half sales and operating revenues, excluding $32 million, by Cosden Petroleum Corporation, in which it acquired a 53% interest in January, totalled $250 million, 6% higher than in 1959.

Soc. Siciliana Metano

A company to study and undertake natural gas transportation in Sicily and from North Africa has been set up in Sicily under the name of Società Siciliana. Transportation of gas from Africa is planned by way of a pipeline. Shareholders in the new company are Tifeo, S.G.E.S., Raffinerie Augusta, Akragas SpA, Fiat, SINCAT, A.B.C.D., Cementi Portland and Cementerie Siciliane.

NEW COMPANIES

ARDEX SURFACES LTD. Cap. £6,000. Manufacturers, importers and exporters of and dealers in all chemical products and compositions used in the preparation, laying or improvement of flooring and other surfaces, road and flooring contractors and specialists, etc. First directors are not named. (So long as Lafarge Aluminous Cement Co. Ltd., Societe Chimique de Gerland and Ardex Chemie G.m.b.H. hold any shares they may each appoint one director.) Solicitors: Gordon, Dadds and Co., 80 Brook Street, London W.1.

K.D. CHEMICALS LTD. Cap. £100. Manufacturers of and dealers in chemicals, etc. Directors: J. K. Williams and Dorothy M. Williams. Reg. office: 49 Parkwood Road, Boscombe, Bournemouth.

OILTONA LTD. Cap. £1,000. Manufacturers of and dealers in natural chemical or manufactured substances for the treatment or removal of oil, dirt, or other unclean matter and all types of containers and implements for use therewith, etc. Directors: D. H. Shaw and Doris Shaw. Solicitors: Montague and Cox and Cardale, 86/88 Queen Victoria Street, London E.C.4.

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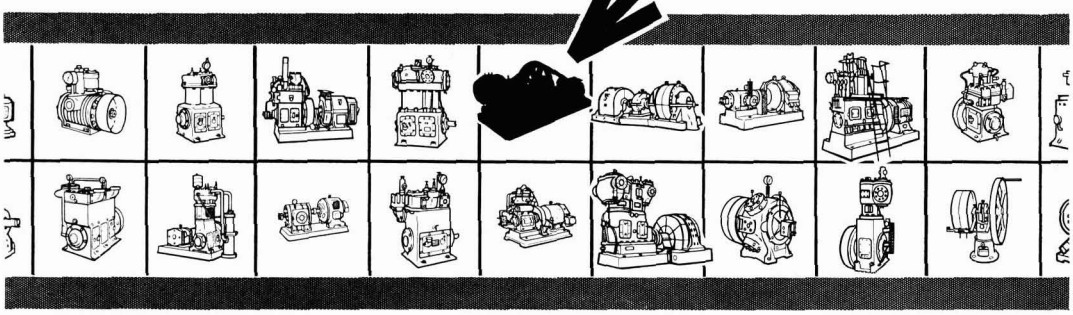

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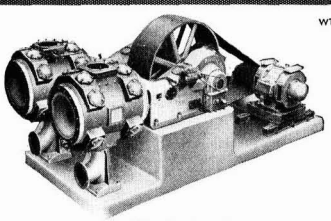

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NEW PATENTS

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

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

ACCEPTANCES

Open to public inspection 19 October

Recovery of trimethyl borate. Olin Mathieson Chemical Corporation. **851 661**

Vulcanisable organopolypiloxane compositions. Soc. Des Usines Chimiques Rhone-Poulenc. **851 578**

Process for the production of substituted 5-aminopyrazoles. Farbenfabriken Bayer AG. **851 987**

Substituted benzodioxanes and their preparation. Lilly & Co., E. **851 662**

Steroids and the manufacture thereof. Upjohn Co. **851 988**

Cyclohexylamine compounds and methods for producing same. Parke, Davis & Co. **851 782**

Pyridine compounds and methods for producing same. Parke, Davis & Co. **851 577**

Production of nitrilotriacetonitrile. Rohm & Haas GmbH. **851 783**

Alkali metal hydroxide production. Diamond Alkali Co. **851 785**

Polymerisation of an ethylenically unsaturated compound. Bataafsche Petroleum Maatschappij N.V. De. **851 583**

Steroids and the manufacture thereof. Upjohn Co. **851 990, 851 960**

Production of polyurethanes. Bataafsche Petroleum Maatschappij N.V. De. **851 668**

Stabilised polyolefin compositions. Hercules Powder Co. **851 670**

Esterification of terephthalic acid in presence of metal oxidation catalyst. Hercules Powder Co. **851 671**

Production of pure silane. Allied Chemical Corporation. **851 962**

Recovery of acetylene and the like. Phillips Petroleum Co. **851 673**

Derivatives of trioxo-2, 4, 6-piperidine and the process of preparing same. Chimie Et Atomistique. **851 674**

Therapeutic hydroxycarboxylic acids and the manufacture thereof. Bergström, S., and Sjövall, J. **851 827**

Process of steam-cracked naphtha light end products. Esso Research & Engineering Co. **851 437**

3-p-diphenylyl-pent-3-enoic acid. Angelini, F. [trading as Aziende Chimische Riunite, F. Angelini.] **851 678**

Steroids and the manufacture thereof. Upjohn Co. **851 679**

Thermoplastic materials. Du Pont de Nemours & Co., E. I. **851 439**

Copolymers of N-carbamyl-maleimide. United States Rubber Co. **851 440**

Polymerisation process with a peroxydicarbonate initiator formed in situ. Goodyear Tire & Rubber Co. **851 964**

Method for the manufacture of alkyl iodides. General Anilin & Film Corporation. **851 683**

Production of acid chlorides. Badische Anilin- & Soda-Fabrik AG. **851 684**

Polyethylene compositions. Union Carbide Corporation. **851 686**

Method of dehydrating barium hydroxide hydrates. Kali-Chemie AG. **851 690**

Hydrogenation of oxyheterocyclic compounds. Quaker Oats Co. **851 692**

Process for the recovery of naphthalene from its mixtures with oils. Rütgerswerke AG. [Addition to 732 652.] **851 698**

Polymerisation of olefinic compounds. Solvic S.A **852 010, 851 850**

Production of ω cyano-carboxylic acids and carboxylic group functional derivatives thereof by telemerisation. Union Rheinische Braunkohlen Kraftstoff AG. **851 809**

Substituted phenothiazinyl trifluoromethyl sulfones. Smith Kline & French Laboratories. [Divided out of 851 886.] **851 887**

Substituted trifluoromethoxy and trifluoromethylcaptophenothiazines. Smith Kline & French Laboratories. [Divided out of 851 951.] **851 952**

6-methyl steroid compounds and the preparation thereof. British Drug Houses Ltd. [Divided out of 851 741.] **851 742**

Open to public inspection 26 October

Fungicidal composition. Imperial Chemical Industries Ltd. **852 634**

Method of polymerisation. Wakefield & Co. Ltd., C. C. **852 332**

Process for salts of sulphuric acid esters of leuco vat dyestuffs of the anthraquinone series. Duran & Huguenin AG. **852 518 & 852 519**

Preparation of salts of antibiotics and vitamins. Laboratorio Atral Ltd. **852 334**

Compositions containing high vinyl—low diene resins and acidic resins and uses. Burke, O. W. **852 465**

Vat dyestuffs of anthraquinone series and a process for manufacture. Farbwerke Hoechst. **852 517**

Process for preparing high molecular polyolefins. Farbwerke Hoechst. **852 187**

Cyclopentanophenanthrene derivatives and processes for production. Syntex S.A. **852 288**

Apparatus for bulk polymerisation of polymerisable compounds. Compagnie de Saint-Gobain. **852 289**

Process for copolymers of vinyl ester and maleic acid. Wacker-Chemie GmbH. **852 520**

Process for polymerisation of olefins. Snia-Viscosa. **852 247**

Dyestuffs of the perylene tetracarboxylic acid series. Farbwerke Hoechst. [Addition to 837 326.] **852 202**

Isothiocyanoethylimidazolidinethione, preparation and use. Rohm & Hass Co. **852 583**

Curing epoxy resins. Union Carbide Corp. **852 409 & 852 410**

Production of trialkyl phosphites. Monsanto Chemical Co. **852 586**

Urea derivatives and process. Farbwerke Hoechst. **852 422**

Monoazo-dyestuffs derived from cyanuric halides and manufacture and use. Ciba Ltd. **852 120**

Preparation of ethylenic hydrocarbon polymers. Houilleres du Bassin du Nort et du Pas-de-Calais. **852 532**

Production of hydrogen cyanide. Monsanto Chemical Co. **852 072**

Water-insoluble monoazo dyestuff derived from 1-(2^1:3^1-hydroxy-naphthoylamino)-2:5-dimethoxy 4-chloro benzene. Farbwerke Hoechst. **852 589**

Polyurethane elastomers and preparation. Goodrich Co., B. F. **852 357**

Process for enriching natural phosphates. Comptoir des Phosphates de l'Afrique du Nord. **852 538**

Production of sulphuric acid. National Smelting Co. Ltd. **852 073**

Polymerisation catalyst recovery process. Phillips Petroleum Co. **852 358**

Process for hydroxamic acids. Imperial Chemical Industries Ltd. **852 176**

Hydroxamic acids and derivatives. Imperial Chemical Industries Ltd. **852 100**

2-Alpha-methyl-4-pregnenes and method of preparing same. American Cyanamid Co. **852 680**

Alkylidene bis inanols. Goodrich Co., B. F. **852 540**

Manufacture of polymeric materials. Imperial Chemical Industries Ltd., Gee, E. Gudgeon, H., and Stephenson, K. [Addition to 839 186.] **852 138**

6-Methyl steroid compounds and process. British Drug Houses Ltd. **852 683**

Polymeric materials. Du Pont de Nemours & Co., E.I. [Addition to 808 144.] **852 360**

Production of benzene-monoazo-pyrazolone dyestuffs containing chromium. Badische Anilin- & Soda-Fabrik AG. **852 363**

Production of metallisable azo dyestuffs derived from 4-hydroxyl-diphenyl and their metal complex compounds. Badische Anilin- & Soda-Fabrik AG. **852 689**

Polymerisation of olefins. Imperial Chemical Industries Ltd. **852 691**

Chemical reactions. Soc. Belge de l'Azote et des Produits Chimiques du Marly. **852 692**

Phosphorodithioate inhibitors. Lubrizol Corp. **852 365**

Production of alkyl benzenes. British Hydrocarbon Chemicals Ltd. **852 079**

Process for electrolytic production of fluorine and apparatus therefor. Imperial Chemical Industries Ltd. **852 369**

Steroid compounds and preparation. Pfizer & Co. Inc., C. **852 647**

Parasiticidal drugs. National Research Development Corporation. [Addition to 809 295.] **852 650**

Pigmented polyolefin composition and method of manufacture. Cabot Inc., G. L. **852 371**

Diisocyanato diphenylmethane derivatives and their polyurethane products. Imperial Chemical Industries Ltd. **852 651**

Phenolic amino compounds. Monsanto Chemicals Ltd. [Addition to 799 397.] **852 374**

Polypropylene waxes and their preparation. Eastman Kodak Co. **852 431**

Emulsifiable polypropylene waxes and their preparation. Eastman Kodak Co. **852 432**

Polyethoxy quaternary ammonium compounds as levelling and stripping agents for dyestuffs. Sandoz Ltd. **852 548**

Method of producing very pure silica. Licentia Patent-Verwaltungs-GmbH. **852 550**

Process for production of foam materials containing urethane groups. Farbenfabriken Bayer AG. **852 379**

Catalytic reduction of dinitrotoluenes. Imperial Chemical Industries Ltd. **852 144**

Production of conjugated diolefins. British Hydrocarbon Chemicals Ltd. **852 145**

Heterocyclic boron compounds, and a process for boron hydrocarbons. Studiengesellschaft Kohle. **852 488**

Polymerisation process. Air Reduction Co. Inc. **852 593**

Production of dinitrosoanilines. Monsanto Chemical Co. **852 595**

Organosiloxane compositions. Midland Silicones Ltd. **852 596**

Preparation of ion exchange resins. Dow Chemical Co. **852 304**

Apparatus and method for electrolysis of alkali metal salts. Asahi Garasu Kabushiki Kaisha. **852 597**

Production of *p*-hydroxybenzoic acids. Monsanto Chemicals Ltd. **852 599**

Process for modification of olefin polymers. Lubrizol Corporation **852 382**

Manufacture of films. Imperial Chemical Industries Ltd. **852 491**

Producing vinyl-substituted pyridines. Distillers Co. Ltd. **852 129**

Removal of sulphur contaminants from hydrocarbon stream. Esso Research & Engineering Co. **852 166**

Aminophenyl ethers. May & Baker. **852 083**

Process for alkylating aromatic hydrocarbons. Esso Research & Engineering Co. **852 383**

Process for preparing dihydroxy alkyl acrylates and methacrylates. Rohm & Haas Co. **852 384**

Benzene-monoazo-benzene dyestuffs. Imperial Chemical Industries Ltd. **852 493**

Method of producing allo-isocitric acid by fermentation. Kyowa Hakko Kogyo Kabushiki Kaisha. **852 486**

Anthraquinone dyestuffs. Imperial Chemical Industries Ltd. **852 604**

Polyamide moulding compositions. Du Pont de Nemours & Co., E.I. **852 487**

Pentaerythritol-olefinic α, β-unsaturated aldehyde resins. Union Carbide Corp. **852 438**

Polycondensation of salts of dicarboxylic acids and diamines. Snia Visco. **852 606**

Process for production of cross-linked plastics of high mol. wt. Farbenfabriken Bayer AG. **852 607**

Benzene-monoazo-benzene dyestuffs. Imperial Chemical Industries Ltd. **852 396**

Production of cycloaliphatic alcohols and ketones by oxidation of cycloaliphatic hydrocarbons. Badische Anilin-Soda-Fabrik AG. **852 523**

Process for activated carbon. Reinluft GmbH. **852 661**

Production of methacrylic acid and esters thereof. Escambia Chemical Corp. **852 664**

Pyridoxal derivatives with a protected aldehyde group and process. Merck AG, E. **852 398**

Various polymers of certain acrylate and methacrylate monoesters of polyglycols and acrylonitrile polymer compositions obtainable therewith. Dow Chemical Co. **852 399**

Preparation of nylon polymers. California Research Corp. **852 672**

Azo dyestuffs of the benzineazo-pyrazolone series containing thiocyano groups. Farbenfabriken Bayer AG. **852 400**

Olefin polymerisation processes. Shell Internationale Research Maatschappij N.V. **852 200**

TRADE NOTES

Laporte Titanium

From 19 September the sales office of Laporte Titanium Ltd. is located at New Bond Street House, 1-5 New Bond Street, London W.1, instead of at Hanover House. The new telephone number is Hyde Park 0631-7. From Monday, 26 September, Laporte Group advertising and publicity will also be dealt with at New Bond Street House, instead of at Fetter Lane.

Northern Aluminium

From 15 September Northern Aluminium Co. Ltd. will be known as Alcan Industries Ltd. This new name involves no change of ownership, manufacturing activity or sales policy, its purpose being to identify the company more clearly as a member of the Aluminium Ltd. of Canada group, comprising some 50 companies in all parts of the world. It is proposed to retain the trade name of Noral.

Change of Address

From 1 September the address of Craven Electronics Ltd. is Victoria Works, Bingley, Yorks. (Bingley 2362/3.)

Zinc-rich Primer

A zinc-rich primer, known as D.M.U. 'F', is claimed by the makers, Detel Products Ltd., South Ruislip, Middx, to be a completely new type, which does not have to be mixed with a thinner before use. It has the further advantage of being produced for both brush and roller application, although for the latter a certain amount of thinning is recommended. The coverage of D.M.U. 'F' is from 400 to 500 sq. ft. per gall. according to the surface to which it is applied.

Mond Nickel Exhibition

An exhibition designed to interest all concerned with engineering problems involving the use of metals, with the main emphasis on the properties of nickel-containing materials and the platinum metals is being arranged by the Mond Nickel Co. Ltd. at the South Wales Institute of Engineers, Park Place, Cardiff, from 1-4 November. Displays and demonstrations will be divided into seven sections relating to the properties of metals at high, normal and sub-zero temperatures; metals versus corrosion; metals for surface protection; metals with special magnetic, expansion or chemical properties; methods of fabrication.

Walker, Crossweller

Walker, Crosweller and Co., Ltd., Cheltenham—manufacturers of Leonard thermostatic mixing valves, Unatap spray taps, and Arkon instruments—have opened a new office block in the town. This houses their sales and service departments, which retain the old telephone number (Cheltenham 56317) and address. Departments at the factory (accounts, works offices, buying and publicity) have a new number: Cheltenham 56366.

Changes of Name

Head Wrightson Stockton Forge Ltd., a subsidiary of Head Wrightson and Co. Ltd., have changed their name to Head Wrightson Stockton Ltd. This move was considered expedient in view of the greater diversification of activity since the days of the company's formation over 60 years ago, and the extension of their operations into new industries. Today Head Wrightson Stockton design and manufacture specialist equipment for the mining, iron and steel, chemical and allied industries.

In view of the fact that their trade name is now well known throughout the world, the directors of Precision Components (Barnet) Ltd., Kabi Works, Potters Bar, Middlesex, have changed the name of the company to Kabi (Electrical and Plastics) Ltd.

A. & W. Belfast Office

Rapidly growing sales to Northern Ireland are reflected in the opening by Albright and Wilson (Mfg.) Ltd., on 19 September, of a sales office in Belfast. The new office is in Imperial Buildings, 72 High Street, Belfast.

The company, one of the Albright and Wilson Group, produce a wide range of compounds based on phosphorus, including phosphates for the prevention of scale and corrosion in industrial and domestic water systems; chemical solutions for metal polishing and for plating processes; plastics chemicals; chemical intermediates; Kanigen nickel plate; Calgon water softener; and general chemicals.

Market Reports

Home Demand is Fully Maintained

LONDON Home demand for chemicals has been fully maintained with the movement to the chief using industries, in the aggregate, covering good volumes. Export trade inquiry continues on a satisfactory scale in the face of keen competition. The price position generally is steady with a firm undertone, but fluctuations in nonferrous metal prices affect the chemical compounds. Zinc oxide, white seal, is currently quoted at £107 10s per ton. There has been little change in the market for the coal tar products, and most items continue to find a ready outlet.

SCOTLAND Overall business was maintained at a reasonable level during the past week. Buying was brisk from most sections of industry, particularly in regard to textiles. Industrial chemicals were well demanded against both spot and contract requirements. Apart from the general range of caustics, hypos and acids, there was a good demand for auxiliary chemicals. Prices still continue steady with little alteration. There is no change to report in the position of agricultural chemicals. The export market remains steady with the usual volume of inquiries.

First Translation of Russian Chemical Reviews

FIRST edition of *Russian Chemical Reviews* (Uspekhi khimii) has been published in a cover-to-cover translation by the Chemical Society, London, with the support of the Department of Scientific and Industrial Research. The five or six articles in each edition will take the form of reviews of recent Russian (or occasionally Chinese) work, with full references. The subscription annually from No. 1 of 1960 is £12 (£9 for universities and technical colleges). Single copies are £1 6s 8d.

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(30) **'U' Trough Mixers** up to 9 ft. 6 in. by 4 ft. by 4 ft.
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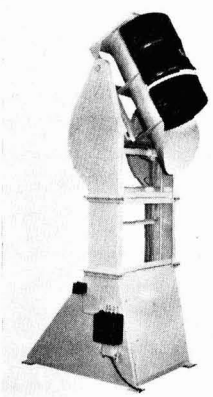
TRENDS IN EQUIPMENT

(*Continued from page 512*)



Russell hydraulic Liftip

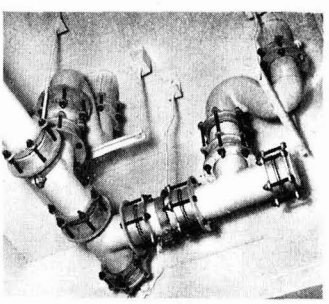
from the vertical can be attained for drums and containers. Sacks may be emptied vertically, automatic stop devices are employed at the loading and tipping positions, an overload switch is employed to protect the electric motor, the machine is a self-contained unit complete with all electrical equipment, etc.

Chemical Resistant Piping

Problem of the provision of effluent piping which would resist the wide range of corrosive chemicals used in a photogravure process department was overcome by the use of Doulton porcelain fixed flange piping, manufactured by **Doulton Industrial Porcelain Ltd.,** Tamworth, Staffs.

This piping is produced from a high strength porcelain material which is completely impervious. Metal flanges are fixed to the outside of the pipes so that they can be bolted together on site, a separate washer of suitable material is used at each joint. A variety of fittings is available and a combination of pipes, bends, junctions, traps and hoppers can be provided so that the whole pipeline is non-rigid and will withstand a reasonable degree of flexing and vibration.

After some trials, it was decided to use a high nitrile synthetic rubber for the jointing gaskets.



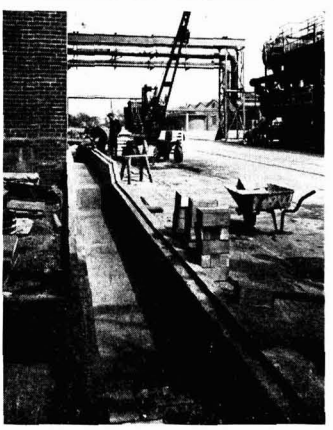
Doulton porcelain fixed flange piping installation

Pneumo-electric Transducer

Designed by **Taylor Controls Ltd.,** 75 Hale End Road, London E.17, to receive pneumatic signals between 3 and 15 p.s.i. and transmit signals of any span between 0 and 70 V, the Taylor 708T transcope pneumo-electric transducer can transmit either a voltage or a resistance signal. Resistance models are available for changes in resistance from 1 K ohm to 20 K ohms. There are two basic units, one for use with flow transmitters, which incorporates square root extraction to give an output proportional to the flow, and one with the output proportional to the input.

The ambient temperature limit is from −10°C to +50°C and response time is within three seconds for the full scale range.

Semtex for Courtaulds



This lining to an outside channel 1,200 ft. long running through the Redscar Works, Preston, of Courtaulds Ltd., meets various branch channels as it passes individual buildings. It crosses fields and runs finally into the effluent scheme. The contract was handled by Semtex Ltd., a Dunlop company, of 19-20 Berners Street, London W.1. The channel comprises a main concrete shell about 2 ft. 6 in. wide by 2 ft. deep over which Semtex placed an Oppanol membrane and further laid 3 in. thick brickwork to both the sole and vertical sides of the channel, fully bedded and jointed in Furane resin cement

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