

# THE Chemical Age

VOL. LXXIV

4 FEBRUARY 1956

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18/11/56  
No. 1908

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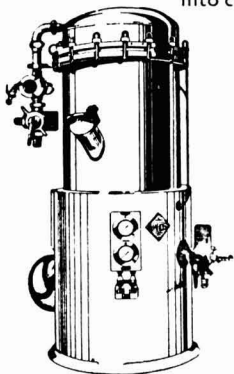
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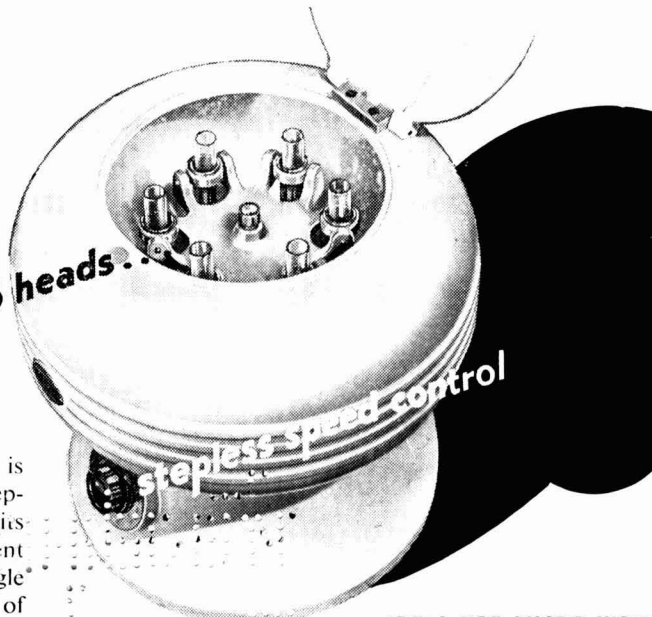
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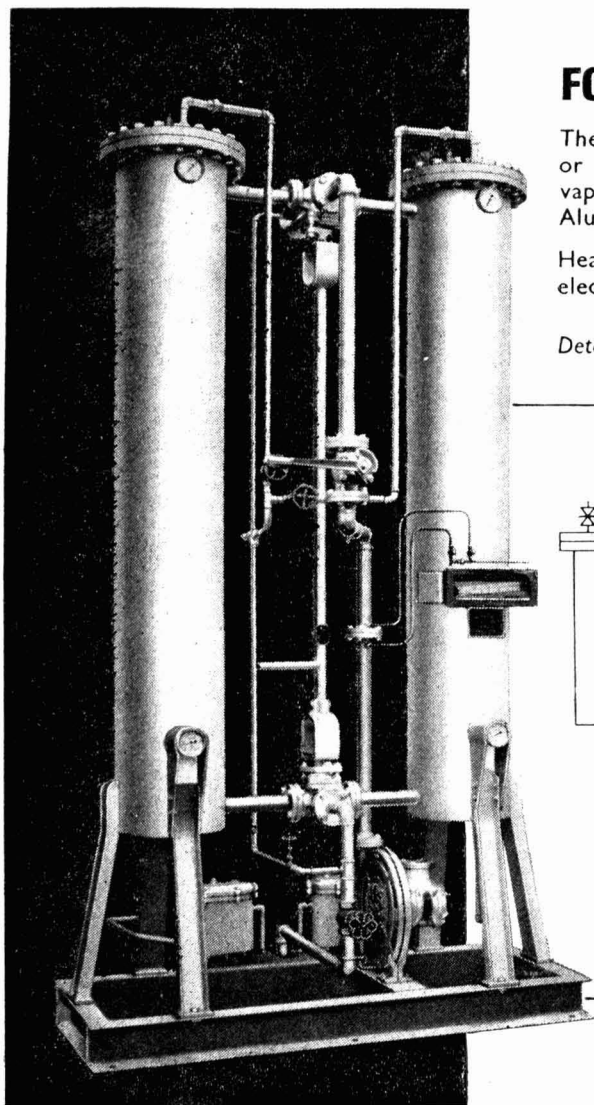
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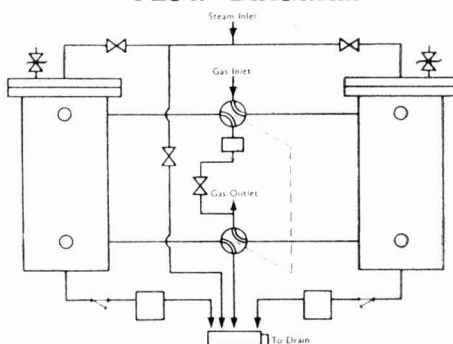
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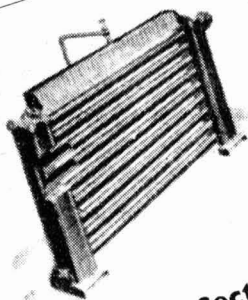
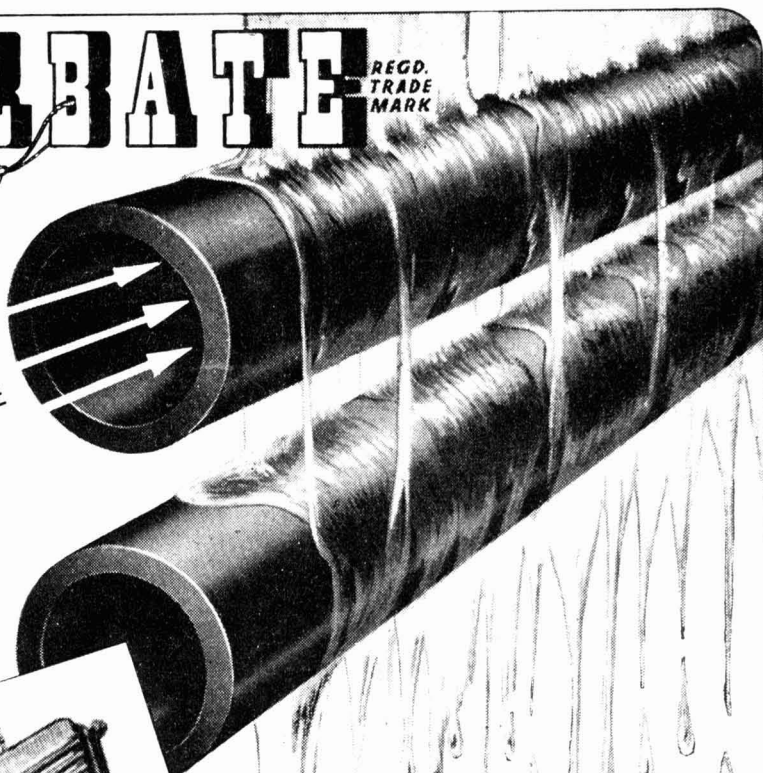
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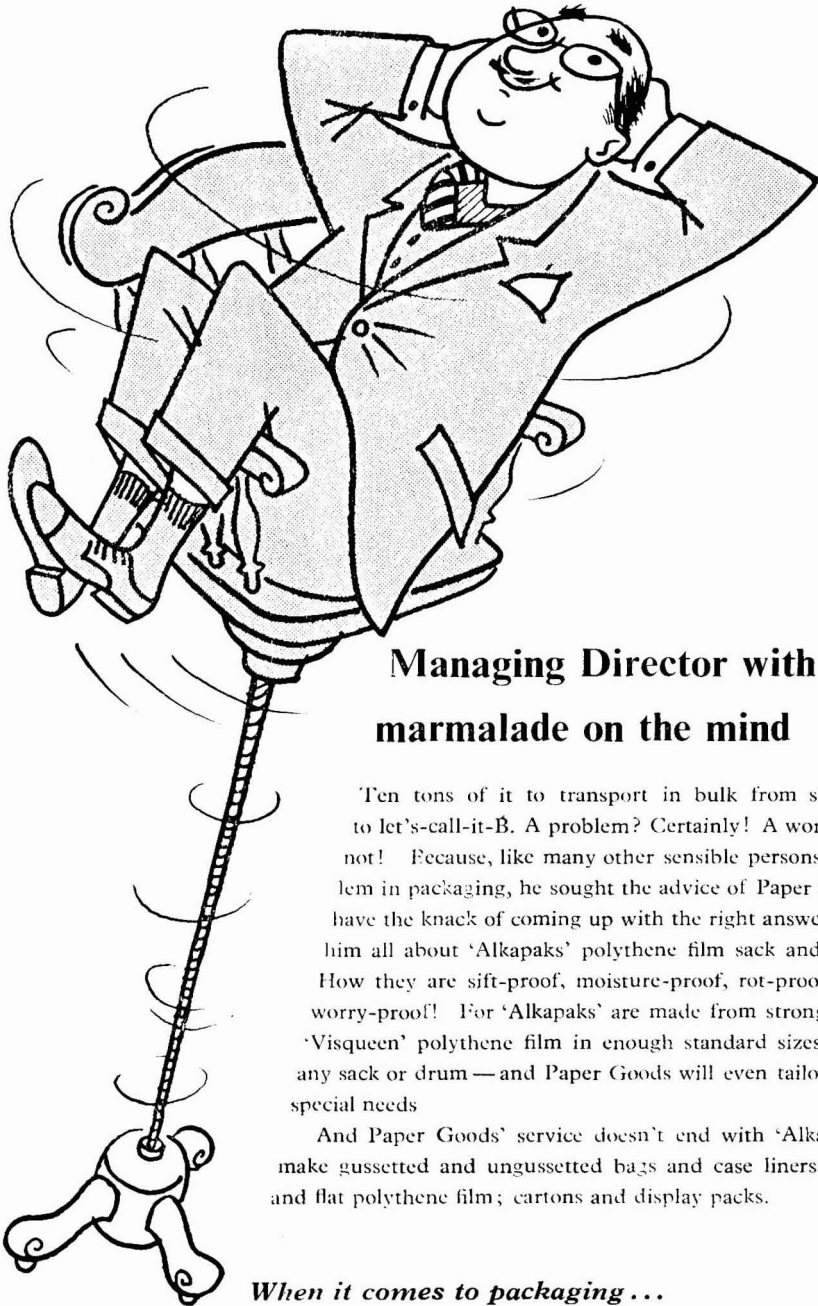
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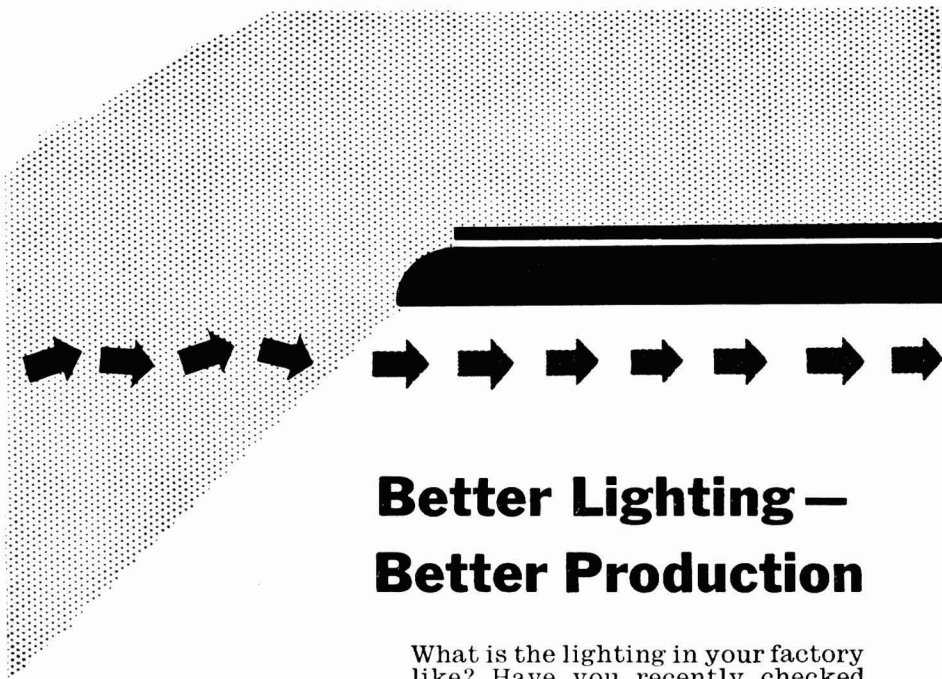
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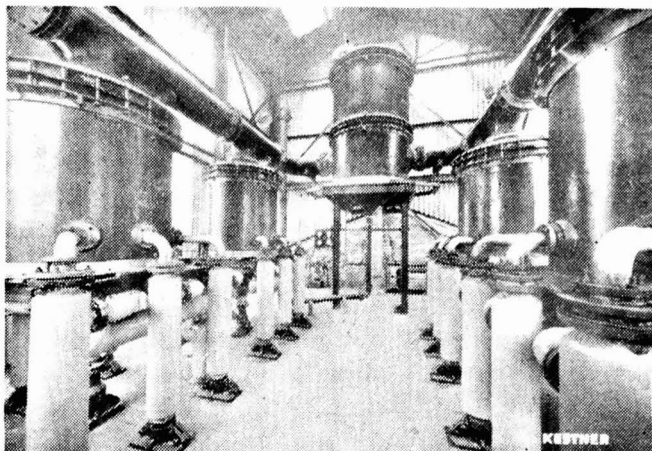
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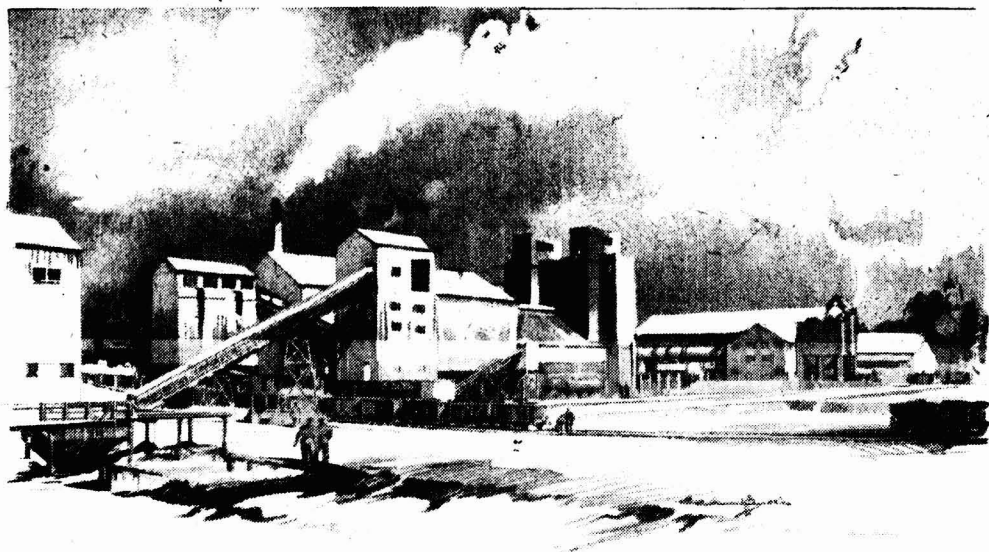
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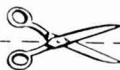
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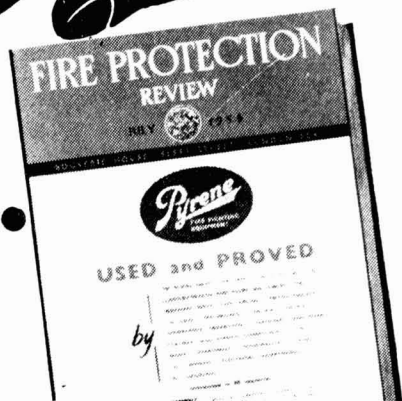
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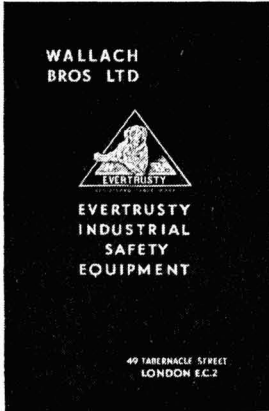
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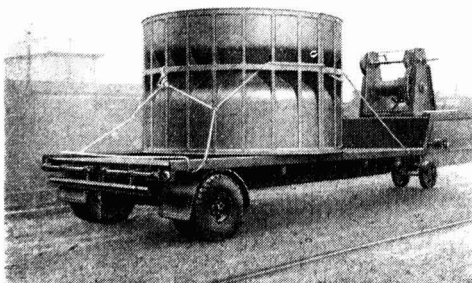
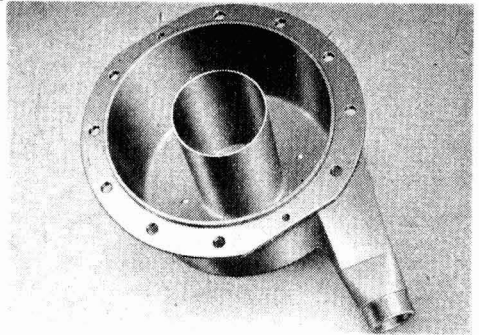
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Volume LXXIV

Number 1908

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Established 1919

*The Weekly Journal of Chemical Engineering and Industrial Chemistry*

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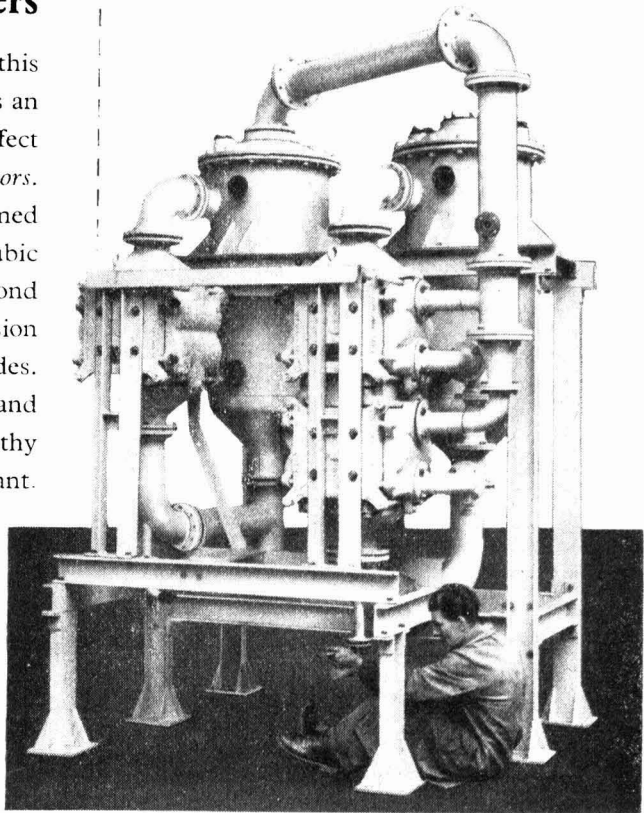
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## Anglo-US Measure of Safety

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A STUDIOUS comparison of our own and the American attitudes towards industrial safety and industrial health has recently been made by a British observer who, through the auspices of the Rockefeller Foundation, was enabled to spend some months in the States. As this observer, Mr. J. H. F. Smith, M.Sc., F.R.I.C., is normally employed in the Ministry of Labour's Factory Section, and particularly in the Engineering and Chemical Branch, all that he saw in the US could be readily measured against British practice for similar or near-similar problems. His report, in the form of a paper read this month to the Institution of Chemical Engineers, forms not unexpectedly a notable landmark in the literature of 'working safety'.

Most of us who peruse US chemical journals with regularity would suppose that the US legalistic system of safety measures was admirably tight. A good many papers published by State officials have seemed to bristle with detailed efficiency, and a most vigilant system of regulations and penalties has been indicated. Yet this is far from actuality. The US code of safety law in factories is loose and inconsistent. Each state has its own laws and there are many variations. The largest state, Texas, is said to have only one safety inspector. A Washington Federal official referred to frustrating difficulties for the enforcement of existing regulations. Our own 150-years-old system, built up stage by stage, and centrally administered, is, at any rate legally, much stronger. This is a surprising aspect of comparison for those who try to assess America from a distance.

Yet what seems a weakness has produced strength in a different plane. The comparative absence of a compulsory safety code has led to a powerful voluntary effort. Educational measures are highly developed, far more so than here. In other words, safety is pursued and studied for its own sake, with much less consciousness that a code of law is being fulfilled. Mr. Smith puts forward the view that a 'combination of our legal system and some of the American methods of education of both management and men' might make a better system for both countries. It is the old story, of course, of the letter and the spirit of law, of rigid regulations and their human purposes. The major phase of America's industrial expansion has occurred during a more enlightened period; laws were essential in the narrower, darker times of our own. Not even now should we begin to be critical of our greater reliance upon legislation. However valuable and far-reachingly effective the more voluntary approach can be, it cannot provide good precautions everywhere. Industrial accidents surely have too many irrevocable costs for a system that makes it possible for those who do not bother not to be bothered.

'We have not in Great Britain done very much so far to teach the ordinary workman the dangers of the materials and plant with which he is concerned and the reasons that lie behind precautions to prevent injury or poisoning.' Here Mr. Smith considers that we have much to learn from the Americans. There is, of course, a hard core, and long has been, that seems obdurately ineducable.

and many a British manager or technician has been forced to give in to this non-responsive reaction, relying instead upon the code of law for both minimum and maximum safety practice. Additionally, we are not as well possessed with the flair for popular education as most Americans—with less colour and humour in the attempt to teach and plenty of illogical suspicion among those who ought to be taught. The echoes of class warfare are louder here.

Plants should not be designed with unnecessary hazards so that workers subsequently have to operate them safely by 'education'. Safety-consciousness begins on the design engineer's blue prints. However, Mr. Smith in making this point would not seem to suggest that American practice is generally better than ours. He gives some indications that it often is better, but he also reports a good deal of inconsistency, and some of the safety devices commonly relied upon there are questionable if not deplorable.

American practices seem particularly better than ours in the field of special fire risks. This may be the natural development of a country more and longer used to handling oil as a major fuel, but there is more to it than that. The use of portable non-spill containers for inflammable liquids was 'almost universal'. In many factories, sills, doorway ramps, and even in one case a precautionary drainage system, limit the spread of inflammable liquids to the ground-floor should large-scale leakage occur. The fragile glass tube level-gauge was rarely seen on US storage or process vessels where inflammable liquids were used. Indirect gauges were preferred—of torsion or float-pulley type, or high pressure plate-glass gauges. On the other hand, the size-limit of storage containers, up to 30,000 gallons for liquefied petroleum gases, seems unduly hazardous; the explosive danger in the event of mechanical collapse or fire could not be localized. The generally high level of precautions with inflammable liquids and vapours in US industry can be attributed to several practical causes. Big fires are bitter and well-remembered American events. The National Fire Protection Association is a vigorous organization, much occupied with research and education; in addition,

the insurance companies and underwriters seem to be exceptionally active in promoting safety practices. The input of effort being so large, the results are strikingly good.

The broad subject of 'industrial hygiene' is far from advanced in the United States. The American Industrial Hygiene Association, founded in 1939, has 800 members. The industrial hygienist has a recognized profession and large manufacturing companies and insurance companies employ specialists. The ill-effects of raw or process materials are closely studied and limits for non-harmful exposure are determined. Medical examinations of workers are a major aspect of this type of precautionary practice. There is a suggestion in Mr. Smith's report, though it is indefinite, that some of the interest in this development is due to the sizeable problem of workmen's compensation claims in some industries. If so, this is a sector of progress that has been stimulated by legal forces.

The handling of poisons and corrosive substances is another branch of good American safety-conscious practice. Flanges and valves in pump-lines are given protective covers or enclosures (usually made of pvc or polythene) much more commonly than in British factories. The provision of protective clothing is good and, better still, the clothing is worn.

The inescapable deduction from this important paper is that the best of US safety practice is superior to most of ours, though the general standard in America is probably of a very varied level. In some obvious precautions, such as those we have mentioned, good up-to-date practices are very common, whereas here we have scarcely begun to introduce them. We have much to learn from America in (a) the detailed technology of safety measures, and (b) the educational technique for inducing a greater sense of care. At a lower level, however, our general system of factory legislation and inspection must be rated considerably higher than their medley of State regulations. Here, then, is a vast project for interchange of views, knowledge, and experience.

# Notes & Comments

## Poetic Licence

**V**ERSE rather than logic seems to be particularly favoured as a weapon by opponents of chemical progress. There has been one of these periodic outbursts in a recent issue of the *New York Times* as part of the dihard campaign against fluorination of New York's water supply. Called 'Drinking Song', the verse runs as follows:

*'Aye! Pass the watered Scotch  
around, though it be fluorinated;  
What matter if such odious stuff  
is contra-indicated?  
Let kidneys fail and livers shrink and  
marrow split and dry—  
We'll have the soundest sets of teeth  
to smile with as we die.'*

The extraordinary irresponsibility of these views upon the merits or demerits of controlled additions of fluorides to water is insidiously obscured by the method of presentation. We are reminded once again of the hundred-years-old piece of verse we quoted last year (THE CHEMICAL AGE, 1956, 73, 468) in which a contributor to *Punch* attacked the then-infant idea of using chemical fertilizers to increase crop yields. Some other lines from that poetic attack on chemical invasion were:

*'Lor, when I was a youngster, who  
thought, to be sure,  
Of guano or gypsum to use for  
manure?  
Of acids and salts from the blue  
bottle shops—  
Where we soon shall be going for  
tinctures and drops,  
Draughts and potions,  
Washes, lotions,  
Pills and powders to doctor the  
crops.'*

The arguments are closely alike despite the gap in time; resistance to the application of proven chemical knowledge must be constitutional in the make-up of some people, an inherent outlook of mind that cannot be modified by facts or rational argument. However, this 1956 sample of verse is as unlikely to retard fluorination in the cause of better teeth as

these 1846 lines had in retarding the progress of fertilizers.

## Detergents & Aquaria

**W**E DOUBT if we are alone in believing that any connection between detergents and fish aquaria would be one of incompatibility. In general the advent of detergents has caused a good many difficulties where natural water equilibria are concerned, e.g., the river problem of oxygen content reduction through detergents in sewage effluent. But a zoologist at the Southern Illinois University, has reported that soapless detergents of the liquid kind are ideal cleansing agents for aquarium sand. The cloudy effects produced soon after introducing water-washed sand are obviated, and there are no apparent ill effects upon the fish. A small amount of liquid detergent is mixed with the dirty sand and water until a thick lather is obtained. The mixture is then water-washed until no more lather suds are producible. Sand washed in this way is superior to sand washed by other means. The generalism with which this has been reported in a US journal seems to us highly dangerous. There are many kinds of liquid detergents. Surely all of them cannot have been safely tested for their absence of harmful or possibly harmful effects upon fish? Also, if the method has a general safety, this must depend upon the efficiency of final washing with water—and the test suggested, regarding this task as completed when no more suds can be produced, depends upon the lather-producing properties of the detergent actually being used. We suggest that this is not the way

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*Owing to a dispute in the printing trade, to which we are not parties, there is a risk that some copies of this issue will be late in reaching reader's hands. We desire to express our regret for any annoyance or inconvenience that may be caused by circumstances that are beyond our control*

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in which new applications of chemical products should be described, and the modern 'portmanteau' use of the word 'detergent' must carry most of the blame. Far too many substances of exceedingly different types are all being called 'detergents' today, and for any use which may have delicate biological reactions precise specification of the substance or substances involved should be given.

### *Electronic Author*

**T**HERE is an old calculation about a monkey tapping on the keys of a typewriter and the number of millions of years it would take for him to produce the letter-sequence of the works of Shakespeare. This piece of 'wonder-lore' has now been displaced by reality—an electronic machine has written a book of 198 pages for Chas. Pfizer & Co., Brooklyn. It is doubtful whether the book would become a best-seller although some of the words in it would undoubtedly be banned in cities with sensitive watch-committees. The book is an exercise in permutations,

etc., a new sort of Roget's Thesaurus. Thirty groups of word endings, etc., all found in medical literature from various countries, were fed to an electronic machine, IBM-702. The machine was able to reject certain syllable-combinations as unsuitable. It rejected some 20,000 and coined 40,000 words. These 40,000 have been used to make the book, which will in future be used by Pfizer's whenever a new drug has to be given a new name. This seems to us an exceedingly good example of the utility of the new master-robot machines. Any illusion that they can substitute for human thought seems neither probable, economic, nor socially desirable; but for the prodigious labour-chore of assembling all the permutations and combinations of an assortment of word-syllables, an electronic machine certainly fits the bill. We suggest that the British and US associations of insecticide, fungicide, and weed-killer manufacturers might get together and produce a similar machine-written Thesaurus—the coining of new and suitable names is probably more difficult in this field.

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### *Activated Carbon Project*

AN agreement for the supply of Carbo-Union-Whessoe recovery plant has been made between British Carbo Norit Union Ltd., London, and Whessoe Ltd., Darlington.

These plants use activated carbon for the purification of gases and the recovery of vapour phase solvents. They have extensive uses in gas, rubber, printing, plastics, artificial silk and dry cleaning industries to recover valuable products and solvents.

This agreement, say the companies, will link the knowledge of the use of activated carbon possessed by British Carbo Norit Union with the chemical engineering and manufacturing abilities of Whessoe who will now be carrying out contracts in this field. It is hoped that this development will result in advances in the design and building of purification and solvent recovery plants, and in the techniques of adsorption.

Activated carbon will as before be supplied by British Carbo Norit Union whose

factory is at West Thurrock. For Whessoe this represents an extension of their work in the chemical industry and supplements their activities in the oil industry and in nuclear power engineering.

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### *Fertilizer Production*

PRODUCTION of nitrogenous, phosphate and potash fertilizers by member countries of the OEEC in 1954-55 increased by 12 per cent, 11 per cent and 15 per cent respectively, according to a report published by OEEC. In 1955-56, total production in terms of fertilizing elements is expected to amount to 2,800,000 tons of nitrogen, 3,000,000 tons of phosphoric acid and 2,900,000 tons of potash.

Exports to non-member countries in 1954-55 increased by six per cent for nitrogenous fertilizers and 28 per cent for potash fertilizers. The report also shows that fertilizer prices generally kept stable in 1954-55 and that no substantial changes are expected in the current year.

# Grange Chemicals in Production

## New Plant Producing Dodecylbenzene

FOLLOWING the announcement made last November that a new plant was being erected at Shell Haven for the production of alkylbenzene (THE CHEMICAL AGE, 1955, 73, 1048) it was announced in London on Wednesday of last week that the £1,000,000 Grangemouth plant of Grange Chemicals Limited came into production in the last quarter of 1955 as planned. This plant is producing dodecylbenzene at the design rate of over 10,000 tons per year. The Shell Chemicals plant, which will cost £1,250,000, has been designed for an initial yearly production of 20,000 tons.

Until the commissioning of the Grange Chemicals plant there was only one UK source of detergent alkylate, namely Monsanto Chemicals. This firm has never made known its output but it is believed to be somewhere around 20,000 tons per year which is quite insufficient for the UK's requirements.

With the Grange Chemicals plant now in production and the Shell plant expected to go on stream within the next three or four months, imports of dodecylbenzene will no longer be necessary and exportable surpluses will be available. Countries which will be particularly interested are those in the sterling block which now have difficulty in finding dollars.

### First Bulk Supplies

Shell, who claim to have produced first bulk supplies for the UK, have been importing what they like to call alkylbenzene from the Netherlands West Indies.

The Grange Chemicals' plant converts propylene tetramer and benzene into dodecylbenzene by a continuous catalytic process using anhydrous liquid hydrofluoric acid. The patents covering the process belong to the California Research Corporation. The plant is located within the factory area of British Hydrocarbon Chemicals (until recently British Petroleum Chemicals Ltd.) at Grangemouth and draws its essential services from the main factory.

The propylene tetramer is made in the adjoining Grangemouth Petroleum Refinery from the polymerization of propylene and will also be made in the new tetramer

plant being erected by British Hydrocarbon Chemicals (see THE CHEMICAL AGE, 1955, 73, 76). These two sources will satisfy the requirements of the Grange Chemicals' detergent alkylate plant and provide a surplus of propylene tetramer for sale through Grange Chemicals. The other raw material for dodecylbenzene is pure coal tar benzene which is obtained from local sources.

Grange Chemicals Limited was formed in 1955 as a joint undertaking of British Hydrocarbon Chemicals Ltd. (which is owned jointly by The British Petroleum Co. Ltd. and The Distillers Co. Ltd.) and the Oronite Chemical Co. of San Francisco which is solely owned by The Standard Oil Company of California. The California Research Corporation, which owns the patents covering the process, also belongs to The Standard Oil Company of California.

### Oronite Process Data

The Grange Chemicals' plant was designed by Stone & Webster Engineering Corporation of New York using Oronite process data and elaborate precautions for safe operation have been incorporated. The construction was supervised by E.B. Badger & Sons Ltd., the UK associates of Stone & Webster, the actual erection on site being done by Costain John Brown Ltd. With a few specialized exceptions all of the equipment was purchased and fabricated in this country. Project manager for the plant was C.S. Newey of British Petroleum.

Dodecylbenzene (also known as tetrapropylene benzene or detergent alkylate) is a colourless, odourless liquid with a boiling range of approximately 280-300°C. It is relatively inert but can be converted into a wetting agent and detergent by reacting with sulphuric acid and then neutralizing. The sulphonic acid is normally reacted with caustic soda to form sodium dodecylbenzene sulphonate, which is the main active ingredient in most synthetic detergents in the US and the UK.

As most commercial detergents contain only 20 per cent active ingredients it is obvious that production of synthetic detergents in the UK can be greatly increased now that the Grange Chemicals plant is in

production and the Shell Chemicals plant is nearing completion. Both of these plants should help to ease the sulphuric acid position as the synthetic detergent industry which they will serve is a large user of this material.

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## Widnes Factory

### Boake, Roberts Plan Approved

**W**IDNES will become one of the most important centres in the country for the production of raw materials used in the plastics industry, it was stated at Widnes on 25 January, when A. Boake, Roberts & Co. Ltd., of Stratford, London, sought permission to erect a chemical factory on a 50 to 60 acre site at Castle View Farm, on the Cuerdley Cross side of the town. One of the factors which lead to Lancashire County Council deciding to favour the erection of a factory was that 17,500 people may be moved to the town under the rehousing proposals of Liverpool. It is hoped to offer as many as possible of them employment in Widnes to avoid long journeys.

Mr. K. S. Dodd held an inquiry on behalf of the Ministry of Housing and Local Government. Objections were lodged by Warrington Rural Council, the Warrington branch of the National Farmers' Union and a number of local residents. Mr William Roots, for the firm, said they held a prominent position in the chemical industry. They had a factory in London, but development was so rapid that they had to find another site. This linked up with the Government's policy to decentralize industry from London. 'It is not a trifling or speculative idea, nor is the choice of this site in any way haphazard. There are specialized requirements and you will hear that the company have, in fact, searched in pretty well every quarter of England with the assistance of the Board of Trade and professional advisors. This has proved to be the site which does fulfil all their requirements.' Mr. Roots said the Ministry of Agriculture had been consulted, as the land was used for farming.

He understood that some objectors had in mind grounds of complaint lodged against a nearby existing factory. 'There will not be any nuisance caused by the works which we are putting up. We will not injure the amenities of anyone. We did make inquiries to make absolutely sure that there

were no other sites for us.'

Mr. Bertram B. White, managing director, said they had inspected 36 other sites in every part of the country and Widnes was the only one meeting all their requirements. They were among the world's largest producers of some raw materials and were at the moment helping to produce vital plastics belting for use in coal mines.

Mr. E. C. Strathon, surveyor to the firm, said the site was as ideal as he could find after searching for 18 months.

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## New Type Conveyor Belt

### Hypalon Outlasts Other Materials

**A** NEW type of conveyor belt now being introduced commercially features a cover of Hypalon chemical rubber, one of the products of the Du Pont Company's research in elastomeric materials, distributed in this country by Durham Raw Materials Ltd., 1-4, Great Tower Street, London, EC3. Lifting hot salt from a direct fired rotary drier to storage bins 27 feet above, the new belt has demonstrated outstanding heat resistance by lasting twice as long as the best belting formerly available.

More exacting conditions could hardly have been found. The belt—57 feet long and equipped with 56 Momel metal buckets—operates seven days a week, in a plant in the US, carrying salt through a sheet metal enclosure which, while it keeps the salt dry, also maintains temperatures ranging from 150°C to 260°C.

Belts on this operation previously lasted from two to three months at most. Failure came as the rubber adjacent to the metal buckets became brittle, especially around the rivets used to attach the buckets to the belt. Then the belt broke, tying up the entire production unit.

The new belt, covered with Hypalon chemical rubber, lasted more than six months. When the belt finally broke it was because the carcass failed, rather than the cover of Hypalon.

In addition to various forms of conveyor belts for hot and corrosive materials, gaskets and packings made from sheets of Hypalon—chlorosulphonated polythene—have given fine service during extensive field trials, and show great promise in coverings for wire and steam housings.

# Society of Cosmetic Chemists

## Speakers at Annual Dinner & Dance

THE aims of the Society of Cosmetic Chemists of Great Britain were described by Mr. R. T. Dobson, president of the society, at the annual dinner and dance which was held in the Café Royal, London, on 13 January. Mr. Dobson was replying to the toast of the society proposed by Dr. D.W. Kent-Jones, president of the Royal Institute of Chemistry, who was one of the guests of honour. The other guest of honour was Lt. Col. J.K.L. Wenham, chairman of the Toilet Preparations Federation Ltd.

Mr. Dobson said that the society had grown very rapidly but he believed it was built on a sound foundation which would withstand weathering for many years to come.

### Primary Qualifications

A cosmetic chemist had to have first and foremost a sound knowledge of chemistry in all its branches. He also had to have a rudimentary knowledge of dermatology and an ability to evaluate the finish of his products, always with the consumer in mind.

One of the objects of the society was to distribute to its members and associates scientific knowledge to benefit the industry as a whole and encourage its members to improve their standard in all branches of science connected with the industry. To this end they had a programme of scientific lectures, some of which were presented in the journal of the society.

Proposing the toast of the society, Dr. Kent-Jones spoke of the very great privilege which had been accorded him. When it was first suggested to him that he propose the toast of the society he had made a number of enquiries, and he was filled with admiration at what he had learned. He said that the society undertook a great responsibility and he knew of very few societies which had assumed so much responsibility in the few years it had existed.

Dr. Kent-Jones said that the task of the society was to try to change an art to a science and he suggested that it was its duty to train and educate people to be chemists primarily and then to take up specific training. He believed that the society had a great future in front of it. Not so many years

ago very few people used cosmetics, but today almost everyone used them.

Referring to the two guests of honour, Dr. R. H. Marriott, past president of the society, proposing the toast of 'Our Guests', said that the society was honoured that men of their stature should think well of them. They could look at their guests and feel proud of the work they were doing in the cosmetic field.

Dr. Marriott's toast was replied to by Colonel Wenham who said that he felt that the society was a very old one, with roots going back 10,000 years when it set the fashion in shark skin and woad for *débutante* and matron. Unfortunately, during the time of the puritans cosmetics had suffered a decline and it was not until the beginning of the present century with the introduction of vanishing cream that the Society really came into its own. For the last 18 months, went on Colonel Wenham, he had been working with members of the society to get standards of purity scheduled for all raw materials used in the industry. When this work was completed it would be a tremendous feather in the cap both for the society and the federation.

The dinner and dance was attended by 162 members and friends, including a number of directors and executives of the cosmetic producing and supply houses.

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### Hanovia Exhibition in Manchester

An exhibition of ultra-violet equipment, for medical, scientific and industrial uses, will be staged by Hanovia (lamps division of Engelhard Industries Ltd.) in the Manchester showrooms of the North-Western Electricity Board (Town Hall extension, St. Peter's Square) from 6 to 17 February. The exhibition will be open each day, except Saturday and Sunday, admission free. Exhibits will include ultra-violet equipment for air sanitation, water sterilization, fluorescence analysis, fluorescence crack detection in metals and plastics, ageing and fading, polymerization, mineral selection and chromatography.

## Protection of Zr

### Enamels Developed by Battelle

**Z**IRCONIUM, a metal important in fabrication of nuclear reactor cores, can be protected against oxidation by enamels developed in research at Battelle Institute, Columbus, Ohio, it is claimed. These adherent, defect free enamels have low thermal neutron absorption cross sections.

'Enamelling Zirconium', a paper by John Schultze, H. P. Tripp, B. W. King and W. H. Duckworth, describes this Battelle research for the Atomic Energy Commission. The paper was presented on 14 December at the Engineers' Joint Council Nuclear Engineering and Science Congress held in Cleveland.

Zirconium was successfully protected from oxidation by the enamels when the Battelle ceramists studied specimens in air at 600°C for 1,000 hours. In 100 hour tests with liquid lead at 345°C and liquid bismuth at 600°C, the enamels also guarded the zirconium. But liquid potassium at 345°C attacked the enamels rapidly. The enamels did not give zirconium suitable protection against high temperature water.

The Battelle enamels were developed from frits based on the lead silicate glass system, and were formulated to mature either above or below the transformation temperature of zirconium. Conventional procedures for applying porcelain enamels were satisfactory with these new compositions. Since rolled zirconium has a tendency to cause

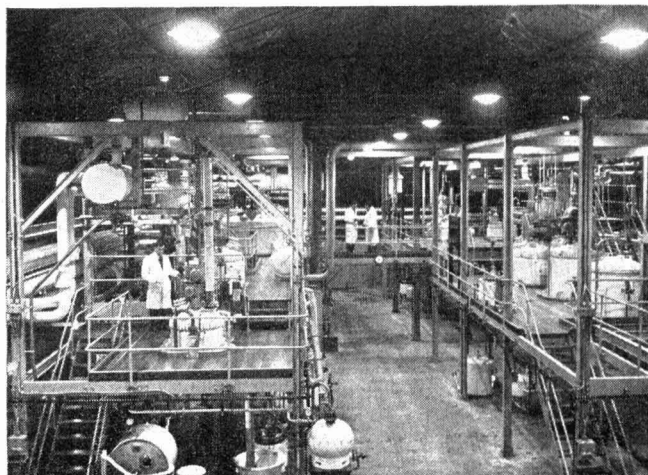
crazing of the enamels because of anisotropic contraction on cooling, the metal was heat treated prior to enamelling.

Another Battelle research project demonstrated that high purity beryllium oxide shapes of essentially theoretical density can be fabricated by the usual ceramic processing methods. The research showed that proper calcination of a suitable starting compound produced a beryllium oxide powder that would densify readily after being compacted into the desired shape.

Colin Hyde, J. F. Quirk, and W. H. Duckworth of Battelle Institute were the authors of 'Preparation of Dense Beryllium Oxide', a paper also presented on 14 December.

Beryllium oxide was of great interest to reactor designers because it combined resistance to high temperatures in oxidizing atmospheres with more efficient moderating power than most other materials. Besides, beryllium oxide had a high thermal conductivity, approaching that of iron. In the past, the low densities of pure beryllium oxide ceramics had limited their usefulness.

Readily sinterable powders were prepared from high purity sulphates or hydroxides of beryllium by thermal decomposition (calcination) under highly controlled conditions. Dense, strong compacts were made from these powders with the use of moderate sintering temperatures. Specimens made in these Battelle experiments have higher strengths than any previously reported for pure BeO ceramics.



*In their new cortisone plant at Beeston, Notts., Boots Pure Drug Co. Ltd. have installed Holophane flame-proof lighting. The system is said to be virtually free from shadow and glare, with clear definition at all levels. Nominal service illumination is 18-20 lumens per sq. ft.*



# Indian Newsletter

## FROM OUR OWN CORRESPONDENT

AT the eighth annual general meeting of the Indian Institute of Chemical Engineers in Delhi, the president dwelt on the past and future of the chemical industry in India. It was pointed out that modern chemical manufacture called for very large scale operations and they should be integrated with existing or by-product industries. The decision of the Government of India to set up integrated industries at Durgapur, West Bengal, was commended; the scheme envisages the use of coal as the raw material for the manufacture of metallurgical coke and by-products to include coal chemicals and liquid fuels. It was pointed out that a good number of chemical engineering personnel being trained and turned out in the country could be usefully utilized by the creation of a chemical construction unit under State patronage.

The 26 papers that were presented and discussed included such topics as the design of adiabatic absorption towers, liquid-liquid equilibria and vapour-liquid equilibria, sulphonation of castor oil, extraction of oleic acid from groundnut oil, fermentation, continuous fluidization of catalysts and investigation of bitterns as a source of heavy water.

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The presidential address to the 43rd Indian Science Congress Chemistry Section at Agra dwelt at length on the work in India on low temperature carbonization and the industrial possibilities in India for supplying domestic coke among other things. It was put forward that 20,000,000 tons of low temperature coke could be manufactured in the next decade by the immediate setting up of five or six low temperature carbonization plants in the different coal bearing areas of the country to utilize the abundantly occurring deposits of low grade coals or lignites. The new industry would make available coal slacks, tar and tar acids, fuel gas, synthesis gas for ammonia, petrol and a variety of chemicals. The Lurgi-Spelgas pilot plant with a capacity of 25 tons per day has been in operation for two years at the Central Laboratories for Scientific and Industrial Research, Hyderabad, and has been producing semi-coke from non-caking Hyderabad coals. The semi-coke is being sold as a

smokeless domestic fuel under the trade name of Coalsite which has 66.5 per cent fixed carbon and gives 11,435 BThU per lb. Processing of tars has also been undertaken and it is proposed to install a tar distillation plant of three tons per day.

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India's first synthetic oil plant will be built at Ondal, in the Bihar-Bengal colliery area, during the Second Five Year Plan period. The Ministry of Natural Resources and Scientific Research of the Government of India has approved the location of the 300,000 ton plant at Ondal on the recommendation of a special committee which went into this question and surveyed this area in addition to Madhya Pradesh and Madras States. In the opinion of geologists the Ondal region has resources of untapped coal totalling 350,000,000 tons and suitable for conversion into synthetic fuel oil. It is learnt that the Government of India would appoint a foreign consultant for the preparation of a project report for the proposed synthetic oil plant.

In the meanwhile, indications of petroleum deposits in the Hoogrijan area of Assam have now confirmed, though reports from Nahorkatiya are not very encouraging regarding location of oil. The Russian oil technicians now in the country to advise the Government of India and to organize the Government's work so far as oil exploration is concerned are expected to complete their work in the next three months.

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The Ministry of Production of the Government of India proposes to spend Rs6,000,000 (£450,000) during the Second Five Year Plan Period for the development of the salt industry in South India in the States of Andhra, Madras and Travancore-Cochin. The proposals include realignment of factories, adoption of scientific methods of manufacture and aid through co-operatives. It should be remarked that in this region, sea salt is the raw material for the alkali-chlorine industry and other by-product manufactures. The Government of India will open 10 laboratories in different parts before the end of the year. The labora-

tories will be charged with the maintenance of standard quality salt in the factories, containing a minimum of 94 per cent sodium chloride.

The improvement of the quality of the raw material will go a long way to help the chemical industry in this region, which at times, owing to the low quality of salt produced, had to import salt from distant Saurashtra. It is hoped that another batch of 10 laboratories will be opened in the next year and the minimum sodium chloride content will also be raised.

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The Ministry of Commerce and Industry of the Government of India has just announced that additional licences for the import of sodium bicarbonate will be issued to established importers on the basis of 20 per cent of their best year's imports. The decision to grant additional licences has been taken after a review of the supply and stock position in the country. It has been stated that importers who had not applied for the half year ending December 1955, may also now apply for these concessions.

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The trade agreements signed between India on the one hand and Russia and Hungary on the other, provide for approved lists of commodities. Of important items available for import into India from Russia, chemicals, dyestuffs and industrial plants and equipment figure prominently; the imports from Hungary are to include dyes, electrical and laboratory equipment. Raw materials and essential oils are important items of Indian exports.

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The Chairman of the Tata Chemicals Ltd., Mithapur, at the recent annual meeting said that there was great scope for the soda ash industry in India. The existing capacity of the industry was about 260 tons per day, and the installation of three new units, for which the Government of India has granted licences, with a capacity of 200 tons per day each at Portandar and Tuticorin and another with 100 tons per day at Dalmianagar, would increase capacity three fold. He added, however, that a production of 190,000 tons per annum when the factories were established would be difficult to be absorbed before 1960 as the present demand was for about 120,000 tons and an annual increase in consumption was not expected to be more than 10,000 tons.

Regarding caustic soda, the rated capa-

city was expected to be increased from 35,000 tons to 58,000 of electrolytic soda and from 6,600 tons to 50,000 tons of lime soda by the end of the Second Plan, thus taking the total to 108,000 tons per annum. It was anticipated that the demand would be around 120,000 tons per annum. In view of the difficulty in disposing of the surplus chlorine, a doubt was expressed whether the plan targets could actually be achieved.

### Exemption From KID

UNDER section 10(5) of the Finance Act, 1926, the Treasury has made an order exempting certain chemicals from Key Industry Duty for the period beginning 23 January 1956 and ending 18 February 1956.

The chemicals exempted are synthetic organic chemicals, analytical reagents, other fine chemicals and chemicals made by fermentation processes, and include the following:—

Diethylene glycol monomethyl ether (an ethylene glycol ether); 1-phenyl-3-methyl-5-pyrazolone (a phenylmonomethyl pyrazolone) of a purity not less than 99.0 per cent, and having a melting point of not less than 128°C; tetrachlorophthalic acid (a chlorophthalic acid); thymol (not including *isothymol*); trifluoroacetic acid.

This order is the Safeguarding of Industries (Exemption) (No. 1) order, 1956, and is published as Statutory Instruments, 1956, No. 46. Copies of the order may be obtained (price 2d, by post 3½d) from HM Stationery Office, or through any bookseller.

### Silicone Prices Cut

MIDLAND Silicones Ltd., the leading British manufacturers of silicones, have announced substantial reductions in the home trade prices of their MS 200 silicone fluids and their Releasil fluids and emulsions. The reductions, varying from 2s per lb. to 4s per lb., became effective from January of this year.

These reductions are a result of the continued expansion in production of silicones at the plant operated by the company in Barry, Glamorgan.

Bulk prices for MS 200 fluids in 1950 were 34s 6d per lb.; in 1953 they were 31s 6d per lb. The new prices are 26s per lb.

# Joint Consultation in Accident Prevention

by A. G. THOMSON

THE prevention of accidents provides a particularly fruitful field for a common approach by management and workers through the machinery of joint consultation. From the workers' standpoint the benefits of safe working conditions and practices are self-evident. Management's approach to the problem is conditioned not only by humanitarian considerations, but also by the knowledge that industrial safety pays. Apart from the fact that accidents are harmful to production, employers have legal responsibilities for providing safe equipment, observing the requirements of the Factories Act, and, in general, taking all reasonable precautions to protect their workers from accidents. They are also interested in keeping down the cost of compensation insurance.

Both in Britain and the United States impressive gains have been reported from labour participation in accident prevention. In fact, the view has been expressed that in some companies the success achieved in this direction may have paved the way for co-operative action in other fields.

An enquiry into the practice of joint consultation in British industry between 1948 and 1952 was undertaken by the National Institute of Industrial Psychology. This investigation, which was sponsored by the Human Factors Panel of the Committee on Industrial Psychology, revealed that in almost all firms visited where accident prevention constituted a problem, joint consultation was being used for increasing safety.

## On the Spot Investigation

The NIIP report ('Joint Consultation in British Industry') states that in some firms worker representatives had been appointed from the works council to sit with management representatives, either as a separate safety committee or as a sub-committee of the works council, which might be given more executive powers. In certain firms members of such committees were summoned immediately to the scene of any major accident and had to investigate the causes on the spot. In others, a workers' safety representative was appointed to each department. His views could be sought on

all matters involving safety precautions and accidents and he could be expected to use his influence to get workers to become 'safety-minded'.

The investigators found that in one very large company, where much heavy and dangerous work was done, there was a worker 'safety inspector' attached to each Department Production Committee, who sat on a Central Safety Committee which met the factory inspectors regularly. The chief personnel manager considered that this organization was largely responsible for an appreciable fall in the accident rate.

## Effect Disappointing

'Six years ago', the report quotes him as saying, 'we appointed a full-time safety officer, but though he brought in very important safety measures, the effect on the accident rate was disappointing. We now think accidents more likely to decrease if we tackle the problem more from the angle of increasing the safety consciousness of workers. Propaganda does something in this direction, but experience of bringing workers in on safety has shown us they can often "sell" safety where the management fails'.

The great interest workers' representatives had come to take in safety measures was commented upon by a number of the companies visited, this attitude being particularly marked where regular reports on the position were made at meetings in a form that could easily be understood. Many reports shown to the investigators, however, were described as being too complicated for easy understanding.

Another very large firm in the United Kingdom, whose work involves dangerous processes, achieved a reduction of 48 per cent in the accident rate, which was ascribed largely to the establishment of a safety committee in each department.

The experience of a number of United States companies and trade unions in the application of joint consultation to accident prevention has been analysed by Ernest Dale, who concludes that this is one of the most important forms of labour-management co-operation and offers considerable possibilities for success.

From the results of Dale's observations, it appears that in the United States, labour's contribution to the joint effort is mostly of an informational character. The activities of the workers' representatives are often confined to unilateral efforts to improve the knowledge of safety rules through lectures or discussions, films and bulletins.

Constructive co-operation, as this expert sees it, involves the participation of labour both in policy making and in techniques of safety promotion. Under the heading of policy making are included such matters as the development of standard methods of guarding equipment or standard operating practice such as safety rules and methods of reward and punishment. Safety promotion covers a number of associated activities, which are listed as follows:

(1) Development of a safety programme—e.g., eye protection, provision of safety footwear, employee instruction in specific safety practices (such as the correct way of lifting heavy articles), and the appointment of safeguards for individual departments.

(2) Plant inspection, checking unsafe habits and practices, encouragement to use personal safety equipment, investigation of accidents, attendance at formal hearings, and refraining from contesting discipline in the case of broken rules.

(3) Discussion of employees' safety suggestions and of hazards pointed out by insurance representatives, supervision of safety contests and awards of prizes.

(4) Spreading news of accident prevention through the works magazine, posters, slogans, exhibits, compilation of a safety manual, acting as a clearing house for new ideas.

(5) Education of new employees in safety principles, interviews with accident-prone employees.

(6) Supervision of housekeeping and maintenance in relation to safety.

Dale reviews the experience of a number of firms and includes two examples which are of particular interest to the chemical and associated industries.

At the largest chemical plant of the Koppers Co. Inc., of Pittsburgh, the safety organization is divided into three major types of committees: (1) a general safety committee, (2) departmental committees, and (3) employees' committees.

The general safety committee includes the plant manager as chairman, the safety

director, the chief union steward and eight department superintendents. Its jurisdiction extends throughout the plant as a whole. Its major functions are the formulation of safety policy, approval of procedures proposed by the other committees, development of educational and publicity work, review of accidents causing loss of time so that corrective action may be taken or discipline administered (in exceptional cases) and the formulation of disciplinary policy.

Each department committee consists of the superintendent as chairman, all departmental supervisors, a representative of the general safety committee and one or more union stewards. Its jurisdiction is department wide and its organization is sectional. It carries out the policies, practices and educational measures passed by the general safety committee, and recommends safe practices and procedures to this committee. It reviews all accidents in the department, investigates all lost-time and non-lost-time accidents and recommends methods of eliminating the hazards involved. It also makes regular departmental inspections for unsafe practices and conditions and acts on suggestions by employees' committees within the department.

### Employees' Committee

Each employees' committee consists of a supervisor as chairman and all employees in that supervisor's section. It reviews, studies and observes the regulations promulgated by the general safety committee. It presents its views and suggestions on practices and conditions as they affect safety. It participates in safety meetings and other safety training activities.

The machinery for joint consultation thus provides for a two-way flow of information and ideas from the general safety committee to the employees' committees.

Its effect is indicated by the low accident frequency rate at the plant in question, which in 1947 amounted to 2.5 per cent.

Equally impressive are the results achieved by the Colonial Beacon Oil Refinery. In 1920, soon after operations were started, this company formed a safety committee to help to reduce the alarmingly high accident rates. The committee consisted of foremen, the supervisors and the two department heads, and was headed by the plant superintendent. It met monthly and performed a number of routine duties, such as investi-

gating injuries, conducting plant inspections and making recommendations for the installation of guards on moving parts and equipment. Yet the number of injuries (minor and disabling) continued to range from 600 to 950 a year throughout the period 1921-26; i.e., roughly from one to  $1\frac{1}{2}$  injuries per employee per annum.

In its efforts to cut down accidents the committee sponsored a course of instruction in first-aid for all employees, made more frequent inspections, consulted outside safety engineers and organized safety contests. Some improvement resulted from these measures, a reduction of nearly 25 per cent being effected in 1929.

Late in 1929 a member of the line production department suggested that the men who did the work knew more about the hazards than anyone else and that their aid should therefore be enlisted. After considerable debate and much opposition, a Workmen's Safety Committee was organized in January 1930. The members were one employee from each of the larger maintenance departments and one man from each of the larger processing departments. The permanent chairman was the safety supervisor, whose position was created simultaneously with the establishment of the committee. The plant superintendent and personnel manager attend meetings occasionally.

The duties of the committee include: regular inspection, training, thorough investigation of all injuries and all the circumstances pertaining thereto, and five minute group meetings of employees for safety instruction.

### Suggestions Discussed

A Foreman's Safety Committee discusses suggestions of the Workmen's Safety Committee and adds its own. The safety supervisor follows up suggestions which have been adopted and ensures that they are put into effect. The general superintendent usually attends the meetings and makes the final decision should there be any conflict between the views of the two committees. He also checks up on each foreman to find out whether suggestions adopted have been put into operation. His very presence, it is stated, has been an important factor in activating the Foreman's Safety Committee, having regard to his influence on promotion and salary increases.

The result accomplished in this refinery,

which employed on an average 500-700 people during the period under review, is described as remarkable. From 1940-47 the total annual number of injuries ranged from 18-29, or three per cent of the average from 1923-1927. The number of lost-time injuries, which used to average 84 a year, fell to  $3\frac{1}{2}$  a year from 1940-1946. From 1930 to 1946 there were only four fatal accidents compared with 25 from 1921-1929. The number of employee safety suggestions rose from an annual average of 86 from 1930-37 to 171 for 1930-1946. The company has won the highest national awards in safety contests.

### Modern Improvements

It is pointed out that these methods are only partially due to employee participation. Since 1930 equipment has been made safer and some foolproof. Hauling is done by cranes instead of men. The average number of employees and hours of work has been reduced by about a third. A safety engineer with higher qualifications was appointed in 1930. The use of safety clothing is now widespread and probably twice as much time is being spent on accident prevention. On the other hand, it has also to be remembered that many accidents are reported today that would have been hushed up in 1930, when workers were afraid to disclose their injuries for fear of dismissal or loss of earnings.

Dale summarizes the advantages of joint consultation for accident prevention as follows:

The group approach stimulates the interest of the individual employee more effectively. It contributes more than the sum of the actions of each individual, just as individuals in a good football team give more together than singly. The group effort is superior to managerial discipline. Group action may increase the effectiveness of management action. The union is given an opportunity to show tangibly that it is doing something for its members, especially if its co-operation is accorded public recognition.

On the other hand, the principle of labour-management participation in accident prevention has been vigorously opposed on various grounds. Opponents of the system contend that safety is the management's sole responsibility and that the job of preventing accidents is a so highly technical one, that few employees have the experience

or knowledge to tackle it successfully. Inspection may involve too much red tape and waste of time and produce a false sense of security. Another objection which has been put forward is that the worker's suggestions may involve too much expenditure of time and money and may be too trivial to act on; yet once having been called on for ideas, the union may insist that they be put into effect.

Whatever justification there may be for these contentions, the evidence collected by the National Institute of Industrial Psychology from its study of joint consultation in the United Kingdom and by Dale from his analysis of results in the United States, indicates that on balance labour-management co-operation, where efficiently organized and canalized, has proved outstandingly successful in the promotion of industrial safety.

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### Dry Fire Extinguisher

A NEW pressure-operated dry-chemical fire extinguisher weighing less than 10 pounds when fully charged, is being marketed by The Pyrene Co. Ltd. Designed to meet the need for a small, powerful fire smothering unit to deal with outbreaks involving petrol, oils, paints, spirits, solvents, greases etc., the extinguisher can also be used with safety on fires involving electrical equipment.

Charged with five pounds of dry chemical powder, the extinguisher is pressurized with nitrogen up to 50 pounds per sq. inch. The pressure is constantly recorded on a gauge embodied in the head of the operating valve, a feature which provides the operator with an instant check on the condition of the extinguisher.

The model has either a pistol-grip or squeeze-grip operating head, requiring only normal hand pressure to actuate the extinguisher after the safety pin has been removed. Both types, claim the makers, provide speedy, accurate control over the discharge of dry chemical which can be turned on or off at will. A specially designed nozzle projects the contents in the form of a fan-shaped jet with an angle of over 30°, smothering the fire in a thick blanket of dry chemical powder. The extinguisher's range is about eight feet.

### Big Deeside Fire

SIX appliances and about 40 firemen dealt with one of the biggest fires on Deeside for some time on 7 January in the main workshop of the International Electrolytic Plant Co. Ltd., at Sandycroft. The brigades were able to confine the fire to a portion of the shop and saved two-thirds of the building containing most of the machinery.

In spite of a high wind the fire was prevented from involving Graesser's Chemical Works, which is adjacent. Flames shot high into the air and part of the roof of the workshop, which covers an area of 360ft. by 120ft., crashed in. No one was working on the premises at the time. Production on the night shift of Graesser's Chemical Works was interrupted when an electric cable was severed.

International Electrolytics manufactures hydrogen, oxygen, caustic alkali and chlorine. Mr. W. Wood, general manager, said he thought full production would be affected for about four weeks, because apart from the damage to the main building, a transformer which reduced electricity from 11,000 volts to 440 volts was badly damaged and the firm was without an electrical supply. He did not think there would be unemployment.

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### Office Accidents

'DANGER!—Office Staff at Work', is the arresting title of a new booklet recently prepared by The Royal Society for the Prevention of Accidents. Believed to be the first publication of its kind in the world, its aim is to impress upon the office worker that he, no less than the factory employee, is beset by dangers during the course of his daily work. It is pointed out that because office hazards are not always obvious, they may present greater risks. Examples are the trailing lamp wire, the open drawer of the filing cabinet and the careless smoker.

These hazards and many others are emphasized in the booklet, which has been written and illustrated in an informal style designed to appeal to office workers of all grades.

Copies of the booklet can be obtained from The Royal Society for the Prevention of Accidents, Terminal House, 52 Grosvenor Gardens, London SW1.

# IN THE EDITOR'S POST

## RIC Qualifications

SIR,—I have just received a copy of the new regulations of the Royal Institute of Chemistry and have come to the conclusion that at a time when we are short of chemists the general idea is to reduce the number of people who can qualify by (a) reducing the chances of passing (b) increasing the cost of examinations. A typical example being:—A person exempt from part 1a. The costs would be

Exemptions P.1a	£ 4 4 0
Translation P.1b	£ 1 1 0
Part II	£10 10 0
	<hr/>
	£15 15 0

To this must be added a stay in London or other large centres for seven days plus cost of travel for some, a loss of one week's wages. This would bring the total amount to between £30 or £40 which to most students is a large amount of money. In fact, in my opinion, it is becoming a money making business for all but the poor students. It must be noted that students were not allowed to vote on the new regulations, only members being allowed a point of view thus causing a closed shop. Why not introduce a third qualification such as Licentiatehip for those chemists who probably are more capable in laboratories than most B.Sc.s straight from universities who have no idea of the general workings of industrial laboratories.

I would like to hear other students' views on the new regulations.

Yours faithfully,

J. ROGERS.

303 Blackburn Rd., Oswaldtwistle, Lancs.

## Research For Industry

SIR,—From time to time requests appear in the correspondence columns of technical journals for information on specific problems; for details of establishments with particular testing facilities; and occasionally for details of laboratories which will undertake the investigation of *ad hoc* problems, research or development work. I have no doubt that very great assistance is given to your reader-enquirers in direct comment on their problems, by referring them to the appropriate institutions or by

publishing their letters in the hope that other readers may be able to assist.

A liaison section has now been established at Fulmer Research Institute whose purpose is to inform industry about the facilities available here and to establish closer contact with industry. If you think we can be of any assistance to future enquirers I would be glad if you would get in touch with me.

As you know, the Institute acts in practice as the private laboratory of each of its individual sponsors, and every enquiry whether it results in investigational work or not is treated confidentially. (Each sponsor, of course, only pays for work carried out directly on his behalf.)

At present there are physical metallurgy, foundry, physical chemistry, physics, corrosion, mechanical testing and engineering, and analytical laboratories at the Institute, and it is our aim, of course, to provide just those technical services which industry needs but which for economic reasons individual manufacturers are unable to maintain privately.

Any publicity you can give to the contents of this letter or any action you take in referring future enquirers with technical problems to the Institute, would be greatly appreciated.

Yours faithfully,

MORGAN H. DAVIES.

Development Officer,  
Fulmer Research Institute.

## Scientists and National Service

SIR,—There is a world wide demand for scientists. Britain is in more urgent need of skilled trained scientists than any other country in the world. Sir Winston Churchill and many other prominent men in Britain have forcibly drawn attention to this.

Russia has 10 times as many scientists as we have, yet they have started a further new five year programme to produce many more fully trained scientists than ever before. Russia is realistic—are we? Russia's university course is five years. Ours three or four.

It is high time the Government made a dramatic move about this at once, and not wait to 'consider' when and what to do.

Student scientists must be released from

National Service, must be allowed (and encouraged) to pursue their studies to completion, without interruption.

Learning to become a scientist is a long laborious process; to break the continuity of this intensely absorbing subject; to break into the course and go away for two years in a 'wilderness', is disrupting, frustrating and heart breaking.

Science is making advances, and progresses almost daily, and to be without daily contact is utter negation. Students in science cannot keep abreast while serving two years in the Armed Forces.

On the other hand every profession and trade can be maintained and progressed in the conscript Armed Forces except the scientists. This particularly applies to the chemistry side of science. What can a research chemist do without a laboratory? For a student to be posted to the 'wilderness' of conscription for two years, to be without contact with the daily progress in the ever and rapidly advancing study of science, is utter negation and defeatist.

On a student's return from two years isolation, it is almost impossible to get a start and try and pick up from where he left off and at the same time take note of new progress.

It is likely, therefore, that after having spent some six or eight years studying, and not earning, then a two years gap in his life in the Forces, for the student to think, 'Is it worth while bothering any more about Science?' He can get a job 'labouring' at £10 or £12 per week,—a spoiled future.

We must release science students completely from National Service; they are at least as important as miners and agricultural workers, and definitely of more value to the nation than merchant seamen. Or are science students only 'ten a penny'? Young men deliberately avoid National Service by becoming merchant seamen, probably leave that job at 26 years of age. They are however earning high wages. Students take science for a career, study for six to eight years, without pay.

More boys could be encouraged to go in for science if the head masters of grammar schools paid more attention to science. Are not most of the head masters on the arts side? If so, they are more interested in progressing the arts than science. Further some grammar schools do not have a Parents Teachers Association (very impor-

tant), some do not have a careers master, (essential). Any head master ought to have enough to do without in addition being also careers master. Can he give adequate time and thought to so important a matter?

Another important point, do all science masters teaching in grammar schools regularly take refresher courses to bring themselves up to date? if not, how else can they teach? The GCE exam papers of today for 6th formers at advanced and scholarship levels, are much more advanced, (with modern ideas), than the papers these very masters had for their exam when they sat for their degrees, 25 to 30 years ago!

The Minister for Education could send out a questionnaire. The results may well be illuminating.

Is it possible that some boys have not gone to university for a science degree, but who should have gone?

If there is something wrong with the final product, look at the 'drawing board', start investigating at the 'top'—Education; for that is where the 'final product' originates from.

Yours truly,

ROGUE MALE

Birmingham 24.

## Oil & Colour Chemists' Dance

THE president of the Society of British Paint Manufacturers, Mr. C. D. O' Sullivan, will propose the toast at the Oil & Colour Chemists' Association's biennial dinner and dance at the Savoy Hotel, London, on 2 March. The president of the Association, Mr. C. W. A. Mundy, F.R.I.C., will respond. Dr. D. W. Kent-Jones, B.Sc., Ph.D., F.R.I.C., the president of the Royal Institute of Chemistry will make the response on behalf of the guests among whom will be:— Mr. R. C. Sissons, M.A., president of the National Paint Federation, Mr. D. L. Annand, B.Sc., president of the Paint Research Association, Professor W. Wardlaw, C.B.E., D.Sc., F.R.I.C., president of The Chemical Society, and Sir Guy Harrison, president of PATRA.

Price of single tickets for the dinner-dance is £2 12s 6d. Non-members wishing to attend should apply to the General Secretary, Mr. R. H. Hamelin, Oil & Colour Chemists' Association, Memorial Hall, Farringdon Street, London EC4(Tel: CENtral 2120).



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# HOME

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## History of Metallography

Professor Cyril S. Smith, Sc.D., of the University of Chicago will deliver a lecture to the Institute of Metals on 'The Beginnings of Metallography' at 4 Grosvenor Gardens, London SW1, on Wednesday 25 April, at 6.45 p.m.

## New Technical Representative

Rhodes, Brydon & Youatt Ltd., chemical process and heating pump engineers, of Stockport, Lancashire, have appointed Mr. R. A. H. Smith as their technical representative for South Wales and south-west England. Mr. Smith is based at Farmborough, Bath, Somerset.

## Dyer Memorial Lecture

The Bernard Dyer Memorial Lecture, entitled 'The Evolution of Agricultural Research,' will be delivered by Sir William Slater, K.B.E., D.Sc., F.R.I.C., secretary of the Agricultural Research Council, before the Society for Analytical Chemistry on 29 February in the Meeting Room of the Royal Society, Burlington House, Piccadilly, London W1. The lecture will be given at about 5 p.m., immediately after the society's annual general meeting, which starts at 4.30 p.m.

## UK Oil Exports

UK exports of refined petroleum products from imported crude oil during 1955 amounted to some 6,200,000 tons, valued at £77,500,000, compared with the record £84,000,000 earned for oil exports in 1954. The lower level of 1955 exports is attributed to the greater UK demand for oil as fuel for industrial and other purposes.

## Accounting in the Chemical Industry

Three papers will be presented at a meeting on 'Cost Accounting in the Chemical Industry' to be held in The Chemical Society's Rooms, Burlington House, Piccadilly, London W1, at 6.15 p.m. on 6 February. The titles of the papers to be read are 'The Purposes of Costs' by H. Hodgson; 'Some Aspects of Costing in the Petroleum Chemical Industry' by T. Ramsay of Shell Refining & Marketing Co.; and 'A System of Costing in the Fine Chemicals Industry' by K.T. Chapman of Ward, Blenkinsop & Co. Ltd.

## Plastics Technology Course

Details are available from the Borough Polytechnic, London SE1, of a nine-day intensive course in practical plastics technology to begin on 3 April.

## Strike Cost £200

The Distillers Co. (Biochemicals) Ltd. announce that the estimated loss of drugs in process following the recent unofficial strike of 400 workers at their Speke, Liverpool, factory was about £200.

## Monsanto Long-Service Awards

Presentations have been made to 16 employees of Monsanto Chemicals Ltd., Cefn Mawr, Wales, who have completed 25 years' service. The firm has 140 employees who have served 25 years and 17 with over 40 years' service.

## Fertiliser Society Meeting

At the general meeting of The Fertiliser Society to be held in the lecture hall of the Geological Society, Burlington House, Piccadilly, London, W1, at 2.30 p.m. on 23 February, Mr. R. G. Warren, B.Sc., will present a paper entitled 'NPK Residues From Fertilizers & Farmyard Manure, in Long-Term Experiments at Rothamsted.'

## Beaverbrook Fellowship

The Beaverbrook Foundations announce the offer of a postdoctoral fellowship in chemistry, tenable for a year from next September, at the University of New Brunswick, Canada. The value of the fellowship, which is open to British subjects who are suitably qualified graduates of universities in the UK, is \$2,500 (£892), plus travelling expenses.

## New Gas Purifier

Henry Balfour & Co. Ltd., Leven (Fife), gas and chemical engineers, have signed a £500,000 contract with the North Thames Gas Board to erect a tower box purifier at the Beckton Gas Works. The purifier, which will treat 30,000,000 cubic feet of gas daily, should be completed in two years. One of the largest units of its kind in the country, the purifier will be 215 ft. long, 76 ft. high and 100 ft. wide, and will be constructed from 4000 tons of welded steel.

# . OVERSEAS .

## Methane Gas to be Piped to Hungary

Hungarian technicians have arrived in Bucharest, Roumania, to work on a chemical test plant which will send methane gas to Hungary through a 250-mile pipeline.

## US Companies Plan Merger

Directors of the Warner-Lambert Pharmaceutical Co. and the Emerson Drug Co. of America have agreed on a merger, subject to stockholders' approval in March. Under the plan one Warner share would be exchanged for two shares of Emerson.

## Cuban Fertilizer Figures

Although Cuba imports only a limited amount of mixed fertilizer it depends on foreign sources for all materials used in the preparation of fertilizers. Statistics recently compiled by the Cuban Department of Agriculture for the fiscal year 1953-54 (1 July to 30 June), reveal that 138,000 short tons were imported, of which the principal items were rock phosphates (26,427); ammonium sulphate (25,042); single superphosphates (16,165); triple superphosphates (12,357); mixed fertilizers (11,324). Cuba has 16 fertilizer plants.

## Canadian Asbestos Output Record

Canadian asbestos production of 1,000,000 tons last year was a record. In 1954 production totalled 900,000 tons. A statement by the Quebec Asbestos Information Service said that the sale of the record yield will bring almost \$100,000,000 into Canada, most of it to Québec where the bulk of asbestos mining operations are centred.

## US Sulphur Production

Statistics compiled by the Bureau of Mines, US Department of the Interior, for last October reveal that the US domestic sulphur industry produced 545,159 long tons of native sulphur and 36,100 tons of recovered sulphur (of a purity of 97 per cent or greater). Carbon black production in November showed an increase of six per cent over October, total shipments of 163,000,000 pounds being the highest for the year. In November copper sulphate production declined by nine per cent at 6,748 short tons.

## Austrian Chemicals for China

The Linz Fertilizer Corp. of Austria recently concluded an agreement with the Chinese People's Republic for the shipment of chemical products valued at \$2,500,000.

## German Cosmetics

West Germany exported a total of DM 7,800,000 worth of cosmetics in the first eight months of 1955. This was DM 1,200,000 (or 18 per cent) more than during the comparable period of the previous year and double the amount of two years earlier.

## German Atomic Training

The financial committee of the State parliament of Baden-Württemberg has agreed to a grant of DM 300,000, in the form of a supplement to the annual budget, for the training of atomic physicists and atomic engineers. The means were also provided for the construction in Karlsruhe of a technical high school for atomic studies. The first step is the establishment of a professorship for reactor technology and radiochemistry.

## Aluminium Stamp

Claimed to be the first of its kind in the world, an aluminium stamp has been issued by the Hungarian Post Office to commemorate the 20th anniversary of the foundation of that country's aluminium industry. Printed on aluminium foil mounted on paper, it is an air mail issue of five forints value and shows an airliner flying above Budapest's principal industrial centre—Csepel Island.

## High-Energy Atomic Particles

The University of California announced on 10 January the discovery of a way to measure high-energy atomic particles in motion. The method involves passing cosmic rays through a chamber containing a mixture of gas, alcohol and water vapour. A sudden expansion of the chamber results in the condensation of a tiny drop of water on each ion, marking the path of the particle. By using this Wilson cloud chamber technique it is possible to determine the speed of each particle and hence its energy.

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# PERSONAL

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MR. CHARLES CRIDLAND, chairman of Aldis Brothers, projection specialists of Birmingham, has been elected master of the newly formed Guild of Scientific Instrument Makers. Mr. Cridland is also president of the Scientific Instrument Makers' Association.

MR. JOHN E. HARVEY, director and general manager of Marine & Industrial Lubricants Ltd., of London, has been appointed to the board of Manchester Oil Refinery (Sales) Ltd.

MR. ALBERT SCHARWACHTER of the Arizona Chemical Co., and chairman of the Tall Oil Division of the Pulp Chemicals Association, has announced the appointment of DR. WALTER I. MURPHY, American Chemical Society, DR. HENRY F. PAYNE, University of Florida, and DR. FRANCIS SCOFIELD, National Paint, Varnish & Lacquer Association Inc., as the judges of the Tall Oil Contest which offers three cash awards for the best original papers on tall oil.

MR. FRANK A. GERARD has been appointed safety manager of the Olin Mathieson Chemical Corp. A member of the metals section of the National Safety Council, and vice-president of the St. Louis chapter of the American Society of Safety Engineers and the Madison County Safety Council, Mr. Gerard was recently appointed by GOVERNOR STRATTON of Illinois to serve as a member of the Safety Education Commission in the Division of Safety Inspection & Education in the Department of Labour. He joined Olin Industries Inc. in 1942.

DR. HAROLD C. UREY, winner of the Nobel Prize in chemistry in 1934 and now at the University of Chicago, has been appointed Eastman Professor at Oxford for the academic year 1956-57. Dr. Urey specializes in the structure of atoms.

LORD DE L'ISLE, V.C., former Air Minister, has joined the board of the British Match Corporation.

MR. G. A. RATCLIFF, of St. John's College, Cambridge, has been appointed a university lecturer in the Department of Chemical Engineering for three years.

MR. G. L. HARRISON, A.I.M., has been appointed to succeed MR. A. D. BUSBY as a development metallurgist at the Mond Nickel Co. Ltd. in London. MR. P. D. WILMOT, B.Sc., has been appointed a development chemist in the company's development and research department in London. MR. J. H. GITTUS, B.Sc., has been appointed section leader of the cast iron section of the company's development and research department laboratory in Birmingham.

MR. G. LOASBY, F.T.I., chairman of the council of the Textile Institute, and MR. D. B. MOORE, general secretary of the Institute, are to represent the Institute at the annual meeting of the American Textile Research Institute in New York on 22 and 23 March. The meeting follows the spring meeting of the National Council of Textile Education on 19, 20 and 21 March, which Mr. Loasby and Mr. Moore will also attend. They will leave Britain by air on 26 February for an extended tour of US colleges, industrial concerns and scientific and technological organizations.

DR. J. PEARSON, M.Sc., Ph.D., F.R.I.C., head of the steelmaking division and chemistry department of the British Iron & Steel Research Association, has been appointed assistant director of research of the Association. In this new appointment, which is additional to his present duties, Dr. Pearson will undertake duties delegated to him by the director, SIR CHARLES GOODEVE.

PROFESSOR DESIRE DE MEULEMEESTER, of Ghent, Belgium, MR. WALTER TATTERSALL, M.Sc., Tech., A.M.C.T., of Mehalla-El-Kubra, Egypt, and MR. J. W. RADCLIFFE, of Birkenshaw, Nr. Bradford, have been elected Fellows of the Textile Institute. Professor de Meulemeester is Emeritus Professor and president of the Scientific Committee of the Belgian Textile Industry's Scientific & Technical Committee, Mr. Tattersall is director of weaving of the Societe Misr. pour le Filature et le Tissage at Mehalla Kubra, and Mr. Radcliffe is a director of Henry Booth & Sons Ltd., Moorhead Mills, Gildersome, Nr. Leeds.

## Obituary

The death has been announced of MR. EDGAR CHARLES EVANS, B.Sc., F. Inst. F., of Stanmore, Middlesex, the first head of the Department of Chemistry and Chemical Engineering at the Treforest School of Mines, now the Glamorgan Technical College. At one time the fuel officer of the British Iron and Steel Federation, Mr. Evans was for many years an honorary secretary of the Institute of Fuel of which he became a vice-president.

MR. DAVID NEVILLE TURNER, a former chairman of the Staveley Iron & Chemical Co. and the Staveley Coal & Iron Co., died at his home, Walton Lodge, Chesterfield, on 27 January, at the age of 83. Mr. Turner was a former High Sheriff of Derbyshire.

MR. HORATIO BALLANTYNE, F.R.I.C., F.C.S., a distinguished consulting chemist and an authority on patents, died on 25 January at Tadworth, Surrey, at the age of 84. Born at Glasgow in 1871, Mr. Ballantyne was educated at Garnethill School and the Glasgow and West of Scotland Technical College. After a period as assistant to the Glasgow city analyst, he continued his training in the laboratories of Wallace Tatlock & Clark and later in the laboratories of R. R. Tatlock, Thomson & Redman. In 1896 he set up as a consulting chemist in London, where the knowledge he acquired of patent law in regard to the patenting of chemical processes was unrivalled. He constantly appeared as a witness in important actions in the High Court, where his opinions carried considerable weight. In 1928 he gave up his consulting practice to join the board of Unilever Ltd. He retired from the board in 1937, but had continued as an advisory director until his death.

### Styrene Co-Polymers Freeze Prices

Styrene Co-Polymers Ltd., manufacturers of synthetic resins for all types of surface coating, of Cheshire, have stabilized their prices. The company, which has made no price increases since July 1955, guarantees to make no price increases in the home market during the next six months. This decision was taken in spite of recent rises in world prices of the drying oils used by Styrene.

## Armour Chemicals

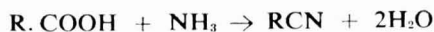
### First European Plant Opened

**F**IRST European plant to produce the Armour range of cationic and non-ionic chemicals has started operation at the Littleborough (near Rochdale, Lancashire) factory of Hess Products Ltd.

Among the chemicals produced are the Armeens (primary, secondary and tertiary aliphatic amines), the Armacs (water soluble amines), the Duomeens (aliphatic diamines) and the Arquads (water or oil soluble quaternaries).

The basic raw materials for these chemicals are fatty acids derived from tallow, coconut and other vegetable oils. After a fine fractionation of the fatty acids into pure compounds they are blended according to needs and then fed in a continuous stream into the nitrile conversion reactors which are the heart of the process.

The overall formula of the reaction can be written:—



where R represents a fatty acid radical. The water formed during the reaction is removed. specially designed converters to give a primary. The resultant nitrile is then hydrogenated in ary or secondary amine:—



The plant is laid out on the straight line principle. The crude fat enters at one end and the finished materials are collected at the other end where there are storage and loading facilities. The boiler house is placed centrally and Dowtherm units are located at two points where high temperatures are required.

Full use is made of automatic control in this plant. Only one operator is required for the fatty acid fractionation still and for the nitrile units. A research and control laboratory and a workshop are attached to the site.

This plant will provide sorely needed materials which up till now have had to be imported say the manufacturers, Armour & Co. Ltd., GPO Box 250, Lindsey Street, London EC1. It also adds to the export potential of the United Kingdom they say.

# Publications & Announcements

THE isolation and purification of vitamin B<sub>12</sub> is described in the January edition of *Endeavour* (Vol. XV, No. 57), in an article by A. W. Johnson and Sir Alexander Todd. In 1926 it was reported that whole liver was effective in the treatment of pernicious anæmia and from that time onwards many attempts have been made to isolate the active principle. It was not until 1948, however, that the anti-pernicious-anæmia (APA) factor, now known as B<sub>12</sub>, was isolated by British and American workers simultaneously. The molecular formula of the vitamin has been found to be C<sub>55</sub>H<sub>70</sub>O<sub>14</sub>N<sub>14</sub>PCo. and magnetic measurements indicate that the cobalt is in the trivalent state. A cyanide group, which can readily be exchanged for other groups, is attached directly to the cobalt atom. The relative positions of all the atoms, excluding hydrogen, were deduced by X-ray analysis and this, combined with a knowledge of the chemical reactions of the substance, has enabled workers to deduce a complete structural formula. Vitamin B<sub>12</sub>, the article concludes, can be regarded as a not too distant relative of the natural porphyrin derivatives such as haem and chlorophyll which are found widely in nature. *Endeavour* is published by Imperial Chemical Industries Ltd., and is distributed free of charge to senior scientists, scientific institutions and libraries throughout the world.

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CAST polythene vessels are now being marketed in this country by Tool Treatments (Chemicals) Ltd., Colliery Road, Birmingham Road, West Bromwich. A 10-gallon large round tub measures 22 inches diameter by 11 inches deep, while the large deep bin of eight gallons capacity is 15½ inches in diameter by 18 inches deep. All the well-known advantages of polythene are claimed for these containers. They are said to be practically indestructible, impervious to the action of corrosive and erosive fluids, light in weight and low in cost. They should find application in food factories, bakeries, chemical industries, brewery trades, laundries and cleaners, dairies and general agriculture, electro-plating; wherever, in fact, fluids and other materials are handled or stored. For convenience when

storing these containers nest into the minimum space. Tool Treatments also market polythene buckets and a two pint measuring jug calibrated in litres, pints, fluid ounces and cups.

\* \* \*

A POLYSTYRENE-butadiene copolymer emulsion known as Styrenol is produced by the New System Manufacturing Co. Ltd., Imperial Dye Works, Battersea, London SW11. This material is described as an aqueous emulsion of plasticized styrene-butadiene copolymer and is claimed to be well suited for non-penetrating coatings with good sealing properties on porous materials such as plaster, masonry, concrete, fibrous cement, cardboard and wood. It can be used in the manufacture of emulsion paints, in cement floorings, leather finishes, glass fibre and other surface coatings. Styrenol is claimed to be non-inflammable and to contain no solvents. It is readily compounded with pigments and materials used in emulsion paints such as thickening and dispersing agents. Paints so prepared are claimed to possess many outstanding qualities including easy application and good adhesion. Styrenol can be compounded with further plasticizers such as dibutyl-phthalate, benzyl butyl phthalate, dimethyl glycol phthalate, tricresyl phosphate and chlorinated diphenyl.

\* \* \*

A DUST collector designed for the collection of fine dusts such as limestone, iron oxide, tin oxide, cement, sulphur, carbon black, soda ash and hot metallic oxides is announced by the Rivac Air Co. Ltd., of Stockport, Lancs, who claim that the unit is specially suited for the handling of fine chemicals. Called the Clear-Flo Dust Collector, the unit's filter utilizes a system of multiple fabric filter sleeves stretched over internal springs and secured to a top spigot plate. A reversed air-flow principle is employed by which air and dust drawn into the collector are subjected to a swirling cyclonic action. This results in depositing the heavier dust in the dust bin and the finer particles on the outside of the circular filter cloth. All restrained dust is free to drop off without the danger of building-up as in the case of filter bags when dust is

blown through from the inside. Standard Clear-Flo units, which need no shaker gear, are available up to 20,000 cfm.

\* \* \*

ISOPROPYL ether is fully described in a new technical bulletin recently issued by Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation. It discusses uses for isopropyl ether and contains up-to-date information on physical and physiological properties, specifications, and solubility and shipping data. Also included are constant boiling mixtures data and physical property charts. Isopropyl ether is an excellent solvent for oils, waxes, and resins. It is a solvent in the manufacture of pharmaceuticals and rubber cements and an extractant for the recovery of phenolics from waste effluents. Isopropyl ether can be used for dewaxing paraffin-base oils. It is a conventional alkylating agent and a good blending agent for aviation fuels. Copies of this new technical bulletin (F-40003) are available from Carbide and Carbon Chemicals Company, 30 East 42nd Street, New York 17, New York.

\* \* \*

THE Aluminium Development Association, 33 Grosvenor Street, London W1, has published a booklet on 'The Arc Welding of Aluminium' (ADA Information Bulletin No. 19). This is described as being essentially a bulletin on practice: for metallurgical principles and other aspects of aluminium welding readers are referred to ADA Research Report 27. One of the greatest difficulties in the welding of aluminium was formerly the rapid formation of an oxide film which had to be removed before a good joint could be formed. The need for flux is eliminated by the use of an inert gas arc shield. The ready availability of argon has accelerated progress in this method in recent years and it is now replacing older methods in many applications. Consumable aluminium electrodes fed into the arc under the inert gas shield have increased the convenience and adaptability of this method. Where it is not necessary to allow for any flux removal after welding, the designer is free to use a wide range of shielded arc welded joints, including lap and fillet welds, and to dispose them anywhere within reach of the welding torch. Automatic welding allows thicker material to be welded since higher welding currents

are possible than with manual welding. Aluminium-magnesium alloys are readily welded by the shielded arc process, the loss of magnesium being negligible. As far as technique is concerned there is said to be sufficient in common with steel welding practice for an experienced steel welder to become proficient in the metal-arc welding of aluminium after a small amount of practice.

\* \* \*

PUBLICATION of the ASLIB handbook of special librarianship and information has just been announced. The handbook, 387-pages, consists of 13 chapters under the following headings:—Administration; Acquisitions; Cataloguing & Indexing; Classification; Filing & Storing Material—with an appendix on binding; Library Planning; Service Routine; Reference & Information Work; Abstracting; Publications of the Library & Information Department; A Review of Mechanical Aids in Library Work; and Organizations in the Special Library Field. Priced 50s (40s to members), the handbook is available from ASLIB, 4 Palace Gate, London W8.

\* \* \*

INFORMATION on the correct procedures to be adopted when heating nickel is contained in 'The Heating of Nickel,' a booklet published by the Mond Nickel Co. Ltd., Thames House, Millbank, London SW1. Nickel has a high affinity for sulphur and is subject to an intergranular form of oxidation when heated under certain conditions. For these reasons, processes which are suitable for other materials in common use may cause damage to nickel. The damage is essentially a type of intergranular embrittlement which may remain undetected until deformation is attempted, when cracking occurs. Before any heat treatment oil and grease must be removed from the surface by the use of solvents or chemicals. Atmospheric contamination can be removed by the use of abrasives or by acid swabbing. All cleaning must be affected immediately before heating. Fuels used must be of low sulphur content: gas less than 10 grains of sulphur per 100 cubic feet, oil preferably less than 0.2 per cent sulphur content. A slightly oxidizing atmosphere is recommended. When hot-forming it is advisable to heat rapidly and to use working equipment of power sufficient to minimize number of heatings.

## Commercial Intelligence

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

### Mortgages & Charges

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

JACKSON BROS. (MILTON) LTD. Stoke-on-Trent, aluminium foundry &c.—23 December, by order on terms, mortgaged to Leek & Moorlands Bldg. Soc. securing £3,000 & any other moneys &c.; charged on Springfield-ho. Endon. \*Nil. 22 May 1954.

TEXTILE MACHINERY HIRERS LTD. London, W.—21 December, £4,350 debentured to Monaco Debentures Ltd.; general charge. \*Nil. 1 September 1954.

### Changes of Name

CHESEBROUGH MANUFACTURING COMPANY LTD., manufacturers of petroleum jelly, petroleum by-products etc., Victoria Road, London NW10, name changed to Chesebrough-Pond's Ltd., on 31 December 1955.

### Increases of Capital

SAFCA AEROSOL MANUFACTURING LTD, 246 London Road, Romford, Essex, increased by £65,000, in £1 ordinary shares, beyond the registered capital of £35,000.

F. D. COPELAND & SONS LTD., dealers in natural essential oils etc, 115 Grays Inn Road, London WC1, increased by £5,000, in £1 ordinary shares, beyond the registered capital of £5,000.

THOMPSON L'HOSPIED & CO. LTD., Chemicals etc, Cornwall Road, Smethwick, increased by £5,000, in £1 ordinary shares, beyond the registered capital of £5,000.

ANGLO CHEMICAL & ORE CO. LTD., Palmerston House, Bishopsgate, London, EC2, increased by £50,000, in £1 ordinary shares, beyond the registered capital of £150,000.

M.E. DOUGHERTY LTD., dealers in synthetic resin, coal tar and petroleum products,

chemical merchants etc, Plantation House, Mincing Lane, London EC3, increased by £12,000, in £1 'A' shares, beyond the registered capital of £6,000.

## New Registrations

### Holbrit Holdings Ltd.

Private company. (560,324). Capital £100 in £1 shares. To establish research laboratories and experimental workshops etc. Directors: Georges E. Mary, director of Potash Ltd., Robert L. Reid, director of Potash Fertilizers Ltd., etc. Registered office: 11 Old Jewry, London EC2.

### Aspro-Nicholas Ltd.

Private company. (560,301). Capital £100 in £1 shares. To carry on the business of manufacturers of and dealers in the medicinal preparation known as Aspro, and of manufacturing, dispensing and analytical chemists and druggists etc. Directors: Maurice A. Nicholas, director of Aspro (Ireland) Ltd., John W. Jamison, John C. D. Hogge, director of Aspro (Ireland) Ltd., John A. Cochrane and William J. Lloyd. Registered office: 71-76A Buckingham Avenue, Slough, Bucks.

### Lishmans of Helmsley Ltd.

Private company. (560,282). Capital £100 in £1 shares. To carry on the business of manufacturing and general chemists etc. Directors: T. W. Lishman and Mrs. Ann Lishman, of Bilton Lane, Harrogate. Registered office: Bridge Street, Helmsley, York.

## Company News

### Apex (Trinidad) Oilfields

Net profit for the year ended 30 September 1955 of the Apex (Trinidad) Oilfields was £683,000 after providing £838,000 for taxation in Trinidad and the UK. Capital and reserves employed in the business totalled £5,390,000, and current assets at £5,879,000 exceeded current liabilities and future taxation by £4,013,000. The company's production for the year amounted to 3,023,000 barrels of crude oil and 3,922,000 gallons of casinghead gasoline. The directors recommend the payment of a final divi-

dend of 1s 5d free of income tax per 5s unit of stock making a total dividend for the year of 1s 8d free of tax, per unit of stock on the issued capital of £1,100,000.

#### **Geigy (Holdings) Ltd.**

The directors of Geigy (Holdings) Ltd. announce the issue for cash of £450,000 5½% debenture stock, 1961/80, which has been placed privately at 97½% by Helbert, Wagg & Co. Ltd. A total of £130,000 of reserves is being capitalized and issued as bonus shares to J. R. Geigy, S.A. of Basle which will thus hold all the 750,000 £1 ordinary shares of Geigy (Holdings) Ltd. In addition there are 50,000 £1 preference shares in issue. J. R. Geigy, S.A. are also subscribing for £200,000 5½% unsecured loan stock. Through its subsidiary and associated companies Geigy (Holdings) Ltd. manufactures and merchants dyestuffs, pigments, pharmaceuticals, plasticizers, pesticides and fine and general chemicals.

#### **Marine & Industrial Lubricants Ltd.**

The boards of Lambert Brothers Ltd. and Manchester Oil Refinery (Holdings) Ltd. agreed for the latter company to acquire the complete control of Marine & Industrial Lubricants Ltd. from 1 February 1956. Marine & Industrial Lubricants Ltd. will continue to operate from 6 Lloyds Avenue, London EC3, and will be responsible within the Manchester Oil Refinery organization for the sale and supply of Morola, Manco! and Morax marine lubricants.

#### **British Benzol & Coal Distillation Ltd.**

At the 27th annual general meeting in London on 17 January, Mr. G. H. Johnson, M.I.Mech.E., F.I.M., the chairman and managing director, presided. He moved the adoption of the directors' report and the accounts for the financial year ended 31 October 1955, and the payment of a final dividend of 12½ per cent, less tax, making with the interim dividend a total distribution of 17½ per cent, less tax, for the year.

#### **Bowmans Chemicals Ltd.**

Profit for the year ended 31 October 1955 of Bowmans Chemicals Ltd., of Widnes, Lancashire, after providing £16,404 for depreciation, £14,696 for tax, and charging £2,324 for Jubilee expenses, amounted £11,611. To the profit for the year has been added the balance brought forward from 1954 of £20,474, plus £2,940, the estimated

amount of tax over-provided in previous years, making a total of £35,025 available for dividends, reserves etc. Dividends, less tax, for the year to 1 October 1955, having been paid on the preference shares, the directors recommend a 10 per cent, less tax, dividend on the ordinary shares for the year ended 31 October 1955. These dividends and the profits tax attributable thereto absorb £7,242.

#### **Hickson & Welch (Holdings) Ltd.**

A final dividend of 11 per cent, making 15 per cent for the year to 30 September 1955, is recommended on the £550,000 ordinary capital of Hickson & Welch (Holdings) Ltd., chemical and timber preservative manufacturers. This compares with the 11 per cent total, on a £400,000 prior to a rights issue for the previous year, and is the third successive increase since the formation in 1951. The group profits, including the results of the John W. Leitch group for nine months since acquisition, show a substantial increase at £406,894, against £278,876, after charging £63,431 (£47,607) depreciation. The net profit of the group amounted to £196,571 (£121,879).

### **Long Service Awards**


AT A CEREMONY at the Ryders Green works, near West Bromwich, of Robinson Brothers Ltd., tar distillers, refiners and chemical manufacturers, Mr. Stanley Robinson, the chairman of the company, presented gold watches to 13 employees who had each completed 25 years' service with the company.

Formed in 1869 as tar distillers, the company merged its tar distilling interests after the first World War with the Midland Tar Distillers Ltd. Following the merger the company began the manufacture of chemicals and this section of the business has steadily expanded. Recently a new office was completed and the research department is being removed to a new building.

#### **Radiation Chemistry Lectures**

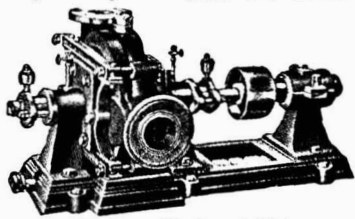
Dr. A. J. Swallow, B.Sc., Ph.D., A.R.I.C., formerly of ICI, and now a Fellow attached to the Department of Radiotherapeutics, University of Cambridge, will give four lectures on radiation chemistry at the Borough Polytechnic, London, on successive Thursdays starting 1 March.





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## Next Week's Events

### MONDAY 6 FEBRUARY

#### SCI (London Section)

London: Chemical Society's Rooms, Burlington House, Piccadilly W1, 6.15 p.m. A meeting on cost accounting in the chemical industry: 'The Purpose of Costs' by H. Hodgson; 'Some Aspects of Costing in the Petroleum Chemical Industry' by T. Ramsay (Shell Refining & Marketing Co.); 'A System of Costing in the Fine Chemicals Industry' by K. T. Chapman (Ward, Blenkinsop & Co. Ltd.).

#### RIC (London Section)

Oxford: University Physical Chemistry Laboratory, 8.15 p.m. 'Gas-Liquid Chromatography' by A. T. James, B.Sc., Ph.D.

### TUESDAY 7 FEBRUARY

#### RIC (London Section)

Chatham: Medway College of Technology, 7 p.m. 'Atomic Energy' by I. Wells, B.Sc., M.I.Chem.E.

#### The Chemical Society

Edinburgh: Biochemistry Lecture Theatre, Teviot Place, 7 p.m. 'Organometallic Co-ordination Compounds' by Professor G. E. Coates, M.A., D.Sc., F.R.I.C.

#### Institution of Chemical Engineers

London: The Geological Society, Burlington House, Piccadilly W1, 5.30 p.m. 'Liquid Atomization & the Drop Size of Sprays' by R. P. Fraser, O.B.E., M.I.Chem.E., and Dr. P. Eisenklam, A.M.I.Chem.E.

#### Textile Institute

Burnley: Hall Inn, 7.30 p.m. 'Ardil & Its Uses in Lancashire Type Fabrics' by P. G. Noble, A.T.I., A.M.I.Chem.E.

#### SCI (Plastics & Polymer Group)

London: Rooms of the Chemical Society, Burlington House, Piccadilly W1, 6.30 p.m. 'A Study of the Chemistry of Radical Reactions by Radioactive Tracer Techniques' by Professor H. W. Melville, Ph.D., D.Sc., M.Sc., F.R.S.E., F.R.S.

#### Society for Analytical Chemistry

Birmingham: The University, Birmingham 3, 7 p.m. 'The Analytical Chemistry of Germanium & Gallium'. A discussion to be opened by H. J. Cluley, M.Sc., F.R.I.C., and G. W. C. Milner, M.Sc., F.R.I.C., A.Inst. P.

### WEDNESDAY 8 FEBRUARY

#### SCI (Microbiology Group)

London: Medical Society of London, 11

Chandos Street, Cavendish Square, W1, 6.15 p.m. 'The Manufacture of Scotch Whisky' by W. D. Burnett, B.Sc., F.R.I.C.

#### Institution of Chemical Engineers

Leeds: The University, 7 p.m. 'A Statistical Approach to Catalyst Development' by N. L. Franklin, A.M.I.Chem.E., P. H. Pinchbeck and F. Popper.

### THURSDAY 9 FEBRUARY

#### Society of Cosmetic Chemists

London: Royal Society of Arts, John Adam Street, Adelphi WC2, 7.30 p.m. 'Plastics in the Cosmetic Industry' by L. F. Bull, M.I.E.I., A.M.I.E.E.

#### SCI (Food & Oil & Fats Group)

London: Wellcome Research Institute, 183 Euston Road NW1. Two-day conference on 'Recent Advances in the Knowledge & Uses of Phospholipids in Foods'. Thursday, 9.30 a.m.; Friday, 10 a.m.

#### The Chemical Society

Bristol: Chemistry Department, The University, 7 p.m. 'Recent Advances in Acetylene Chemistry' by Professor R. A. Raphael, Ph.D., A.R.I.C.

Manchester: Large Chemistry Theatre, The University, 6.30 p.m. Tilden Lecture. 'Recent Progress in the Chemistry of Peptides' by Dr. G. W. Kenner, M.Sc.

Belfast: The Queen's University, 7.45 p.m. 'Reactions in Liquid Dinitrogen Tetroxide' by Dr. C. C. Addison, F.Inst.P., F.R.I.C.

Nottingham: The University, 4.45 p.m. Lecture by Professor B. Lythgoe, M.A., Ph.D.

Dundee: Queen's College, 5 p.m. 'Polymerization Reactions in Solution' by Professor G. M. Burnett, D.Sc., Ph.D.

#### Society of Instrument Technology

London: Manson House, 26 Portland Place, W1, 'The Scope for Feedback Control & Automatic Calculation in Industrial Mechanization' by Professor A. Tustin, M.Sc., M.I.E.E.

### FRIDAY 10 FEBRUARY

#### SCI (Liverpool)

Liverpool: Radiant House, Bold Street, 7 p.m. Film Show.

#### The Chemical Society

Birmingham: Chemistry Department, The University, 4.30 p.m. 'Ionization of Acids &

[continued on page 358]



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## Next Week's Events

*continued from page 356*

Bases' by Professor D. H. Everett, M.B.E., M.A., D.Phil.

St. Andrews: St. Salvators' College, 5.15 p.m. 'Some Recent Studies in Organometallic Compounds' by Professor G. E. Coates, M.A.

## New Research Reactors

### ZEUS & ZETR Now Operating

TWO new research reactors (or atomic piles) are operating at Harwell. They are ZEUS, a name adopted from the initials of its title zero energy uranium system, and ZETR (zero energy thermal reactor). They form part of Britain's programme for investigating different types of reactors. Zeus has been built to check the nuclear calculations on which the design of the fast reactor being built at Dounreay in the north of Scotland depends. In many essentials it is a full scale model of the Dounreay reactor. ZETR uses a nuclear fuel in solution and is intended to provide information about the quantities of fuel required for large scale reactors using such solutions.

A team from the industrial group of the UKAEA and the group of Harwell scientists working on ZEUS have combined and are gaining experience of the running of a fast reactor.

The construction of ZEUS was first announced during the International Conference on the Peaceful Uses of Atomic Energy at Geneva last August. The cylindrical core of the reactor, which is roughly 20 in. in diameter and 20 in. long, is made up of uranium; this uranium is very highly enriched in the rare uranium 235 isotope. Thus in ZEUS uranium is used as a fuel whereas in ZEPHYR, the first fast reactor at Harwell, plutonium is the fuel employed. The core of ZEUS is surrounded by many tons of uranium in which plutonium is formed gradually as the pile runs. The amount of uranium 235 needed to permit the nuclear reaction to start was found to be very close to the predicted value. The enriching of the uranium used in the core was carried out at the Atomic Energy Authority's factory at Capenhurst near Chester.

## Market Reports

LONDON.—A good call against contracts has been reported for the leading industrial chemicals, and the flow of new enquiry both for home account and for shipment continues on a fair scale. Prices generally are unchanged with quotations moving within narrow limits. White lead, red lead and litharge prices were raised on 24 January and reduced by the same amount on 31 January. Current quotations are white lead, £149 10s. Red Lead, £144 15s, and Litharge £146 15s. An improved demand for pitch and for solvents is the only feature of the coal-tar products market which remains steady throughout.

MANCHESTER.—Satisfactory trading conditions have been reported this week in most sections of the Manchester market for heavy chemical products. The soda, potash and ammonia compounds generally are being called for in good quantities against contracts, and most other lines in steady request. Fresh enquiries have been fairly numerous. With an odd exception prices are firm in undertone and are likely to continue so. The demand for fertilizers is gradually picking up, and a steady trade in the leading tar products, both light and heavy, continues.

GLASGOW.—A satisfactory position continues in the Scottish heavy chemical market and a good week's trading has to be reported. Although the bulk of demands have been against current requirements a fair percentage of forward bookings have been received. Prices on the whole have remained firm. The export market continues to be brisk with numerous enquiries being received.

### West German Perlon Cheaper

Leading manufacturers of Perlon in West Germany announce price reductions of between five and seven per cent, bringing the price for 30-denier filament down to DM 35.50 (old price DM 38.50), for 40-denier to DM 28.00 (DM 29.50), and for 60-denier to DM 24.50 (DM 26.50) per kilogram. West German output of fully synthetic fibres in 1955 amounted to about 10,300 tons, an increase of 25 per cent over 1954. This year the industry hopes to attain an output of 12,000 tons.

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★ Overseas enquiries should be directed to local Shell Companies.

# CLASSIFIED ADVERTISEMENTS

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

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**ELECTRICAL ENGINEER** required by **HUNTINGTON, HEBERLEIN & CO. LTD.**, subsidiary of Simon-Carves Ltd. Applicants should be capable of estimating and supervising complete electrical installations for heavy chemical and metallurgical plants. Good salary, 5 day week, pension scheme, 3 weeks' holiday, luncheon vouchers. Write full particulars experience, age, etc. to **STAFF DEPARTMENT, 114 CROMWELL ROAD, LONDON, S.W.7.**

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One one-rail crane with grab,

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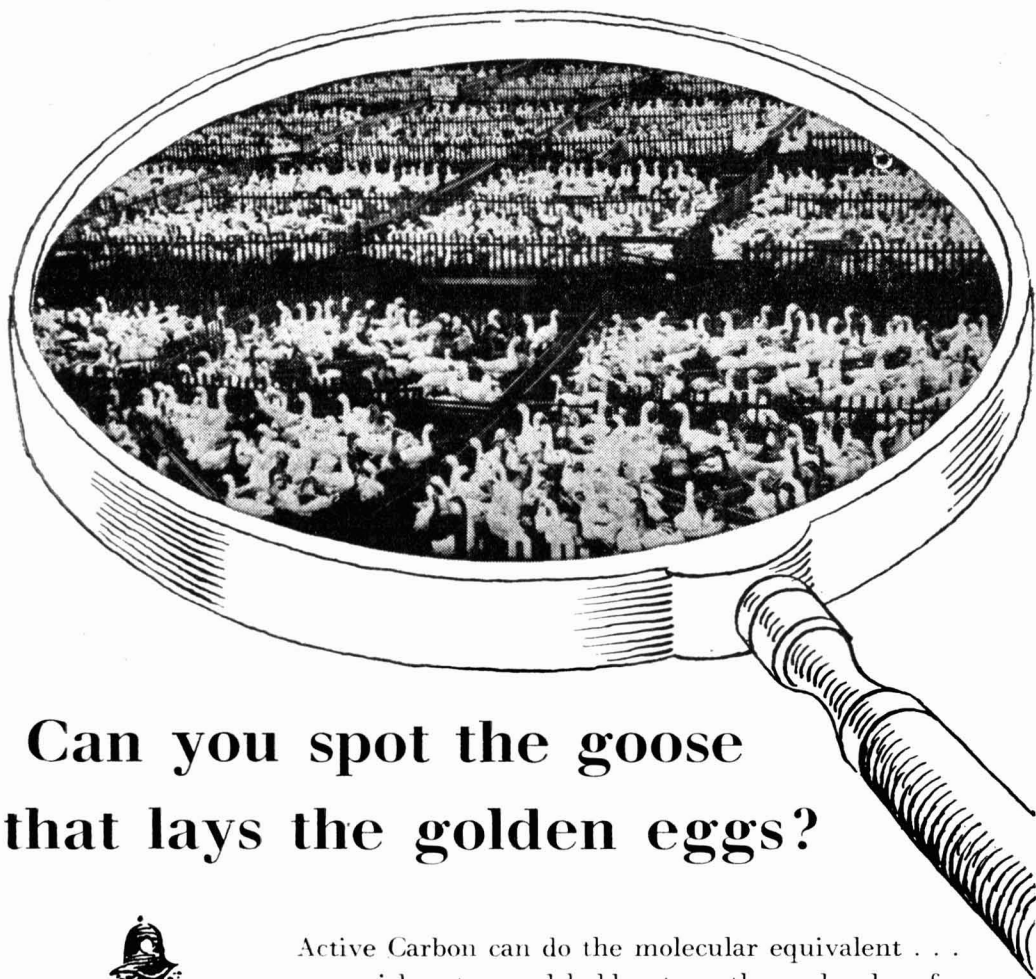
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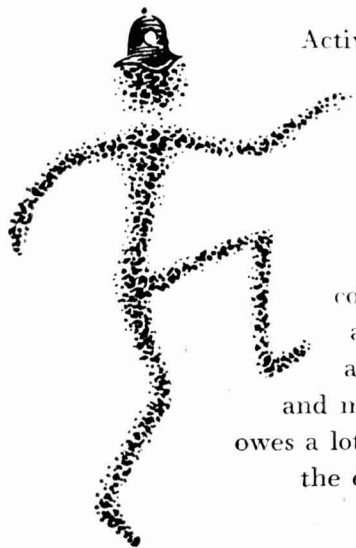
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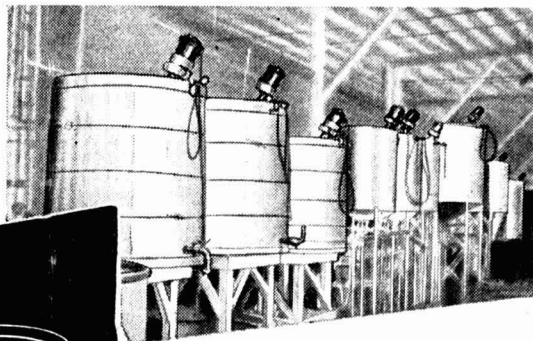
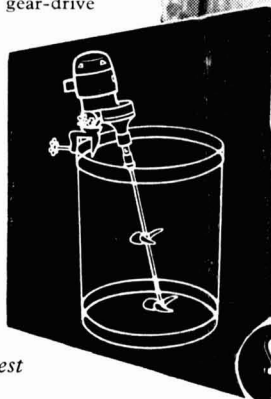
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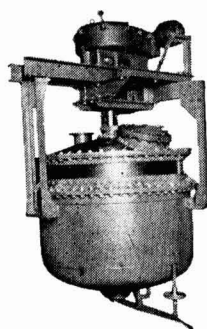
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