PIN-UP PICTURE for Caustic Soda Users

Latest contribution to safeguarding Westvaco quality and service to Caustic Soda customers is the fleet of tank cars just delivered.

Last word in tank-car construction, they have double-thick insulation; corrosion-resistant lining; double-relief valves; safety platforms, and outlet valve operated from outside the dome.

As part of our long term program in safeguarding the purity of *Westvaco Caustic Soda* right to the customer's siding, all Westvaco tank cars are being modernized or replaced *just as fast as shop facilities are available.*

Westvaco Caustic Soda

Uniformly High Quality from a Conveniently Nearby Source

Liquid • Flake • Solid

WESTVACO CHLORINE PRODUCTS CORPORATION

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CHICAGO, ILL. GREENVILLE, S. C. NEWARK, CALIF.

Westvaco CHEMICALS

YOU CAN NOW BUY DRY SODIUM METHYLATE

A NEW AND USEFUL REAGENT

PREPARATION BY CONSUMER NO LONGER ESSENTIAL

Until the recent development of *dry* Sodium Methylate by Mathieson, this useful reagent had to be prepared by the consumer from metallic sodium and methanol—a slow and hazardous operation.

Moreover, the "home-made" product—a dilute solution of sodium methylate in methanol—did not permit the close control so necessary to efficient operation and high yields in organic syntheses.

Mathieson Sodium Methylate . . . a white crystalline powder over 95% pure . . . has made possible some spectacular developments in the manufacture of sulfa drugs, vitamins, dyes, perfumes and other important products.

According to the conditions to be met, the consumer may either use dry sodium methylate to supply his *entire* requirements or employ the new dry reagent to build up the concentration of the dilute methylate solutions prepared in his own plant.

Just how this versatile new reagent might fit into *your* processing picture we don't know, but we do believe it may pay you to consider its possibilities.

Our technical staff is at your service without obligation. Write for full information.

*PROPERTIES OF MATHIESON DRY SODIUM METHYLATE

APPEARANCE—A fine, white, very hygroscopic powder.

PURITY—Contains a minimum of 95% sodium methylate, CH_3ONa, not over 2% of inorganic alkalies (sodium hydroxide and sodium carbonate) and not over 3% of methanol.

STABILITY—Stable when stored in airtight containers.

MELTING POINT—None, decomposes and chars.

APPARENT DENSITY—About 0.4.

SOLUBILITY—Dissolves in approx. twice its weight of methanol.

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SODIUM METHYLATE . . SODA ASH . . CAUSTIC SODA . . BICARBONATE OF SODA . . LIQUID CHLORINE . . BLEACHING POWDER . . H T H PRODUCTS
AMMONIA, ANHYDROUS & AQUA . . FUSED ALKALI PRODUCTS . . SYNTHETIC SALT CAKE . . DRY ICE . . CARBONIC GAS . . SODIUM CHLORITE PRODUCTS

Chemical Industries

THE BUSINESS MAGAZINE for MAKERS and USERS of CHEMICALS
Management • Research • Production • Marketing

VOL. 55—NO. 4

tober, 1944

Contents

DEPARTMENTS

NEWS OF THE MONTH

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THE READER WRITES

Research Leadership Better Than Insurance Plants

To the Editor of Chemical Industries:

I cannot agree with the "insurance plants" proposal as advanced by Dr. Keyes.

He has left one very big "if" in the proposal when he says "provided the decisions are made by chemists and chemical engineers and not by politicians or industrialists." The politician and the industrialist are the only two sources of funds and they most certainly would want to influence any decisions.

Secondly, after this war we will be the greatest industrial country in the world. In order to maintain that position, American Industry must keep its research program far ahead of that of other countries. Therefore, we will be the ones that will be bringing out new products, developing the new processes. We will have the know-how in our country; we won't have to develop it for a process uncovered by a foreign country.

And thirdly, the tempo of research will increase, new products and new processes will displace the old ones more rapidly in the coming years. To be sure, not all of them would require "insurance plants," but a certain percentage would. This would mean the needless building of many pilot plants that would be obsolete before we cashed in on the know-how. Whether this expenditure would be greater than that resulting from lack of knowledge is difficult to even approximate, nevertheless it's a factor.

C. B. Weiss, Chemical Engineer
The Buckeye Cotton Oil Co.,
Memphis, Tenn.

Prepare for Peace

To the Editor of Chemical Industries:

Referring to the article on "Insurance Plants for the Chemical Industry" in your June issue, and the letters in reply to this article in the August issue, I have been wondering if you have received any comments on the necessity of preparing as strenuously for peace, by peaceful means, as on the necessity of preparing for war, which is what your articles advocate. Preparedness has been tried many times, but it has not stopped wars.

If we were to devote as much effort to overcome the causes of war, as we do to prepare for it, we would be getting at the root of the evil and would have a good chance for eventual success.

Karl E. Buff, *Executive Chemist*
11140 Craft St.
Detroit, Mich.

fightin LEATHER

In every battle area and on the home front too, America's fighting men are wearing chrome-tanned shoes, made of leather that is soft, comfortable and long-lasting. Very large amounts of chromium chemicals are required for the tanning of leather. Not only does chrome tanning produce superior-wearing and more flexible leather than the old tanning methods, but the chrome tanning process is very much faster, which is particularly important to the war effort. Many of the country's foremost tanners know "Mutual" Bichromates to be the best obtainable. Their knowledge of skins and tanning, coupled with the use of the best materials for their treatment, minimizes manufacturing difficulties.

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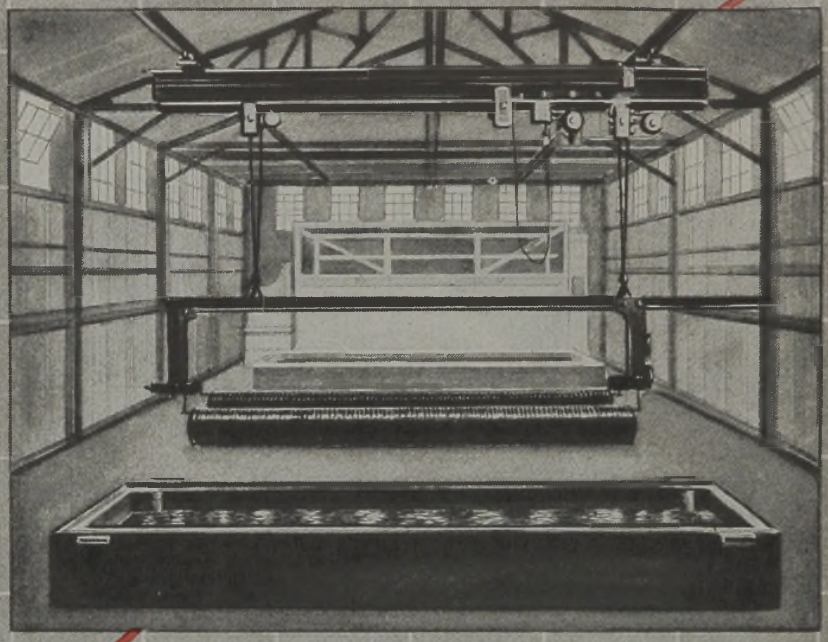
Dowtherm on the job!



Beating the fire hazard of asphalt at 390°F.!

Here is the interesting experience of a large culvert manufacturer in the use of the Dowtherm heat transfer method. Their problem involved the continuous, precise control of heat in a 20,000-gallon storage tank, and in two 6,000-gallon tanks used for the dipping of drainage pipe and culverts in asphalt at 390°F.

A Dowtherm unit was installed. Now, after more than three years of dependable Dowtherm service, an executive of the culvert company writes: "We had several reasons for deciding upon Dowtherm: Fire hazards, due to the high flammability of hot asphalt, were eliminated by employing the Dowtherm indirect heating method instead of open flame . . . We get much more uniform heat control. Dowtherm is fully automatic and needs no attention beyond ordinary maintenance . . . And it is less expensive to operate."

This example of Dowtherm-on-the-job is *typical* among the hundreds of Dowtherm units in service today. For these advantages are inherent in both the Dowtherm liquid and Dowtherm vapor systems. If your plant operation requires accurate, economical, product-improving heat control in the 400°F.-725°F. range, a note to Dow may well be the means of increasing profits and efficiencies in your business.

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Dowtherm

The high-temperature, low-pressure heat transfer medium

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

WASHINGTON

T. N. SANDIFER *reporting*

WPB After V.E. Day • Surplus Plants • Synthetic Rubber Venture Manpower • Sales of Surpluses

V. E. Day and After

War Production Board, under its acting chairman, J. A. Krug, is reviewing all major production programs, control orders, and material supplies, anticipating its immediate post-hostilities moves.

The Chemicals Branch has reviewed every applicable control order, all programs, including even individual projects, and has canvassed its personnel position. On the strength of this survey it has already made extensive recommendations to WPB, which has them under advisement, along with those of other industries.

No decisions have been made on any of these recommendations from the Chemicals Branch by WPB, and Chairman Krug has indicated that any overall plan for the chemical industry generally may be some time in development. The reason, he said, is the obvious necessity of studying the impact of any changes in chemicals output on both the war effort and civilian requirements, in view of chemicals' universality of use.

War Production Board meanwhile, is preparing its own plan for V. E. Day, when it will begin releasing all its present controls over industries. Curtailments will only begin going into effect. The statements in the daily press relative to a "40 percent cut" on V. E. Day are entirely too broad. In some cases curtailment will be 100 percent, in others, none.

In the chemicals field, informed opinion is that Government-owned plants will be closed or curtailed first, and other production according to the factors; Chairman Krug is protesting at every opportunity against any premature retrogressions in war industry in general. As he sees it, we are still at war in the Pacific, even after the German collapse, and we cannot tell yet what else will be needed.

The belief is still strongly held at WPB that any prospective reductions in chemical war activity will be offset by increased civilian demands.

WPB May Fade as a Control Agency

The Office of War Mobilization may be the real controlling element in all industry reconversion. Acting Chairman Krug recently indicated that WPB planned to relax all possible production controls after Germany collapses. A widespread interpretation of this statement is that WPB will thus take second rank in reconversion matters. It appears that OWM will actually be in overall control. WPB programs and policies would be geared to those emanating from OWM.

In operation, this probably means that OWM will be in a position to intervene in a particular industrial situation, affecting nation-wide interests. Control at the point of contact would still be exercised by WPB, where such was still necessary.

The development of this possibility is seen already in the Surplus Property Disposal program as it stands. OWM will figure largely in the necessary policy-making. The fact is that the war agencies are top-heavy, frequently in conflict with each other, and with older departments, behind scenes. Moreover, trick national policies, or even international relations conceivably can become enmeshed in what otherwise is a domestic industry matter. Witness the synthetic rubber industry, the chemical industry with its need of foreign raw materials, and the current Washington obsession on the subject of cartel arrangements. Some overriding authority, as vested in the OWM, or the Office of Economic Stabilization, has to be called in from time to time.

Surplus Plant Disposal

Private operators and option-holders have been circularized by the Secretary of Commerce, in charge of the Defense Plant Corporation, as to their intentions or desires with respect to the plants built by the Government, and put under their handling during the war. Meanwhile, however, the various Congressional committees who considered the 50-odd bills for disposal of all war surplus, gave unmistakable evidence of their preoccupation with the public ownership possibilities of many of the plants in question.

Such possibilities are in the minds of certain Congressional elements as well as public-ownership advocates of various denominations, in respect to the following: aluminum and magnesium plants, chemical plants and facilities, synthetic rubber plants, aviation gasoline plants, and the various explosives plants, built by the Government.

One of the underlying policies governing the disposititon of Government plants would be, in the words of one Senator, "to discourage monopolistic practices and assure fair prices to the consumer."

The idea of Government operation of some facilities, not for commercial production but as a "yardstick" of profits of comparable private industries was frequently stressed during consideration of the various surplus disposal bills. This might be applied to fertilizer production, for illustration. A suggestion to this effect was advanced by certain farm organization representatives. One such spokesman, Russell Smith, of the National Farmers Union, strongly endorsed the recommendation of Secretary of Agriculture Wickard, that 40 percent of the wartime synthetic nitrogen plant capacity be converted to production of nitrogen fertilizer. Mr. Smith said:

"This type of plant should not be closed down, dismantled, or simply turned over to private industry without safeguards of the public interest. All of them can well be operated, not to compete with private industry, but in order to do experimental jobs that private industry cannot afford to undertake . . ."

Whatever provisions are in the current bills on the subject, the underlying pressure for some public use of various surplus facilities is still very strong. There will be other bills.

Thus a Senate agricultural subcommittee is already actively opposing the sale of Government-built industrial alcohol plants. Chairman Gillette of this committee said it was "gravely concerned over reports that some administration officials" were inclined to sell these plants when they become surplus property.

This subcommittee has recommended that the plants be kept in production to assure a market for surplus grains after the war, and to supply alcohol for synthetic rubber manufacture.

Synthetic Rubber Program

So far, Col. Bradley Dewey, retiring director of the synthetic rubber program, reported recently, the greatest tonnage of butadiene has been produced from alcohol and over the next six months may still account for more than half of all production. However, he continued, at present butadiene from alcohol costs approximately five times as much as butadiene from the low-cost butylene dehydrogenation. The cost of alcohol butadiene, he pointed out, will continue to be high as long as the price of alcohol is based primarily on the cost of grain.

"If, in the postwar period, sufficient alcohol can be obtained synthetically from petroleum or from molasses or other low-cost agricultural products, this cost differential will close rapidly and the two processes would be comparative, if the prices of alcohol and butylene were approximately 9½ and 6 cents per gallon respectively, or 15 and 13½ cents respectively," he reported.

This suggests a question as to where his view leaves the Gillette subcommittee, with its plan of continued use of grain for alcohol in synthetic rubber manufacture.

One answer may be the following additional reference to Col. Dewey's report:

"However, an improvement in the Carbide and Carbon process resulting in a higher yield of butadiene from a given quantity of alcohol or recovery of certain by-products which at present are credited at fuel value, would make the picture for alcohol butadiene more favorable."

Manpower for Experimental Work

The principle now approved by WPB, of certain limited numbers of highly skilled technical personnel being assigned to develop experimental models and other preliminaries to post-hostilities civilian output, will be extended to industry generally, Acting Chairman Krug has indicated. Currently it is known that WMC and WPB have jointly approved the practice in the automobile industry, and, said Mr. Krug, this can be regarded as indicative for other industries.

"It seems to us that a very limited investment in that type of men would bear great dividends at the time when we have to change the economy over, or at least partly over, from war to peace," he remarked recently.

Surplus Chemicals Sold

War property declared surplus to the Reconstruction Finance Corporation by other owning agencies up to August 15, included chemicals valued at $1,798,751. The latest sales reported totaled $180,135, for chemicals costing $183,104, the RFC reported. On hand at the mid-August report date were chemicals valued at $1,615,647.

Coal, crude petroleum and related crude hydrocarbons reported as surplus for the same period totaled $45,220. No sales were reported. Petroleum and coal products except raw materials for chemicals reported surplus, totaled $189,587, with no sales reported. Other chemicals reported amounted to $261,465, with sales at cost amounting to $474. Heavy chemicals reported totaled $20,124, with sales amounting to $13,464, for materials which originally cost $15,936.

Industrial, industrial fine, and related chemicals reported totaled $818,629; sales, $145,504 compared with costs, $145,695; small quantities of intermediate cyclics, perfume and flavor materials, compressed and liquefied gases and chemical warfare agents, from which no sales were reported. In addition, the list of reported surplus included miscellaneous organic chemicals, $139,957, against which sales were made amounting to $20,693, for materials costing $20,999, and paints, varnishes, lacquers, japans, thinners, pigments, driers, fillers and related products totaling $194,209, from which no sales were reported.

Other chemicals reported as surplus to the RFC in the same period were: explosives and components, $9,503, no sales; plastic materials, synthetic fibers and synthetic elastomers, $56,686, no sales; industrial chemical products and preparations, $277,170, no sales.

DEDICATED TO RESEARCH

DURING the first week of October, this doorway to the Whitemarsh Research Laboratories officially opened, and the new home of Penn Salt's Research and Development Department was formally dedicated.

Here will be continued the important work of Penn Salt's rapidly growing staff of chemists, engineers and other technologists. With greatly enlarged facilities, they will be well-equipped to bear a substantial share of the increased responsibility imposed on industry by wartime's fast changing economy. Materials, not even dreamed of yesterday, already have become commonplace. And still more remarkable things are in store for the world of tomorrow.

This great building symbolizes the transformation that is taking place in the field of practical research.

PENNSYLVANIA SALT MANUFACTURING COMPANY

1850 *Chemicals* 1944

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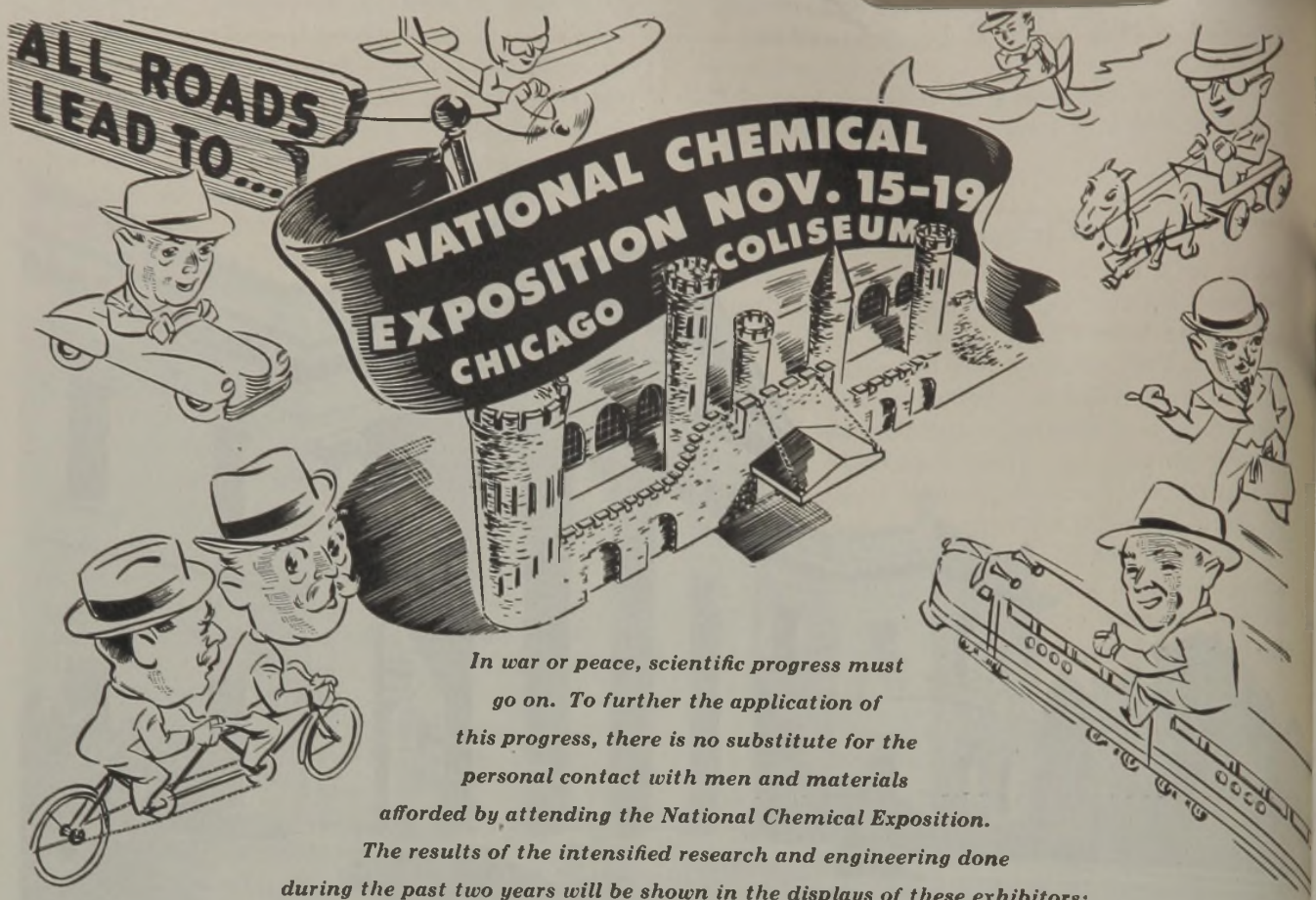
FORWARD TO A BETTER FUTURE WITH RESEARCH

Penn Salt products enter into the manufacture of chemicals for agriculture, water and sewage, metal industries, ceramics, glass, oil refining, pulp and paper, textiles, leathers, laundry and dry cleaning, aviation gasoline.



In war or peace, scientific progress must go on. To further the application of this progress, there is no substitute for the personal contact with men and materials afforded by attending the National Chemical Exposition. The results of the intensified research and engineering done during the past two years will be shown in the displays of these exhibitors:

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Ace Glass, Inc.
Alox Corporation
American Air Filter Co., Inc.
American Chemical Society
American Foundry Equipment Co.
American Instrument Co.
American Photocopy Equipment Co.
American Resinous Chemicals Corp.
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Eastgate Hotel
Hotel Sheridan Plaza
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NATIONAL INDUSTRIAL CHEMICAL CONFERENCE—Dr. H. E. Robinson and his Conference Committee have provided an outstanding program, to open with a joint luncheon with the Chicago Association of Commerce. Conference programs will feature such subjects as:

Metals—New Developments in Aluminum, Magnesium, Steel and Steel Alloys—The Chemist and Chemical Engineer in Pharmaceuticals—Vitamin Synthesis and Production—Production of Penicillin—Research and Production Contributions of Chemical Engineers in Petroleum and Synthetic Rubber—Current Contributions of the Chemist and Chemical Engineer to Human Progress.

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FEATURE EXHIBITS—Latest physical and electronic methods applied to chemical and chemical engineering problems, including: high frequency heating, electron microscopes.

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a LOW-COST Plasticizer for Synthetic Elastomers

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As a plasticizer, Baker's P-8 contributes to:

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The plasticizing effect of P-8 for Perbunan
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Plasticizer	% Vol. 48 hrs. @ 150°C.	Flex. to °C.	Modulus @ 300%	Tensile psi	Elong. %	Set %	Shore Hard.
None	Nil	–30	2175	3225	395	15	75
P-8	1.6	–60	400	1650	665	20	45
Tricresyl Phosphate	9.5	–50	750	1475	515	25	60
Glycol Ester of Low Molecular Weight Fatty Acids	12.1	–60	550	1650	570	20	45

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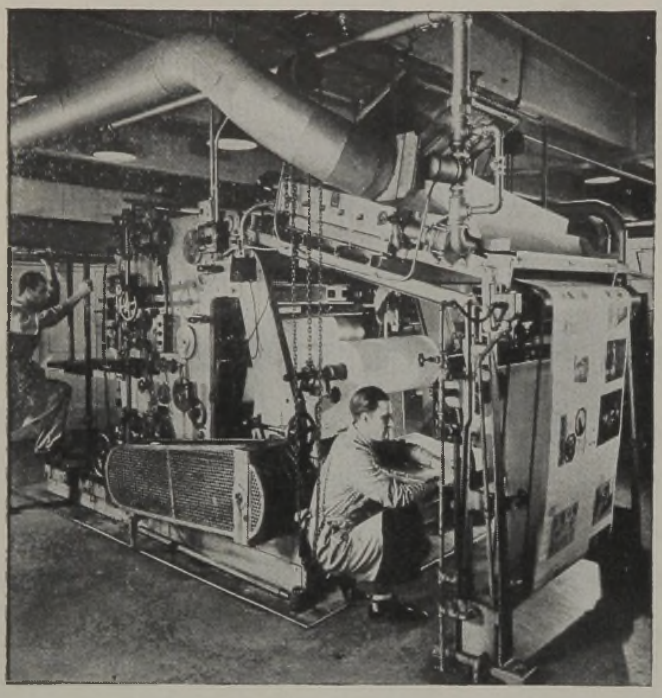
LIFE On The



(*Above*) **MORE ACCURATE REGISTER IN MULTICOLOR PRINTING** operations is possible when PAREZ is added to paper stock because dimensional stability under varying humidity conditions is improved.

PAREZ IMPARTS BOTH WET AND DRY STRENGTH TO PAPER

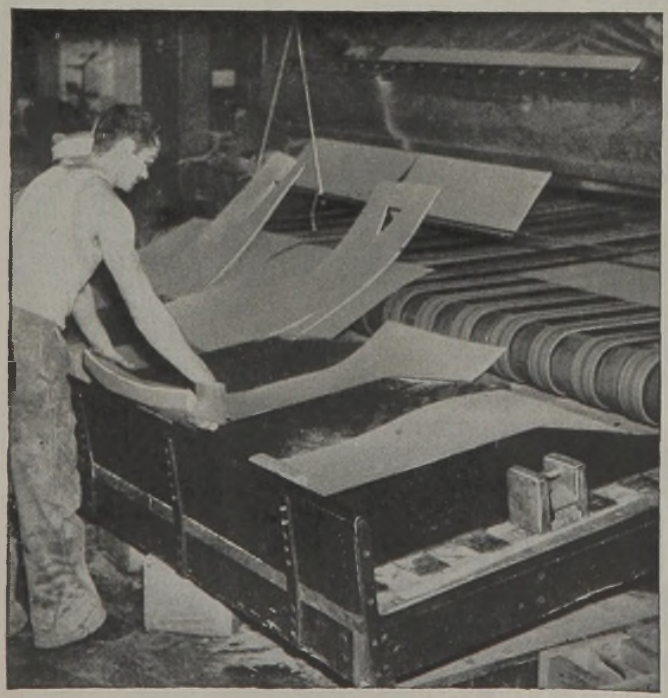
Dry strength characteristics in paper provided by PAREZ**, Cyanamid's new *wet strength* melamine resins, have opened a new field of possibilities in paper making. Paper that is tough when either wet or dry, made possible by PAREZ, has become an important factor in the war effort. It is used for maps, food packages, paper bags, wet strength blueprint and photographic papers, papers for cleaning machinery and polishing lenses, and for wet strength tags.

In some instances, however, the dry strength of paper is of as great an importance as wet strength. For example, the addition of PAREZ to paper stock produces paper with a higher densometer test and substantially higher burst and tensile strength values. In most papers a pronounced increase in folding endurance is evident. PAREZ Resin makes it possible to bring greatly improved dimensional stability under varying humidity conditions, resulting in less misregister in multicolor printing operations. High folding and tensile strength may be obtained in less expensive and lower grade paper pulps.

The addition of PAREZ also improves sizing of rosin-sized papers which is of particular importance in the manufacture of papers that undergo severe exposure to wet conditions or in the production of lightweight papers that are difficult to size to a high degree.

Papers treated with PAREZ will find many new fields of usefulness where either wet or dry strength is of importance. Additional information on present or postwar use of PAREZ is available on request.

***Trade-mark of American Cyanamid & Chemical Corporation applied to its synthetic resins for use by the paper industry.*



(*Above*) **THE DRY STRENGTH OF CARDBOARD** and lower grade paper pulps is greatly increased with the use of PAREZ since high folding and tensile strength are obtained.

(*Above*) **MAPS PRINTED ON WET STRENGTH PAPER** retain their strength even after being soaked with water, oil, trampled in mud, then washed with soap and water or dipped in gasoline.

Chemical Newsfront

(*Left and Right*) **FINE LEATHERS** for civilian footwear are again coming into the picture as restrictions are lifted on materials and designs. As war demands slacken, TWECOTAN*, Cyanamid's line of vegetable tanning extracts which have been used so extensively to add fullness and solidity in retanning all kinds of military leathers, is again available for use in processing civilian shoe leather. TWECOTAN is supplied in various grades with the right properties for straight vegetable tanning, combination chrome-vegetable tanning, and retanning of chrome leather. Other Cyanamid tanning specialties, DEPILIN*, CUTRILIN*, TANAK*, and BETASOL* are also available.

(*Above*) **THE AUTOMATIC DIP COATER**, developed in the course of Cyanamid research on synthetic resin vehicles, provides a simple but reliable standard dipping method for applying uniform films of surface coating materials to test panels. For further information, write Cyanamid.

(*Above*) **TERMINAL BLOCKS OF MOLDED PLASTIC** are now installed in all single and polyphase watthour house meters of the Sangamo Electric Company to eliminate possibility of block failures resulting from arc tracking. Cyanamid's mineral-filled MELMAC* molding material was selected because of its unusual insulation properties, high arc and heat resistance. The filler block and "A" block are molded separately and assembled (as shown above) into the terminal block for installation in the die cast aluminum base.

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A Unit of American Cyanamid Company

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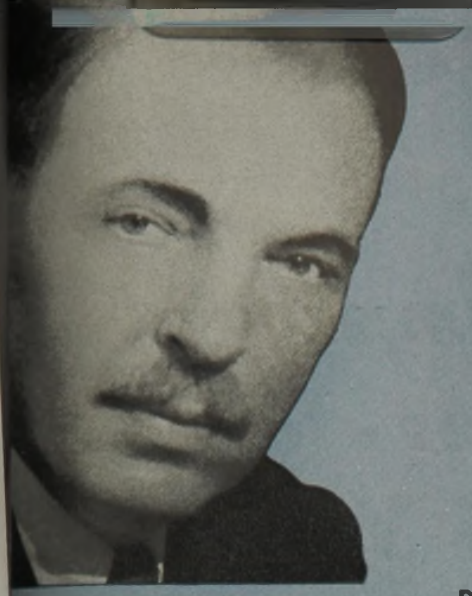


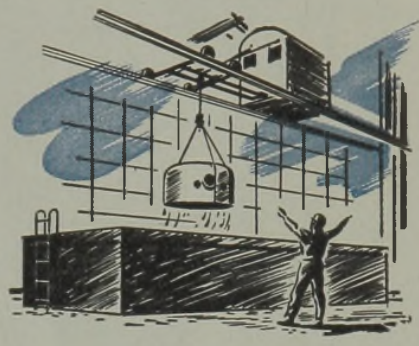
"...It took CHEMISTRY to realize the nation's wealth

American manufacturers once relied on *imported* camphor, an essential ingredient in many important products of industry. When war cut off these imports, however, the *domestic synthesis* of camphor was greatly enhanced by a substance which Hercules' chemists produced from wood turpentine . . . *Alpha-pinene.* This is just one example among hundreds of how Hercules research has helped bring to light the hidden wealth of our natural resources."

DAVID DIETZ, *Science Editor of Scripps-Howard Newspapers, Author, Pulitzer Prize Winner*

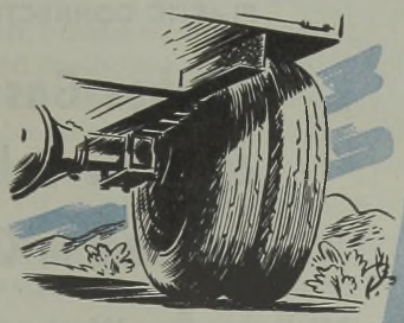
PROTECTING HEALTH from food contamination by flies and other insect germ-carriers is one of the jobs whose importance can hardly be exaggerated . . . a job now handled by a terpene chemical product. Thanite*, the modern toxic agent used in sprays, is in great demand.

WASHING WOOL—saving time. Yarmor* Pine Oil saves up to 30% of the time required for scouring and processing of wool. Yarmor is a wetting agent, lowering surface tension, emulsifying dirt and grease, producing fluffier, cleaner wool, helps get the most out of our wartime supply.



GREASE-GETTER. Another wetting agent is Dresinate*. Dresinate is speeding the production drive by making it easier for alkaline baths to replace solvent baths for *cleaning metals.* Effective in both strong and weak alkaline baths, it has no harmful chemical action on soft metals.

BEST SOLVENT. For many uses besides paints, there is conceded to be no better solvent than turpentine. Hercules produces the finest clear, pure, water-white turpentine which thins and spreads paint without weakening its color, helps dry it fast.

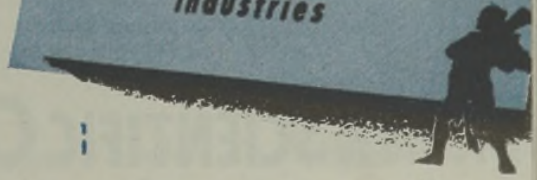


LESS RUTS. Just a small amount of Hercules' amazing new product, Stabinol*, when properly mixed with the top few inches of soil, and then compacted, makes a completely water-proof surface—*preventing mud.*

HERCULES

TERPENE AND ROSIN CHEMICALS

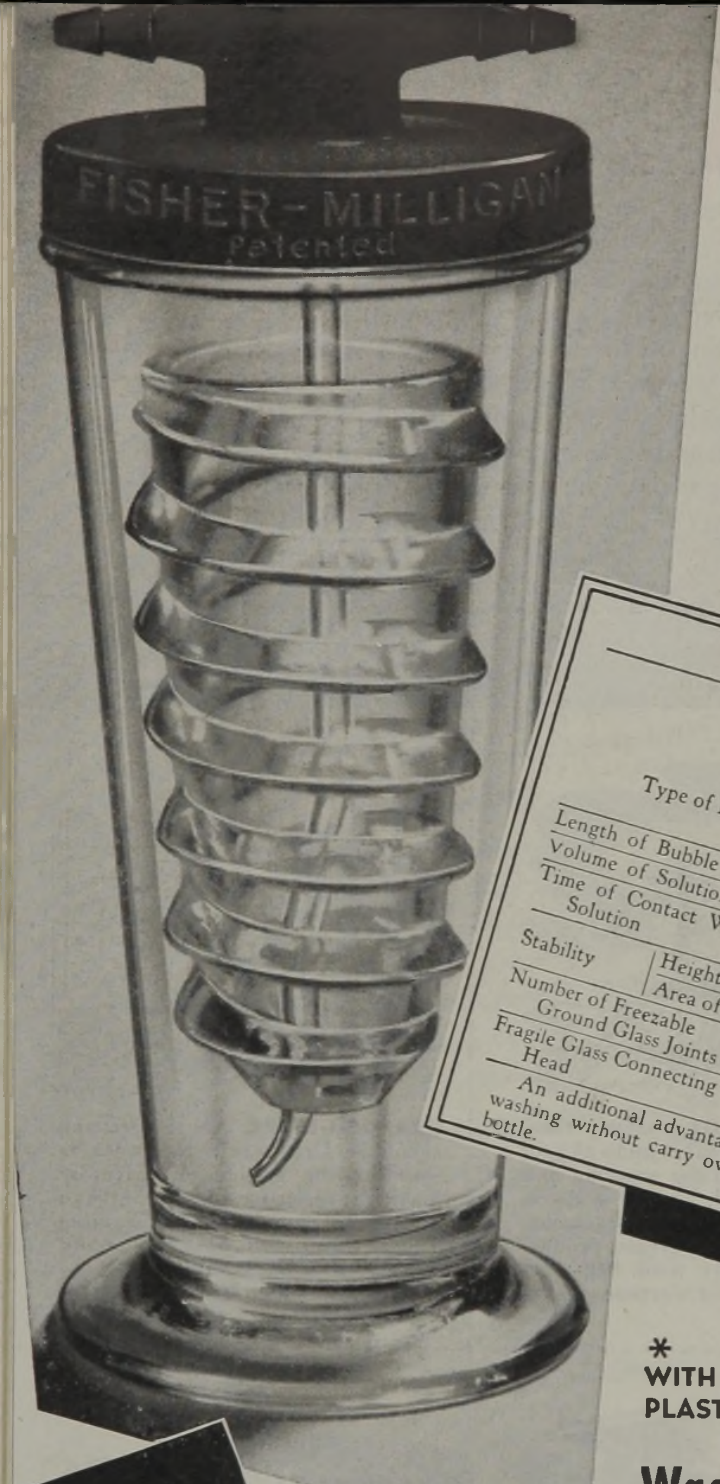
offer answers to material problems in many industries



HERCULES POWDER COMPANY
INCORPORATED

994 Market Street, Wilmington 99, Delaware

*Reg. U. S. Pat. Off. NI-42



Improved Fisher-Milligan GAS WASHER*

Comparison of Gas Washing Bottles

Type of Bottle	Old Style German Bottle	Old Style Milligan Bottle	New Style Fisher-Milligan Gas Washer
Length of Bubble Travel	5 3/8"	25.4"	36.8
Volume of Solution	250 cc.	145 cc.	274 cc.
Time of Contact With Solution	1 sec.	6.1 sec.	8.1 sec.
Stability — Height	13"	8 7/8"	7 7/8"
Stability — Area of Base	6.4 sq. in.	8.9 sq. in.	10.6 sq. in.
Number of Freezable Ground Glass Joints	1	1	None
Fragile Glass Connecting Head	1	1	None

An additional advantage of the new style Washer is the fact that the maximum rate of washing without carry over has been increased to 229% the rate of the old style Milligan bottle.

* WITH RESILIENT SARAN PLASTIC CONNECTING HEAD

Washes Gases more effectively

Because **• Bubbles Travel 45%** ***farther***

and Stay in Contact 32% ***longer*** **••**

MORE – EFFICIENT

MORE – CONVENIENT

MORE – STABLE

Fisher-Milligan Gas Washer - - - $6.00

The Fisher-Milligan Gas Washer is another apparatus improvement from Fisher's Development Laboratories. It is available along with other modern laboratory appliances and reagent chemicals from:

Manufacturers—Distributors

FISHER SCIENTIFIC CO.

717 Forbes St., **Pittsburgh (19), Pa.**
2109 Locust St., **St. Louis (3), Mo.**

EIMER AND AMEND

Greenwich and Morton Streets
New York (14), New York

Headquarters for Laboratory Supplies

Unfinished Business!

• Behind the door of America's chemical industry is being conducted one of science's most important pieces of unfinished business—the exploration of coal-tar.

Already this war has given impetus to a host of amazing new coal-tar developments.

Niacin, in the Vitamin B Complex . . . many of the new life-saving sulfa drugs . . . scores of compounding materials, helping to make possible our vitally essential synthetic rubber industry . . . DDT . . . and finally, one of the most notable of modern chemical syntheses—the exact duplication of the complex quinine molecule.

For the even more memorable advances to be anticipated in the future, Barrett stands ever available as a key source of supply for coal-tar chemicals. If you are working on any problems involving coal-tar, or any of its derivatives, Barrett invites your inquiries.

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ALLIED CHEMICAL & DYE CORPORATION

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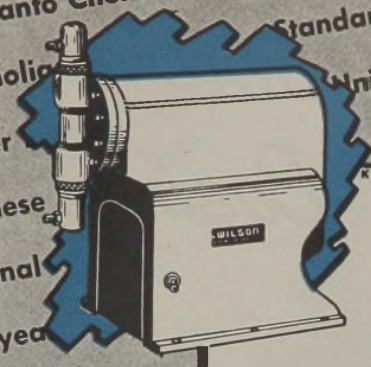
BARRETT COAL-TAR CHEMICALS: Tar acids: Phenols, Cresols, Cresylic Acids, Naphthalene • Phthalic Anhydride • Dibutyl Phthalate • Pyridine Cumar* (Paracoumarone-indene Resin) • Rubber Compounding Materials • Bardol* • Barretan* • Pickling Inhibitors • Benzol • Toluol • Xylol • Solvent Naphtha, Hi-Flash Solvent • Hydrogenated Coal-Tar Chemicals • Flotation Agents • Tar Distillates • Anhydrous Ammonia • Ammonia Liquor • Ammonia Nitrate • Sulphate of Ammonia • Arcadian*, the American Nitrate of Soda.

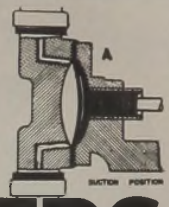
*Reg. U. S. Pat. Off.

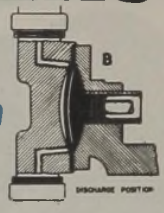
Barrett

ONE OF AMERICA'S GREAT BASIC BUSINESSES



WILSON
(PROPORTIONING PUMPS)
PULSAFEEDERS





...are known by the companies they keep in precision production!

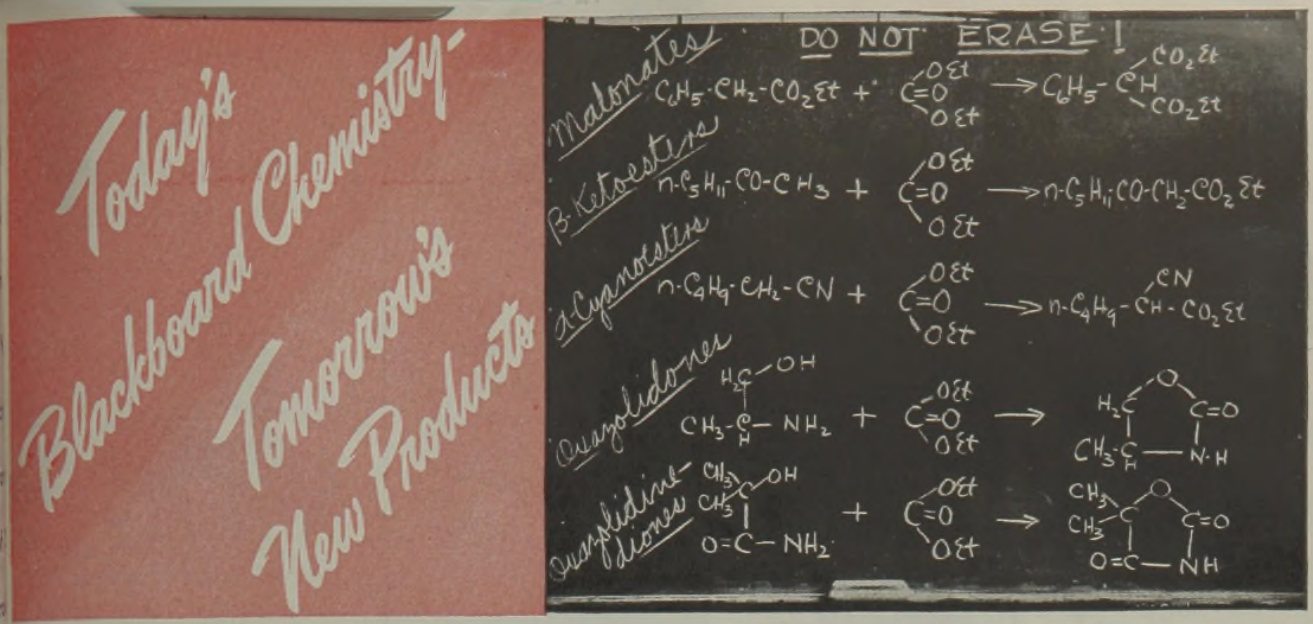
Acceptance of WILSON *Pulsafeeders* evidences almost universal preference by exacting technicians. *Dependability of* WILSON *Pulsafeeders* results largely from absence of leak-likely packing glands and breakable diaphragms. "A" and "B" above, show isolation of working parts from load liquids. An inert liquid surrounds the flexible diaphragm which changes shape against uniform pressure as the piston advances, eliminating possibility of rupture. *Capacity of* WILSON *Pulsafeeders* ranges from 1 cmh. to 600 gph. Liquids may be in mono- or multi-flow, of practically any nature, including acids, volatiles, slurries, etc.

Accuracy of Wilson Pulsafeeders is guaranteed, in most instances, at better than ⅛ of 1% through automatic or manual controls.

Adaptability of WILSON *Pulsafeeders* is almost limitless because of their extreme flexibility. They long have served in chemical proportioning, food and other processing, laboratory work, water and sewage treatment, etc. Power may be direct by electric, air or water motor, or indirect from any revolving or reciprocating source. WILSON *Pulsafeeder Engineering Service* cooperates in objectives concerning flow control and use of our Automatic Filling Machines.

WILSON CHEMICAL FEEDERS, Inc.

215 CLINTON STREET (P. O. Box 998) BUFFALO 4, N. Y.
ESTABLISHED 1923... WITH EXPERIENCE IN ALLIED LINES SINCE 1914



SEE FOR YOURSELF the many new products* which these reactions now put within your reach. You are cordially invited to visit the Mallinckrodt booth at the National Chemical Exposition, Chicago, Illinois, November 15-19, 1944. Our research chemists will be happy to discuss these new organics with you.

Among the Products on Display Will Be:

ESTERS

Diethyl Phenylmalonate
Diethyl Phenylethylmalonate
Diethyl Phenylbenzylmalonate
Ethyl Phenylacetate
Ethyl *Alpha*-phenylbutyrate
Di-n-amyl Carbonate
Dibenzyl Carbonate
Dicyclohexyl Carbonate

ALPHA-CYANO ESTERS

Ethyl *Alpha*-phenylcyanoacetate
Ethyl Phenylethylcyanoacetate
Ethyl Phenylbenzylcyanoacetate

BETA-KETOESTERS

Ethyl Isovalerylacetate
Ethyl *Beta*-ketocaprylate
Ethyl p-chlorobenzoylacetate

OXAZOLIDONES

2-Oxazolidone
2-Hydroxyethyl-2-oxazolidone
3-Phenyl-2-oxazolidone
4, 4-Di-(hydroxymethyl)-2-oxazolidone

*Fundamental research on ester condensations by Mallinckrodt chemists have made potentially available a host of new organic compounds of diversified properties. See U. S. patents 2,338,220; 2,342,385; 2,346,059; 2,351,085. J. Am. Chem. Soc. *63*, 2056, 2252 (1941); *64*, 576, 578, 580 (1942).

MALLINCKRODT CHEMICAL WORKS

FINE CHEMICALS Mallinckrodt SINCE 1867

FOR VICTORY BUY UNITED STATES WAR BONDS STAMPS

77 Years of Service to Chemical Users

Mallinckrodt Street, St. Louis 7, Mo. • 74 Gold Street, New York 8, N. Y.
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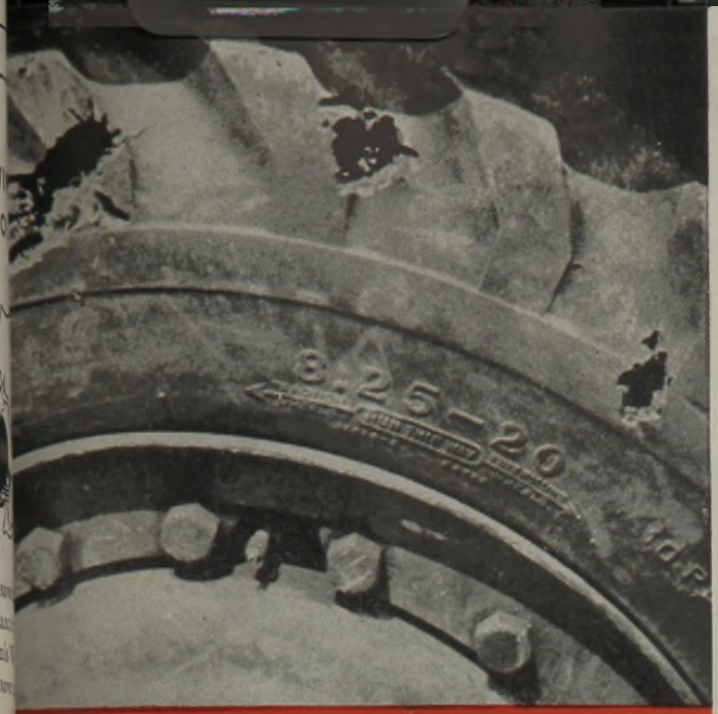


A typical example of

F. GOODRICH DEVELOPMENT IN RUBBER

"The jagged holes were made by machine gun bullets that went right on through, but the tire didn't go flat. . . . Even with the air gone the tire itself will support the load and run forty miles before going flat."

Photograph courtesy of B. F. Goodrich.

6

Baker Chemicals

FOR THE RUBBER INDUSTRY

MAGNESIUM OXIDE
MAGNESIUM CARBONATE
CALCIUM NITRATE
LEAD ACETATE
LEAD PEROXIDE
CARBON DISULFIDE

When Rubber is

MORE THAN RUBBER

New Qualities Long Hoped fo
Developed in Various Synthetic

Out of our war-time shortages of natural rubber ha come many synthetics that render a greater service. Ar here's the major reason. These synthetics were custor built to *specific* rather than general needs.

The J. T. Baker Chemical Co., in step with the changi chemical needs of those who work with rubber, has be going along with this expanding technology. Wh chemicals were required to give synthetics certain qu ities, Baker frequently made these chemicals to the ru ber industry's defined specifications.

Today, Baker not only supplies large quantities of C cined Magnesia to meet the exacting requirements Neoprene compounders, but also Magnesium Carbon for its reinforcing qualities and high tensile streng

Baker makes four other sales leaders for the rubb industry to predefined specifications: Calcium Nitra Lead Acetate, Lead Peroxide and Carbon Disulfide.

If you have need for one or more of these chemical or require a special chemical custom-built to your o rigid specifications, we urge you to write. Our chemic technical and executive staffs are at your service. Y inquiry will be treated in strict confidence.

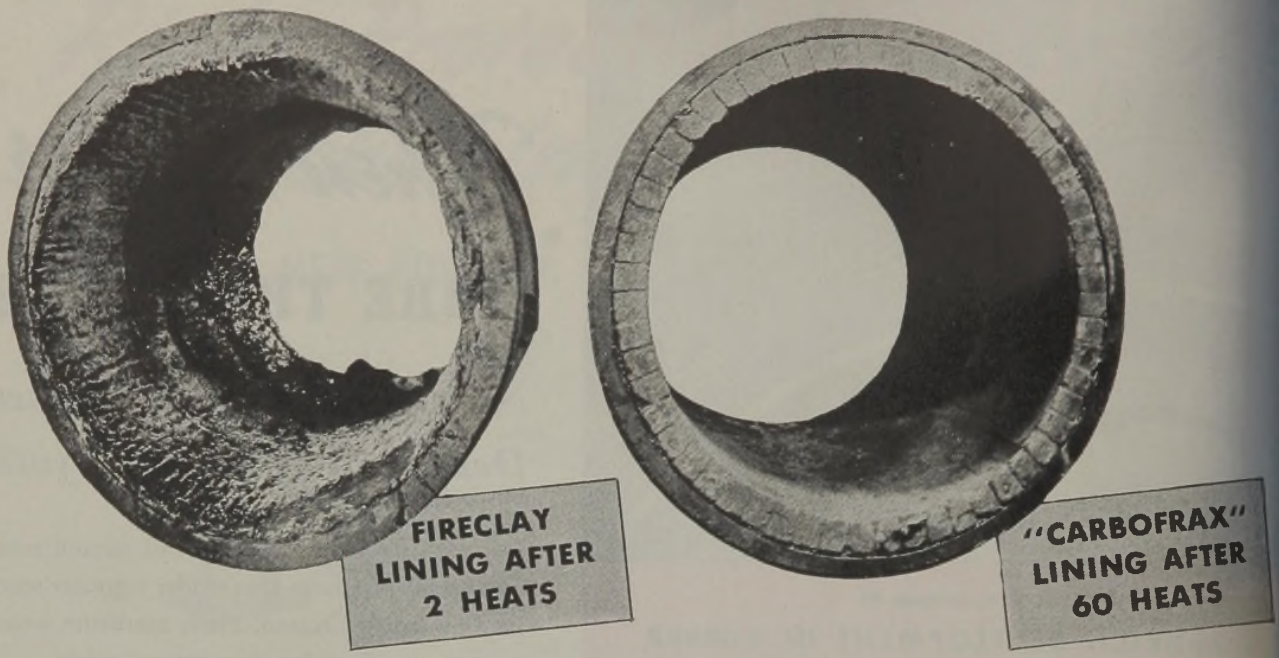
J. T. Baker Chemical Co., *Executive Offices and Pla* Phillipsburg, New Jersey. *Branch Offices:* New Yo Philadelphia and Chicago.

Baker's Chemical

C. P. ANALYZED • FINE • INDUSTR

Baker's

NO. 1 IN A SERIES DESCRIBING THE USE OF SUPER REFRACTORIES IN THE PROCESS INDUSTRIES



The refractory that made a process practicable

When a non-ferrous reduction process was being translated from pilot plant to production, its success was threatened by lack of a satisfactory vessel lining.

Conditions within the vessel were severe—corrosive slag and metal above 3500° F. After only 2 heats, a fireclay lining was useless. The process was faced with abandonment—for other refractories, when tried, also rapidly broke down. Finally, a "*different*" kind of refractory was tried. "*Different*" in that it had superior corrosion resistance and a thermal conductivity 11 to 12 times that of fireclay. ***It worked***—primarily because the terrific heat was rapidly transmitted to the atmosphere and dissipated with minimum effect on the lining.

After 60 heats, the lining still looked as good as new. Its ultimate life and that of succeeding replacements averaged better than 150 heats—*remarkable service for such severe conditions.*

"CARBOFRAX"—the silicon carbide super refractory possessing high heat conductivity and outstanding resistance to spalling, cracking and corrosion at elevated temperatures—made this process commercially feasible.

Many processes now in common use have been made practicable through the proper selection and use of Carborundum Brand super refractories. Used as linings for gas generators; still settings; hearths and rabble blades in multiple hearth furnaces; arches in muriatic acid furnaces; etc., they have consistently meant longer life, less maintenance, greater efficiency.

Call on Carborundum whenever high temperature problems arise. Qualified Refractories Engineers will work with you to determine if Carborundum Brand super refractories can be used to make a proposed process work—or an existing process more efficient.

THE CARBORUNDUM COMPANY
Refractories Division, Perth Amboy, N. J.

District Sales Branches: Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh. **Distributors:** McConnell Sales & Engineering Corp., Birmingham, Ala.; Christy Firebrick Company, St. Louis, Mo.; Harrison & Company, Salt Lake City, Utah; Pacific Abrasive Supply Company, Los Angeles & San Francisco, California; Denver Fire Clay Company, El Paso, Texas; Smith-Sharpe Company, Minneapolis, Minn.

"Carborundum" and "Carbofrax" are registered trade marks of, and indicate manufacture by, The Carborundum Company

Super Refractories by **CARBORUNDUM** TRADE MARK

SEND FOR *this booklet and learn how super refractories are used in the process industries. Gives helpful charts of properties and many interesting applications.*

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THE CARBORUNDUM COMPANY, Refractories Division, Perth Amboy, N. J.
Please send me a copy of "Super Refractories for the Process Industries."

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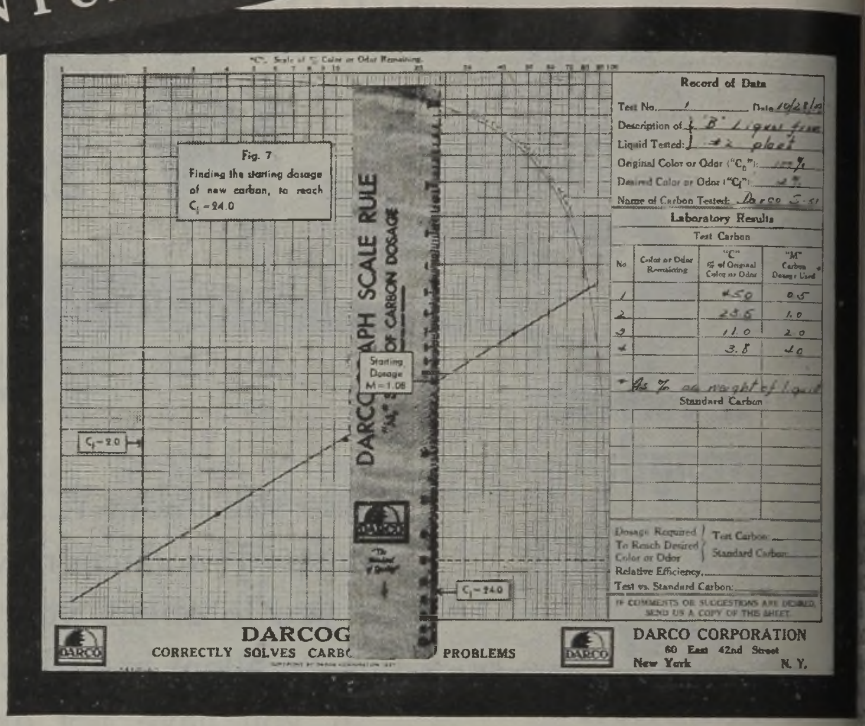
DARCO
Does Two Processing Jobs That Assure PRECISION PURITY

Visit us at Booth #130
National Chemical Exposition
November 15 - 19
Chicago Coliseum



The Darcograph simplifies and speeds determining precisely *how much Darco activated carbon will purify any given amount of liquid.*

Stir Darco activated carbon into your process liquids—organic or inorganic—in precisely the amounts determined by your Darcograph. See how Darco actually does two jobs:

1. ***Swift, complete removal of impurities.*** *Savings in man-hours and materials.*
2. ***More efficient crystallization, evaporation or distillation,*** *since impurities no longer impede processing. You get higher returns—a more saleable product—lower operating costs—increased profits.*

That's what we mean by *precision purity:* the double duty done by Darco, properly applied according to the data on your Darcograph. You'll find that each pound of this activated carbon, containing billions of adsorptive particles like miniature "sponges," will soak up the impurities from many gallons of solution. Darco quickly and completely removes unwanted colors, odors, gums, greases, colloids and the like.

Try the combination of Darco activated carbon and the Darcograph. Your toughest liquid purification problem may have a surprisingly easy answer. Why not send for your Darcograph today? It's free.

DARCO
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DARCO—REG. U. S. PAT. OFF.

DARCO CORPORATION

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New

Westvaco CHEMICALS

STRONTIUM HYDRATE

$Sr(OH)_2 \cdot 8H_2O$

NOW AVAILABLE IN COMMERCIAL QUANTITIES

Strontium Hydrate is a soluble reactive chemical for use in the production of strontium salts without undesirable by-products.

Research quantities are at hand for immediate delivery. Your inquiry will receive prompt attention.

Write, wire or phone
Technical Service and Market
Development Division

ANALYSIS

$Sr(OH)_2 \cdot 8H_2O$	95.6 %
$Ba(OH)_2 \cdot 8H_2O$	1.92 %
$SrCO_3$	1.39 %
SrS	0.02 %
CaO	0.05 %
NA_2O	0.02 %
Fe	0.004 %
MgO	0.0002%

PROPERTIES

Colorless crystals
Specific Gravity 1.90
Refractive Index 1.499, 1.476
Loses $8H_2O$ at 100°C
Soluble in acids
Soluble in water at 100° C
47.7 parts/100 parts water

POTENTIAL USES

Sugar refining
Lubricants
Driers
Oil additives
Soaps
Organic Salts
Inorganic Salts
Ceramic Glazes

Westvaco CHEMICALS

WESTVACO CHLORINE PRODUCTS CORPORATION
405 LEXINGTON AVENUE • NEW YORK 17, N. Y.
CHICAGO, ILL. • GREENVILLE, S. C. • NEWARK, CALIF.

Glutamic Acid
Glutamic Acid Hydrochloride
Betaine Hydrochloride

Produced by Amino Products

AVAILABLE NOW

Now, as a result of an increased supply of raw material and larger production facilities, our Amino plant, at Rossford, Ohio, is prepared to accept orders for shipment of Glutamic Acid, Glutamic Acid Hydrochloride and Betaine Hydrochloride in ample quantities to meet food and pharmaceutical market requirements.

Under wartime conditions the facilities of our Amino plant have been devoted exclusively to the production of Mono Sodium Glutamate for use in Ration K, canned soups, dehydrated foods and in a very limited way for fine restaurants, hotels and clubs. Additional production of Mono Sodium Glutamate will be available by November first.

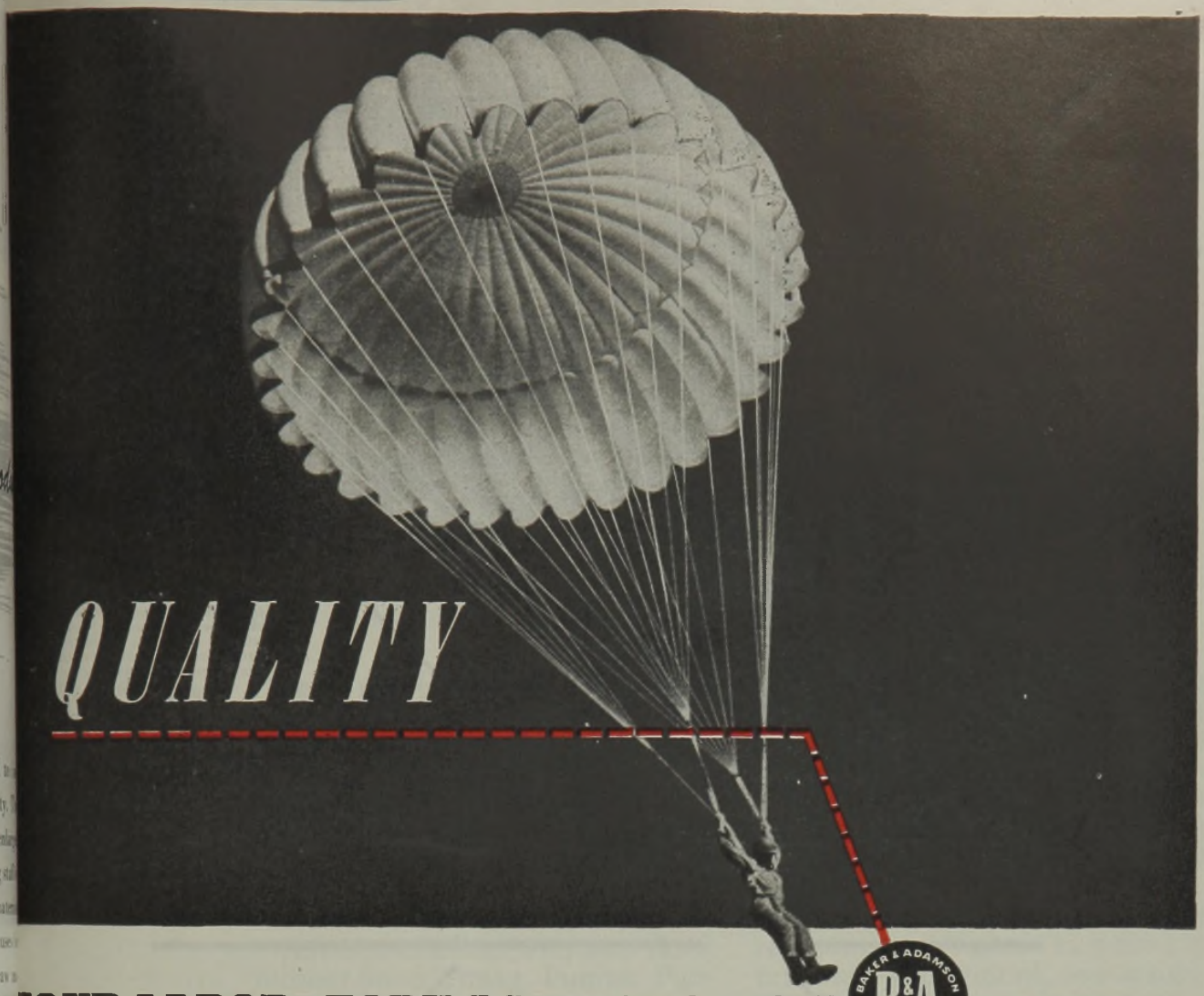
In December, 1942, the Amino Products Company was acquired by International Minerals & Chemical Corporation which initiated a long-range expansion program. New equipment has been installed to improve efficiencies and plant capacity. The Amino research laboratory has been enlarged to provide facilities for an expanding staff of scientists who are studying raw materials and extraction processes as well as uses for the new products found in these raw materials. New sources of raw material have been established. Two new Steffens Filtrate concentrating plants are being built in California and plans are being made for construction, when conditions permit, of a new modern plant for production of Mono Sodium Glutamate and allied products.

Inquiries for Glutamic Acid, Glutamic Acid Hydrochloride and Betaine Hydrochloride are invited from users of these chemicals in the food and pharmaceutical industries and from chemists engaged in product development work.

AMINO

AMINO PRODUCTS

DIVISION OF
INTERNATIONAL MINERALS & CHEMICAL CORPORATION
General Offices: 20 North Wacker Drive, Chicago 6



YOUR LABORATORY ASSET IN EVERY B&A REAGENT

When the ripcord is pulled, *quality counts.* The paratrooper hurtling toward the ground stakes his life on the quality of materials and workmanship that have gone into his 'chute.

With the chemist, too, *quality counts* . . . for upon the quality of the reagents he uses depend the results of all his work. *That's* why so many chemists specify Baker & Adamson Reagents. They know B&A Reagents are quality products whose purity and uniformity are assured by the strictest manufacturing standards and advanced control methods. That's why we say . . . when *quality counts—specify B&A Reagents!*

Setting the Pace in Chemical Purity Since 1882

BAKER & ADAMSON B&A QUALITY STANDARD OF PURITY

BAKER & ADAMSON *Reagent and Fine Chemicals*

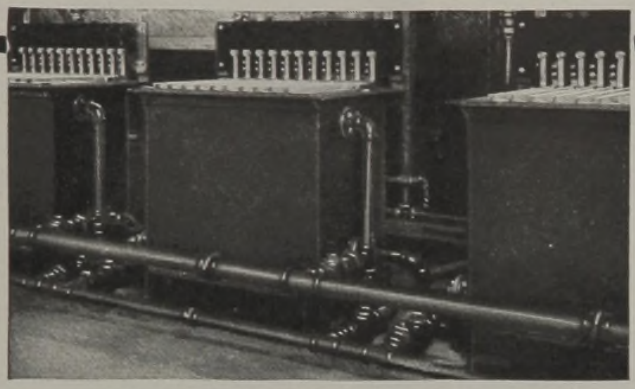
Division of GENERAL CHEMICAL COMPANY, 40 Rector St., New York 6, N. Y.

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Milwaukee • Minneapolis New York • Philadelphia • Pittsburgh • Providence (R. I.) • St. Louis • Utica (N. Y.)

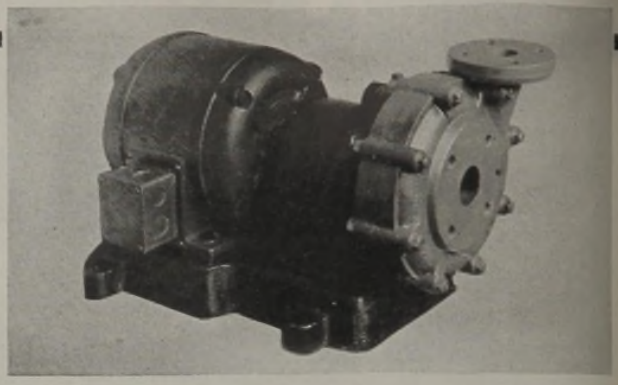
Pacific Coast Technical Service Offices:
Los Angeles • San Francisco • Seattle, Wenatchee and Yakima (Wash.)

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

. . . and now



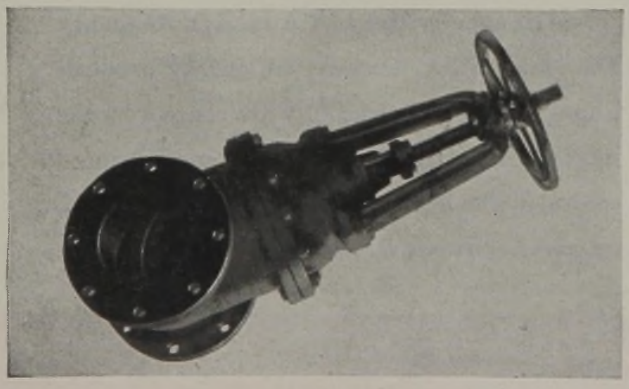
Ace Hard Rubber-lined and covered steel tanks in all sizes and capacities to specification. These may be connected with entire circulating systems of hard rubber or rubber-lined pipe and fittings.



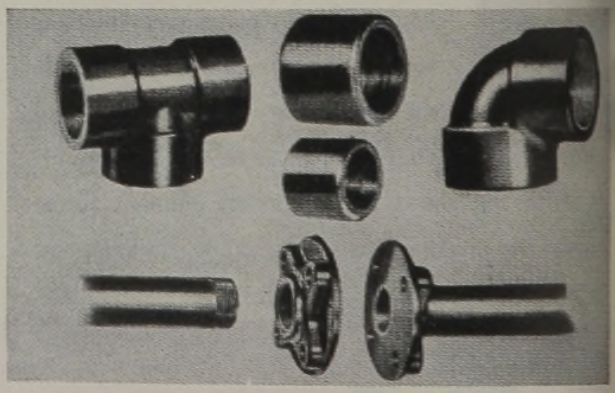
Single and double acting, centrifugal and rotary gear pumps rendered immune to chemical attack with full hard rubber protection over all parts in contact with corrosive solutions.

TANKS PUMPS VALVES PIPE & FITTINGS

Gate, diaphragm and check valves with fully bonded hard rubber linings over all inner surfaces.



Solid HARD RUBBER, flanged and threaded — Hard Rubber lined flanged iron pipe and fittings—SARAN pipe and fittings in a range of standard sizes.



AMERICAN HARD RUBBER

RECONVERSION

ALREADY, in hundreds of manufacturing plants throughout the country, the pressure of war production is easing off; giving ground to problems of pent-up civilian demand.

Long-range planned economies now — well ahead of, or even at the time of re-conversion — are bound to have a definite effect on post-war profit margins.

RECONVERSION demands quick revision of schedules, realignment of facilities, planned replacements of obsolete facilities, new processing methods. All of which means dependable equipment that will stand up and deliver uninterrupted service for years ahead.

American Hard Rubber Company invites you to look into the advantages offered you by converting—

with HARD RUBBER PROTECTION

ACE HARD RUBBER will provide the logical answer to many chemical processing problems, where adequate protection against costly corrosion is an economic "must."

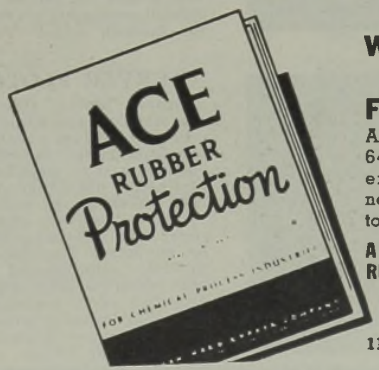
Savings effected with Ace Hard Rubber-lined Tanks, Pumps, Pipe Fittings and Valves, are a matter of recorded performance. Ace protects against damage to valuable solutions and goods in process. Result: substantial long range economies in plant maintenance costs, such as no forward looking plant executive or engineer can afford to overlook.

Where both heat and chemical resistance are factors in industrial processing operations, new synthetic hard rubber compounds offer further protective opportunities. In this direction, too, Ace research has already made significant progress.

and SARAN

This remarkable new plastic has materially increased our ability to extend non-corrosive protection into new fields. Its resistance to many rubber solvents, as well as to almost all active chemicals, is remarkable.

Saran pipe and fittings are presently available in standard iron pipe sizes from ½ to 4 inches. A simple electric heat butt-welding operation makes it possible to assemble long Saran pipe lines on the job. Circular on Saran sent on request.



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A reference book of 64 pages for plant executives, engineers and laboratory technicians.

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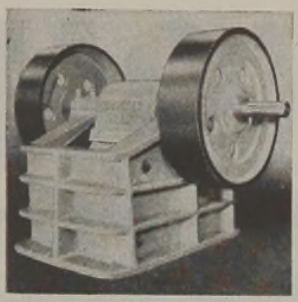
Akron 4, Ohio
111 W. Washington St., Chicago 5, Ill.

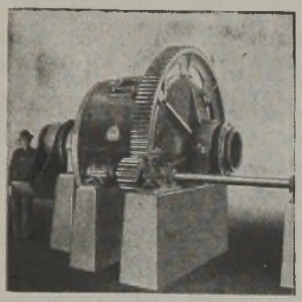
ACE means ACE protection for your chemical storage and circulating systems

"COMPLETE MILL EQUIPMENT FROM CRUSHER TO FILTER"



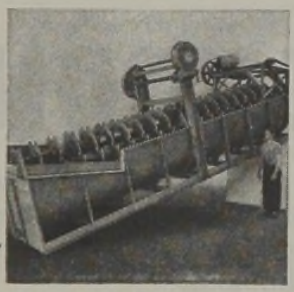
DENVER JAW CRUSHER

The Denver Forced Feed Jaw Crusher is simple and has but few wearing parts. It is well adapted to coarse and fine crushing due to the forced feed principle. Rugged construction is used throughout including ribbed reinforced frame, alloy-steel eccentric shaft, roller bearings, and heavy reinforced steel jaw bumper. Jaws and cheek plates are of manganese steel and the jaws are reversible. Sizes 5"x6", 8"x10" and 9"x16" Bulletin C-12-B.



DENVER BALL MILLS

Denver Steel Head Ball - Rod Mills are made with cast steel heads and rolled steel shells giving greatest strength with minimum weight. Diameters measured inside liners give maximum capacity. Heavy duty trunnion bearings and steel construction allow lengths to be increased. Denver Ball-Rod Mills are made in 30", 3', 4', 5' and 6' diameters and various types and lengths to fit your requirements. Bulletin B2-B4 gives complete data on Denver Ball-Rod Mills and includes capacity slide rule.



DENVER CLASSIFIER

The Denver Cross-Flow Spiral Classifier presents several outstanding features for wet separation processes in the mining and chemical industries. Large settling pool with evenly controlled flow of pulp regulated by wide adjustable overflow weir insures efficient classification of fine particles. Heavy duty drive with easily replaceable alloy wearing flights and suspended bottom bearing entirely above the pulp gives trouble-free mechanical operation. Made in sizes from 6" to 60", simplex and duplex.

HYDRO-CLASSIFIER

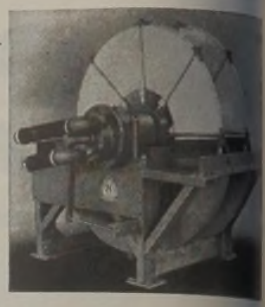
The Denver Hydro-Classifier is designed for the efficient wet separation of fine particles having different settling rates. Distinctive totally enclosed head motion has anti-friction bearings running in oil. Heavy duty spiral rakes are rigidly braced to convey settled material to discharge in one revolution. Bottom washing cone insures complete separation of fine material. Laboratory models are widely used for accurately solving difficult separation problems. Write for Bulletin C4A-B.

DENVER FLOTATION

Denver "Sub-A" Flotaion Cells are standard the world over, and used for the concentration and beneficiation of industrial materials as well as metallic minerals. Distinctive advantages include circulation of coarse material, individual cell control, and ability to recirculate material without pumps or elevators. Controlled aeration provides metallurgical flexibility, with supercharging either by air or other gases increasing recoveries and lowering power requirements in many difficult installations. Bulletin F11-B.

DENVER DISC FILTER

The Denver Disc Filter has the exclusive gravity drainage feature of filter segments that provides complete drainage of all filtrate before "blow-off" occurs. Lower moisture content of product results. Separate valve outlets allow separation of wash water from strong liquor, while different filtrates can be simultaneously removed from each end of the shaft. Especially valuable where more than one product is to be filtered with minimum floor space requirements.



DENVER MINERAL JIGS

A low dilution type of gravity concentrating machine. It is designed to give maximum efficiency in separating materials which have different specific gravities, and due to the arrangement of rotating water valve, synchronized with plunger stroke, it is possible to separate materials having only slight differences in specific gravity.

Used on coarse or fine materials, in closed or open circuit with grinding mill. Write for Bulletin No. J2-B.

DENVER THICKENERS

Denver Thickeners are built in the lowhead beam type design (shown at the right) in sizes up to and including 45'. The beam design gives maximum headroom and flexibility, ideal for milling and industrial applications. An outstanding feature is the patented spiral rake which immediately moves the material to the center.

Denver Thickeners are also built in a lowhead truss type in sizes of 50', 55', 60', 65', 70' and 75'. Write for information.

DIAPHRAGM PUMPS

The Denver Adjustable Stroke Diaphragm Pump is easily regulated by a handwheel while the pump is in operation. This flexibility, combined with precision workmanship, makes a positive unit for handling all types of sludges and slurries. Diaphragm flexing is eliminated by vertical motion of plunger.

The positive action and quick regulation of these pumps account for their wide use. Built in 2", 3", 4", 5", and 6" sizes. Bulletin No. P8-B.

DENVER SAND PUMPS

Pulp flows direct by gravity to pump bowl and is drawn into pump chamber by vortex action. It is an ideal unit for handling flotation concentrates, frothy and sandy pulps. The pump is designed with unit bearing housing with all vulnerable parts away from splash. Wearing parts are accurately designed for easy replacement and these may be furnished of several materials. Pump can be furnished in six discharge sizes. Obtain Bulletin No. P10-B.

When Timing is of the Essence

on the great bombers will take off on another history-making raid. The briefing session s charted the mission in minute detail—each crew knows its exact task. Eyes on atch, an officer calls out, "In 15 seconds it will be 4:08 . . . 10 seconds . . . 5, 4, 3, 2, 1, eck—4:08."

The success of a large-scale aerial attack depends on a multiplicity of supporting ctors, including supplies, data on the target area, weather, flight courses, altitude and proach of the bombing run. And timing.

Similarly, the timing of production schedules is all-important in successful manu- cturing operations. When raw materials meet specifications one source of costly delays avoided. Columbia's reliability in this respect helps maintain production . . . an portant reason why Columbia is the preferred supplier for so many manufacturers.

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING · PITTSBURGH 19, PA.

CHICAGO · BOSTON · ST. LOUIS · PITTSBURGH · NEW YORK · CINCINNATI
CLEVELAND · PHILADELPHIA · MINNEAPOLIS · CHARLOTTE

COLUMBIA SPOTLIGHT

HEXACHLORETHANE is one of the smoke-producing chemicals which our Chemical Warfare Service has used to such great advantage on every front. Screening our operations from observation has reduced enemy effectiveness and kept down our casualties. As indicated by the name, chlorine is one of the ingredients of hexachlorethane, and Columbia is one of the principal producers of chlorine required for this purpose.

ALLYMER—Columbia's recently announced thermosetting plastic—is truly a "contact-pressure" resin. In making laminated products, only enough pressure is used to keep plies in contact with the mold. The relative simplicity of the tooling necessary when Allymer is used and the large complicated sections which can be made greatly extend the application possibilities for laminated parts. Research reports and other data are available on request.

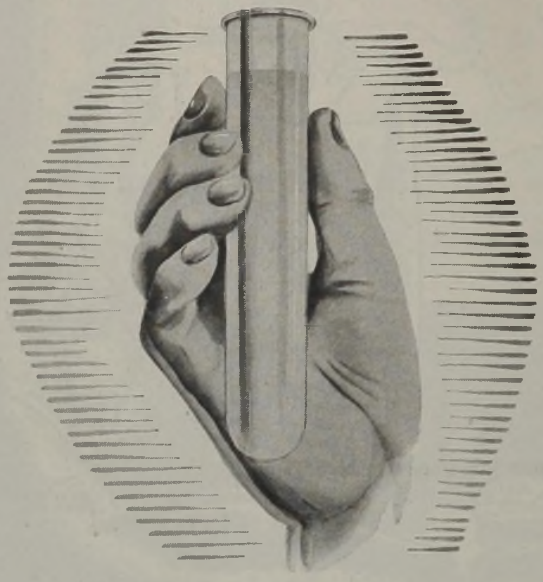
HOMEMAKERS, who have despaired of the ugly black marks left on floors by rubber-shod members of their families, can now eliminate this nuisance by insisting that "no-mark" soles and heels be obtained. Those two remarkable Columbia pigments, Calcene T and Silene EF, are being used with GR-S to make a highly satisfactory no-mark sole and heel stock. Primarily developed for the rubber industry, new uses for these pigments are being uncovered in numerous other fields. Write for information.

THOUGH THOUSANDS think of "bicarb" only for the relief it brings to certain stomach maladies, Sodium Bicarbonate serves in scores of other important uses in a variety of industries. To name but a few—in the baking and milling field, particularly as an ingredient of baking powders and self-rising flours . . . in the leather industry, as a neutralizer in tanning operations . . . in textile manufacturing, for the prevention of timber mold. Columbia manufactures three grades of Sodium Bicarbonate in various granulations to meet the specific needs of customers in every field.

COLUMBIA CHEMICALS include Soda Ash, Caustic Soda, Sodium Bicarbonate, Liquid Chlorine, Silene EF (Hydrated Calcium Silicate) Calcium Chloride, Soda Briquettes, Modified Sodas, Caustic Ash, Phosflake, Calcene T (Precipitated Calcium Carbonate) and Calcium Hypochlorite.

Yes HARDESTY CAN SUPPLY *RED OIL*

...among other things!



Now that Red Oil (oleic acid) is again offered freely, you can choose a supplier best fitted to serve you. Here at Hardesty you gain the advantage of buying from specialists in Red Oil manufacture who offer you the benefits derived from broad experience and extensive research in every type of red oil.

Whether you use a distilled or saponified product in a wide range of titres, HARDESTY can meet your specific requirements. It will pay you to send for samples and specifications of the various grades we are now producing, or, advise us of your requirements and we will recommend the grade best suited to your needs.

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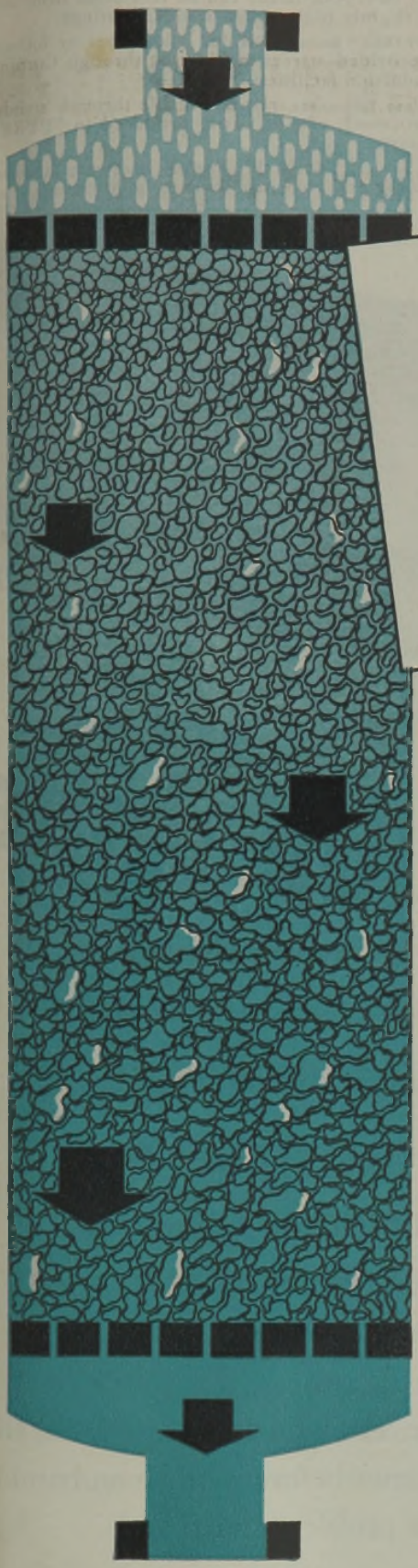

A TOWER OF DRYING STRENGTH—WITH DRIOCEL

Driocel is the new low-cost bauxite desiccant. Used at any place in the flow line where water molecules must be wrung from gases or liquids, it turns in an efficient, long-lived performance. A hard granular product, Driocel can be regenerated time after time and still perform with high efficiency.

It is used for DRYING —

- **Most gases, vapors and liquids.**
- **Process and instrument air.**
- **Feeds to catalytic processes.**
- **Synthetic rubber charge stocks.**

We'll be glad to tell you more about applications of DRIOCEL to petro-chemical processes. We have studied a great many, and operators are daily finding more uses for this versatile drying agent. Write for a sample and the folder, "Bauxite as a Drying Agent," which details the fundamental research leading to the development of this drying material that offers new economy to users in many different fields.

POROCEL CORPORATION • BAUXITE ADSORBENTS AND CATALYSTS

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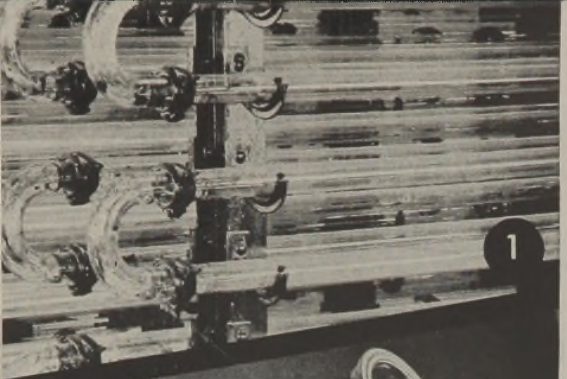


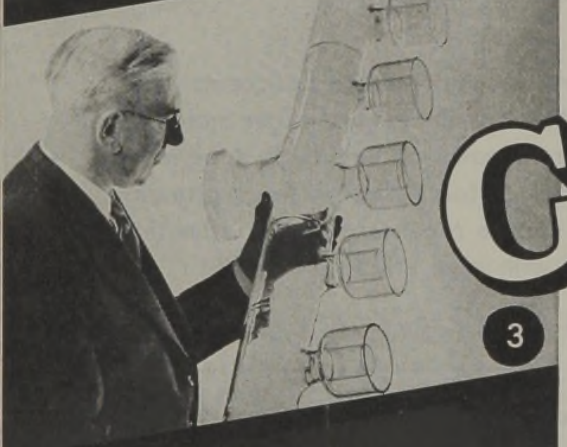
1 adaptor connections and fittings for easy [illegible]

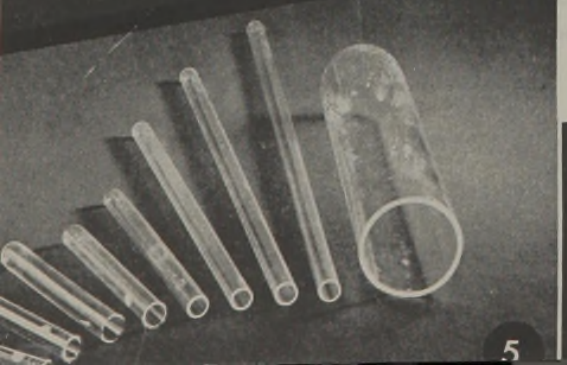
2 **Special Glass Fittings** to meet your needs can be fabricated from stock parts at prices only slightly higher than standard fittings.

3 **Special Equipment of "PYREX" Brand Glass** for pilot plant or full-scale production can be provided at reasonable cost through Corning's engineering and production facilities.

4 **Difficult Shapes . . . Close Tolerances,** not obtainable through standard glass fabrication processes, can be easily produced in "PYREX" Brand Multiform Glasses.

5 **For High Temperature Service,** "VYCOR" Brand Glassware fabricated from 96% silica glass is available in a wide range of standard and special shapes.





Can it be done

That is the question we want to hear at

Booths 113-114
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Corning Engineers who have answered this question many times before, will be on hand to discuss your glass problems with you.

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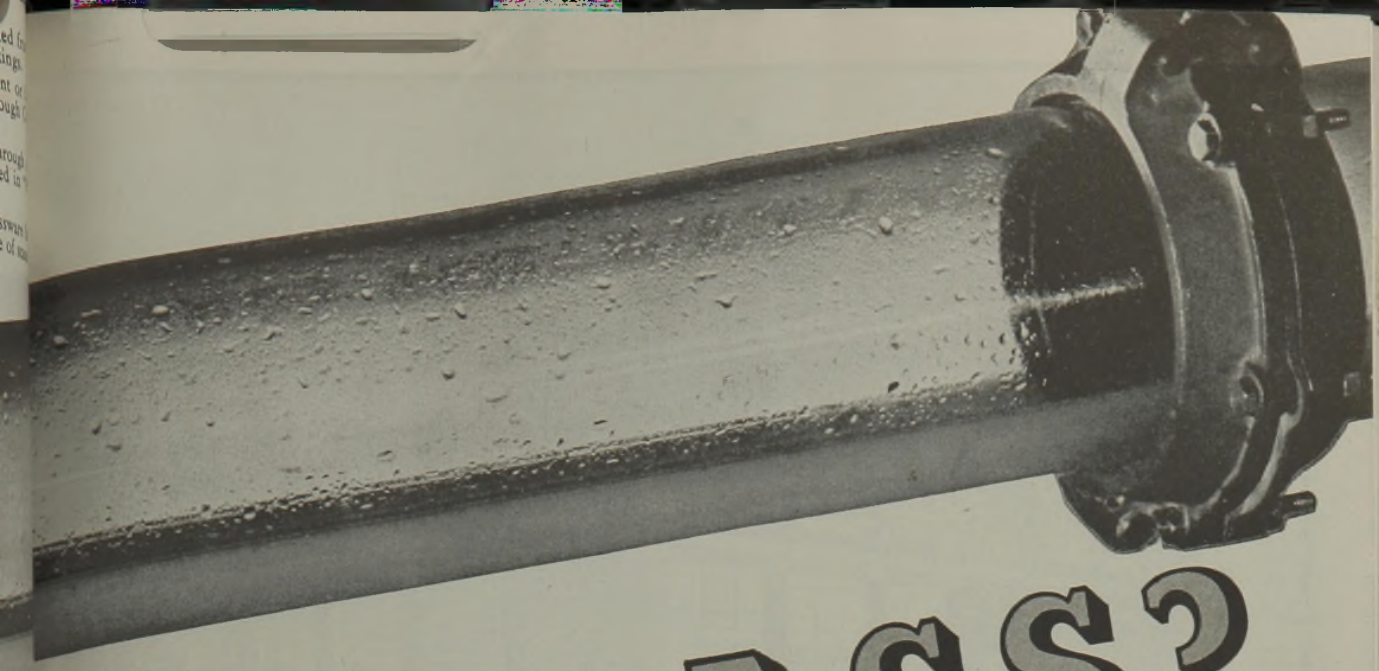


with GLASS?

If you are concerned with acid corrosion . . . transparency . . . high temperature service . . . resistance to thermal shock . . . then bring your problems with you. Corning Engineers will be glad to discuss them with you and to furnish complete information on length of service, accessories, comparative costs, etc.

Should you be unable to attend the show, the coupon below will bring you interesting and important information in bulletin form. A letter stating your particular problems will bring a prompt answer from Corning Engineers.

"PYREX" is a registered trade-mark and indicates manufacture by Corning Glass Works, Corning, N. Y.

Industrial Glass

Corning Glass Works,
Industrial Sales Dept. CI10,
Corning, New York

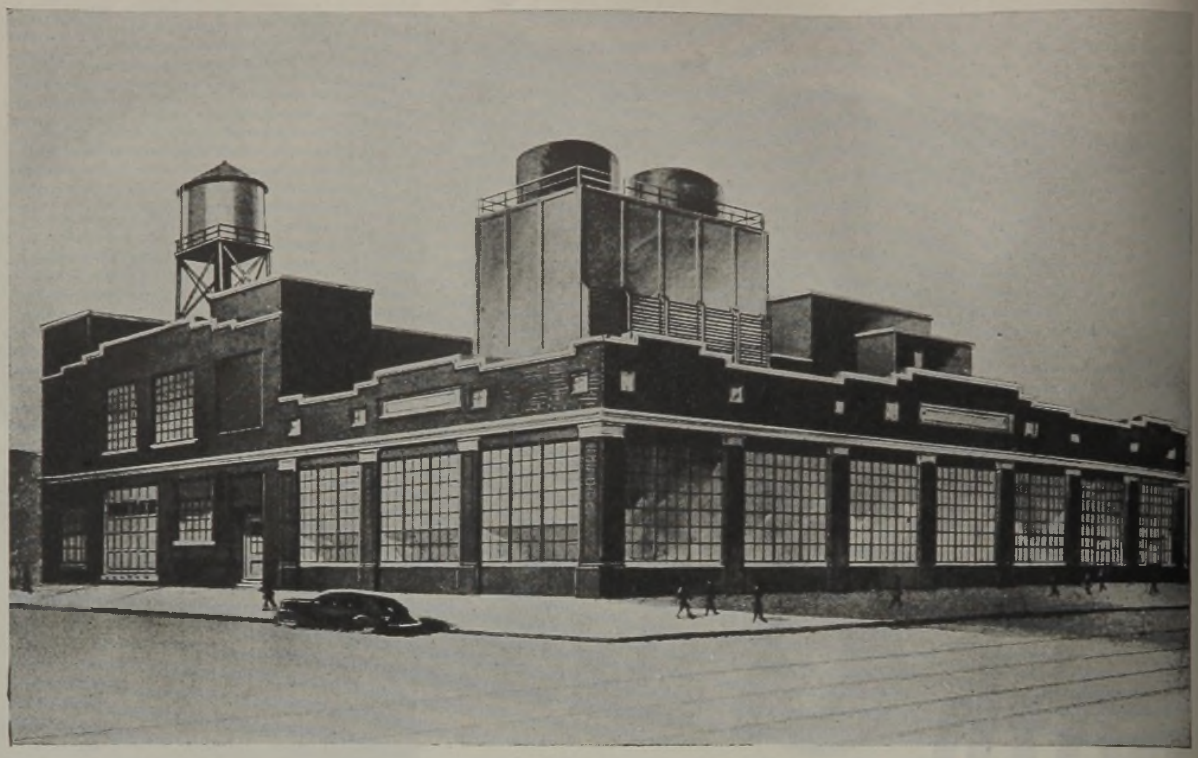
Please send me the following literature:

- ☐ Piping Installation Manual
- ☐ PYREX Piping and Heat Exchangers
- ☐ Valves
- ☐ Piping Adaptors
- ☐ Industrial Glass by Corning

Name.....

Firm.....

Address.....



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TODAY, IN THIS PLANT, PFIZER IS PRODUCING THE GREATER PORTION OF THE WORLD'S AVAILABLE SUPPLY OF PENICILLIN

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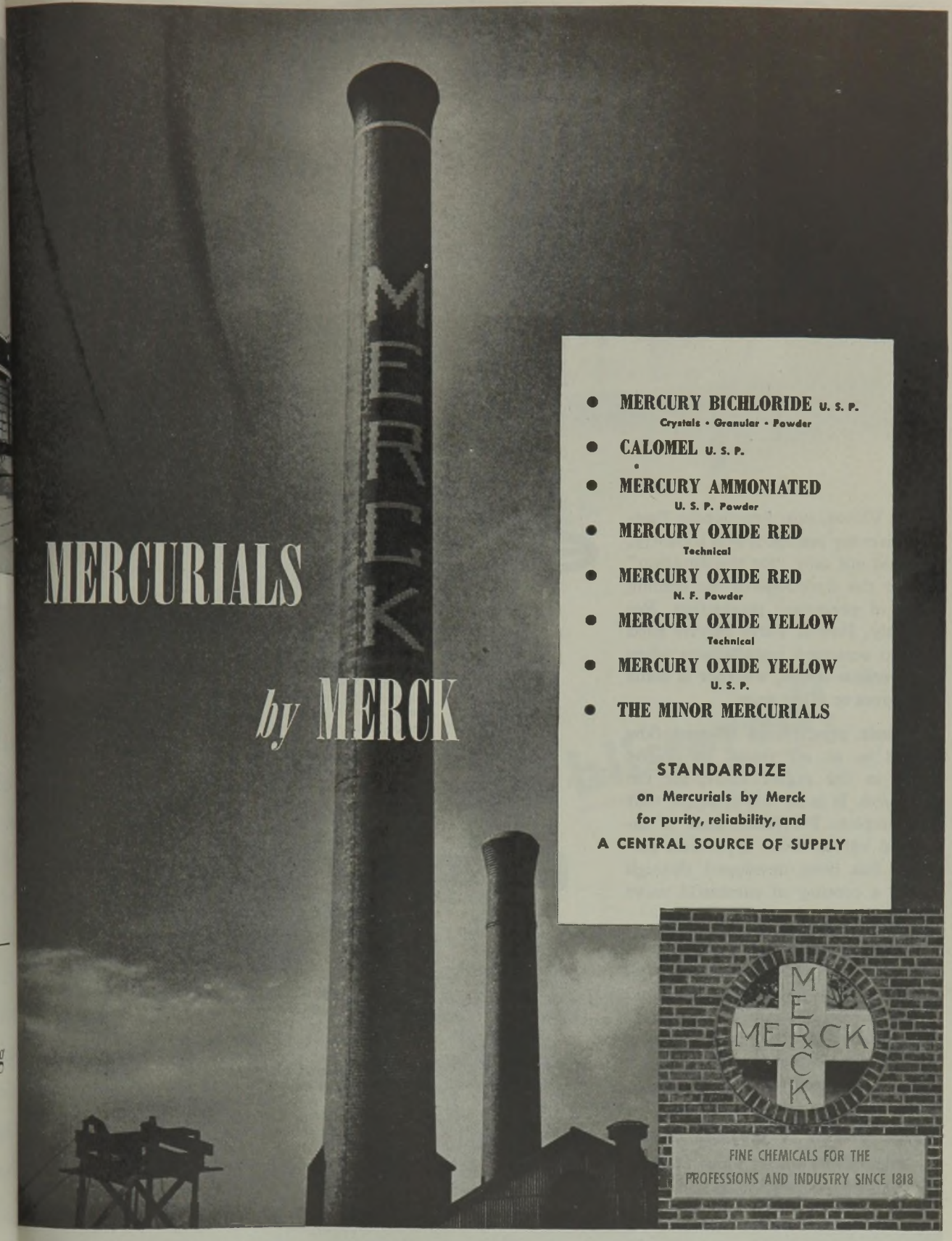

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POWELL VALVES

. . . for the duration

. . . AND AFTER!

Powell Valves, now functioning flawlessly in every branch of War Industry, are good not only "for the duration" but for the durations of the coming cycles of peacetime production. Resultantly, Powell Valve buyers need face no scrapped installations when reconversion comes, whether it come by degrees or all at once.

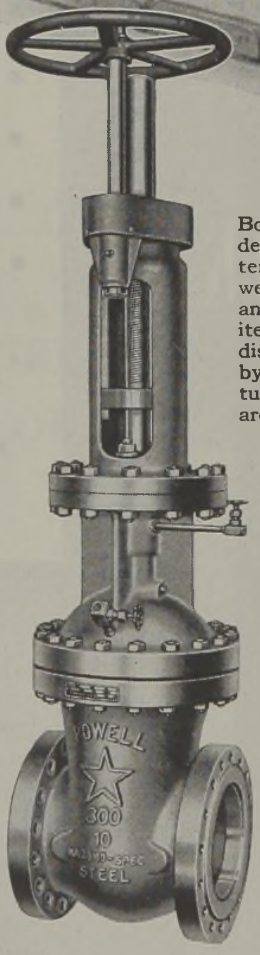
The basic principle of efficient flow control is, at all times, the *right valve,* in the *right spot,* for the *right job.* It is on this principle that the complete POWELL Line of industrial valves of all types and materials has been developed through nearly a century of successful valve manufacture.

The gear operated gate valves shown here were specially designed by Powell Engineering to meet the specific and exacting requirements of high temperature hydrocarbon gas reforming and thermal catalytic cracking in a large western refinery.

The Wm. Powell Co.

Dependable Valves Since 1846

Cincinnati 22, Ohio



10", Class 300-pound, Cast Alloy Steel O. S. & Y. Gate Valve. Spur-gear operated.

Both gate valves were specially designed and built for ultra-high temperature service. Double wedge discs, seats, disc guides and stem guides are Stellite faced. Cooling fins for dissipating heat and thereby lowering the temperature in the stuffing box are another feature.

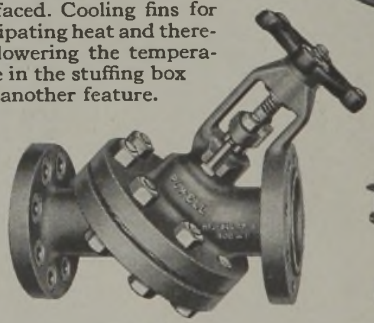
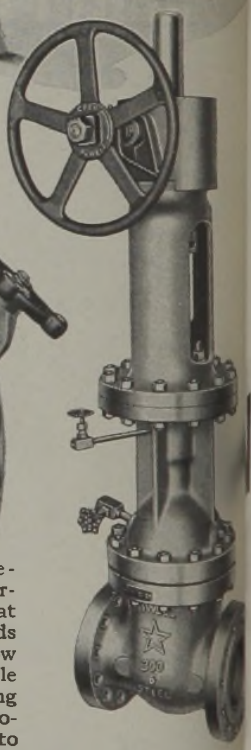
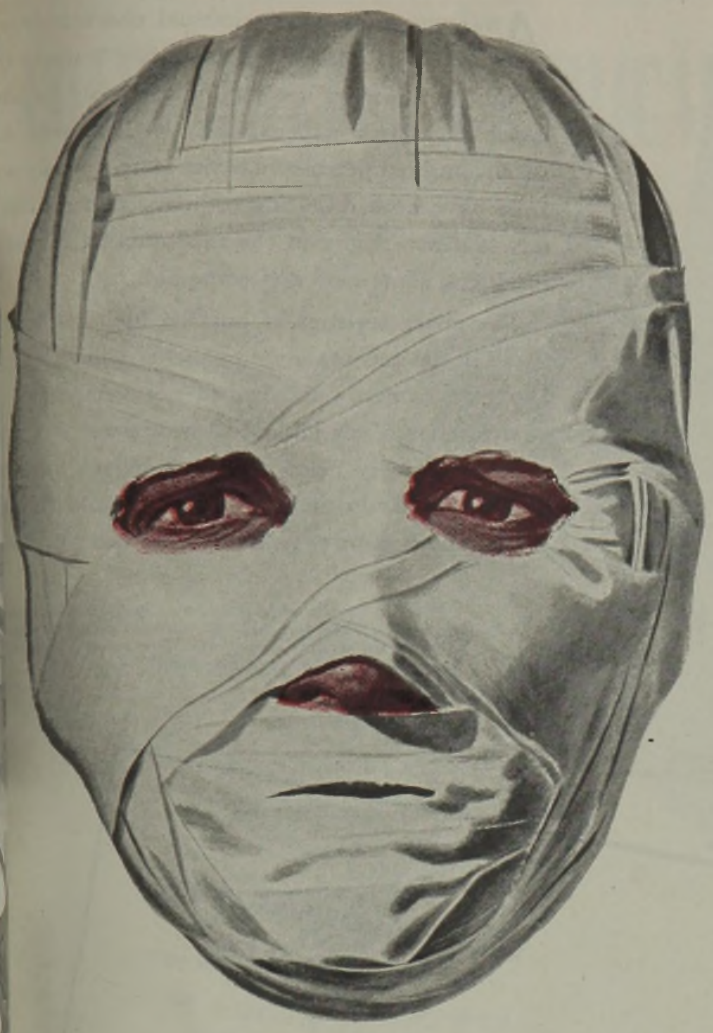


Fig. 1095—Specially designed, extra heavy, Separable Body, Reversible Seat "Y" Valve for 300-pounds W.P. Has straightway flow area through body. Available in special alloys for handling chlorine compounds in isomerization units. Sizes, ½ to 4", incl.; flanged ends only.



6", Class 300-pou
Cast Alloy Steel, O.S
Y. Gate Valve. Be
gear operated.

POWELL VALVES



When ignorance is blistered!

● It's the ignorant men who make costly mistakes. Trained men don't get hurt by small fires. Trained fire-fighters don't let little blazes grow into big ones.

The way to train workers in fire extinguishing is by demonstrating use of extinguishing equipment. Show how to handle real fires. Show how various types of extinguishers are handled on different kinds of fires.

Walter Kidde & Company has prepared a booklet — "How To Teach Fire-Fighting." It tells how to stage a fast-moving, interesting, instructive fire class. Write for your plant's copy.

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HIGH PRESSURE GASES • FIRE PROTECTION

Check List #3*

of properties which may suggest new applications of

SONNEBORN PURIFIED HYDROCARBON OILS

in your manufacturing processes

ANALYSIS of the many unusual characteristics of purified hydrocarbon oils often leads to their adaptation to meet specific requirements for which these oils are constitutionally well suited. As a result, purified petroleum hydrocarbon oils for some time have been replacing ordinary mineral oils, or oils of other origin, in the manufacture of various products, some new and some old.

The characteristics of purified hydrocarbon oils listed in the accompanying panel are augmented by the many others published in previous check lists of this series. They indicate a wide variety of applications in many fields and may suggest new uses for purified hydrocarbon oils which hold the solution to one or more of your manufacturing problems.

**This is the third in a series of bulletins focusing the dustry's attention on the potentialities of purified petroleum hydrocarbon oils. The others appeared in earlier issues of this publication.*

PARTIAL LIST OF CHARACTERISTICS OF SONNEBORN PURIFIED HYDROCARBON OILS

- ☐ No unsaturated hydrocarbons—Substantial freedom from aromatic hydrocarbons—Composed predominantly of saturated paraffins and naphthenes.
- ☐ Freedom from color, odor and taste—Non-contaminating to food products.
- ☐ Excellent phytonomic properties.
- ☐ Insect-repellent.
- ☐ Lubricating, penetrating, softening and plasticizing properties, depending on viscosity.
- ☐ Render surfaces repellent to adhesive substances.
- ☐ Absorbent for many gases and vapors.
- ☐ Inhibit foam formations.
- ☐ Low electric power factor loss—High dielectric strength —High specific inductive capacity.
- ☐ Low rate of oxidation—Long induction period—Minimal acid-forming tendencies.

RANGE OF PHYSICAL CHARACTERISTICS

Specific gravity: 0.775 to 0.895 @ 60°F.
Saybolt Viscosity: 30 to 345 @ 100°F.
Distillation Range: 370 to 800°F.
Flash Point: 170 to 420°F.
Fire Point: 190 to 480°F.
Pour Test: +40°F. to —35°F.
Aniline Point: 175 to 230°F.
Refractive Index @ 20°C: 1.43 to 1.48
Dielectric Strength: Above 29 K. V.
Sligh Oxidation Number: 0.0 to 0.9
Copper Stability Test: Not less than 20
Molecular Weight: 175 to 400
Conradson Carbon Test: Below 0.005%
Unsulphonatable Residue: Above 97.5%

Please direct inquiries on specific problems to Department of Industrial Research

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CONSOLIDATED CHEMICAL INDUSTRIES INC.

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POTASSIUM SULPHATE
BONE BLACK
BONE MEAL

BONE FLOUR
BONE GREASE
BONE OIL
BONE GLUE
HIDE GLUE
DIGESTA BONE MEAL
EDIBLE GELATIN
EXTRACTED BONE GLUE
MEAT SCRAP
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SULPHATE OF AMMONIA
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staffed by able chemists and engineers give customers the benefit of quality products, delivered when promised.

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We are the largest processors of spent sulphuric acid and offer our many years of experience in this field to the solution of your acid disposal problems. We solicit your inquiries for prices and technical services.

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Shell Chemical helps several ways

• Acetone is used to make rayon for parachutes, ammunition for the paratrooper's gun, even some of the fabrics he wears. Shell's Tertiary butyl alcohol goes into the paint for Army's trucks and Navy's battlewagons. Every other Shell Chemical product has an important war assignment today.

That's why it will pay you to file the name SHELL CHEMICAL for future reference. Our products and knowledge, so valuable to the nation during war, will be available after the war for the important peacetime work you'll be planning.

PRODUCTS OF SHELL CHEMICAL

Acetone
Tertiary Butyl Alcohol
Butadiene
Diacetone
Isopropyl Alcohol
Mesityl Oxide
Isopropyl Ether
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Ammonia
Secondary Butyl Alcohol
Allyl Chloride
Allyl Alcohol

ARMY E NAVY

Martinez and Dominguez, California, plants

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Always uniform, dependable, pure—Diamond Liquid Chlorine comes to you in individual cylinders, multi-unit or single-unit tank cars, whichever best suits your requirements.

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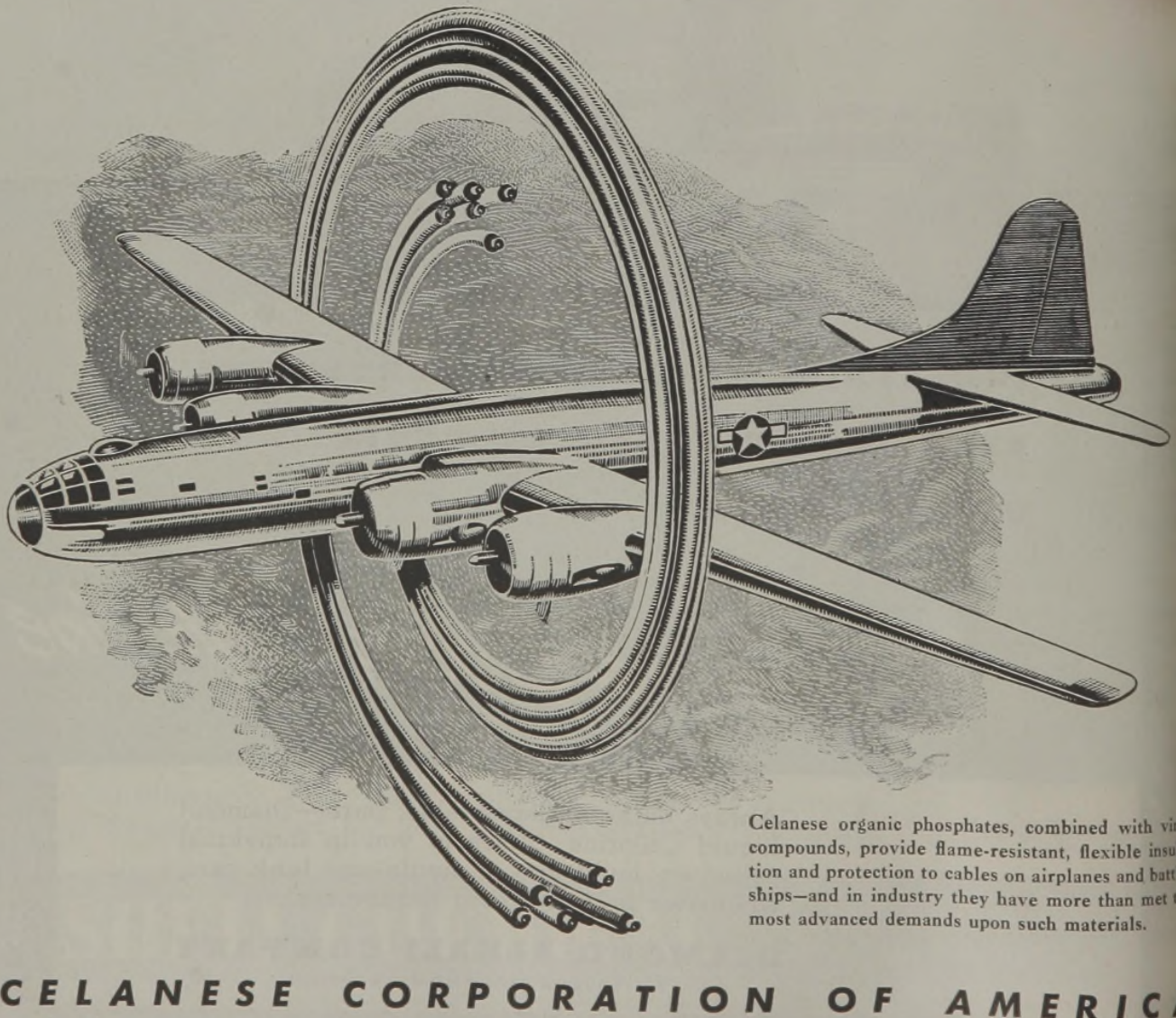
Celanese* Chemicals



Celanese organic phosphates, combined with vinyl compounds, provide flame-resistant, flexible insulation and protection to cables on airplanes and battleships—and in industry they have more than met the most advanced demands upon such materials.

CELANESE CORPORATION OF AMERICA

Industry's greatest asset—the Question Mark ?

IE CONSTANTLY QUESTIONING attitude of Cela-se research makes continued contributions to dern synthetic chemicals. In many cases, work a single chemical compound has been of basic vice to users as far apart as the producers of vinyl npounds for battleship cables and the refiners of for aviation use. The research in organic phos-ates is a case in point.

Celanese pioneered the development of tricresyl osphate, and from this work Lindol* was pro-ced. Lindol's first job was as a plasticizer. But lanese research didn't stop there. Constant work duced other plasticizers—other organic phos-ates. As a result, Lindol* M.P., gave industry a sticizer for lacquer films coming in contact with d products.

The next big step in this single research project covered the possibility of organic osphates as lubricant additives. ndol* E.P. came out of the Cela-e laboratories to meet the need high-film strength lubricants essary for high compression in-nal combustion engines. This anese organic phosphate is play-a vital role in aviation motor today. It acts as a solvent for hy-carbon resinous materials. It is -oxidizing, non-flammable, non-rosive, and chemically stable.

There have since followed other organic phosphate developments. Celluflex* produces a dry type of highly plasticized lacquer film thereby decreasing tackiness in the finished material. This particular compound increased the pigment-wetting characteristics over former organic phosphates. Then Cellulube* was developed, to supply a material of higher viscosity and greater miscibility with petroleum oils. Simultaneously, the specific gravity was lowered and the excellent solvent power for hydrocarbon resinous materials maintained.

Another aim of Celanese research has been to increase raw material sources for organic phosphates. By originality in processing, a new source was found in petroleum base materials. These materials give Celluflex and Cellulube their individual characteristics.

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Bulletin No. 52-5. Colloidal Silica as a Aid to Floc Formation.

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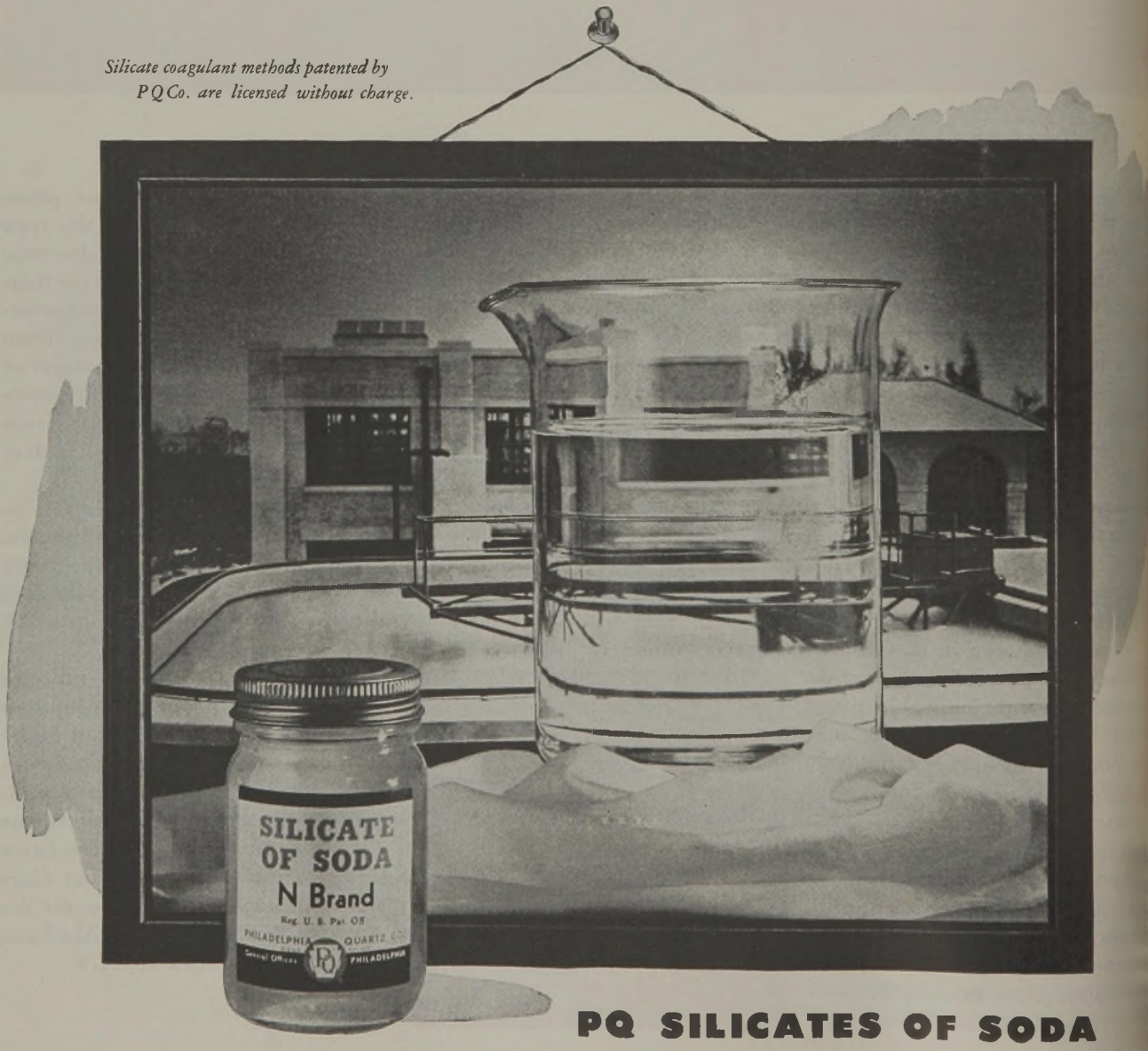

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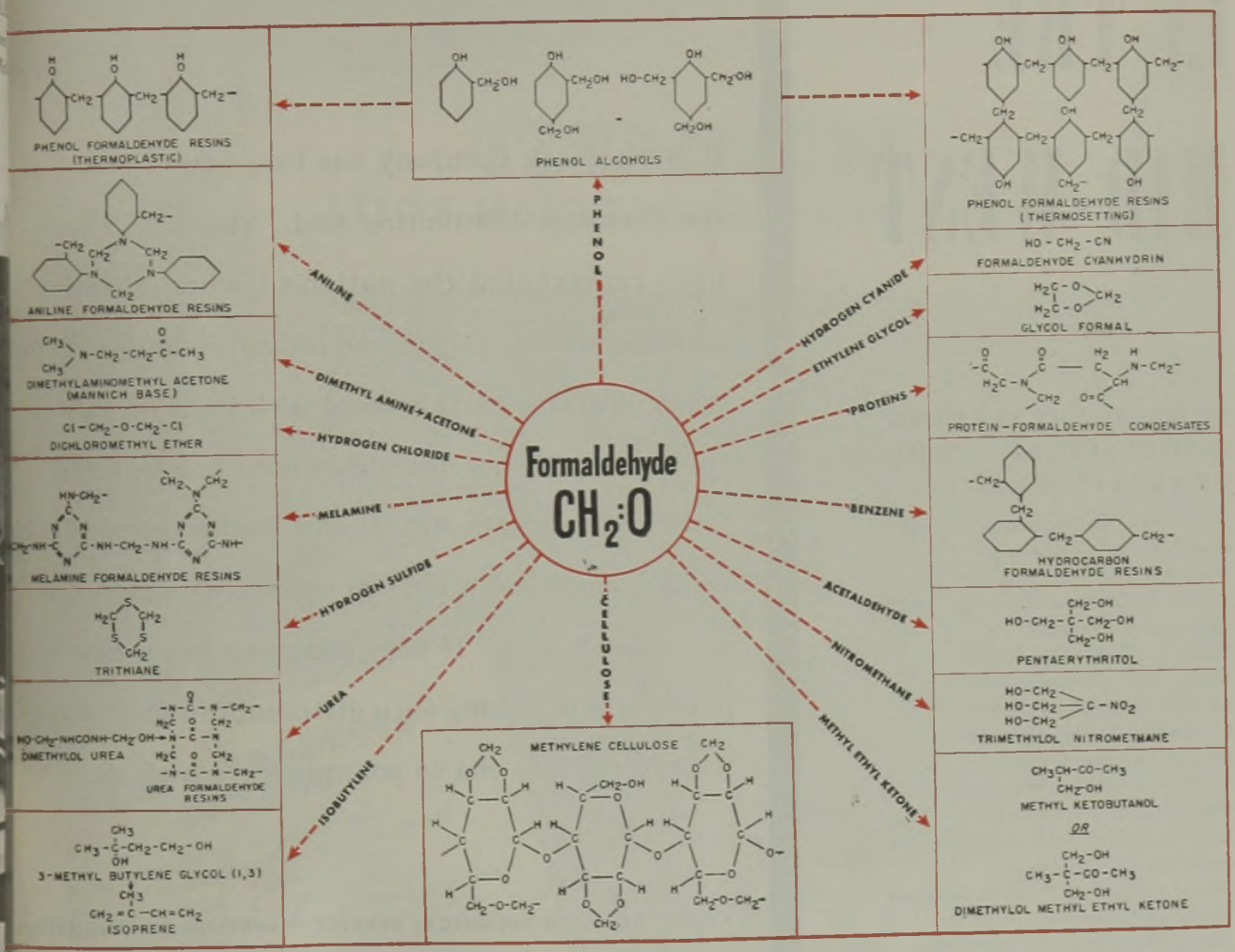

dequate amounts of formaldehyde onthly can be obtained for research nd experiment without application to PB. Information on specific applitions and methods of handling forldehyde are available from the lectrochemicals Department, E. I. du ont de Nemours & Co. (Inc.), Wilington 98, Delaware.

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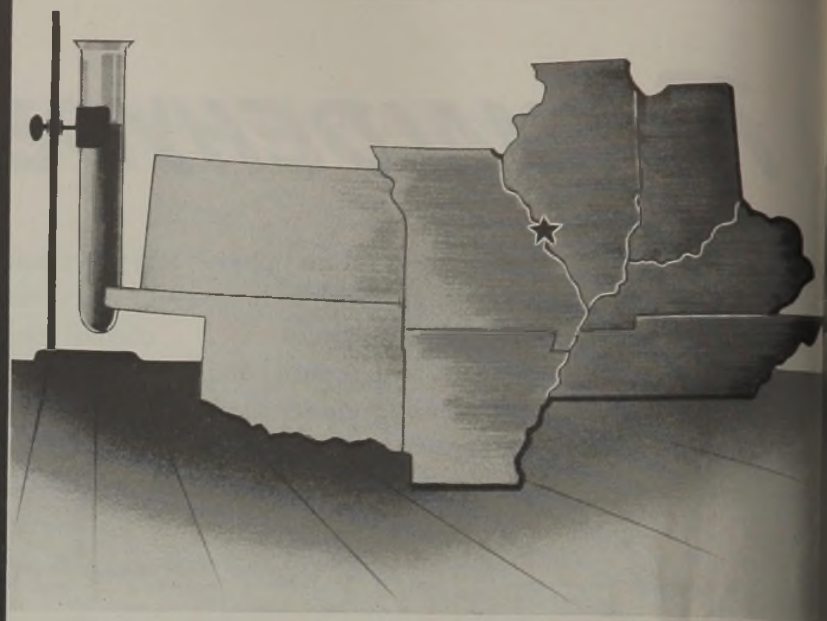

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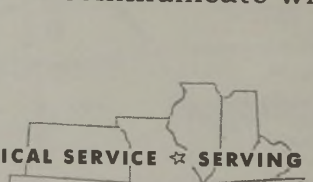

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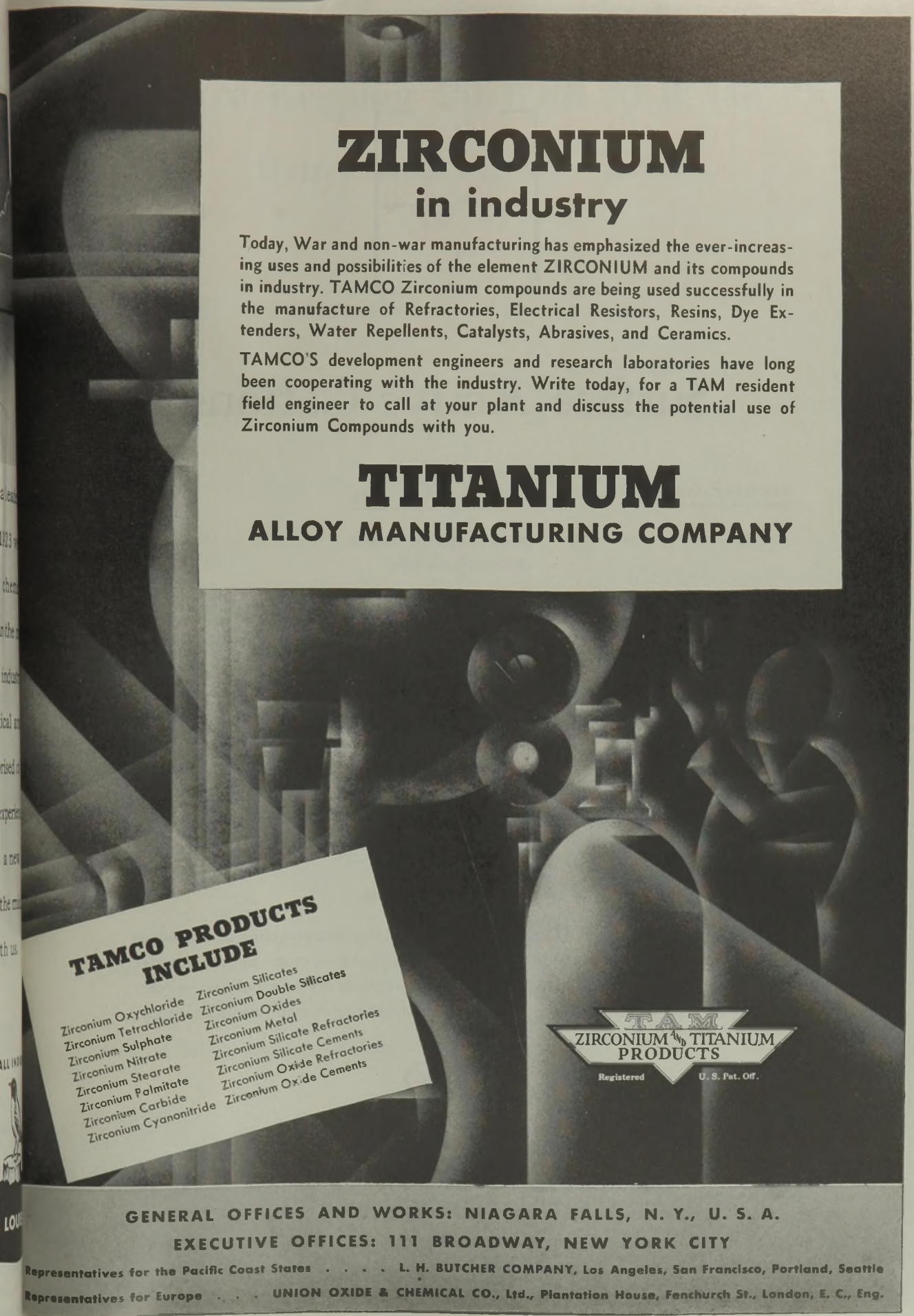
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C_{12}	Dodecyl dimethyl amine	Dodecyl dimethyl benzyl ammonium chloride	Dodecyl dimethyl amine oxide
		Cetyl dimethyl benzyl ammonium chloride	
C_{16}	Cetyl dimethyl amine	Cetyl trimethyl ammonium bromide	Cetyl dimethyl amine oxide
		Cetyl dimethyl ethyl ammonium bromide	
C_{18}	9-octadecenyl dimethyl amine	9-octadecenyl dimethyl ethyl ammonium bromide	9-octadecenyl amine oxide
		Octadecyl dimethyl benzyl ammonium chloride	

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For men thinking about today's problems and tomorrow's products, these are chemicals that should be studied. They are the newest products of Carbide and Carbon Chemicals Corporation, a primary producer of synthetic organic chemical raw materials.

Most of these chemicals are in commercial production and can be supplied in fifty-five gallon drums. A few are now available in tank-car quantities.

Descriptions of these new chemicals including their physical properties and possible uses are given in the alphabetical list of NEW CHEMICALS FOR INDUSTRY, appearing elsewhere in this publication.

Write for further information on the uses and availability of these new industrial chemicals.

Allyl Alcohol
Trimethylcyclohexanol

Ethylhexanediol-1, 3
Polyethylene Glycol 600
"Carbowax" Compound 1000
"Carbowax" Compound 6000

Ethylbutyl "Cellosolve"
Dibutyl "Carbitol"
Ethoxytriglycol

Methoxytriglycol Acetate

Pentanedione-2, 4

Cationic Amine 220
m-Tolyldiethanolamine

Thialdine
Mercaptoethanol

"Tergitol" Penetrant 4 Paste

"Cellosize" Hydroxyethyl Cellulose WS
"Cellosize" Hydroxyethyl Cellulose WS (Dried)

"Flexol" Plasticizer 4GO
"Flexol" Plasticizer DOP

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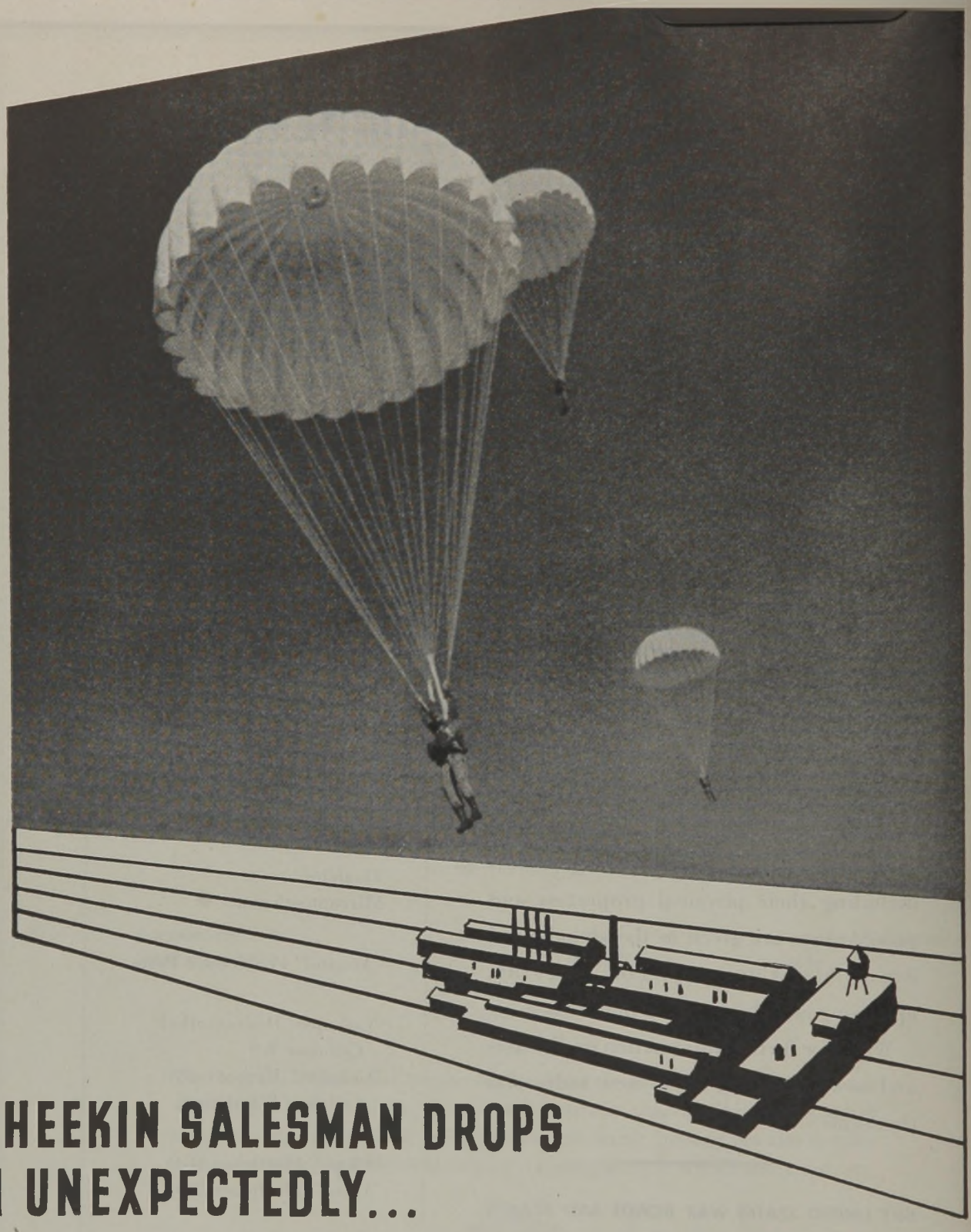

A HEEKIN SALESMAN DROPS IN UNEXPECTEDLY...

MEN from the Heekin organization are in this war . . . in all branches of the service. The paratrooper that drops out of a ship over Europe may be a Heekin salesman in peace time. Right now he is trying to sell the enemy a big bill of goods . . . Unconditional Surrender. Right now the home folks in the Heekin factories are producing war materials. Someday these salesmen will be calling on you again. When that time comes, remember Heekin offers you virtually unlimited production on colorful lithographed metal containers . . . in all shapes and sizes. And remember too, that tin keeps it better. The Heekin Can Company, Cincinnati, O.

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From This Laboratory Come

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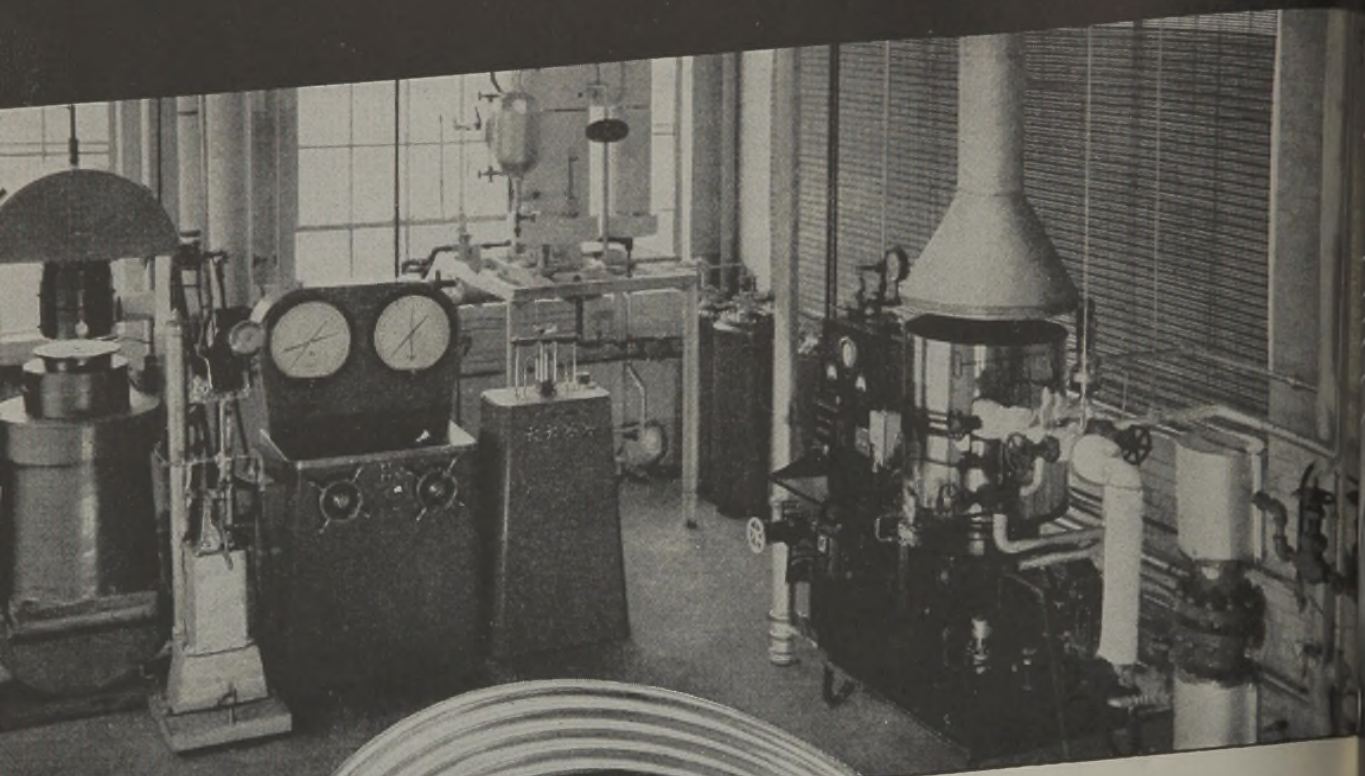
Vital to Industry



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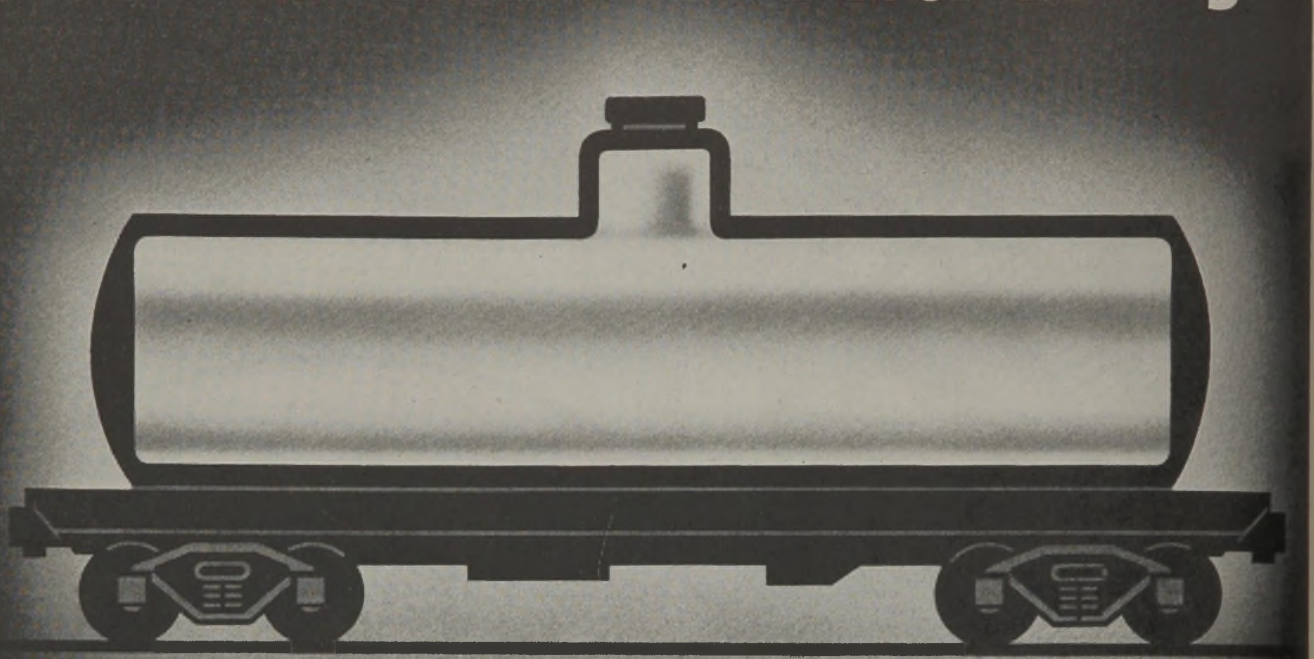

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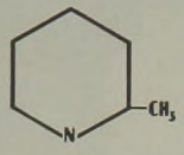
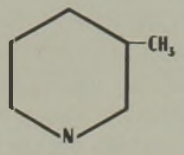
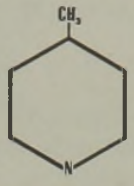
PICOLINES







	ALPHA PICOLINE	BETA PICOLINE	GAMMA PICOLINE
PURITY	**99% Minimum**	**90% Minimum**	**95% Minimum**
DISTILLATION RANGE	It shall have a distillation range from the very first drop to dry point not exceeding 2.0° C., including the temperature of 129.3° C.	95% shall distill within a range of 2.0° C., including the temperature of 144.2° C.	95% shall distill within a range of 2° C., including the temperature of 145.4° C.
SOLUBILITY	Very soluble in water. Soluble in most common organic solvents including alcohols, esters, ethers, ketones, aliphatic and aromatic hydrocarbons.	Very soluble in water. Soluble in most common organic solvents including alcohols, esters, ethers, ketones, aliphatic and aromatic hydrocarbons.	Very soluble in water. Soluble in most common organic solvents including alcohols, esters, ethers, ketones, aliphatic and aromatic hydrocarbons.
USES	Pharmaceuticals, resins, dyestuffs, rubber accelerators, insecticides.	Pharmaceuticals, resins, dyestuffs, rubber accelerators, insecticides, nicotinic acid.	Pharmaceuticals, resins, dyestuffs, rubber accelerators, insecticides.
APPROX. WT. PER GAL.	7.91 lbs.	8.01 lbs.	8.01 lbs.
SHIPPING CONTAINERS	400-lb. drums. 35-lb. cans.	400-lb. drums. 40-lb. cans.	400-lb. drums 40-lb. cans.

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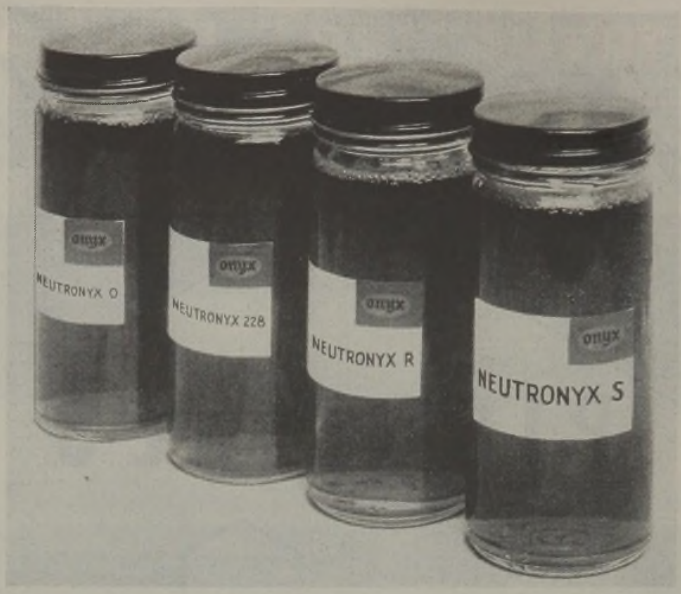

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Retaining freshness that hints of dew drops on rose petals is the quality that Arlex lends cosmetic creams—a smooth, fine-textured, skin-refreshing quality that remains until the last smidge in the jar is used.

Commercially speaking, an "Arlecized" cosmetic has longer shelf life and virtually no loss of quality if the consumer leaves the lid off her cosmetic jar. The cosmetic will not become watery nor cause beads of moisture to raise on the skin in hot, humid weather.

This is just one example of how Arlex controls moisture pick-up or loss to add new appeals to established products. Not only cosmetics, but textiles, glues, papers, leathers, tobaccos and foods gain quality through Arlex. All these hygroscopic materials—and more—need a permanent conditioning or humectant agent to keep their moisture content fluctuations within a narrow range.

Arlex (Atlas Commercial Sorbitol Solution) does the job superbly well. Arlex picks up moisture slowly and loses it slowly; neither does it "soup up" at high humidities.

Arlex may have great possibilities for you. Write for samples and data today.

ARLEX is Off Allocation

Arlex is now available for all end uses—critical and non-critical. There is no longer any red tape to getting Arlex; it was deleted from allocation order M-300 on August 22. Arlex will be shipped promptly upon receipt of your order.

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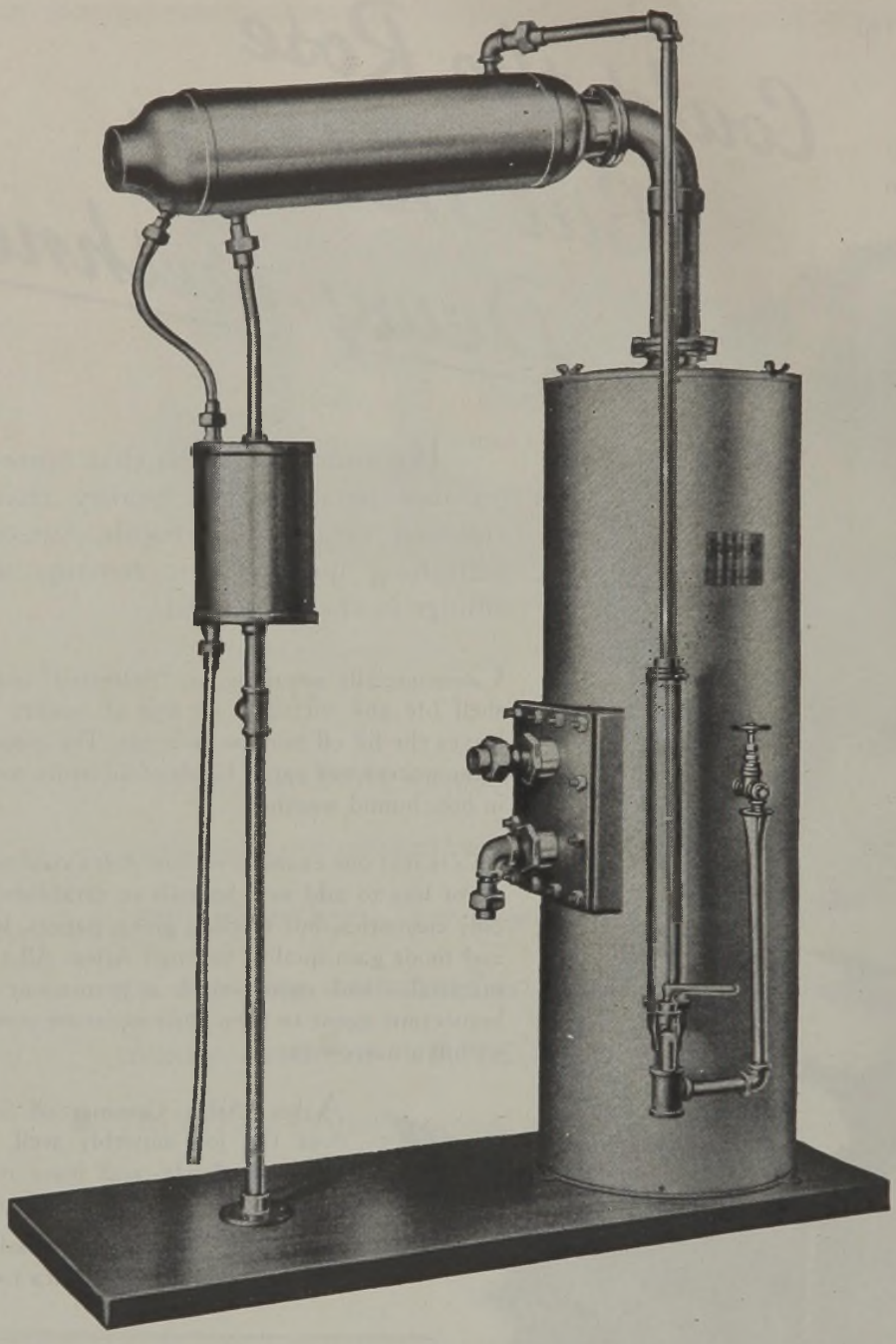

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With a long established, nationally recognized reputation for solving difficult technical and production problems in the synthetic resin, chemical color, industrial chemical and plastic fields, the RCI staff has added many notable achievements to its enviable record during the war.

Co-operating with the Army, Navy, governmental agencies and industry, RCI has speedily developed, and is producing, products such as: P-296 Beckosol Solution—used by the Navy to meet the rigid primer and finish requirements of Navy Specification 52-R-13 . . . P-322 Beckosol Solution to produce a tough, durable primer and finish for Army mobile equipment . . . No. 1425 Zinc Chromate for the most widely used zinc chromate primers . . . P-372 Beckosol Solution—a primer vehicle replacing critical wood oil . . . P-398 Plyophen, which solves the problem of the manufacture of a satisfactory exterior plywood . . . P-364 Beckamine—a water- and weather-resistant component of adhesives for fibreboard V-Boxes.

In addition, RCI rushed four new plants to completion, one for the large scale production of the basic industrial chemical phenol and another for the manufacture of dimethyl phthalate, which is used in large volume as an insect repellent by the Armed Forces. A third plant was constructed for the manufacture of phthalic anhydride and a fourth to increase the production of synthetic resins.

Broadened by the many and varied demands of the war, the greatly enlarged research and production facilities of RCI will be even better equipped to serve postwar industries.

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Editorial

The Engineers Speak Up

by ROBERT L. TAYLOR, editor

WE ARE GLAD TO SEE THE REPLY of the five engineering society presidents (see page 563 of this issue) to Secretary Morgenthau's proposal for postwar obliteration of German industry.

This masterly statement is further support, if any is necessary, of the contention that engineers, chemists and physicists do have the capacity and breadth of vision to see beyond the literal confines of their work—and that when they do they are usually capable of presenting clear and convincing arguments based on facts.

This is not to say that the human equation can be solved with a slide rule. Regrettably, the tendency to assume that it can is still all too frequently a weakness of well-meant attempts to apply "engineering solutions" to social problems. But it does say that scientific people can exert a greater influence on contemporary political and social thought than they are now doing. The example of the engineering society presidents should be encouragement to technical people everywhere, individually and in groups, to concern themselves with matters of state, politics and society, and speak up.

AS FOR THE STATEMENT ITSELF, we believe it embraces one of the soundest plans yet proposed for control of postwar Germany.

To eliminate German industry, as Secretary Morgenthau advocates, would be virtually to eliminate Germany. That of course is one way of preventing any future aggression by that country. But it is certain to be a very difficult and a very costly way.

It would be costly from the standpoint of breeding hate, revolt, and unemployment, with attendant human misery and suffering both of the German people and of members of the Allied occupational forces charged with carrying out the job.

It would be costly from the standpoint of its economic effect on the rest of Europe and the world. Non-German Europe has long depended on Germany to accept its foodstuffs and raw materials in exchange for needed manufactured goods. Many of the world's great scientific discoveries have come out of Germany. The United States and every other country has profited by them. Because the Germans have chosen to turn some of them against society is not a good reason for saying there should be no more of them.

Altogether, from the practical standpoint of assuring a durable peace in Europe at the least cost to the rest of the world, which in our opinion should be the objective of the peace table rather than subjugation of the conquered nations, it will be to the advantage of the Allies if they can control rather than destroy the talents of the German people.

THE ENGINEERING SOCIETY PRESIDENTS' PLAN offers a way whereby this can be accomplished.

By the simple expedient of exercising strict supervision over the Reich's production and imports of oil, nitrogen, steel, light metals and aircraft, she can be maintained in a state of complete impotence as far as ability to wage modern war is concerned and at the same time be permitted to produce enough of these materials to allow a normal peacetime living for her people.

To anyone familiar with the munitions and supply requirements of mechanized warfare, it is obvious that control of these five items would make any attempt at military aggression utterly impossible. As a matter of fact, an inadequate supply of any one of them would produce the same result. The other four make the control just that much more certain.

It must be admitted that such a plan will be only as successful as our ability to enforce it rigidly and keep all possible loopholes plugged. But such will be the price of peace under any plan. Eternal vigilance can be the only dependable guardian, regardless of the penalties imposed. It is logical, therefore, that the plan that can be enforced with the least difficulty will have the best chance of success.

Another precaution that must be taken, under the engineers' plan or any other, is to see that the controls do not become outmoded. War, like everything else, is a changing business. Control over a conquered enemy's supply of horses and mules would have been an effective deterrent to military action once, but transportation methods changed. The responsibility for establishment and enforcement of peacetime controls over Germany and Japan should rest with a Commission or other such body which will include, in addition to government and military members, experts from the major fields of science.

As science grows in its influence on the ways and work of the world, scientists must be prepared to take greater part in the direction of world affairs.

Commodities vs. Specialties

In our lead article this month, "Planning for Postwar Chemical Sales," A. T. Loeffler predicts that the coming years will see more industrial chemicals bought as commodities and fewer bought as specialties.

Mr. Loeffler refers, of course, to chemicals purchased for industrial use only. This does not include the large field of chemical specialties that are marketed through retail channels to the public. That branch of the industry will doubtless continue to grow—probably at a greater rate than ever before.

But as far as industrial specialties are concerned, there are several indications that over the long term they will see a decline, despite the fact that they have been among the fastest growing items on many chemical companies' list over the past two or three decades. This is the feeling of a number of far-seeing members of the industry.

The view is based largely on the fact that industrial users of chemicals are learning some chemistry and what to do with it. It was pointed out on these pages a few months ago that the war has greatly accelerated the employment of chemists in what are not commonly considered as chemical or chemical process industries. This is a trend that in all probability will continue. And with it will come both a decreased need and a decreased disposition on the part of chemical-using industries to rely on suppliers for their chemical research. Moreover, it won't take many of them long to find out that they can frequently save money by buying the straight chemicals and making up their own specialty formulations.

The industrial specialty business is a business that has been built on the principle of selling a product plus a service in a single package. That is the way the customer wanted it. But there are signs that the customer's wants may soon be changing, and it is the smart supplier who anticipates the needs of his market.

Magnesium Points the Way

"Magnesium holds within itself a greater power to increase wages while at the same time decreasing costs than do all the laws and all the politicians on earth. Real wages, let me remind you, can never be more than temporarily increased by law. They can be increased only by science."

In these words addressed to the Magnesium Association, Dr. Willard H. Dow, president of the Dow Chemical Company, sums up much of the economic history of the last few decades.

Look at our major military projects—radar, aviation gasoline, synthetic rubber, penicillin. Five years ago they were laboratory curiosities. Or look at our peacetime petroleum, automotive, or plastics industries. They were in their infancy not more than two decades ago, and now they provide employment for millions.

Some government spokesmen have said that the function of our postwar economy will be to provide jobs for 54 million workers. Isn't that putting the cart before the horse? Isn't the function, rather, to give competitive enterprise the opportunity to develop new products and better ways of doing things—so that our standard of living will be enhanced?

Jobs are a means, not an end. They are a natural corollary to production, which is in turn a corollary to consumer demand. Let science give to the world the things people want, or things they will want when they learn of them—cheap magnesium, for example—and the world will continue to move, as it has for the past century, in the direction of higher material standards for all.

Sales Control—A Useful Sales Tool

Several recent inquiries would indicate that sales control has not been put to as effective use in the chemical industry as in some other industries that are more highly developed from a merchandising standpoint. This checks also with a report from the sales manager of a medium size chemical company who is interested in strengthening his sales control operations and has been making an informal study of the systems in use by other chemical concerns.

A good sales control system can provide the sales manager with a variety of useful information that will be of great value in planning sales programs and directing the sales effort.

Most sales control systems will provide the following information plus any other of a special nature according to the needs of the business:

1. A complete record, all in one place, of the total purchases of each customer.
2. Individual case histories of the company's relationships with each customer, including pertinent notes and observations of interest to representatives who may call on the customer in the future.
3. A record of the cost of soliciting and servicing each customer, and the ratio of this cost to actual sales and potential sales.
4. Freight rate advantages or disadvantages on each customer in relation to competitors.
5. Necessary information for setting up sales quotas and budgets.

Maintenance of the sales control records may be a centralized function, or it may be left to the individual salesmen or assistant sales managers. Which method is used will depend largely on the sales set-up and the size of the company.

Where the records are kept in a central place, they may be the responsibility of a records clerk or department reporting direct to the sales manager or his assistant. Under certain conditions it may be preferable to make them a part of the accounting department. One company has placed all of its sales control work under the director of market research for the reason that effective market forecasting depends so much on accurate and complete records of current sales.

Sales control will pay out if it is conducted properly. A check-up on the system you now have and the use that is being made of it may well be worth a prominent place on your postwar sales planning agenda.

A good time to mend the net

Planning for POSTWAR CHEMICAL SALES

by ALFRED T. LOEFFLER, General Branch Manager
Monsanto Chemical Company, New York, N. Y.

WHAT CAN BE DONE IN THE PRESENT to prepare for the future? Buying habits of customers . . . industry selling vs. product selling . . . use of commodity specialists, technical service, market research, advertising . . . determination of export potentials . . . these and other elements of the postwar sales plan can be worked out now and during the breathing spell of easy spending that will follow cessation of hostilities.

THE CHARGE has been made by some that chemical sales forces have been coasting during the war period. Actually sales departments of most chemical concerns have been putting forth a conscientious and energetic effort to retain the good will of chemical consumers and yet comply with the restrictive, although by and large necessary, wartime regulations of the Government bureaus. Perhaps time, once aptly described as "unerring and remorseless," should be left to determine the success of that effort and the degree to which it will be valued and remembered by consumers.

Certainly salesmindedness has made much progress since World War I. Sales policy in the chemical industry during the present war has dictated a continuance of low price levels. Cost savings accruing with increased production have been passed along to the consumer in price reductions which should stir the research minds to consider new post-war uses. The isolated instances of price increases have generally resulted from unusual increases in the costs of raw materials suffering from disruptive war influences. The theory of pricing best summed up in the expression "all the market will bear" has largely disappeared from the chemical community. On the contrary, it is held that a good sale must be a good buy.

What can be done in the present to prepare for the future? Much clear thinking has already been applied to this question. Every mind in the sales departments of the industry should be at work on it. The successful sales representative in the chemical industry has probably been "on his own" as much or more than those in other industries; and the future is not likely to see a marked change in this respect. It is fitting, therefore, that every member of the sales team should tackle this question, and this article should be just one of many beginnings.

A Period of Easy Spending

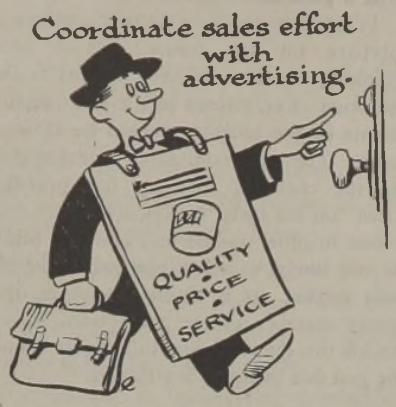
With the cessation of hostilities and release of restricted materials, the unprecedented accumulation of savings plus a big backlog of consumer needs will sooner or later produce an easy spending period. Ultimate consumer purchases of automobiles, homes, furniture, refrigerators, washing machines, stoves, clothes, electrical appliances, agricultural implements, radios, musical instruments, and the like, involve great volumes of chemicals in their manufacture.

But will these products be made exclusively by past producers? This boom business has general appeal, and evidence is already appearing that industry lines will be crossed many times. Those of us who were interested to see gliders manufactured by piano and refrigerator makers during the war will receive a new surprise in the announcement that a flour miller will manufacture household electrical appliances. The crossing of industry lines means that chemical company representatives must display initiative and resourcefulness in seeking new uses of chemicals in both old and new quarters. Market research studies by industry specialists and other survey efforts will produce some of the evidence, but the job still lies squarely with the man in the field who knows his territory intimately and lives with its problems.

The real test, however, is to come when the easy spending period is "spent." A chemical industry leader recently made the wise observation that American enterprise would succeed in avoiding a postwar depression by building confidence in the ultimate consumer for continuing employment. But the ultimate consumer is also influenced to buy by the utility and attractiveness of the goods which are offered through retail channels. The view that distribution is the principal problem is generally held by competent authorities. How then can those of us concerned with the marketing of chemicals to industry play a constructive part in this all-important job? The war and easy spending periods offer a breathing spell and opportunity for preparation.

What Should the Effort Be?

Merchandise managers of retailing organizations such as variety chain stores,



mail order houses, and department stores, are perhaps the best authorities on the characteristics and qualities of ultimate consumer goods which will increase utility and appeal. These merchandising experts are ready and willing to meet with informed representatives of the chemical industries and to point out the functional treatments which must be developed to increase the utility and enhance the appeal of leather, textiles, paper, wood products, etc. The many opportunities to work with such experts should be developed to the maximum extent.

It should be kept in mind that the industries manufacturing ultimate consumer goods vary in what might be described as development and buying styles. On the one hand, an industry may seek a product or a combination of products to provide certain characteristics, in which case a trade-named or coded specialty developed by the supplier specifically for the purpose is the answer. Other industries develop their own treatments and require straight chemicals purchased *per se* to meet definite specifications. Direct and indirect competition, both domestic and foreign, is likely to cause a trend toward the latter style, and chemical marketers must have the flexibility to follow it quickly.

Similar procedures for the development of other markets follow logically. Flavor and food ingredient outlets can be found through consultation with merchandisers and with research groups at universities which specialize in diet and kindred studies. Contacts with research workers in medical fields point the way to new pharmaceutical markets. The need for new and existing chemicals in the protective coatings industry (paint, varnish, lacquer and the like) calls for scrutinizing inquiry among users as well as makers of coatings. Architectural societies and the industries manufacturing the products to which coatings are applied many times produce the real lead.

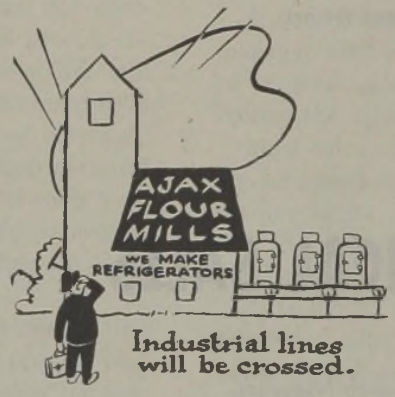
How Organize the Sales Effort?

In general, chemical products are now sold according to one of three methods.

Industry selling has been found most effective in cases where specialties for functional treatments satisfy the buyer's needs best.

Commodity specialists are wisely employed with newly introduced products requiring highly developed technical service. Chemical additives for lubricants and petroleum products are marketed in this way, with application and service laboratories being nearly indispensable to the success of the effort.

The third method involves that large group of products which are sold essentially on price, quality and service. Many of our most progressive industries from the standpoint of internal research and development, buy most of their chemical requirements from this group. Technical service must be rendered to the desired degree without being intrusive. The expeditious handling of orders and traffic department service play an important part in the rention of contracts and the securing of new business. All of these service features should be studied comprehensively for any flaws which may be found and eliminated. Successful selling of this type, however, depends largely on the representative and his intimate knowledge of



the territory to which he is assigned. Character, energy and knowledge of his products will continue to loom large in importance, but alertness to changing conditions in his territory will be equally essential in the pastwar years. The crossing of industry lines will not necessarily be limited to the easy spending period, for the skills acquired during the war and immediately thereafter may well be applied to new products having consumer appeal and promising growth possibilities. A departure from traditional lines never experienced before seems to be in the offing.

In many of our larger chemical companies all three methods of marketing are in use. The fields of activity and authority should not overlap and need not where clearly drawn. The team work factor cannot be over-emphasized. Men and departments can work up to their full capacities without sacrificing cooperation when a conscientious effort to attain the combination is made.

Advertising activities are of genuine value in the introduction of new products and uses; and, when possible, should be assigned departmentally to specialists. Coordination and close cooperation with sales make "follow through" more effective. An honest appraisal of these efforts will indicate their places in the complete marketing program and emphasibe the necessity of making the most of their results. Advertising, properly executed and directed, can be an important source of prospect information for salesmen as well as lay much of the preliminary groundwork for actual sales.

The Market Abroad

Out of the rather controversial discussions of international trade and the relative importance of chemical exports are emerging certain conclusions which are receiving support from most schools of thought. Public opinion in the United States seems likely to crystallize around the view that we should help in rehabilitating the countries adversely affected by the war to the point where their peoples may return to productive work.

The product of such work must appear in part in the form of U. S. imports which would tend to produce some unemployment at home. The degree to which rising standards of living abroad would offset such unemployment through increased exports is also debated warmly. At any rate, we (in the chemical and other U. S. industries) can be reassured by the fact that the realistic views of the men who return to industry from the Armed Forces will disclose the true aims and ambitions as well as sincerity and capacities of the people abroad.

In the export markets of great potentialities, the same reasoning follows as applies to the domestic sales effort. The successful export seller must study the development and buying styles of the consumer abroad and meet them in his offerings. In fact, he must go one step further and present them in the language of choice in the country of destination.

The thoughts expressed here only do some surface scratching. That every chemical marketer regardless of his assignment should have a hand in the matter will bear repetition. The chemical industry has in its sales teams the real enterprise characteristics which have brought it a great way and will carry it to new heights of accomplishment.

Removing sheepskins from tanning drums — *A. C. Lawrence Leather Co.*

v. THE LEATHER INDUSTRY:

A Highly Specialized Field—But Profitable Markets Await the Chemical Manufacturer Who Operates Intelligently • By KENNETH E. BELL*

THE CONVERSION of hides and skins into leather involves a series complicated operations which require ry important group of chemicals in product or another. Heavy chemicals, ganics, synthetic resins, dyes, oils, pig- nts, solvents, surface active agents and ymatic preparations are all important ns.

t is the tanner's problem to convert es and skins, which vary widely in , texture and thickness into a substan- ly uniform product. It it not surpris- that slow and patient work has been uired to place the industry under tech- nical control and to absorb newer materials and techniques.

Most of the larger chemical houses have found it essential to train technical representatives especially on leather so that they can demonstrate their products properly to tanners. The industry requires special techniques rather than minor modifications of those employed in textiles or paper. Consequently, many specialty houses have developed profitable business based on sales service on products streamlined for tannery use.

It is the industry's business to convert by-products into raw materials. In peacetime it draws on world-wide sources of cattle hides, calfskins, goat, sheep and lamb skins, horse hide, deer and reptile. The leathers made from them fall into two distinct sub-divisions — upper and sole leather. The former includes approximately two-thirds of the cattle hide and skins of the other categories for use not only as shoe uppers but also as garment, glove, handbag and pocketbook leathers. Approximately two-thirds of these products are chrome tanned, the remainder vegetable tanned. Peace-time leathers were produced in all colors of the rainbow and in finishes to meet milady's whims and fashions, as well as requirements of the industry. War-time regulations have restricted leather to a relatively drab range of colors.

* Technical Director, A. C. Lawrence Leather Peabody, Mass.

Table I—Analysis of Production of the Leather Industry for 1939
(Millions of Dollars)

	*Millions of Hides or Skins	Raw Value	Labor	Materials	Overhead†	Value of Product
Cattle hide, sole	8.2	$54.1	$9.6	$20.5	$14.8	$99.0
Cattle hide, upper	13.6	58.2	24.5	11.5	16.6	110.8
Calfskin	13.7	20.5	6.0	2.0	5.0	33.5
Goat and kid	40.9	17.1	7.5	4.4	5.1	34.1
Sheep and lamb	39.2	16.9	6.4	4.6	4.9	32.8
Horse, deer, pig	...	6.0	1.9	1.5	1.7	11.1
		$172.8	$55.9	$44.5	$48.1	$321.3

* Tanners' Council statistics.
† Includes interest, depreciation, repairs, taxes, sales, administrative expense and profit.

The heavyweight third of the cattle hide production goes into sole leather, which is practically all vegetable tanned. Such leather is used not only for shoe soles but also in belting, harness, strap and heavy luggage leathers. In 1939, which was the last peacetime year, there were over 400 tanning establishments employing upwards of 40,000 wage earners. For those interested in statistics, Table I shows an estimated distribution of costs of the various types of leather. It will be noted that in every category the value of raw hides or skins is greater than all other items put together. Consequently, careful operation and the use of proper materials is required to ensure high yields of quality leather.

A. C. Lawrence Leather Co.

Removing sheepskins from finish conveyor and hanging in dryer. Resin base finishing material is applied by spray gun at other end of conveyor.

Table II—Classification and Values of Chemicals Consumed by the Leather Industry (1939)

Heavy chemicals	$3,700,000
Other tanning agents	4,300,000
Vegetable tanning ingredients	18,100,000
Finishes, pigments and solvents	7,100,000
Oils, soaps and prepared fat liquors	4,000,000
Dyes	4,300,000
Syntans	2,500,000
Enzymatic preparations; preservatives	500,000
Total	$44,500,000

Table II shows the main categories and dollar values of chemicals used by the industry for the year 1939. These in turn are broken down in Tables III a,b,c,d,e, into individual items. It is obviously impossible to secure accurate figures on every item for an industry as complex as leather. While the values given have been carefully checked from several angles and are believed to be fair engineering approximations, none of the detailed figures should be considered of absolute accuracy.

A flow-sheet of a typical tanning process for upper leathers is given in Table IV. This shows how various chemical items or classes of materials are employed. The following comments supplement the information shown in the flow sheet:

The presence of iron in water or tannery chemicals results in the formation of iron tannate or ink in vegetable leather operations. Consequently, many chemicals must be furnished iron-free if they are to be satisfactory for industry use.

(1) *Water.* Water is the life-blood of the tanning industry and an adequate source of good water in large volume is a prime requisite in choosing a tannery site. In many localities water treating plants are essential in eliminating iron, lime, sediment, leaf-mold, etc. while for dyeing, softening plants are desirable. Approximately 250 gallons of water are required for each hide produced.

(2) *Depilatories.* Slaked lime is the time-honored material employed in removing hair from hides and skins. This has been supplemented in recent years by [illegible] dimethylamine and other "sharpening" agents. Controlled alkalinity is the key to this operation and the skilled tanner gives careful attention to the formulation of his depilatory to ensure complete removal of hair without injury to the delicate characteristic grain or hair surface of the leather.

(3) *Bating Materials.* The nauseous mixtures employed fifty years ago in bating have given way to enzymatic preparations, mixed with ammonium chloride or ammonium sulfate. Enzymes are derived from bacteria, fungi, or extraction of pancreatic glands. Lime is removed by the ammonium salts, which also bring the pH of the bate liquor to the point of optimum enzyme activity. The enzymes selectively dissolve certain proteins or "clear the grain".

(4) *Tanning Materials.* These loom large in dollar volume and importance. Skillful blending and application of vegetable tans determine the yield, color and character of heavy leathers. Vegetable tans are prepared and sold by suppliers, while in other cases tanners prepare their own. Domestic chestnut oak bark, chestnut wood, and hemlock bark share the field with materials imported from all over the world, notably quebracho from the Argentine and Uruguay. Chrome tan is prepared by the reduction of sodium bichromate with sugar or sulfur dioxide. Prepared chrome tans are readily available although many tanners reduce their own liquors. Alum, formaldehyde, sulfite liquors from wood pulp production and synthetic condensation products are important supplementary items.

(5) *Oils and Fats.* Most tanners purchase prepared trade-name blends of oils for the lubrication of their leathers. A few blend and sulfonate their own. Proper formulation ensures correct lubrication without impregnation of the leather.

(6) *Dyes.* Dyes are among the most expensive items used by tanners, and skillful formulation of dyes and mordants and chemical control of the operation are required if bright, even shades and colors are to result.

(7) *Finishes.* Leather must withstand repeated flexings, abrasion, exposure to sunshine and often to rain. In most cases eye appeal is important so that proper choice of bodying materials, pigments, oils and lubricants is essential if the finish is to withstand such treatment without cracking or flaking off. Many supply houses specialize in this class of material for tannery use.

The Industry in War-Time

The start of the war in September 193[illegible] skyrocketed hide and skin prices. These later subsided and were subjected to price control along with other materials. The military importance of leather was recognized by all belligerent nations so that it soon became evident that the supply

Table III—Breakdown of Chemicals Consumed by the Leather Industry (1939)

a. *HEAVY CHEMICALS*

	Pounds	Value
Acids		
Acetic	310,000	$7,000
Formic	900,000	99,000
Hydrochloric	5,000,000	53,000
Lactic 22°	1,400,000	80,000
Lactic 44°	900,000	
Oxalic	250,000	31,000
Sulfuric	39,000,000	320,000
Aqua ammonia	720,000	36,000
Ammonium bicarbonate	388,000	38,000
Barium chloride	112,000	11,000
Borax	10,000,000	220,000
Calcium chloride	970,000	10,000
Calcium hydrate (lime)	47,000,000	235,000
Ferrous sulfate	200,000	2,000
Fluorides (sodium, sodium bi-)	2,500,000	200,000
Glauber's salt	810,000	81,000
Magnesium silicate (chalk)	2,100,000	32,000
Magnesium sulfate (Epsom salts)	20,000,000	400,000
Potassium carbonate	215,000	15,000
Salt (sodium chloride)	140,000,000	280,000
Sodium acetate	200,000	10,000
Sodium bicarbonate	11,300,000	210,000
Sodium bisulfite	6,000,000	200,000
Sodium carbonate (soda ash)	1,400,000	15,000
Sodium hydroxide	800,000	20,000
Sodium sulfide (60-62% flake)	13,000,000	300,000
Sodium sulfhydrate	3,000,000	90,000
Sodium thiosulfate	20,000,000	560,000
Sulfur dioxide	1,500,000	100,000
		$3,659,000

b. *VEGETABLE TANNING MATERIALS*

	Pounds	Value based on 1939 average prices
Chestnut extract	340,000,000	$8,400,000
Hemlock extract	7,600,000	360,000
Quebracho, equivalent solid extract	130,000,000	6,200,000
Myrobalans fruit	11,000,000	400,000
extract	2,500,000	200,000
Oak bark extract, 25%	13,000,000	470,000
Mangrove bark	3,800,000	130,000
extract	15,000,000	750,000
Sumac extract	3,600,000	260,000
Valonia extract, 63%	1,500,000	120,000
Wattle bark	8,500,000	220,000
extract	1,900,000	95,000
Gambier extract	3,800,000	340,000
Cutch extract	470,000	30,000
Fustic extract	350,000	45,000
Logwood extract	240,000	30,000
Hematine extract	110,000	30,000
Spruce extract	1,300,000	20,000
		$18,100,000

c. *OTHER TANNING AGENTS*

	Pounds	Value
Aluminum sulfate	8,800,000	$130,000
Sodium bichromate	40,000,000	2,800,000
Corn sugar[1]	42,000,000	800,000
Glucose[1]	3,000,000	60,000
Formaldehyde	10,000,000	500,000
		$3,790,000

[1] Considerable percentages of these items are used as sole leather treating materials.

d. *FINISHES, PIGMENTS AND SOLVENTS*

	Pounds	Value
Pigment finishes	9,000,000	$1,700,000
Lacquer and shellac	2,000,000	400,000
Linseed oil	3,000,000	270,000
Synthetic resin finishes	7,000,000	2,050,000
Prepared finishes, not included above	5,000,000	1,000,000
Solvents including naphthas and thinners	2,500,000	300,000
Dry pigments	4,700,000	470,000
Titanium dioxide	2,100,000	320,000
Albumen		
Blood	700,000	160,000
Egg	140,000	
Casein	400,000	10,000
Gum tragacanth	40,000	90,000
Glycerine	800,000	50,000
Waxes		
Carnauba	240,000	130,000
Beeswax and other waxes	900,000	175,000
		$7,125,000

e. *OILS, SOAPS AND PREPARED FAT LIQUORS*

	Pounds	Value
Castor oil—raw	100,000	$10,000
sulphonated	1,500,000	100,000
Cod—raw	10,000,000	700,000
sulphonated	3,200,000	200,000
Degras	1,600,000	80,000
Greases	5,000,000	150,000
Menhaden oil	1,300,000	60,000
Mineral oil	18,600,000	280,000
Neatsfood oil	6,200,000	1,240,000
Pine, olive and sperm oils	400,000	50,000
Sulfonated stearine and tallow	4,000,000	160,000
Soaps	4,000,000	160,000
Sponging compounds	2,000,000	100,000
Prepared fat liquors not included above	6,000,000	700,000
		$3,990,000

Note: These tables based on Tanners' Council Statistics but adjusted after consultation with numerous industry representatives.

would not be adequate for our own and our Allies military efforts as well as for civilian needs. In consequence, the latter have been severely curtailed to the marginal production remaining after military requirements have been satisfied. The problem was further aggravated by shipping difficulties, which imperiled the supply of vegetable and chrome tans, and by a drastic curtailment of the raw stock available, due both to reduced kill and cutting off of imports. It is to the great credit of the industry that all military demands have been met virtually on time and this without resort to new plant facilities.

The necessity of meeting government specifications has accelerated chemical control and physical and chemical testing in tanneries. This will prove of lasting benefit. The photographs illustrating this article show some of the many uses to which leather is put. It is not generally known that the industry collaborated with the Army Air Forces in 1940 in the development of self-sealing gasoline tanks for airplanes, in which specially tanned cattle hide replaced metal. Properly tanned cattlehide fiber possesses an ultimate tensile strength twice that of aluminum, and this property made it possible to substitute it for metal.

Shearlings or sheep skins tanned with the wool on were requisitioned by the Army and Navy for aviators' winter flight clothing. Skins were frozen for this purpose and the industry increased its production many-fold to meet the demand. In addition, enormous quantities of cattle hide and calfskins have been tanned for uppers for Army, Navy, Marine Corps, and lend-lease shoes. Sole leather has been employed for outer and inner soles for our own use and for lend-lease.

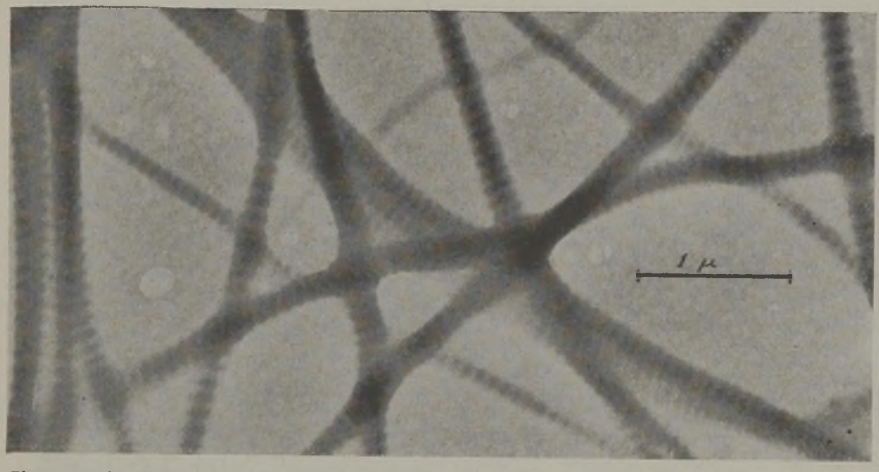
Belts; straps; Navy rigging leather; chamois for gasoline strainers and helmet liners; goat, cowhide, horse, deer and sheep for coats and gloves; are a few of the military items. It is sufficient to say that leather is seventh in the list of most important items in the prosecution of the war. Our own Army has eliminated the use of leather in many desirable pieces of equipment in order to conserve the supply for the most important requirements. It is of interest to note that the German and Russian armies employ leather in military equipment to a much greater extent than our own.

The Future of the Industry

Tanners have a comparatively simple reconversion problem. Inventories of hides and skins; of finished leather and of manufactured items such as shoes and garments are at minimum figures. Military items are not generally convertible to civilian use. There is a large peacetime demand for civilian items which awaits government release of the required leathers. These shortages extend to our Allies and to belligerent and occupied countries. This is offset to a slight extent by the fact that refugees have established tanneries in South American countries. These have flourished due to lack of ceiling restrictions imposed here.

The public has been led to believe that the products of the plastic and rubber industries will supplant long established standard materials such as leather. However, recent experience with unrationed shoes is still vivid in the minds of purchasers, and synthetic products must prove

Cross section through calfskin, by M. C. McDonald, A. C. Lawrence Leather Co. Mag. about 85 ×.



Electron micrograph of collagen fibrils from guinea pig Achilles tendon, by Dr. F. O. Schmidt, C. E. Hall and M. A. Jakus, Massachusetts Institute of Technology. Mag. about 24,000 ×.

A. C. Lawrence Leather Co.

Determination of grease content of leather by Soxhlet extraction.

The unique structure of leather has proved of continued value under wartime conditions. The photomicrograph showing a cross section through calfskin leather illustrates clearly the three dimensional mixture of fibre bundles. This compact structure is able to take up stress from any direction since there are always fibres oriented to meet it. As a result, leather can withstand many hundreds of thousands of flexings while under tension. Many of the synthetic materials are laminated, and under stress and flexing separate into laminations and quickly lose their strength and appearance.

While leather must meet technical specifications, a considerable factor in its sale is also its eye and touch appeal. Comfort is an essential factor and for many purposes the ability of leather to permit the passage of moisture vapor and to absorb moisture while withstanding wetting from the outside give it properties not equalled by synthetic materials. It is the experience of many who sell leather products that the public has a high regard for genuine leather articles and that they will return to them after experience with substitute materials.

Tanners are not blind to the fact that plastics and rubber will offer real price competition in certain fields after the war, but they are confident of their ability to meet it. The hide and skin or raw cost constitute over fifty percent of the value of all leathers. Since these hides and skins are a by-product of the packing industry, their price can fall to levels which the tanner expects will enable him to meet competition. Further, tanners are alert to investigate and adopt improved materials and techniques in their own industry. They expect to continue the trend toward shorter processing time and improvements in the appearance and characteristics of their leathers.

Outlook for Chemical Consumption

Many bulk items such as lime, salt, sodium sulfide, dyes, chromium and vegetable tan compounds are likely to continue on a stable basis. Many new or modified items will be adopted and used increasingly.

(1) *Surface Active Agents.* Surface active agents have been employed by tanners since their introduction in this country, and indeed the leather industry was one of the first carload users. These materials are used in conjunction with solvents in degreasing skins. In other cases they are employed in tanning, while in dyeing they assist in the development of uniform color on leather fibres. In still other cases they are employed in emulsifying oils and in formulation of finishes, to suspend pigments. Research on specific applications of anionic, cationic, and non-ionic agents is warranted.

(2) *Finishes.* Leather finishing has required a wide variety of materials and

been employed for patent leather pigment, and plasticized casein-shellac formulations have had widespread use for many years in finishing other upper leathers. Nitrocellulose, cellulose acetate, polyvinylchloride, latex and polyacrylate dispersions were employed as finish ingredients before the war and to an increasing extent in the last three years. The leather industry anticipates the production of very attractive leatners and a wealth of colors, textures and resistance to abrasion and weather hitnerto impossible by the adaptation of some of the improved synthetic materials developed recently for war purposes. The tanner will require that such finishes accentuate and embellish the characteristics of his leather without imparting an oil-clothy or cold, clammy feel. Ease of application without the development of toxic or flammable vapors are desirable characteristics.

(3) *Syntnetic and Reconstructed Tans.* Conventional chrome and vegetable tanning preparations are expected to account for a high percentage of tanning materials consumed in the next few years, but it is anticipated that syntans, reconstructed tans and improved complexes will assume increasing importance in enabling the tanner to produce better leathers at less expense and shorter time. The vegetable tans are susceptible to chemical treatment to modify their properties and to permit more rapid takeup by hide substance.

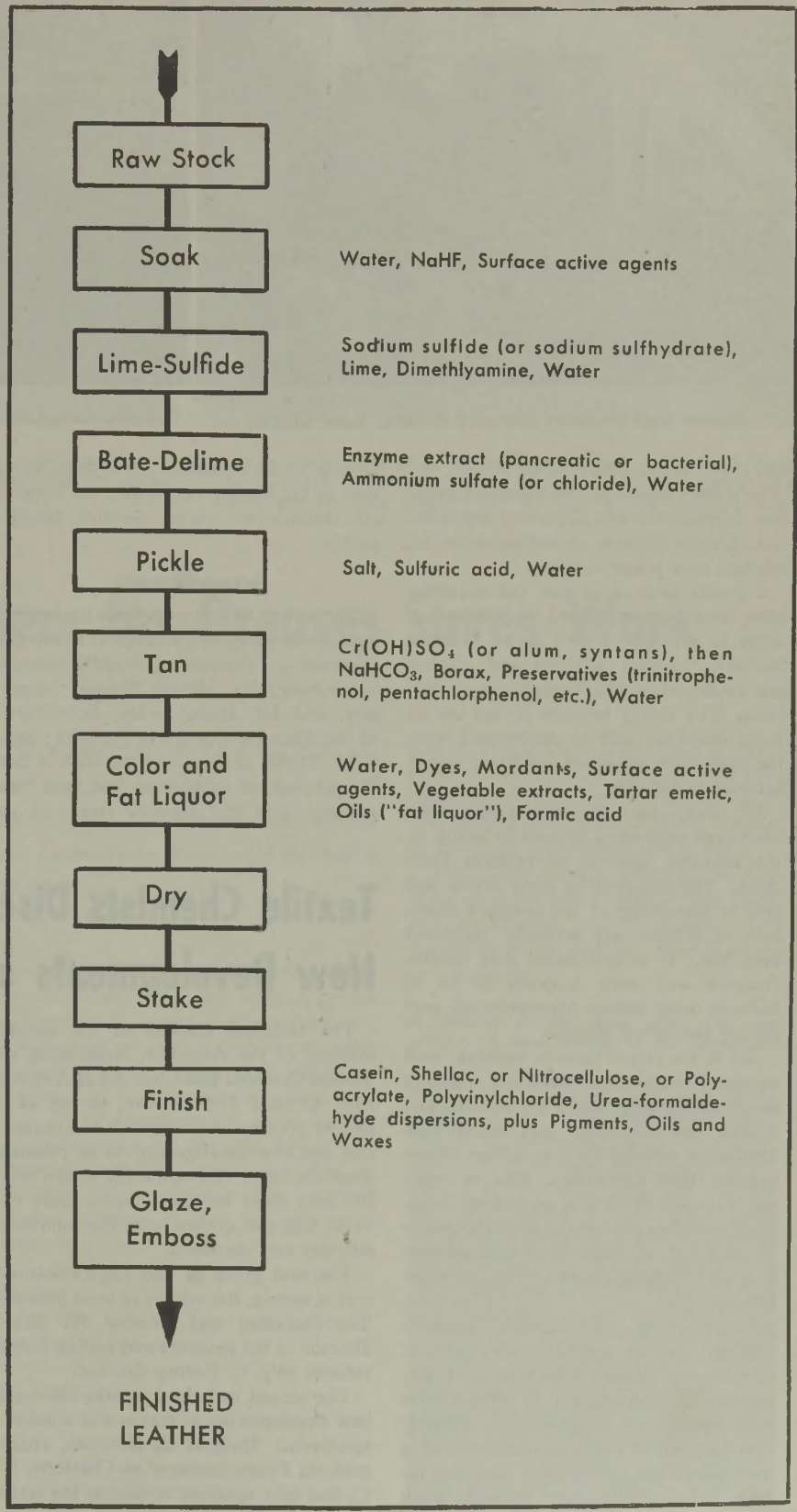
Syntans are understood in the leather trade to be water-soluble condensation products for which leather has an affinity. Almost any synthetic resin is a potential syntan. At present, syntans are used to supplement true tanning materials rather than as replacements. As the tanner's knowledge of the structure and composition of his material increases it will be possible to utilize such new products to better advantage.

(4) *Mold and Mildew Inhibitors.* Dinitrophenol, pentachlorphenol, copper naphthanate and many trade-named compounds have been employed by tanners to eliminate mold and mildew development during processing and to reduce any tendency toward mold development under extreme conditions of use. Military experience under tropical conditions in the Southwest Pacific has shown that metals, textiles and leather all suffer. Better resistance to bacteria is desirable. This field offers possibilities of development.

(5) *Lubricants.* Raw oils and natural greases were long the only lubricants used on leather. These in turn gave way to emulsions of raw oils and soap. Still later oils were sulfonated and blended with raw oils for which they acted as carriers. These materials sold to the industry as "fat liquors." Correct blending and treatment result in products which are an important factor in imparting desired feel or drapiness to certain leathers. There has been an increasing trend recently toward the employment of synthetic emulsifying or carrying agents in such preparations. Conversion treatment such as methylation is employed in other instances. The possibilities of new and improved products will stimulate work on these items.

(6) *Solvents.* Recent work at the Tanners' Council Research Laboratory at the University of Cincinnati has shown that the tanning time for heavy leathers can be reduced from months to days by the use of acetone solutions of tannins. These replace the conventional water extracts or solutions. Due to the fact that acetone is miscible in water in all proportions the acetone solution penetrates rapidly into

Table IV—Flowsheet of a typical tanning process for upper leathers.



Tanner's Council of America

Leather field telephone case used by Army Signal Corps.

U. S. Navy

This plane navigator is wearing a Navy sheep shearling winter flight suit.

wet hide. While problems on solvent recovery and tannin balances must be solved, this development has important possibilities. Other solvents or combinations of solvents may prove valuable.

Solvents such as narrow cut naphthas have long been employed in degreasing skins in process as well as on finished leathers. Lacquer solvents and alcohol are employed in the formulation of finishes. The steady increase in the use of these materials will be accelerated with the availability of newer and lower priced solvents in volume.

(7) *Enzymes.* Enzyme preparations have been mentioned as used in bating or the selective removal of proteins from skins. The obscurity of their action and lack of knowledge of the complete structure of leather has probably restricted their use. It is anticipated that further research will show enzymes to be of value in many leather operations not previously considered suitable.

All of the larger tanners maintain well equipped technical laboratories. Tanners and their technical staffs are anxious and willing to investigate and adopt new techniques which offer possibilities of improving their operations. Due to many sad experiences in the past they know their complex industry involves many variables, all of which must be controlled if their resulting product is to be satisfactory.

Organizations offering new products will do well to provide their technical sales representatives with adequate training in the leather field if their efforts with tanners are to be fruitful. Experience has shown that successful use of a material in the textile field does not insure automatically that it will work equally well on leather. Profitable markets in the leather field await the chemical manufacturer who operates intelligently.

Acknowledgments

The writer wishes to express his appreciation especially to Dr. Fred O'Flaherty, Director of Tanners' Council Research Laboratory; Mr. Merrill Watson, Secretary, and Dr. Irving Glass, Economist, of the Tanners' Council of America; Mr. J. M. Taylor of the Chemical Unit of the Department of Commerce, for their assistance with the statistics employed in this article; to many members of the staff of A. C. Lawrence Leather Company for their time and patience in providing helpful figures and advice; and to many other friends in the industry for their encouragement and assistance.

Next month Philip H. Groggins, chief of the Chemicals and Fertilizers Branch of the War Food Administration, will discuss prospects for postwar consumption of chemicals by agriculture. This will be No. 5 in the "Peacetime Markets for Chemicals" series—EDITOR.

Textile Chemists Discuss New Developments at Atlantic City

The technical sessions at the annual meeting of the American Association of Textile Chemists and Colorists at Atlantic City, October 12th to 14th, served as a sort of preview of the wealth of information and new developments to be released after the war. To cover the entire textile field these technical papers were divided into five groups with the following subjects and chairmen.

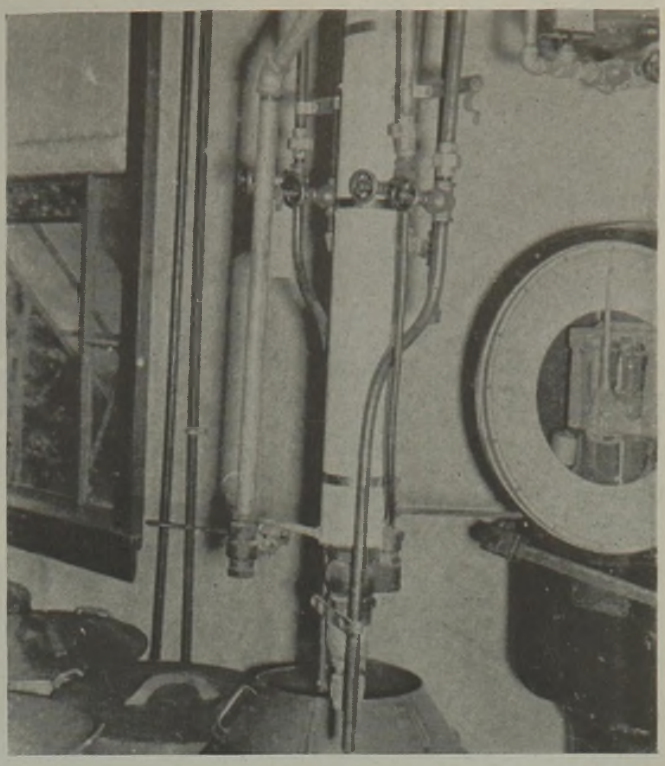
The first group of four papers covered textile testing, the subject of most interest. The chairman was Charles W. Dorn, director of the research and testing Laboratories of J. C. Penney Co., Inc.

The second and third groups discussed new developments in cotton and wool respectively. Douglas C. Newman, chairman, du Pont's manager at Charlotte, N. C., had four speakers to discuss the latest news in cotton dyeing, drying, and degradation on ageing. In the wool group, Dr. Milton Harris, director of research for the Textile Research Institute, Inc., presided and gave a paper on wool shrinkage. Captain Clapham discussed this same subject from the Army's standpoint.

In the group on finishing, there were talks on the finishing of hosiery, on tropical damage to textiles, and on a general review of resin finishes by the chairman, Dr. Donald H. Powers of Monsanto Chemical, one of the first and foremost advocates of the use of resins on textiles.

Dr. Harold DeWitt Smith of A. M. Tenney Associates, Inc., was chairman of a group of papers on synthetic fibers and gathered four leading authorities in this field as speakers, including William D. Appel, president of the A.A.T.C.C.

E. A. Emerson, chief chemist, lifts the pumping mechanism from a drum of lanolin to show the feed pipe. The counterbalancing makes it easy for him to support it with one hand.



Several outlets converge at the batching platform on the lower floor. The insulated center pipe is for hot fats. The four pipes with valves are for the greases and for air to control their flow.

Pumping System for Greases Saves Work

PLANT OPERATION

PETROLATUM AND ANHYDROUS LANOLIN are by their nature difficult to handle. Chemists of John H. Breck, Inc., Springfield, Mass., and engineers of the Alemite Division of the Stewart-Warner Corporation have worked out a pumping system which has saved time and trouble.

A NOVEL method of handling petrolatum and anhydrous lanolin was devised by Mr. E. A. Emerson, chief chemist, and William Thompson, production manager of John H. Breck, Inc., in collaboration with Alemite engineers.

The Breck concern uses large quantities of these materials in the manufacture of various ointments and cosmetic preparations, but until last spring these sticky and difficultly handled greases were shoveled out of the drums by hand.

There was the alternative, of course, of using a heating system to enable handling of molten material. But in the intermittent operations employed where a great variety of products are manufactured, the material would have to be heated and cooled several times. Continued heating of lanolin develops color and unpleasant odors.

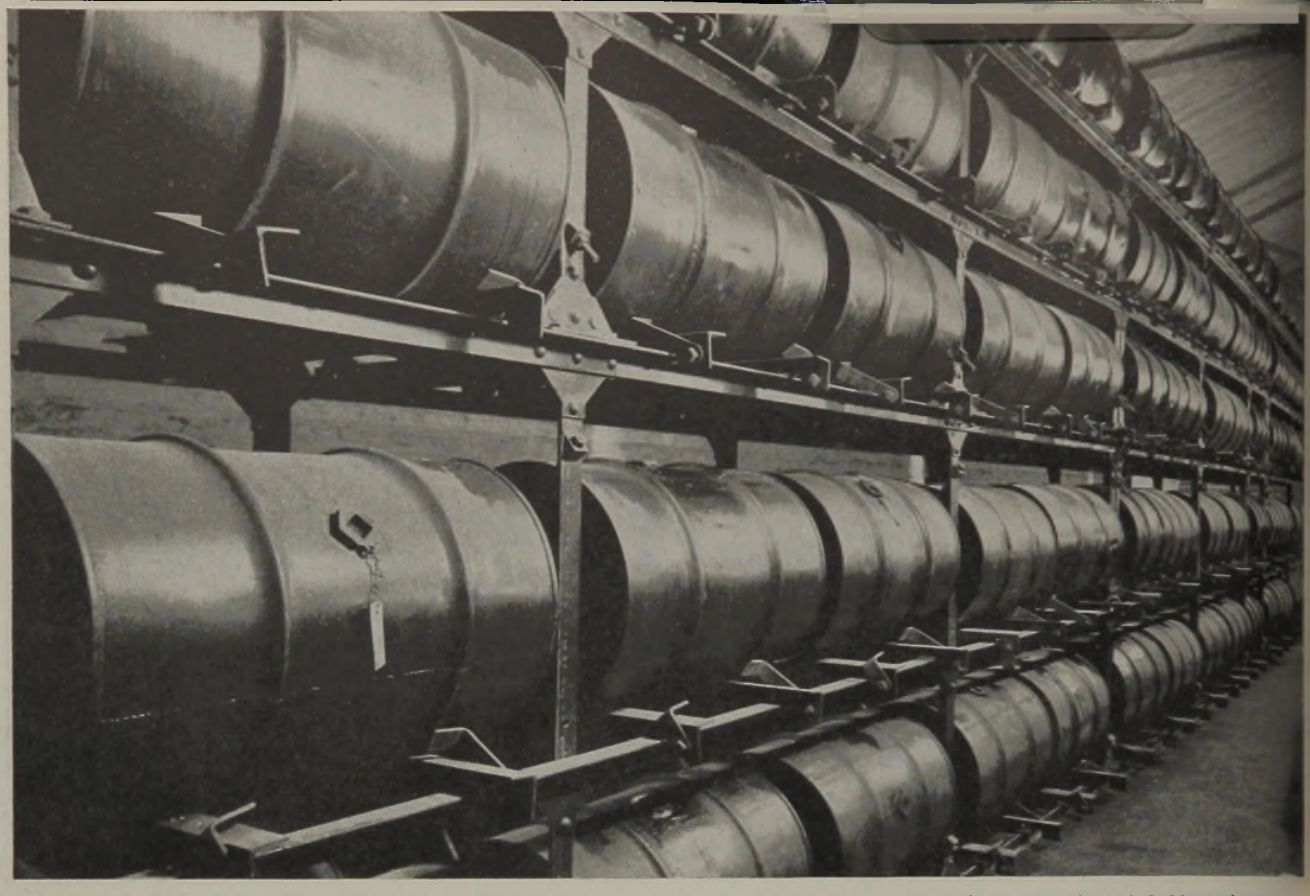
Finally a system was worked out whereby drums of the material, stored on the second floor, are emptied by air pressure in a "grease-gun" arrangement. Compressed air from a standard air compressor is piped to the pumps, which are mounted on drum covers in such a way that the counterbalanced units can be hoisted by hand for changing drums. The pump delivers the greases to outlets on the floor below, directly above a scale where quantities of each, as well as of other ingredients piped to the same location, can be weighed out for the various batches.

Varying with the temperature, the capacities of the pumps are 10 lbs. per minute of lanolin and somewhat greater for petrolatum.

The system is not quite perfect in that a ring of material is left in the bottom of the drum, particularly in cold weather. Mr. Emerson believes that a slight modification, employing a follow plate operated by air pressure, would eliminate that difficulty. At present the residues are shoveled into another drum which is emptied in the usual fashion when it is filled.

This equipment has facilitated the handling of these heavy greases and might well be adapted to other manufacturing operations where materials of this nature are employed.

A close-up of the pump shows the compressed air lines leading to the compressor.



In these steel drums at U. O. P.'s Riverside, Ill., laboratories are samples of petroleum from practically every major oil field in the world.

Universal Oil Products Company

A HIGHLIGHT OF THE American Chemical Society meeting in New York last month was the announcement that ownership of Universal Oil Products Company will pass from six of the country's largest oil companies* to the Society under the terms of a gift. What Universal is, what it does, and how it grew to become one of the largest petroleum research organizations in the world is the story that is told briefly on these pages.

WHEN THE U. S. Government launched its aviation gasoline program at the beginning of the present war, it was concerned with more than increasing production facilities for what was then known as aviation gasoline. It was looking for a new motor fuel, a better, more powerful gasoline for the new fighter aircraft engines that were already on the test blocks. It wanted to know how to make such a gasoline—quickly, and in quantities that slightly staggered even the size-conscious petroleum industry.

One of several places it went for information and help was Universal Oil Products Company. Motor fuels have been Universal's specialty virtually since its incorporation in 1914. The Universal chemists and engineers were able to be of assistance, and today there are close to 100 licensees of the U. O. P. processes for aviation gasoline ingredients alone.

Known for Petroleum Research

Universal Oil Products Company is one of the world's largest research organizations in the field of petroleum. It has a staff of about 600 people all told, a large proportion of which are chemists and engineers, and its work has influenced petroleum technology around the world. Its principal income is royalties from patents, of which it holds about 1,500 that are active and a large number that are still pending. All of these have resulted from work carried on in its own laboratories and pilot plants in Riverside and East Chicago, Ind. Most of them pertain to the production or utilization of petroleum hydrocarbons.

As one approaches the Universal laboratories at Riverside, less than an hour from Chicago's busy loop, he is impressed by the quiet campus-like atmosphere surrounding the three brick buildings that meet his view. Here, indeed, is an ideal place for concentration and research. But as he proceeds through one of the buildings to the opposite side, an entirely different sight greets his eye. There, spread out over some 25 acres but screened from view at the laboratory entrance by hedgerows and stately trees, are process buildings, rows of tanks, several distillation columns, and the general subdued activity of a going chemical plant or petroleum refinery. Such a combination of campus atmosphere and industrial plant should certainly produce something, is the reaction of the visitor.

Most of Universal's activities today are of course secret. But it can be said that

* Phillips Petroleum Corp., Shell Oil Co., Standard Oil Co. of California, Standard Oil Co. (Indiana), Standard Oil Co. (New Jersey), The Texas Co.

Aerial view of Universal Oil Products Company research and development laboratories at Riverside, Ill., about 12 miles from downtown Chicago.

the company's general scope of activity includes such operations and materials as catalytic cracking, catalytic reforming, hydrogenation, alkylation, isomerization, thermal cracking, thermal reforming, hydroforming, dehydrogenation, polymerization, retreating, polytreating, solvent treating, catalysts, and inhibitors. It has recently laid claim to the distinction of having designed both the largest and the smallest commercial fluid catalyst cracking units in the world.

About 15 years ago, when it appeared that thermal cracking of petroleum had about reached its limits, Universal began a large scale research program on catalytic processes—first cracking, then polymerization and others. The results of some of this work were ready to go when the war broke. Others were developed further in accordance with war needs.

Catalytic Polymerization Developed

One which gained world-wide acceptance even before the war is the catalytic polymerization process using a solid phosphoric acid catalyst to produce high octane gasoline from gases obtained in cracking. As far back as 1937, more than 170,000,000 cu. ft. of cracked gases per day were being polymerized to produce 14,000 bbls. of valuable aviation-quality gasoline. Since the war, polymer gasoline production has of course increased tremendously.

As demands for higher-octane fuels became greater, and more became known about the various ingredients required and methods of obtaining them, Universal became interested in isomerization and alkylation. Among the results of its research along these lines were contributions to the field of sulfuric acid alkylation and hydrofluoric acid alkylation with olefins. (Alkylation, in the terminology of petroleum chemistry, means combining of low molecular weight branched-chain paraffins, especially isobutane, with a low molecular weight olefin such as ethylene, propene or butene, to give high-octane paraffinic products.)

Isomerization methods for converting butane and pentane into high-octane isobutane and isopentane were also developed.

Work on Catalyst Materials

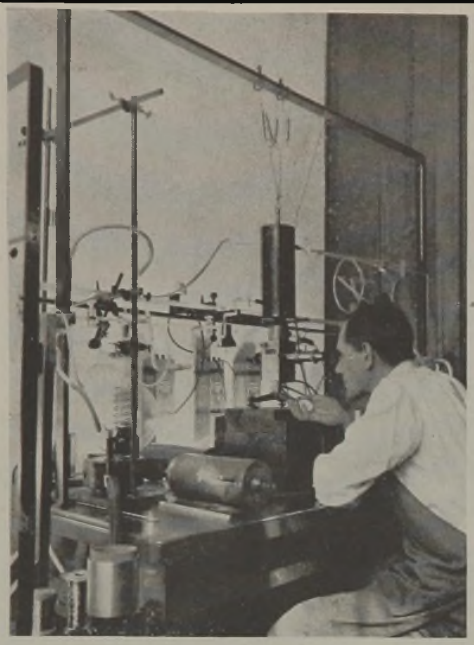
With the work on catalytic processes went intensive study of catalyst materials. The temperamental natures of these reaction helpers often turned out to be tougher problems than the reactions themselves. And after the long and difficult job of finding the proper catalyst for a process there was always the almost equally difficult job of getting it into the physical form in which it would work most efficiently, as well as problems of regeneration and reactivation. These studies led the Universal group deeper and deeper into catalyst work, with the U. O. P. line of catalysts finally resulting.

Interwoven with this was a smaller program on gasoline gum inhibitors, which resulted in the discovery of a series of new inhibitors.

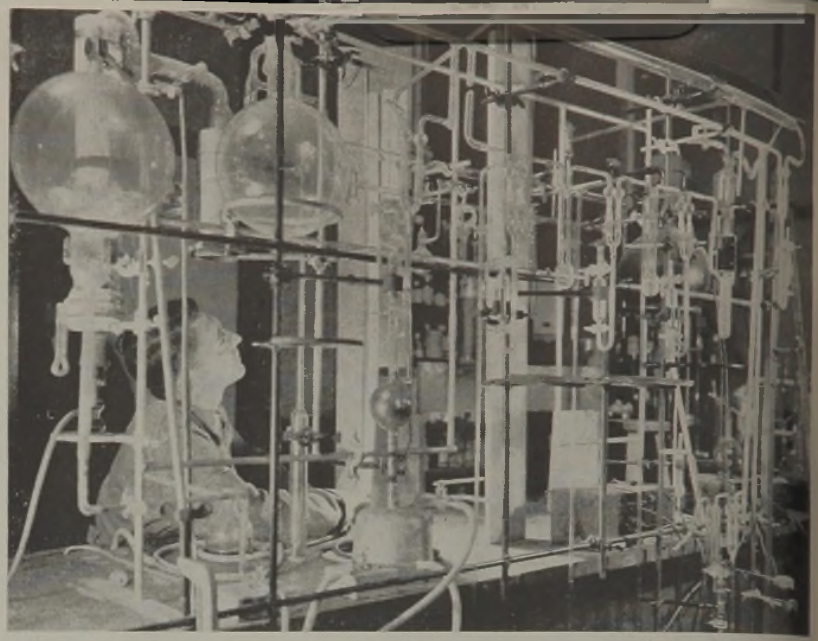
Thirty Years Old

The value of Universal today is estimated at between $10,000,000 and $15,000,000. Net income is reported to be running at approximately $1,000,000 a year.

This is a rather far cry from the little experimental laboratory in Independence, Kansas, where Universal got its start. The company was born officially in 1914 for the purpose of holding certain patents for the Standard Asphalt & Rubber Co., one of the many outside interests of J. Ogden Armour of Chicago meat packing fame. That is what it did for two years, and few people knew it even existed. The patents were obtained from a California oil man and inventor named Jesse A. Dubbs. One of them pertained to the dehydration of water-oil emulsions under heat and self-generated pressure. It also contained a claim covering distillation and condensation of the cracked hydrocarbon vapors that happened to be produced during the process. This latter claim Mr. Dubbs had added as an amendment in 1913 to his original application when the William M. Burton patents on gas oil cracking, issued that year to Standard Oil Co. (Indiana), indicated a possible usefulness for cracked hydrocarbons.



The effectiveness of catalysts are determined in specially developed electrical apparatus.



Heavy glass apparatus for obtaining extremely high vacuum. Some work is carried out utilizing a fraction of a millimeter working pressure.

Three different types of catalysts used in U. O. P. petroleum refining processes.

It was this one of the Dubbs patents in which Hiram J. Halle, president of Standard Asphalt and close friend of Mr. Armour, became very much interested. He became so interested in the cracking possibilities of the process, in fact, that he persuaded Mr. Armour to put $2,000,000 realized from the sale of Standard Asphalt to the Cities Service Co. in 1916 into Universal Oil Products Co. to develop Mr. Dubbs' process. Mr. Halle went along with the $2,000,000 and became president of Universal, a position he held until his death in May of this year.

Development of the Dubbs continuous cracking process was carried out by Universal under the direction of Carbon Petroleum Dubbs, gifted son of Jesse Dubbs. Progress was slow, and it wasn't until 1919 that Mr. Halle was ready to show the oil industry what his group had been doing. The process finally evolved by C. P. Dubbs had but little resemblance to that of Jesse Dubbs. The industry was astounded when it was demonstrated that it could crack heavy residual fuel oil for an extended time without clogging the furnace tubes with coke.

When asked his terms and conditions for use of the Dubbs cracking process, Mr. Halle laid down a policy that has been followed ever since at Universal. It embraced two principal points:

(1) Guarantee of the performance of the unit as to capacity and yield, with provision for reimbursement of its cost to the refiner and removal of the unit from his plant if it fails to meet the guarantee, and

(2) Unqualified guarantee to every licensee of immunity against the world from all charges of patent infringement. This includes both defense of litigation and protection against loss through damages that might be assessed.

The Dubbs cracking process was the sensation of the oil industry, but even so, and despite Mr. Halle's guarantees, it was two years before the first licensed commercial unit was installed. By this time, however, it was obvious to all that Universal had something, and the research and development program proceeded. More than $6,000,000 was spent before the investment earned a dollar of income. Much of this sum was eaten up by costly litigation over the validity of the Burton cracking patents held by Standard of Indiana, an argument that dragged on until 1931 when Universal was sold for $25,000,000 to a group controlled by its two largest licensees—Shell Oil Co. and Standard Oil Co. of California. Following consummation of the purchase, Standard of Indiana along with several other oil companies who comprised what was known as the "patent club," signed an agreement to drop all pending litigation with the owners and licensees of the Dubbs process and to institute no new suits involving patent infringement against each other or against Universal.

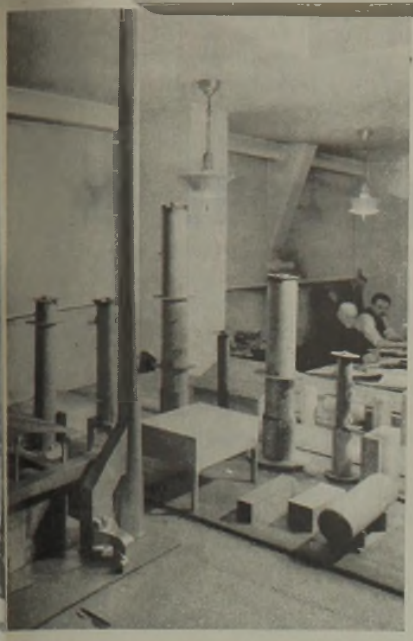
The whole history of Universal has been liberally seasoned with aggressive patent litigation both to prevent infringement of its own patents and to protect licensees against suits for infringement brought by others. The Dubbs litigation has been some of the most voluminous in industrial history and at one time or another has involved most of the larger refiners. One member of the oil industry has ventured the opinion that it has cost the litigants well over the $25,000,000 paid for the company in 1931.

But withal, much credit is due Universal and the Dubbs process for their significant contributions to the cracking art. Cracking has been one of the basically important developments in the petroleum industry. In 1920, 100 bbls. of average crude yielded the refiner about 26 bbls. of gasoline. In 1936, the year that cracking for the first time outstripped straight distillation as a source of gasoline, 100 bbls. of crude yielded on the average 44 bbls. of gasoline. Today the figure is even higher.

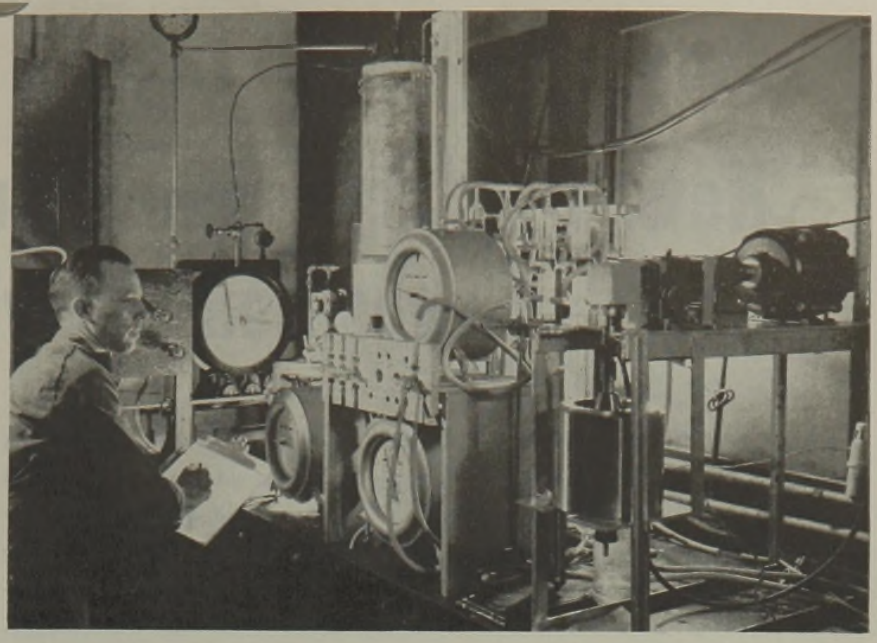
Modern cracking processes—both thermal and catalytic—in addition to gasoline, yield coke, gases and fuel oil. These products are becoming increasingly important as sources of a large number of chemical derivatives such as acetylene, alcohols, glycols, aldehydes, acids, esters, and ethers.

Method of Operation

In licensing its processes, which are available to anyone on a royalty basis, Universal acts as designer and consultant. It does not serve as contractor or builder,



A U. O. P. thermal cracking unit, including equiflux furnace, modeled in wood.



Apparatus for experimental work in catalytic dehydrogenation. The U. O. P. laboratories are equipped to carry a process from the glassware stage through to a commercial scale unit.

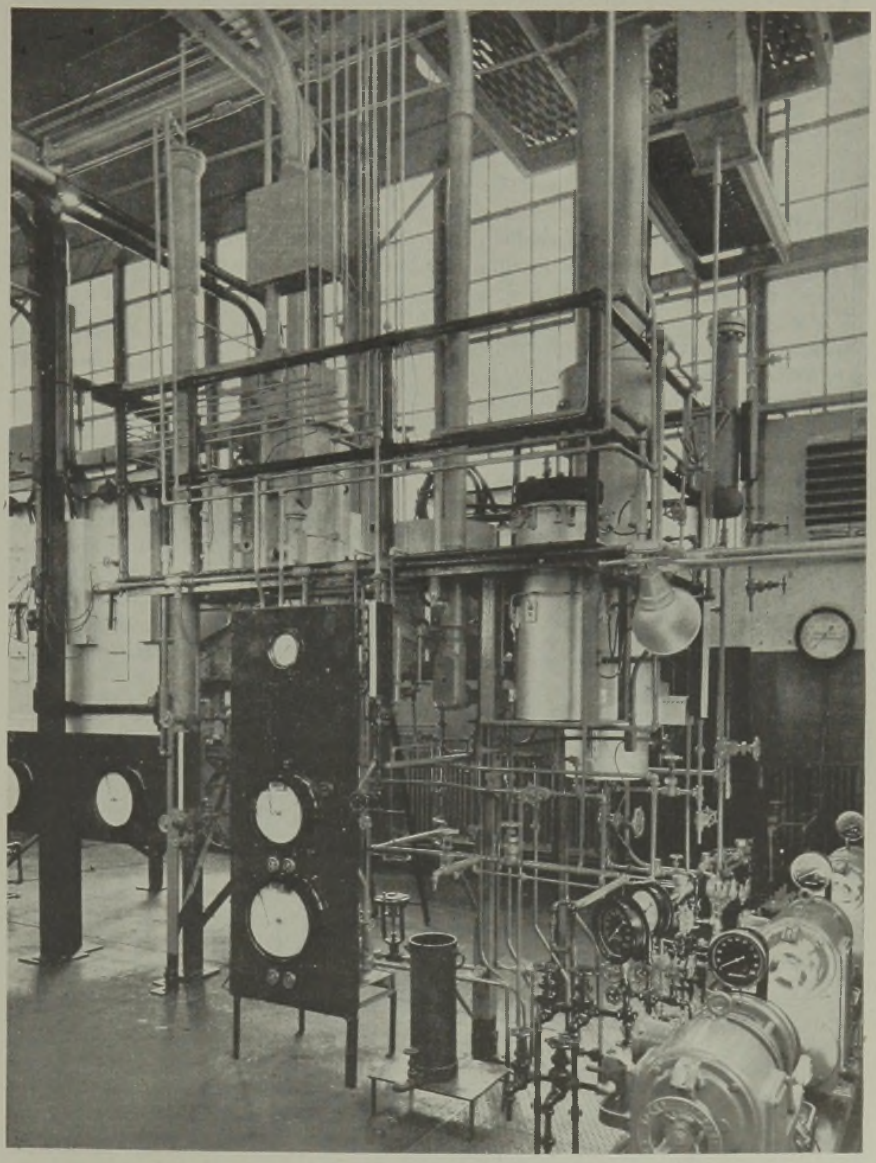
but it oversees construction, trains personnel and helps get operations started. In many cases it also reserves the right to conduct research and development work on licensed units. Such work, along with the servicing of operating units, keeps many of its engineers in the field most of the time.

Universal is equipped to handle research problems all the way from the idea stage up to full commercial scale. All developmental and design problems are worked out by the group conference method. Data are laid on the table, tentative plans are formulated, then chemists, physicists, engineers, and specialists in design and construction combine their talents and experience to arrive at the final solution.

With the death of Hiram Halle in May of this year, former vice-president and general manager Joseph G. Alther was made acting president of the company.

Though not yet as well known as his predecessor, Mr. Alther has been with Universal since early in its history and has been directly responsible for some of its most significant developments. In 1940 he was honored as a "Modern Pioneer" by the National Association of Manufacturers for his invention of the Universal Equiflux furnace, a method of heating oil for cracking through the use of a hitherto unrecognized principle of heat application.

Under the piloting of Mr. Alther, with the assistance of such outstanding members of its staff as Drs. Vladimir Ipatieff and Gustav Egloff, Universal expects under its new owner to continue its search for better motor fuels. The day is not far, it claims, when all of our gasoline will consist of closely controlled blends of pure hydrocarbons.



An experimental selective cracking unit.

New Products and Equipment in Exposition Preview

THE CHEMICAL INDUSTRY has been called upon to do many new things and to do the old things better and faster during these war years. How well it has responded is familiar to all of us. An important clearing house for the necessary "know-how" is the biennial National Chemical Exposition in Chicago. In these pages we present a preview of some of the new developments which will be shown at this year's Exposition in Chicago Nov. 15-19.

MANUFACTURERS will bring to the Chicago Exposition in November the practical results of their chemical and engineering research during the past two years. This year's display is particularly significant, for the imaginations of many—if not their hands—are turning from the implements of war to the commodities and services of peace. Intensive wartime research has opened possibilities of vast peacetime markets for synthetic rubber, plastics, electronics and a host of other fields; and manufacturers are ready, or are getting ready, to step out into the new directions of the future. New equipment has been designed, new products have been commercialized, and many of these developments will be publicly presented for the first time at the Exposition.

CHEMICAL INDUSTRIES has asked the exhibitors to describe their displays, and from their information we have compiled the following descriptions. The press of war work prevented many from preparing the information, and some reported that they were not displaying any new developments. The list, then, is not complete; but it will give the reader a telephoto view of what he will see a few weeks hence, and enable him to glimpse what will be offered in his particular fields of interest.

Ace Glass, Inc. will present a number of interesting items both old and new in the exhibition of its laboratory products. Among them is a glass pump that has proved its worth in both research laboratories and pilot plants as a means of circulating corrosive liquids and other solutions.

An item of interest in the plastics field is a split flask in which the top section is entirely removable, permitting easy and complete recovery of viscous or solid materials.

Also featured will be several semi-automatic stills with reflux control regulated by the "Ace Fractometer" timer, with which reflux ratios from 1:150 up to 150:1 can be obtained. Other features of the timer include resetting while in operation and instant determination of setting.

Other new items will be a light oil pycnometer, a micro Kjeldahl apparatus and metal spherical joints.

Alox Corporation: New preservative lubricants, ranging from very low viscosity to very high viscosity, will be on display. Demonstrations of these lubricants will be made to show how efficiently they protect metal when exposed to seawater, wet atmosphere, etc. They are designed to lubricate and preserve all kinds of fire-arms and other fighting equipments. The low viscosity, low pour point lubricants are found useful for lubricating and preserving farm machines, wood and metal working tools, and sporting equipment.

Tools and machine parts will be shown coated with Par-al-ketone film forming rust preventives designed for overseas shipments of metal replacement parts. Film forming rust preventives for ball and roller bearings will be shown as well as preservative lubricants designed for the lubrication and protection of anti-friction bearings. Other derivatives of oxygenated hydrocarbons of the polar type will be on display, particularly those found useful in improving the lubricating value of of mineral oils.

American Instrument Company: Immersion and space heaters will be shown, including a new development in the form of lead-sheathed immersion heaters for use where corrosion is a problem; and also the newly introduced automatic safety immersion heater with the thermal link that prevents burnouts should the liquid run low. Another item of almost universal interest is the Aminco Sub-Zero Cabinet that produces temperatures as low as minus 120 degrees Fahr. for the cold-treatment of metals and the low-temperature testing of instruments and materials of every description.

Other items that will be exhibited include: relays, temperature regulators, circulating pumps, stirrers, forced-draft constant temperature ovens, the Magne-Gage for measuring coatings on metals, superpressure and catalytic hydrogenation equipment, and fused high-precision absorption cells.

H. Reeve Angel & Co. Inc. will exhibit Whatman and Reeve Angel Filter Papers.

Whatman filter papers, especially adapted to analytical work in chemical laboratories, include grades for qualitative and quantitative analyses and are also widely used in the manufacture of biological products and fine chemicals.

Reeve Angel filter papers are especially used for industrial filtrations in funnels, filter presses and filtering machines.

Atlas Powder Company: Wartime advances in the use of the new poly-alcohols mannitol and sorbitol, will be the key note of the Atlas exhibit. Arlex (Atlas Commercial Sorbitol Solution) will be on display, and some indications of the versatility of Atlas' water-in-oil and oil-in-water emulsifiers (Spans and Tweens) can now be disclosed. Drying oils that make better varnishes and enamels—and at the same time relieve our country of dependence upon foreign sources for natural raw materials, resins and plasticizers will be among the new chemical materials displayed. Produc finishes illustrating these advances will b shown by Zapon Division.

Barnstead Still and Sterilizer Co. Inc., will exhibit Barnstead automati water stills in steam, gas and electrically heated types. The latest method of ful automatic control for distilling equipmen

will be demonstrated. Also shown will be the new Barnstead purity meter which provides a quick and handy means of checking the purity of distilled water.

Battelle Memorial Institute: Scale models of Battelle's buildings will illustrate the quarter-million square feet of facilities for research for industry. These models will also demonstrate the growth of the Institute both from the physical aspect and employment of skilled scientists and technicians since its founding in 1929.

The exhibit will emphasize Battelle's work in the chemical field. A few selected displays will illustrate some chemical projects which Battelle has undertaken in the paper, paint, plastics, petroleum, ceramic, hydrometallurgical, and metal treating industries.

Bemis Bro. Bag Co.: A number of interesting new developments in bag manufacturing will be shown. Among these is a multiwall paper bag designed to withstand long periods of out-of-door storage. A test of the ability of these bags to withstand outdoor storage will be a device for simulating rainfall. Filled bags will be placed in the rainfall booth where water will fall on them continuously for twenty-four hours. Each day, at a specified time, a bag will be taken out and opened to demonstrate that the contents are still perfectly dry after a twenty-four hour drenching.

Another exhibit of interest will be the new Aquatex Closure for multiwall paper bags. The equipment used in making this closure will be on display and used in daily demonstrations.

An interesting demonstration will be made of the superior qualities of wet strength papers used in manufacturing certain types of multiwall bags. The use of waterproof adhesives in bag manufacturing and bag closing will also be shown. The Bemis exhibit will include waterproof bags and many other types of bags used by the chemical industry.

Celanese Corporation: The Celanese booth will be dedicated to the proposition that synthetics are materials that can be tailored to individual needs. Contributions of Celanese synthetics, such as plastics, textiles and chemicals to the war effort and to civilian living will be on display, as will some projection of possible post war uses of war born material.

Central Scientific Company: A complete line of photoelectric photometers including the Cenco-Sheard "Spectrophotelometer", two types of Cenco-Sheard-Sanford "Photelometers" and the Beckman Quartz Prism Spectrophotometer, will be displayed. Included in this exhibit of scientific instruments and laboratory apparatus will be many other new developments for rapid metal analyses. The Cenco-Leco Carbon Determinator which provides fast and accurate measurements of carbon, the Leco Sulphur Determinator, and the new Cenco Gas Analyzer for quickly determining carbon dioxide to indicate the start of a heat-treat cycle are of particular significance. The Tempilo line of products for indicating surface temperatures, the Cenco-Hyvac and Cenco-Megavac high vacuum pumps, the Cenco-DeKhotinsky cylindrical oven, the Cenco High-Torque stirrer, specimen mount presses, grinders, polishers and other items of interest will be there, too.

Commercial Solvents Corporation: The display will be devoted primarily to colored transparencies showing the production of Penicillin-C. S. C. in its new plant. Vials of both penicillin-sodium and penicillin-calcium will be on display.

The outside end of the booth will include two cases in which will be presented various chemicals and products produced by Commercial Solvents.

Corning Glass Works: Latest developments in industrial and laboratory glassware are included in this display which will feature a working demonstration of a fractional distilling apparatus consisting of a perforated plate column and "Corad" head, and especially designed for research work and laboratory use where only small quantities of liquids are available. "Corad" still head permits greater control of distillation processes, shortens time and improves quality of distillations.

Other laboratory ware to be displayed are full lines of ball and socket joints and standard taper joints, panel displays of fritted ware, low actinic ware for vitamin assay work, Vycor brand ware—a 96% silica glass for high temperature uses and graduated ware such as pipettes and hex-base cylinders.

Another moving display will demonstrate the high resistance of Vycor brand ware to thermal shock. An automatic machine will transfer beakers from cross fire to cold water with no deteriorating effect upon the glass.

In the industrial section of Corning Glass Works exhibit will be a working display of a glass pump, including a plug-cock valve and a rotameter. A series of panels will also show Pyrex pipe fittings, industrial ware and precision finished ware as well as Vycor brand industrial ware.

Chicago Apparatus Co.: This organization is presenting a careful selection of the newest products of well known manufacturers that may not otherwise be represented at the exposition.

Among the equipment to be displayed will be the complete line of the Lindberg Engineering Company, featuring muffle, combustion tube, and crucible furnaces, and hot plates, all automatically controlled by modern regulating devices. This equipment has received considerable attention in the past year.

Also being shown is the precision Thelco utility oven, International centrifuges, Bausch and Lomb chemical microscope, and several other items for comparison with other and earlier models.

Its booth will also feature several items of its own manufacture.

Chicago Pump Company: The Chicago Wide-Band air diffusion system will be in action, showing maximum oxygenation and mixing efficiency for microbiological and chemical processes.

Adaptations of the system to any size and shape of tank will be shown. There will be illustrations of typical installations in round tanks to effect circulation up the outside and down the center, in rectangular tanks to effect spiral circulation, and in other tanks to effect the maximum amount of oxygenation and mixing.

Engineers and chemists will be in attendance to give visitors the benefit of their ten years experience in the application of the Chicago Wide-Band Air Diffusion System in oxygenation and mixing in aerobic process plants.

Continental Can Company, Inc., will have a comprehensive exhibit of all types of molded plastics, as well as examples of sheet forming and laminating.

Darco Corporation will exhibit the four-sided function of activated carbon in the chemical process industries: (1) concentration of desired product by adsorption and elution, (2) color, odor, and colloid removal for finished product purity, (3) purity maintenance in continuously used liquids, and (4) catalyst and catalyst carrier.

The Dicalite Company: A combined pictorial and physical exhibit representing the extent of the company's manufacturing and research facilities, engineering service rendered, and typical finished materials, will be shown.

The company produces diatomaceous silica filter-aids, fillers, high temperature insulation, absorbents, catalyst carriers, admixtures, etc. Direct war use of Dicalite products, as well as use of these ma-

terials in many war products, has resulted in development of materials with new and interesting post-war applications.

Harry W. Dietert Co.: High speed analytical equipment which does not sacrifice accuracy will be featured.

An improved Two-Minute carbon determinator will be exhibited wherein automatic atmospheric pressure balancing is used to improve the accuracy of carbon determination. The human equation is reduced to a minimum. For sulfur determination in all materials, a new model of a Three-Minute sulfur determinator is being shown.

Two models of laboratory combustion furnaces will be on display; the Varitemp furnace, designed especially for rapid combustion of samples for either carbon or sulfur and a Glotemp furnace, especially designed for combustion of samples for carbon determination.

The Dorr Company will demonstrate its deionization system of water purification. Other features will be large photographs and animated flow diagrams of installations for wet process cement manufacture, recausticizing system for Kraft pulp manufacture, recovery of phosphate rock, and water purification.

Durametallic Corporation: Packings and sealing devices are featured in the exhibit presented by this company, a packing engineering firm producing sealing devices especially designed to meet the individual operating need in industries in the working of fluids by centrifugal and rotary pumps, agitators, mixers, autoclaves, and the like.

The Durametallic exhibit will include samples of the various types of metallic and semi-metallic packings produced by this company as well as a demonstration of their packings, mechanical seals, and lubricating oil pressure systems in actual operation.

The Emulsol Corporation: The display emphasizes the developments of the Emulsol Corporation of the past twenty years in the field of interface-modifying chemicals.

The many products manufactured by the company encompass the fields of foods, pharmaceuticals, cosmetics, textiles, leather, mining, insecticides, germicides, waxes, polishes, and various other products and industries.

It is the purpose of the first exhibit of The Emulsol Corporation at the National Chemical Exposition to display not the products, but rather the functions carried out by Emulsol surface active chemicals.

Eutectic Welding Alloys, Inc. will exhibit the special line of welding rods and fluxes that it manufactures. This line is of particular interest to chemical industries. Many applications have been found for this method, which is exceptionally corrosion-resistant and color-matching. The low bonding temperatures of these rods eliminate many of the hazards of high temperature fusion and other welding methods.

The Fansteel Metallurgical Corporation exhibit will consist of acid-proof chemical plant equipment fabricated entirely or partly of the metal tantalum. This equipment will consist of a full scale evaporator unit suitable for distilling or concentrating acids or other corrosive reagents, heat exchangers, bayonet type heaters and condensers. Smaller accessory equipment such as thermometer wells and diaphragms will also be displayed.

Filter Paper Company: Outstanding among the many items to be displayed by Filter Paper Company is a new type of cylinder filter perfected after a year of intensive development. This filter offers a number of innovations, including observation port, variable capacity, accurate pressure control and several other desirable features.

Other new and redesigned items are filters of all types, including porous stone, plate and frame filter presses, activated carbon and quartz filters, paper disc filters, oil filters, and other types of cylinder filters.

Fisher Scientific Company: Laboratory appliances and reagent chemicals developed in the past year will be featured in this booth along with the key instruments for volumetric, gravimetric and colorimetric analysis. Fisher's new Central States Plant at St. Louis, Missouri, will be in charge of the exhibit.

Among the new equipment to be shown will be the following: Fisher Sub-Sieve sizer, for measuring particle size; E. & A. Penicylinders, penicillin culture flask, Penicillin culture medium and Fisher penicillin reader; E. & A. low temperature thermometer for measuring temperatures down to —200° C.; E. & A. Boileezers, an inert material for taming boiling action; E. & A. purified Rhodamine B for tungsten analysis; Fisher combustion boats; laboratory model CO_2 fire extinguisher; Fisher improved Milligan botle for absorbing and washing gases; Fisher Filtrator for rapid filtering into beakers or volumetric flasks; E. & A. buffer set; and Fisher-Payne Dip-Coater for applying surface coatings to paint panels.

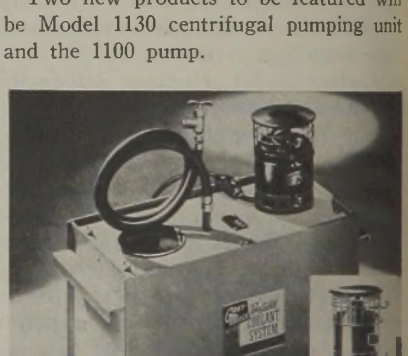
General Ceramics Company: New designs of ceramic equipment fabricated both of chemical stoneware and porcelain will be the feature of this exhibit. A large tower, for both reaction and absorption, will be shown. A ceramic heat exchanger with metal body and stoneware tubes will be exhibited. Another [illegible] of HCl absorption apparatus.

Some of the new developments, in smaller items will include penicillin rings used for cup assay test, porcelain "Neverstick" cocks, and stoneware Hills-McCanna valves in large sizes. A new line of acid proof cements and drawings showing acid proof construction will be displayed.

Glyco Products Co., Inc.: Among the products to be exhibited are several new materials which have recently been introduced. These include Ural Resin A, a stable water-soluble urea-formaldehyde resin which comes in the form of a heavy liquid; Glycaid, a non-ionic surface active agent which is used as a dye assistant and levelling agent; and Acrawax C Dispersion S 891 which is a 33⅓% stable dispersion of the high melting point synthetic wax Acrawax C. The latter material is of considerable interest as it is a fluid dispersion of the wax in a form almost as fine as an emulsion. The dispersing agent breaks down under heat, leaving the Acrawax C in a fine powdered form which can be calendered into textiles, paper, etc. for waterproofing purposes.

Gray-Mills Co. will demonstrate portable pumping units, industrial fluid refrigerating systems and a new pump particularly designed for corrosive fluids.

Two new products to be featured will be Model 1130 centrifugal pumping unit and the 1100 pump.



Although this unit is perhaps most widely used to apply coolants, it also has wide usage in the application of miscellaneous fluids and solutions.

Kimble Glass Company will have a representative display of glassware to meet basic and special requirements of research, analytical and control laboratories in essential industries and professions. Kimble Blue Line Exax Retested, Kimble Precision Normax graduated ware and Kimble K-Brand ungraduated ware will all be included.

Lapp Insulator Co., Inc. will display a complete line of porcelain equipment for process work. Of particular interest will be a 1" porcelain pipe line under pressure, having joint faces polished op-

tically flat and [illegible] a new porcelain raschig ring support plate offering twice the free space available in standard drilled or slotted diaphragms; porcelain valve specialties, safety valves, flush bottom valves, quick opening and armored valves; and newly announced porcelain plug cocks.

Leader Iron Works, Inc., equipment is too large and heavy to permit showing actual models. The exhibit will consist largely of photographic illustrations showing a variety of chemical processing equipment including heat exchangers, fractionating columns, jacketed kettles and special tank work.

Loeb Equipment Supply Co. will show a siphon bottle and can filling machine and Alsop portable electric mixers, glass lined tanks and filters.

The Lukens Steel Company booth will be set-up as a little theatre, and the following 16 mm. Kodachrome motion pictures will be shown:

"Head Work" (sound), which deals with the spinning and pressing of heads by Lukens Steel Company.

"The Manufacture of Lukens Clad Steels" (sound), which, as the name implies, deals with the manufacture of Lukens Nickel-Clad and Monel-Clad steels.

"World's Largest Plate Mill" (silent), which depicts the casting of 110,000 lb. ingot and its subsequent rolling on our 206" Mill. This picture also includes the spinning of one of the largest heads ever produced—over 18 ft. in diameter—and the pressing of head sections from 3½ in. steel.

Mallinckrodt Chemical Works: "Research and Development for Today and Tomorrow" will be the theme of the exhibit which will feature a variety of new organic products resulting from fundamental researches by Mallinckrodt chemists on ester condensations. Samples of many compounds will be on display and available for inspection. These will include malonic esters, alkyl carbonates, alpha-cyano esters, beta-ketoesters and oxazolidenes.

Also on display will be an interesting series of amino alcohol ester polymers. These range from liquid monomers to rubbery masses and show considerable promise as plasticizers for certain types of synthetic rubber.

In addition to the compounds already mentioned, the exhibit will include a series of pyridylmercuric compounds, which are new effective fungicides and mildewproofing agents. These compounds may be incorporated in textiles, felt, leather, cork, lacquers, paints, varnishes, paper, wood, rubber, synthetic resins and waxes. A comprehensive testing program is in progress and much technical information is available.

The Marathon Corporation exhibit will feature two somewhat unrelated lines.

The first of these will be the utilization of lignin reclaimed from paper mill wastes as represented by both lignin chemicals and lignin plastics. In connection with this portion of the exhibit it is probable that new lignin derivatives of unique chemical structure and interest will be shown.

The second portion of the exhibit will be devoted to industrial packaging and packages, some of which should be of considerable interest to the manufacturers and distributors of fine chemicals.

Merco Nordstrom Valve Co. will show a complete line of lubricated plug valves with emphasis on special alloy valves. Sectional cut-away models will be displayed to demonstrate the patented "Sealdport" method of valve lubrication.

Featured will be valves with "Merchrome" coating. This is a patented process of hard facing whereby the contact surfaces of plug and body are armored against extreme conditions of corrosion and erosion. Also to be shown are valves with extended shanks for use on very high or low temperature services.

National Carbon Company, Inc.: This exhibit will feature a demonstration of the new "Karbate" pump in operation. This will be a complete installation showing the method of connecting the pump to a "Karbate" pipe line, connected with various types of joints such as the new Van Stone connections and "Karbate" globe valves, expansion joints, elbows, etc. The liquid (water) will be pumped into a "Karbate" tank through a small concentric tube heat exchanger and recirculated continuously through the system. This demonstration will show how these materials can be adapted to almost any type of installation.

"Karbate" plate type heat exchangers will be displayed along with new models of "Karbate" bayonet type heaters.

The National Engineering Co., designers and manufacturers of mixing and handling equipment, will display the Simpson intensive mixer which features the mulling principle of mixing. This principle of mixing has proved itself very successful in the mixing of dry, semi-dry, and pasty materials, and at the present time many successful installations of this type equipment are now operating in the chemical and processing industries.

National Starch Products, Inc.: A striking new five-panel display, featuring how corn starch is made, will signalize this exhibit.

A dramatized and attractively lighted flow chart indicating the principal processes through which the corn kernel passes in becoming pearl, powdered, and thin boiling corn starch, dextrine, corn oil and cattle feed will dominate the main panel. This will be flanked by a diagrammatic cross section of the corn kernel and a panoramic photograph of National's refinery at Indianapolis, with interesting data on the magnitude of its operations.

The central panel will be supported on the one side by sections devoted to other starches and starch specialties processed by National for industrial uses, and on the other side by panels tying-in its starch refinery activities with the manufacture of adhesives.

The fact that National Adhesives produces every type of adhesive for every type of adhesion is stressed. Of special interest will be the panel devoted to its synthetic resin adhesives, which have found wide usage in war industries and which hold considerable promise for the peace-time future.

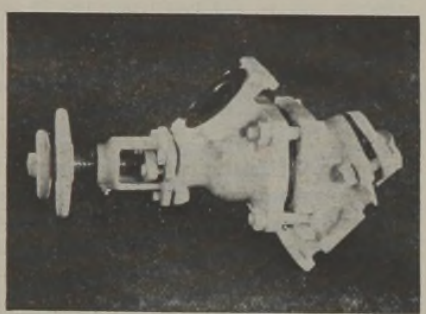
National Technical Laboratories: The central feature of the exhibit will be the new infra-red spectrophotometer for qualitative and quantitative analysis of hydrocarbons. National Technical Laboratories pioneered, with Shell Development Company, in producing the first commercial infra-red spectrophotometer which was widely used for hydrocarbon analysis. The newly announced model capitalizes on the wide experience gained in connection with the manufacture and application of the more than 75 instruments which have been manufactured. Among the outstanding improvements incorporated are a new energy receiving system employing a palladium bolometer and vacuum tube amplifier; an electronically stabilized Nernst glower as a source of radiation; a continuous wavelength scale covering the range 1.0 to 15 microns, with a 17 position stop mechanism for routine analysis, and a motor drive for automatic continuous scanning (available as an accessory); and thermostatted sample cells for gases and liquids.

Ohio Chemical & Mfg. Co.: The latest equipment designed for the control and storage of high pressure gases will be on display. This includes high and low pressure gauges, regulators, flowmeters, and needle valves useful for indicating the contents and reducing the pressure of compressed gases. A complete line of cylinders containing rare and common gases suitable for use in research and laboratory work will be on display also.

The Ohio Steel Foundry Company will exhibit several corrosion resistant castings made under the trade name "Fahrite".

The Pfaudler Co.: Exhibited for the first time will be Pfaudler's new line of acid-resisting, glass lined heavy-duty valves. These are now available in the

flush type, pop safety, globe type, and line type, in 1½", 2", and 3" inside diameters. These provide resistance to corrosive acids at high temperatures and pressures since the porcelain valve seats and plugs are free of pipe line strings. Regrinding and fitting of valve plugs can be done without special tools simply by turning a grind-in wheel. Interchangeability of valve bodies with the operating mechanism and porcelain parts permits the use of any valve for various uses. They can be attached to 125 pound cast iron or 150 pound steel flange fittings, since Pfaudler valve flanges have the same bolt circle and number of bolts.



In addition, Pfaudler will display for the first time one of several new types of stainless steel shell and tube heat exchangers. These include the internal floating head, packed floating head and fixed header designs, all of which will be available in stainless steel and other alloys.

Reichold Chemicals, Inc. will show some of the products which were developed during the war period and which will be applicable in the postwar era. One of these is plywood of as high as twenty-nine laminations, in which Plyophen was used as the bonding agent and which was cured by means of the new principle of electronics. Laminates made with a special Plyophen, which was used to impregnate a new high tensile paper developed by the Forest Products Laboratory, will be shown. This type of laminate gives exceptionally high tensile strength. The adaptation of certain war items will also be on exhibition, such as a casting phenol-aldehyde resin which is replacing metal in certain die operations, and some of the more interesting and intricate materials made for military use which may have application later.

St. Regis Paper Company: Multiwall paper bags and bag filling and closing equipment will be shown by this organization.

The display will include samples of over 300 products now packed in paper shipping sacks. Valve bag packing machinery and bag sewing equipment will be shown. New developments include special papers for incorporation in bags and special bag construction which will withstand submersion in water for 24 hours and other rigid tests. Also shown will be multiwall paper bags used by U. S. Army, U. S. Navy and other government agencies for shipment of various products overseas.

Schaar and Company: This exhibit will feature many new and improved pieces of laboratory equipment, all of which have been designed especially for the modern laboratories.

On display will be a group of instruments which have been of increasing importance in laboratories everywhere during the past few years. These will include the Lumetron photoelectric colorimeter and fluorescence meter, the Photovolt reflection and gloss meter, the Brabender moisture tester, the Brabender recording viscosimeter, laboratory furnaces, ovens, hot plates, and many smaller pieces of equipment. Also shown will be glassware, rubber goods (the new synthetic will be included), porcelainware, and reagent chemicals.

Selas Corporation of America: Four new developments, all based on specialized ceramics and research disclosing unusual properties and applications, will be featured.

Operating display models will show unusual principles of operation and construction details of the "Liqui-jector", a device for automatically and continuously removing condensate from compressed air or gas lines—utilizing the surface tension of the condensate to effect complete phase separations of gases and liquids without moving parts, and to eject liquid phases from the system through open drain lines never requiring attention or maintenance.

Selas systems will be demonstrated for automatic liquid-liquid separations during pressure flow through treated microporous membranes at commercial rates. An operating pilot plant will illustrate techniques of aqueous phase extraction from hydrocarbon streams—continuously and with full phase effectiveness. A gasoline-water closed-system model in glass will clarify new concepts and principles.

Also shown will be combustion systems for refinery tubestills and continuous liquid heat treating processes, which permit increased control over heat transfer rates and time - temperature - pressure cycles.

A scale model of a 50 million Btu heater and actual operation of ceramic-cup radiant gas burners on which the new development is based will permit interpretation in terms of particular production objectives.

The first presentation will be made of results of 3 years' research on porosity, pore distribution, flow characteristics, and other properties of microporous porcelain filtering media.

The Claude B. Schneible Company, engineers and manufacturers of Schneible Multi-Wash Collector Equipment for the removal of dust, fumes and vapors from contaminated air or gas, will display an operating Collector, constructed with a glass shell and stainless steel impingement elements, illuminated to show the Multi-Wash action. Photo-murals of installations will provide a booth background.

Sparkler Manufacturing Company will show its 18" glass filter in operation in the new construction using stainless steel.

The improvements which have been made in this equipment include the cartridge assembly of plates as standard equipment, an exclusive construction of the filter plate, and a new and improved cover design. The filter plate has been standardized by building the outside perimeter of the plate of ¼" bar stock ring to render it less subject to damage from rough treatment.

Trimount Instrument Company will display a complete line of well type and U-type manometers, as well as micromanometers for measurement of very low pressures. Also included will be airflow measuring equipment such as is used in aircraft engine testing.

A new product which will be on demonstration publicly for the first time is a dynamic pressure guage and allied carrier equipment.

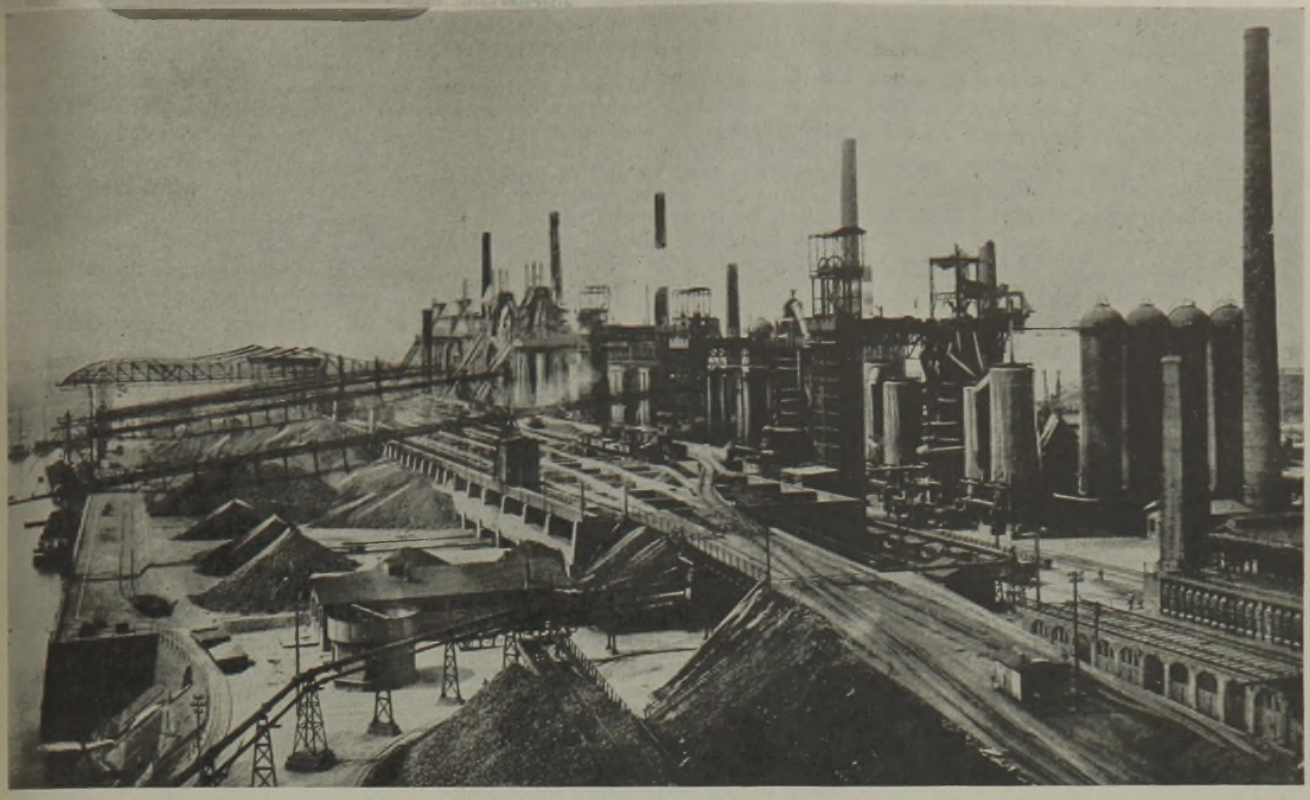
Waukesha Foundry Company will show Waukesha positive displacement type pumps of ball bearing construction, with all parts of the pump head which contact the product of stainless steel construction.

Also on exhibition will be many rough and polished, and machined and polished castings of "Waukesha Metal." "Waukesha Metal" is a solid white, corrosion resistant, high nickel content nickel alloy.

The Welch Scientific Company will display at their exhibit the complete line of Duo-Seal high vacuum pumps including the new and faster model #1403 having a free air capacity of over 1700 ml. per second. Also exhibited will be stainless steel laboratory balances, motor stirrers, electrical meters, hydrogen ion equipment, spectrometers, and many other laboratory and industrial pieces of apparatus.

Hasco Valve & Machine Company will show a variety of stainless steel valves and fittings, made of KA2SMo, and some valves of similar design made of Hastalloy. Also on display will be some direct contact heaters. No large ones are available for the show, but these have been built in capacities up to 3500 g.p.m. for heating sulphite liquors.

Glycerine Producers' Association will introduce its new booklet which lists 1600 specific uses for glycerine. The display will dramatize with human figures a variety of these applications.



The giant Krupp steel works at Essen, Germany.

An Engineering Proposal for Control of POSTWAR GERMANY

CONTROL OF GERMANY'S FACILITIES for obtaining gasoline, nitrogen, explosives, light metals, alloy steels and aircraft at a level sufficient to provide peacetime requirements only, is all that is necessary to eliminate that nation's capacity ever to wage another war, according to this joint statement by the presidents of five American engineering societies* in reply to Secretary of Treasury Morgenthau's proposal to destroy all German industry.

ON THE basis of our experience in engineering and industry, we consider that the proposal of the Secretary of the Treasury for the control of postwar Germany by the destruction or virtual dissolution of her industrial plant is economically unsound and contains the seeds of a new war.

We believe that the part played by over 75,000 members of the above Societies in the design, engineering and production of the implements for our armed forces in quantities adequate for victory, as well as our long experience as engineering industrialists in peacetime, entitle us to speak on this subject of paramount importance to the peace of the world.

In general, the Morgenthau proposal is indefensible because the destruction of the machines, utilities, tools, materials and other essentials for peacetime living penalizes not only the owners of the materials destroyed, but the world as a whole.

Specifically, the fundamental fallacy of of the proposal for the indiscriminate destruction of the German industrial system is that it fails to differentiate between the wartime and the peacetime economy of the Reich.

We are for one simple, clear objective—an effective industrial means to keep Germany from starting another war.

This objective should not be confused, especially before the war is even won, with the appropriate punishment of Germany or with the international arrangements for the long future to be made around the peace table by the representatives of the Allied Nations after victory is achieved.

This statement, therefore, deals not with broad, complex postwar questions of diplomacy and international policy, but simply and solely with the suggestion for the indiscriminate dismemberment of the German industrial economy.

"Unconditional surrender" implies disarmament of the German armies, the surrender of all arms, munitions, airplanes, and other ordnance materiel in stock piles or in process. It also should include the elimination of all German war production facilities such as aircraft plants, munitions plants, submarine works, etc., and the control of raw materials required by war industries.

We make no suggestions as to the overall international treatment of Germany after surrender, but confine our statement to the physical disarmament of Germany and to the subsequent steps to make it impossible for her to prepare industrially for another war.

With this sole aim in view, however, we must recognize that the German nation cannot arbitrarily be kept in economic and industrial subjugation. To do so would create an economic vacuum in Europe which sooner or later would be filled, either by the German nation itself or by the collaboration of Germany with other nations or individuals who would profit financially or politically, or both,

* George Granger Brown, president American Institute of Chemical Engineers; Chester A. Fulton, president American Institute of Mining and Metallurgical Engineers, Inc.; Robert M. Gates, president The American Society of Mechanical Engineers; Malcolm Pirnie, president American Society of Civil Engineers; and Charles A. Powel, president American Institute of Electrical Engineers.

by helping to develop Germany into a good market.

Germany must have its chance for recovery along peaceful lines after the war. Such recovery cannot come about through an economy wholly agricultural, even if that were practicable; or without industry to produce both for German needs and for the reconstruction of other nations of Europe; or without markets.

It is farthest from any suggestion of a so-called "soft peace" to recognize this fact. Germany must be disarmed and that part of its industrial plant devoted to armament destroyed. But it is equally necessary to create a plan which will (a) allow the German people to live a reasonably normal life; (b) permit the retention of German industry to help in the vast task of restitution and reconstruction, and (c) keep an economic balance in Europe.

This, we are confident, can be done without giving German industry the independence it would require to prepare for war again, either secretly or overtly.

We recommend, therefore, not an indiscriminate destruction, but a selective restriction and control of German industry.

Germany and Europe and the world need the contributions which the German nation, freed from the domination of war lords, can make in the future, as it has made in the past, to the development of modern technology and scientific and industrial advance.

If allied controls force the German people into an unnatural existence and hold back national economic development in Europe, they will become even more unstable and subject to pressures and possibilities containing the explosive seeds of another war. We should plan, therefore, to create a minimum of controls and to avoid abnormal social dislocations.

Discriminating between peace and war economy, there are at least six industries which are the most essential for war purposes, and the least essential for a peacetime economy. They are: synthetic gasoline, for which there is no economical peacetime use; manufacture of explosives; airplane production; use of aluminum and magnesium; high alloy and electrolytic steels, and nitrogen fixation, all of which must be vastly expanded for war.

The labor employed by all these six industries in peacetime is less than two per cent of the total German labor force.

Therefore, Germany's capacity to make war would be eliminated by the following steps in regard to its industrial economy:

1. Eliminate all synthetic oil capacity and prohibit the reconstruction of plants and the importation of oil beyond normal peacetime inventories.

This would destroy the major part of Germany's internal oil resources. Coal is the raw material for synthetic oil. It is plentiful in Germany and only a small per cent is used in synthetic oil plants. It is not readily controllable in the Reich.

2. Eliminate 75% of Germany's synthetic nitrogen plant capacity and prohibit reconstruction of plants and all importation of nitrogen compounds.

This will leave a capacity in Germany ample for peacetime nitrogen requirements. The principal ingredient of explosives is nitrogen. The relatively small amount of dynamite required for mining, quarrying, etc., should be under import control.

3. Eliminate 50% of Germany's steel-making capacity in those categories of plants which are most capable of producing essential war materials such as heavy forging, electrolytic and high alloy steels. Manganese, chromium, nickel and tungsten are practically non-existent in Germany. Also prohibit importation of iron ore, flux material, steel and steel products beyond normal peacetime inventories.

4. Eliminate aircraft plants and equipment. Aluminum and magnesium are the raw materials required for airplane manufacture. There are no important bauxite deposits in Germany. Importation should be prohibited. Aluminum and aluminum plants should be destroyed and importation of aluminum ingots beyond prewar peacetime needs be prohibited.

If any *one* of these steps were taken, war could not be waged nor prepared for. Taking all four would afford ample insurance against war.

By attacking the problem from this angle, it would be possible to set up uncomplicated, non-political controls to prevent the rearmament of Germany, but at the same time make it possible for the

Making synthetic rubber in one of the I. G. Farbenindustrie plants in Germany

German nation to meet its own peacetime needs and thereby prevent her from becoming a drag on the economy of all Europe and a breeder of future wars.

Fifty or sixty per cent of the German oil and gasoline supplies have come from synthetic coal distillation plants scattered throughout Germany. A third of her requirements have been derived from the Polesti oil field in Rumania. The synthetic plants produce inferior products at a cost about four times world prices. Their operation has required Government subsidy. These [illegible] demolished.

Eighty per cent of nitrogen is produced synthetically from the air, but it could not be produced without reconstruction of special plants or without Chilean nitrates which Germany must import.

Germany could not make steel, produce oil products or make munitions of war without imports of bulky, easy-to-police materials. Hence policing the curtailment of potential war production would consist of (a) controlling the imports of, or the accumulation of stocks of such bulk materials as petroleum, pyrites or brimstone, manganese, chrome ore and iron ore, steel, aluminum and nitrogen compounds, and (b) requiring periodic inspections of plants and special revocable permits of construction or of operation of manufacturing facilities for any purpose.

Further insurance could be secured by transferring the ownership or management of nitrogen and steel production plants into allied hands.

Under such a plan Germany still could reestablish a productive economy for nonmilitary purposes. It would leave Germany economically free to expand along peaceful lines, and give her a competitive position in international commerce with other nations burdened with high debt charges, the maintenance of armies and navies, rehabilitation costs, etc.

A large part of the determined peacetime productive capacity of Germany should be turned immediately, and for a long period, to the manufacture of restitution materials for war-damaged countries. The percentage of industry turned to this purpose should be the maximum possible without reducing the people to a submarginal level.

When the Allied Nations presently have rendered Germany harmless by disarmament for the next ten or fifteen years, a program of permanently disarming her must look not to 15 but to 50 years. It is unrealistic to assume that any program put forward to take the sting out of Germany will not require supervision and vigilance for a long period in the future.

The essence of this program is to remove from Germany the plant and source materials essential for war purposes, but to do it with the least disturbance to the normal economy of Western Europe.

Engineers play an essential part in providing employment in the economy of any nation. In this country especially they see their function not in narrow, professional terms, but in providing jobs and in promoting industrial production. They do not believe that crippling the normal peacetime industrial economy of any country, even an enemy nation, can promote world peace and reconstruction. On the contrary, such a policy jeopardizes the peace and progress of all. We are opposed to any plan which would make postwar Germany a drag on the economy of all Europe, if not of the world, and a breeder of future wars.

Sampling tank car air for combustible gases.

Taking precautions in handling tetraethyl lead.

Combating HEALTH HAZARDS In the Chemical Industry—Part II

by WILLIAM J. BURKE, Chemical Engineer
Division of Industrial Hygiene, New York State Department of Labor, New York, N. Y.

Illustrations courtesy Standard Oil Co. (N. J.) and Mine Safety Appliances Co.

THE RESPONSIBILITY FOR SAFETY EQUIPMENT AND EDUCATION rests with management. In the second and concluding instalment of this article the author points out what management should provide in the way of medical and engineering control, and how these services should be used to secure the maximum benefit.

ALTHOUGH there are many health hazards associated with the manufacture and use of industrial chemicals, experience has shown that irrespective of their degree of toxicity, their harmful effect can be reduced to a negligible amount by proper precautionary measures.

These measures fall into two categories: those which should be provided by the employer and those which should be observed by the employee. The latter have been discussed in the preceding instalment.

It is the employer's responsibility to provide all the reasonable and necessary measures required for the protection of his workers. The following is a brief description of some of the more important protective measures which should be provided by management for the protection of workers against chemical health hazards.

Medical Control

Proper medical control, i.e., the services of a full- or at least a part-time industrial physician, depending upon conditions and the number of workers involved, can institute many effective measures. It is unfortunate that most small plant do not have the benefit of such services. Such plants, however, can receive considerable assistance by calling on the services of governmental agencies or outside physicians specializing in industrial hygiene work. In plants more adequately staffed, the following are some of the medical duties other than those previously described that can be performed by the resident plant doctor:

(a) Assign workers to jobs which they are physically and mentally constituted to handle properly.

(b) Examine periodically those workers who are exposed to potentially toxic materials in order to detect any early signs of injury in order that necessary remedial measures can be provided.

(c) Inform workers of any physical defects or illness of non-occupational origin requiring treatment by an outside specialist or family physician.

(d) Cooperate with the safety or plant engineering departments in the initiation of proper safeguards against exposure to harmful substances.

(e) Make arrangements with the management to be informed of all new in-

dustrial chemicals purchased or manufactured in order that they may be evaluated as to their toxicity and that proper safeguards be provided for their use.

(f) See that the first-aid room is properly equipped both as to personnel and materials.

(g) Provide first-aid instructions to a select number of workers and also instruct all workers as to the value of first-aid treatment.

(h) Institute an industrial nutrition program. This should include adequate eating facilities, a proper lunch period, and a food education program.

(i) See that adequate hygienic facilities such as drinking water, washing facilities, toilets, locker rooms, etc., are provided and maintained in proper condition.

To sum up, it is the responsibility of the industrial physician to place the worker in the job for which he is best fitted and to provide the necessary medical control to protect his health while on the job.

Engineering and Safety Control

Good engineering and safety control should not be limited to specification, design, and installation of equipment, but it should also include means for the protection of workers from injurious exposures which may result in the operation of this equipment. Some of the important control measures used to provide such protection may be classified as follows: (1) ventilation, either localized or general or a combination of both, (2) substitution of non-toxic substances, (3) isolation of hazardous operations, (4) mechanization of processes, (5) automatic air testing equipment, (6) provision of proper personal protective equipment, (7) education and supervision of workers, and (8) proper maintenance and housekeeping.

Ventilation. This may be of a general or localized nature or a combination of both, depending upon conditions of operation. The fundamental distinction between general and localized ventilation is that in the former, pure air is introduced into the air of the workroom to dilute the air contaminants to a safe level; while in the latter, these impurities are removed at their source.

Although general ventilation does not provide as positive a method of control as local ventilation, it may afford a convenient method where there exists a general release of impurities of a low order of toxicity. There are two means of general ventilation: mechanical—provided by fans or blowers, and natural—accomplished by air movement through open windows, doors, louvered roof ventilators and other structural vents.

Because of their effectiveness in removing the air contaminants at their point of generation or dissemination, local exhaust systems are the most widely used means of ventilation. The conventional local exhaust system for the control of air-borne chemical impurities consists of an exhaust hood or enclosure, ducts, an exhaust fan and, where necessary, an air-cleaning unit. The air-cleaning unit may comprise such types as a cyclone, an electrostatic or cloth screen separator for particulate matter, an air washer for mists, or a chemical absorbent for gases and vapors. Although fans of the propeller or centrifugal types are the most common exhausters, ejector-type exhausters operated by air, steam, or water are sometimes used, especially in plants where a high explosive hazard exists.

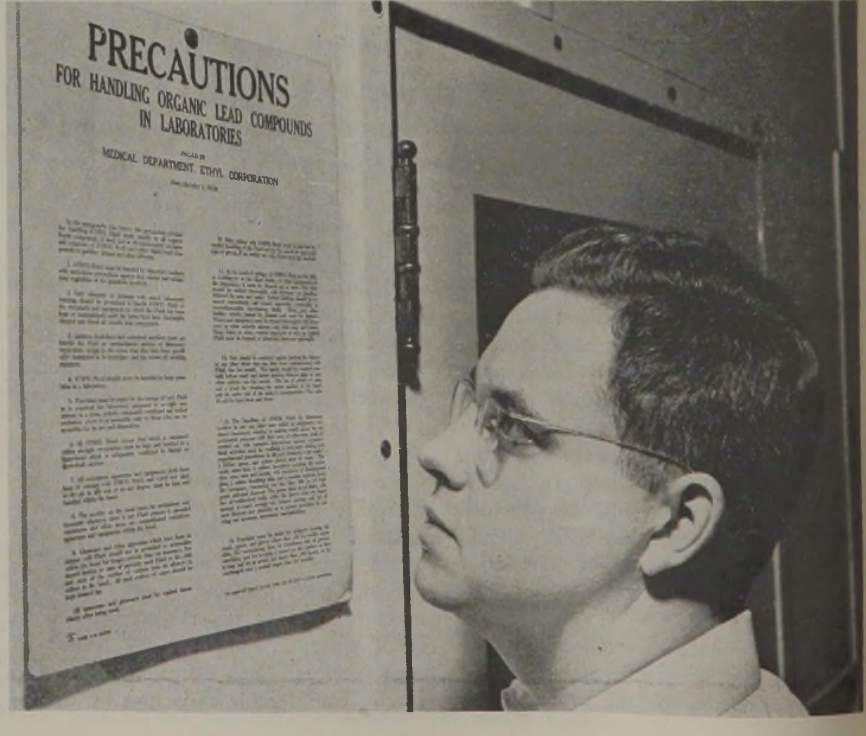
Local exhaust systems may vary considerably from the conventional type since the design of a proper system is governed by specific requirements. Some of the factors governing their design are the type of operation and number of units to be exhausted, the physical and chemical nature of the impurities to be removed, whether the air removed is to be recirculated into the workroom and also whether it is necessary or desirable to recover the material removed in the exhausted air. The design of a proper exhaust system is in many cases a complicated engineering problem and should accordingly be handled by ventilation engineers. It is our experience that, in general, those who are not engineers do not appreciate the technical problems associated with the design of an exhaust ventilation system. As a result, they often install a system which not only does not do the work required of it, but frequently costs more than one of proper design.

Substitution. One of the first considerations in the use of highly toxic chemicals is the possibility of substitution with others of non-toxic or less toxic nature. An investigation of the problem may reveal that such a substitution is feasible, or that although the substance cannot be completely replaced, its quantity may be reduced considerably by partial replacement. Highly toxic substances have been replaced by less dangerous materials in lead-free paints and poreclain enamels, and in benzol-free solvents for lacquers, paint removers, printing inks, rubber cements, and the manufacture of artificial leather. Other examples are mercury-free carroting solutions and the substitution of petroleum naphtha for carbon tetrachloride in the dry cleaning industry.

Isolation of hazardous operations. In many plants large numbers of workers employed at safe operations are needlessly exposed to harmful air contaminants arising from hazardous operations requiring the services of only a few workers. This condition exists because of a faulty lay-out wherein the safe operations are situated near the hazardous ones. The number of workers involved in the exposure can be greatly reduced simply by isolating the hazardous processes in separate rooms. This is especially advisable where no other method of control is practical. Protection of the few workers required to attend the dangerous operations can be provided by suitable devices.

Mechanization of processes. Another means for eliminating or reducing harmful exposures is the substitution of automatic or semi-automatic machinery for manual operations. Such a substitution

Safety rules should be posted conspicuously.



Periodic blood tests by the company physician will reveal systemic poisoning.

may not only afford replacement or reduction of workers engaged in hazardous operations but may also permit the operations to be totally or partially enclosed. The possibility of using such mechanical operations would necessarily have to be governed by the limitations of the processes and expenses involved. Yet the possibility of making such changes should not be overlooked since there are numerous instances where such changes have not only improved working conditions, but have reduced manufacturing costs as well. Instances where automatic or semi-automatic machinery are used successfully are the unloading of bulk materials from cars, degreasing operations, paint spraying and dipping operations, the pasting of lead grids for storage batteries, soldering radiator cores, and the unloading of viscose churns.

Automatic air testing control equipment. The development of highly sensitive automatic photometric and other electrical recording devices has provided a relatively new tool for detecting and measuring some of the chemical impurities in the workroom atmosphere. These instruments furnish a means for the continuous sampling and recording of such chemicals as carbon bisulfide, carbon monoxide, hydrogen sulfide, mercury, nitrogen dioxide and sulfur dioxide. They are particularly valuable in the control of operations involving any of those chemicals where conditions warrant a continuous check on their presence in the general environment. In addition to recording continuously the amounts of the chemicals in the atmosphere, these testing units may be equipped to sound alarms or to provide additional ventilation whenever these impurities exceed a set standard.

Personal protective equipment. Proper protection of chemical workers often necessitates the wearing or use of various types of personal equipment such as protective clothing, goggles, respirators, gas masks, and various other devices. These may vary from such extremes as the use of protective creams on the hands to guard against contact with chemicals likely to cause skin irritation to the use of gas-proof clothing and hose mask for protection against absorption of hydrogen cyanide through the skin and lungs.

Each individual process must be studied to determine which type or types of personal protective equipment should be issued to the employees to protect them from harmful or potentially harmful exposures. The National Safety Council, the U. S. Bureau of Mines, the National Bureau of Standards, and manufacturers of safety equipment, among others, have issued bulletins giving information and advice on the selection of proper equipment for various types of exposures. When this equipment is necessary, it is the duty of the employer to provide it and to supervise its proper maintenance and use.

Education and supervision. Much can be accomplished by proper education and supervision of the workers. These measures have a special significance under present operating conditions and especially in plants employing workers having no previous industrial experience. While special care should be given to instructing and supervising these new workers, it is necessary that all should have a complete understanding of actual or potential hazards associated with their work and a thorough knowledge of safe working practices. It is not only fair to the worker to inform him of the injurious nature of the chemicals handled but it is also good business: a well informed worker is usually a safer worker. Most of them can be relied upon to follow instructions, but there are always certain individuals who, either knowingly or through carelessness, will at times disregard established safety rules. Such a worker is the problem-child of industry and requires more education and supervision than the average.

The education of a worker in a large

plant is usually the function of a well organized committee of specialists; consequently, he is usually better informed than one engaged in a small plant where such a committee does not exist. Educational literature on the toxicity and use of many of the common chemicals is therefore particularly valuable for small plants. The United States Public Health Service, the Division of Labor Standards of the National Department of Labor, the National Safety Council and various divisions of industrial hygiene in state departments of labor and health are helpful sources of informative literature.

Maintenance and housekeeping. To allow well designed equipment capable of giving safe performance to become impaired in its operation because of lack of proper maintenance is certainly deplorable; yet this condition occurs often, especially with regard to respiratory protective equipment and to a lesser degree in connection with exhaust ventilation systems. It is just as essential to keep up protective equipment as it is to care for the processing units. The proper care of respirators requires that they be cleaned and inspected after each use by some person having a thorough knowledge of their proper maintenance, and that any defects be remedied before the equipment is allowed to be used again. When not in use, they should be stored under conditions which will not allow them to become contaminated. They should be sterilized frequently and always before being worn by another worker.

A definite plan should be instituted for the periodic inspection of the exhaust system by some competent person. Lack of sufficient air velocities either for the capture of the air-borne material in the exhaust hoods or transporting velocities in the exhaust air ducts or piping may result from some of the following causes: (1) missing blast gates or open ends in ducts; (2) too infrequent cleaning of cyclone separators or cloth filters; (3) excessive accumulation of dusts upon fan blades or in ducts; and (4) hoods or ductwork so badly dented that they are practically collapsed. Even blocked and punctured ducts have been observed in exhaust ventilation systems. It is good practice to check frequently the rate of air flow into hoods and also the velocity of the air in the piping.

Good housekeeping is essential for the control of exposure to poisonous dust. Such dust if allowed to disperse into the workroom atmosphere may eventually settle on overhead structural members such as trusses and beams, or on processing equipment, or on the floor of the workroom. The dust on the structural members and processing equipment may be dislodged by a sudden jar or vibration and thereby be recirculated into the air, or it may be stirred from the floor by trucking or walking. Various means are used for the removal of toxic dust, but the best method is usually by vacuum cleaning. This may be accomplished by either a portable vacuum cleaner or a built-in system. Compressed air should never be used in cleaning, nor should dry sweeping of the floor be permitted during working hours; both of these methods create dust clouds in the workroom. Suitable receptacles should be provided for waste materials of various kinds, and materials and tools should be kept in proper storage places. A well maintained, clean and orderly plant is a fairly good indication that both management and workers are sincerely interested in safety measures.

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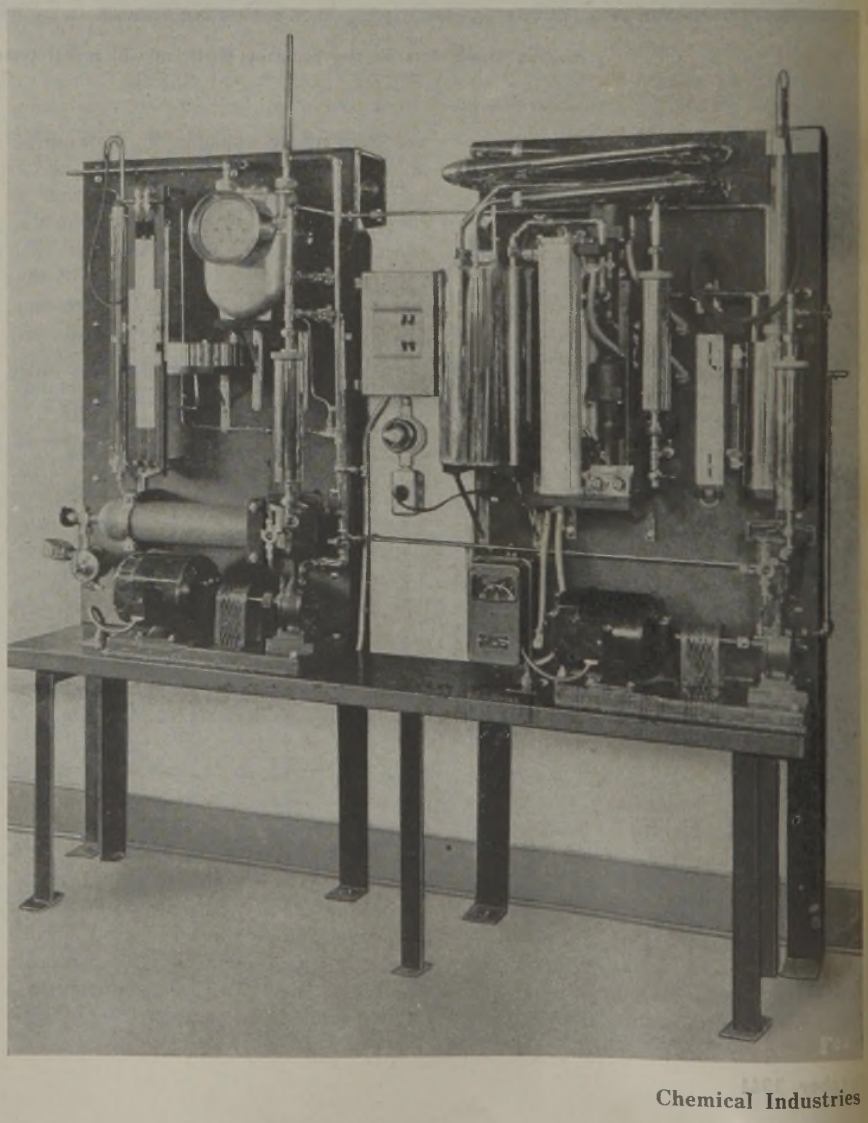
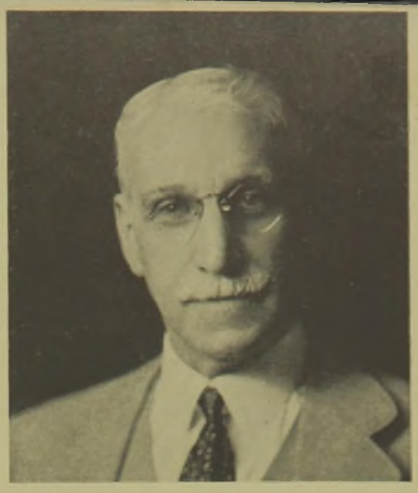
Instrument for measuring and continuously recording carbon monoxide concentration.



HEADLINERS in the NEWS

ROBERT BRINTON HARPER, vice president of the Peoples Gas Light and Coke Company, Chicago, will receive the Honor Scroll award given by the American Institute of Chemists.

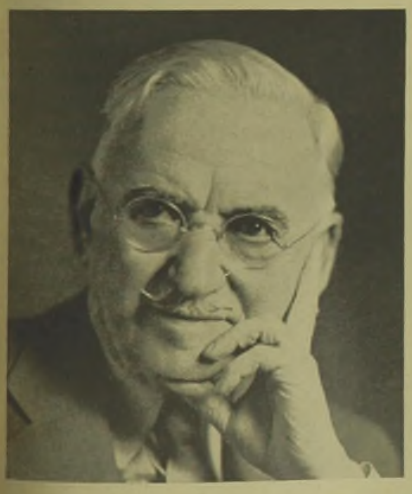


DR. LOUIS A. OLNEY was the first recipient of the Olney Medal, named in his honor and given by the American Association of Textile Chemists and Colorists at its annual meeting.

ROBERT J. GOODRICH has been named manager of the E. I. du Pont de Nemours & Co. Chambers works in Deepwater Point, N. J., principal plant of the Organic Chemicals Dept.

A. K. HAMILTON has been named vice president and general manager of the Pennsylvania Alcohol & Chemical Corporation and the Siboney Distilling Corporation.

DR. LEONARD H. COHAN has been appointed director of research by Continental Carbon Co. in conjunction with its expanded program. Dr. Cohan has been chief chemist since 1942.



DR. MAXIMILIAN TOCH, internationally known paint technologist, will be honored at a testimonial dinner of the New York Chapter of the American Institute of Chemists.

DR. ELMER K. BOLTON, chemical director of the du Pont Company, has been chosen by the American Section of the Society of Chemical Industry to receive the Perkin Medal.

R. P. RUSSELL, vice president of the Standard Oil Development Company, which operates the Esso Laboratories, was named president upon the recent resignation of Frank A. Howard.

Penn Salt Completes Whitemarsh Lab

Conversion of the former Stotesbury mansion in Chestnut Hill, Pa., into research laboratories, undertaken a year ago by the Pennsylvania Salt Manufacturing Company, has been completed. They were formally opened on October 4, at which time groups from various fields of science, industry and education were invited to Whitemarsh and conducted through the laboratories. The building, surrounded by its beautiful formal gardens, is shown at the left.

One of the rooms in the former mansion is utilized for seminars and discussion groups. Here a group of Penn Salt research workers participates in a discussion of research problems.

The original building contained 130 rooms, 80 closets and 29 baths—most of them equipped with gold-plated fixtures. Above is one of the organic research laboratories.

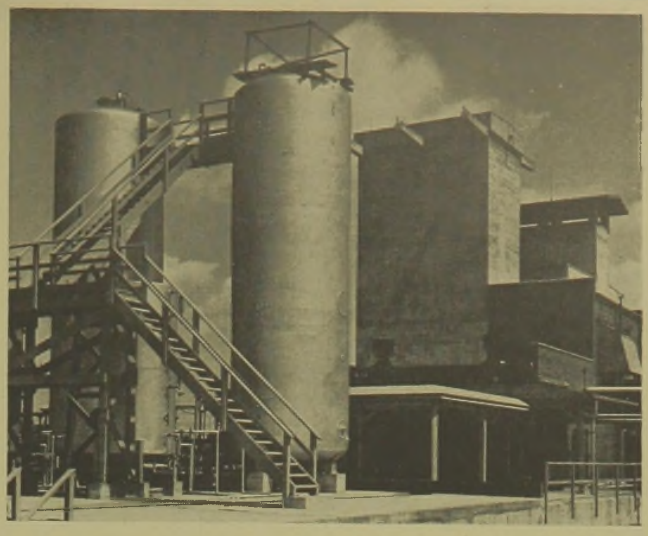
A sizable proportion of the Company's research deals with paper and pulp chemicals. Some of the special equipment used for these investigations is shown in the pulp and paper laboratory.

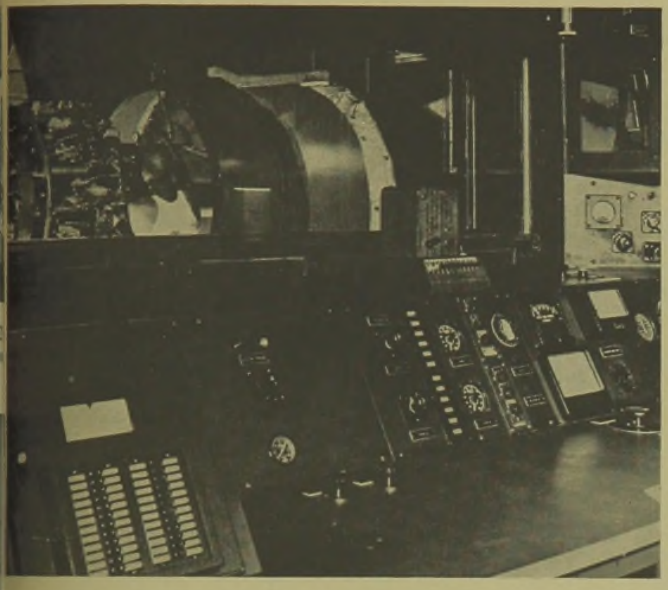
The library is in one of the first-floor rooms. All the rooms on the first and second floor have large fireplaces, and a number of them have gold-leaf paneling on the walls.

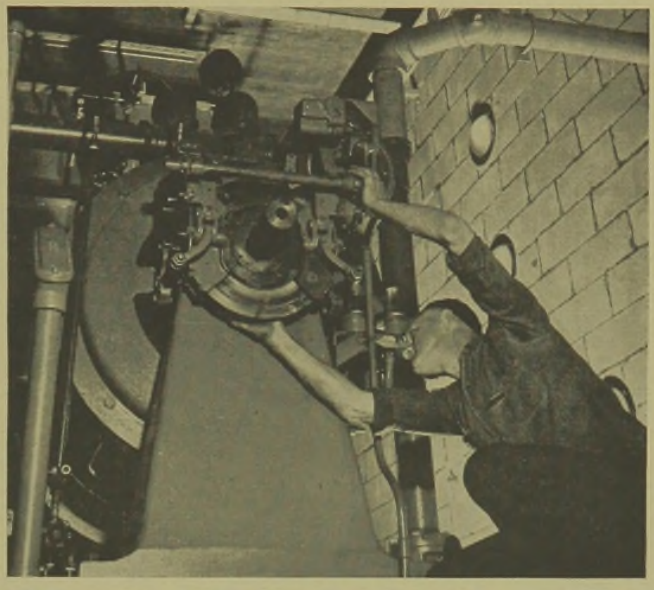
Left to right are the Penn Salt officials who are directing the work of the laboratories at Whitemarsh: Dr. S. G. Ogburn, Jr., manager of the research and development departments and head of the Whitemarsh laboratories; A. E. Gibbs, advisory technical director in charge of the patent department; Walter S. Riggs, director of development; and Dr. William A. LaLande, Jr., director of research.

Esso Builds Fuel Testing Unit

The Standard Oil Company of New Jersey put into operation its $500,000 aviation fuel testing unit last month. Laboratory and small-engine data cannot be extrapolated with certainty to flying conditions, and the new unit is designed to shed additional light on the correlation between fuel properties and engine performance. These views show the fuel tanks behind the building housing the unit, the dynamometer which measures the horsepower and frictional resistance of the engine, and some of the controls and instruments in front of the window looking into the engine cell.



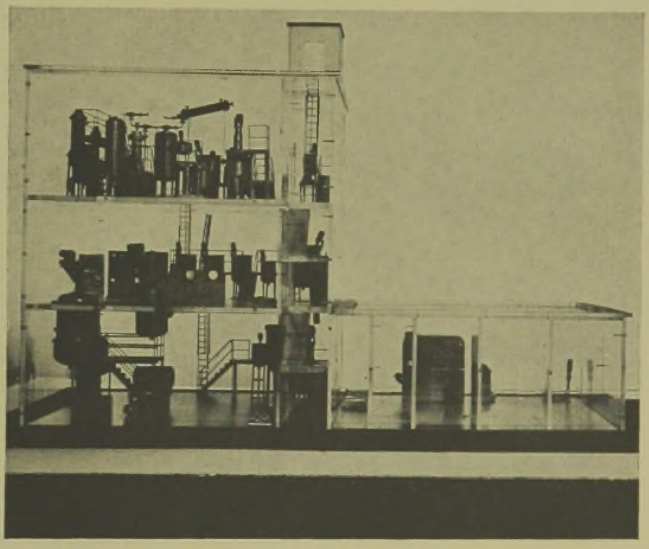




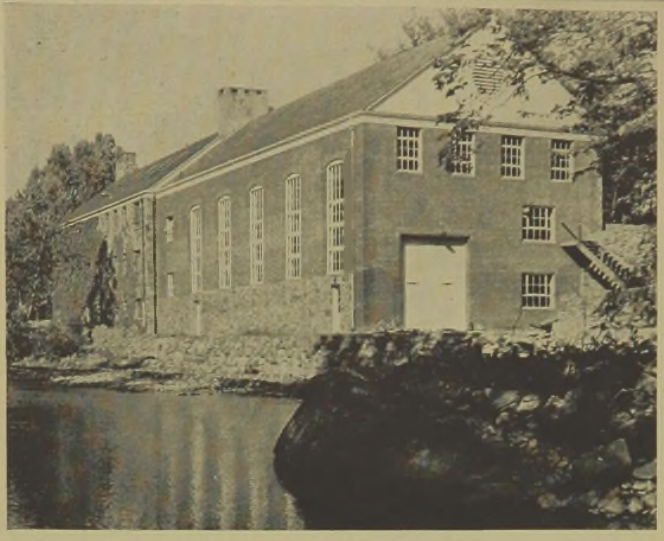
Hero Honored

Raymond F. Evans (left), vice president and general manager of the Diamond Alkali Company, presents Col. Donald M. Blakeslee with a watch at a testimonial dinner in his honor. Col. Blakeslee was a Diamond Alkali employee before he entered the service.

Plexiglas Model



Plexiglas was used by the Display Studios of Pittsburgh to construct a scale model of a synthetic rubber plant for the Blaw-Knox Co. The transparent walls, floors and partitions aid in visualizing the plant layout and in placing efficiently the operating units.

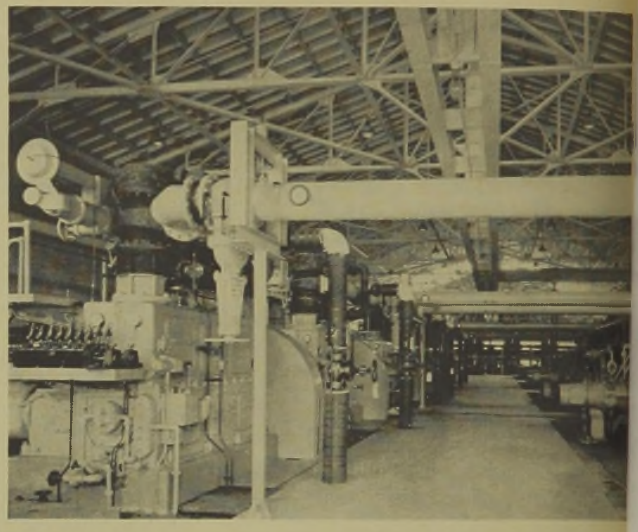


Dorr Opens New Pilot Plant

The new Westport, Conn., pilot plant was put into operation recently by the Dorr Company. Its facilities, together with its operating staff, is available to all organizations, large and small, who have projects in the development or demonstration stage. It supplements the work of other research groups and obviates the necessity of their building units which might be of no further use after the completion of an experimental program.

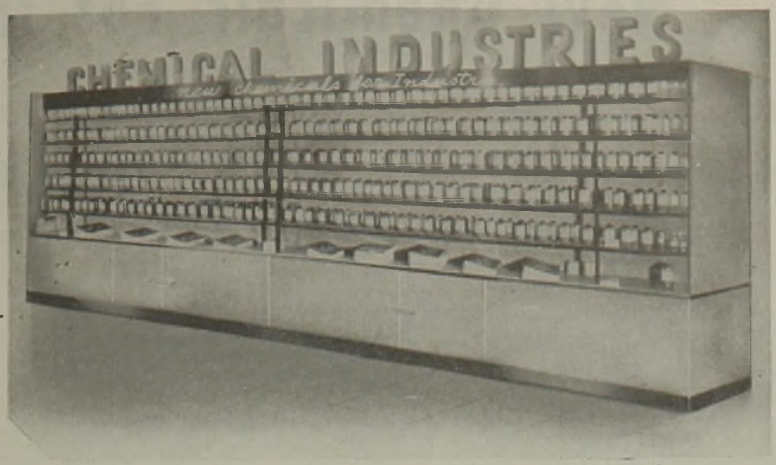
Mathieson Operates Ammonia Plant

A newly completed ammonia plant, built by the Defense Plant Corporation at Lake Charles, Louisiana, is operated by the Mathieson Alkali Works. The plant is one of the two largest in the country producing ammonia from natural gas. The ammonia is now being used to make explosives; after the war the plant is expected to produce fertilizers and ammonia for refrigeration.



Neville Company Plans Postwar Marketing

Postwar marketing was discussed by officials and sales agents at the Neville plant. Standing left to right are P. E. Calo, D. D. Bradley, T. W. Ashley, E. P. Lambert, V. L. Roberson, E. F. Wilson, George Senn, O. E. Goetz, C. L. Small, Dr. J. H. Lux, C. L. Hueston, R. L. Ulrich, J. H. Calo, D. L. Marsh and W. F. Eberle. Bottom row, kneeling, are company officials J. M. Spatz, H. N. Dauler, L. V. Dauler, J. W. Westhead, E. G. Isenberg, J. G. Hatman, H. J. Shearer, R. M. Lauderbaugh and L. M. Geiger.



NEW CHEMICALS FOR INDUSTRY

★★ The 1944 National Chemical Exposition theme, the "Great Transition Period," finds one of its most significant expressions in the "New Chemicals for Industry" display and catalog of new products developed by CHEMICAL INDUSTRIES advertisers during the past two years.

This year the collection has mushroomed to new proportions, a testimony of the intense research activity of the nation's chemical industry during these war years, and a harbinger of their intended contribution to better living in the future.

Samples of the "New Chemicals for Industry" described on the following pages will be displayed by CHEMICAL INDUSTRIES at the Third National Chemical Exposition to be held in the Chicago Coliseum, November 15-19. The descriptions will also be reprinted in a special supplement to be distributed by CHEMICAL INDUSTRIES at the Exposition.

We invite you to visit us at Booths 128 and 129.

New Chemicals For Industry

A catalogue of New Chemical Products introduced during 1943, 1944 by the advertisers in Chemical Industries Magazine and displayed at the Third National Exposition of Chemical Industries, Coliseum, Chicago, Ill., Nov. 15 to 19, 1944

ACCELERATOR S-288

Sp. gr., 1.13. Suggested Uses: An alkaline plywood glue accelerator developed for use with plywood glue S-273 in the proportions of 100 parts glue to 6.5 parts accelerator. U. S. Industrial Chemicals Co.

ACCOFILM D

A new resin used for leather finishing which produces a permanently flexible, tough film with good adhesion; an excellent binder for pigments. American Cyanamid & Chemical Corp.

ACETOPROPANOL

$CH_3C(=O)CH_2—CH_2—CH_2—OH$. Mol. wt., 102.13. Appearance: Pale yellow liquid. Odor: Slight, pleasant. Boiling point @ 730 mm., 208°C. Sp. gr. 1, @ 25/15.6°C., 1.003. Solubility in water: Miscible in all proportions. A very versatile compound giving all the typical reactions of both a ketone and an alcohol. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

ACETOVANILLON

$C_9H_{10}O_3$. 4-Hydroxy-3-methoxyacetophenone. Intermediate of adrenalin & papaverine syntheses. Mol. wt., 166.08. Colorless prisms. Melting pt., 115°C. Boiling pt., 295-300°C. Slightly soluble in cold, freely in hot water, alcohol, benzene, chloroform, ether; insoluble in petrol, benzin. Suggested Uses: Medicinal—raises blood pressure slightly. General Drug Co.

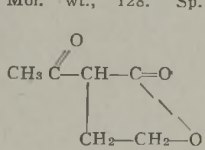
ACETOVERATRONE

$C_{10}H_{12}O_3$. 3, 4 Dimethoxy acetophenone. In-Melting point, 48 to 50°. Boiling point, 15 mm. 207, 10 mm. 205. Molecular wt., 180. Soluble hot water, alcohol, ether, chloroform, benzol. ppt. Chloroform, Sol. with ligroin from aq. sol. NaOH. Condenses with Salicylaldehyde. Suggested Uses: Intermediate in pharmaceutical manufacture. General Drug Co.

ACETYL BENZOYL PEROXIDE

$CH_3CO—O_2—COC_6H_5$. Mol. wt., 180.06. Yellow white crystals. Melting point, 36-37°C. Nearly insoluble in water, but soluble in acetone, carbon tetrachloride, chloroform, ether and oils. Sharp odor. Active oxygen 8.5%, purity about 95%. Suggested Uses: Active catalyst for the polymerization of various monomers. The Lucidol Corp.

α-ACETYL BUTYRO LACTONE



Mol. wt., 128. Sp. gr., 1.185-1.189 @ 20/20°C. Refractive Index, 1.460 @ 20° C. Boiling point, 121-122°C. @ mm. Hg. abs. Colorless liquid. Suggested Uses: Organic chemical synthesis. U. S. Industrial Chemicals Co.

ACETYL PROPYL CHLORIDE (5 Chloro Pantanone 2)

$CH_3C(=O)—CH_2CH_2CH_2CL$. Mol. wt., 120.5 Sp. gr., 1.054 @ 20/20°C. Refractive Index, 1.440 @ 20°C. Boiling point, 71-72°C. @ 20 mm. Hg. abs. Colorless liquid. Turns dark on storage in presence of air. Suggested Uses: Organic chemical synthesis. U. S. Industrial Chemicals Co.

ACITERGE-OL

A salt of a substituted oxazoline. Sp. gr., 20°/20°C, 0.977. Flash point, degrees °F (Cleveland Open Cup), 115. Solidification point, °C, initial is —15. final is —21. Solubility in mineral oil, less than 0.1%; alcohol, completely miscible; water, completely miscible. Suggested Uses: Aciterge-OL may serve as a penetrant or detergent, as an emulsifying assistant, and as a wetting or foaming agent. It is a surface active agent of the cationic type. In water solutions containing from 0.05 to 0.5% Aciterge-OL, water-oil interfacial tensions less than one dyne per centimeter are obtained. Commercial Solvents Corp.

ACRAWAX C DISPERSION (S 891)

A stable 33⅓% aqueous dispersion of Acrawax C Powdered. Consistency-fluid, color—white. Soluble in water, insoluble in alcohols, hydrocarbons, etc. Suggested Uses: Waterproofing and water-repellent agent for textiles and paper. Glyco Products Co., Inc.

ACRYLIC EMULSION V2-44

Emulsion of higher alcohol derivative of methacrylic acid. Fine particle size. The unplasticized emulsion deposits clear continuous films possessing good flexibility, extensibility and water resistance. For many applications addition of a plasticizer is desirable. Recommended as base for leather finishes, coating and impregnation of paper and textiles. Available in 30 and 50% solids. pH 5 to 6. American Resinous Chemicals Corporation.

ADENYLIC ACID

Adenosine-3-phosphoric acid. Mol. wt., 347. Melting point, 194-195. White, crystalline powder, odorless, and of slightly saline taste. Very slightly soluble in cold water, difficultly soluble in hot water, insoluble in alcohol and ether. Solutions are levorotatory $[\infty]D^{50} = -49°$. The adenosine nucleotide of yeast nucleic acid. It may be hydrolyzed to yield adenine, adenosine, phosphoric acid and d-ribose. Suggested Uses: In preparation of the hydrolysis products, for preparation of its salts used in medicine, and for biochemical researches on metabolism. Available in moderate amounts. Schwarz Laboratories, Inc.

ADHESIVE BASE U7-45B

Emulsion base for use in compounding with synthetic rubber latices particularly neoprene in formulating pressure sensitive adhesives. Fully compounded adhesive mixtures are also available. American Resinous Chemicals Corp.

ADHESIVE GO-11B

Adhesive GO-11B designed to give a non-critical low cost emulsion for general use. Possesses fair strength and water resistance and slight thermoplastic qualities. Recommended for paper, leather, rug backing, general adhesive compounding base, etc. May be fortified by addition of synthetic rubber latices. American Resinous Chemicals Corporation.

ADHESIVE U7-2D

A fabric combining adhesive possessing excellent adhesive strength and flexibility. Recommended for wet combining applications where quick grab and nonpenetration are required. American Resinous Chemicals Corporation.

ADHESIVE V9-10

A low cost, high solids tackifier emulsion for synthetic rubber latices. This adhesive will deposit a highly tacky film per se and in conjunction with synthetic latices will modify the rubber film to produce tough resilient films possessing aggressive adhesion and good tensile strength. Adhesive V9-10 is derived from a non-oxidizable synthetic resin and possesses excellent ageing properties. American Resinous Chemicals Corporation.

ADHESIVE W4-16

A low priced padding adhesive derived from a synthetic polymer base. Adaptable for brush application, the system will set within five minutes and dry thoroughly in a few hours. The product deposits a tough, dry, elastomeric film. The emulsion is alkaline in nature and may be pigmented to any color. Pigments compatible with this system are available on request. American Resinous Chemicals Corporation.

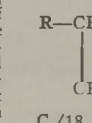
ADHESIVE SOLUTION W5-18

A laminating adhesive solution for heavy weight fabrics demanding high bonding strength. Application by brush or roller coat. Both surfaces are coated and allowed to dry; then laminated at 190° to 250°F. and 2000 lbs. pressure. Product meets WPB specifications on synthetic soling compositions. American Resinous Chemicals Corporation.

ADHESIVE Y4-3D

Adhesive base for use with GRS latices in the formulation of high viscosity combining and laminating adhesives. It is possible to formulate laminating compounds possessing a wide range in viscosities and degree of dry tack. Fully compounded combining adhesives are available to meet specific requirements. American Resinous Chemicals Corporation.

ALKENYL SUCCINIC ACID ANHYDRIDES



In the general formula of liquid dibasic acid R represents an aliphatic hydrocarbon with olefinic unsaturation. Properties vary with length of side chain, with following description being typical of a C_{8}-$_{18}$ mixture. Pale yellow oily liquid. Boiling range 160-180° C./18 mm. Neutral equivalent 98. Density 1.058 grams/cc at 20°C. Slight mineral oil odor. Miscible in all proportions with carbon tetrachloride, benzene and raw linseed oil. Soluble in alcohols but react to form half esters. Slightly soluble in water at room temperature reacting slowly to form AS acids. Suggested Uses: resins, modified oils, modified rubber, plasticizers, driers, lubricant adjuncts, emulsifying agents. Available in drum quantities. The Solvay Process Co.

ALLYL FORMATE

Physical state, liquid, colorless. Mol. wt., 102. Boiling point, 82-85°C. Solubility: Slightly soluble in water; soluble in most organic solvents. Suggested Uses: Fumigants, solvents. Victor Chemical Works.

ALKYD W5-13

An extender for natural and synthetic latices. Derived from a modified alkyd resin base containing 40% solids. When compounded with synthetic and/or natural latices, the resulting system will deposit films of increased toughness and tack. Alkyd W5-13 is compatible with all synthetic rubber latices in any proportion and is designed not to increase the viscosity of neoprene and buna latices. Admixtures will yield low viscosity systems adaptable for spray and brush application. The resinous components of this system possess excellent resistance to oxidation and ageing. Available in varying degrees of flexibility. American Resinous Chemicals Corporation.

ALSEC

Acid stabilized higher fatty acid ester. Cream colored wax with faint odor. 1% dispersion—pH 3.8, surface tension 34 dynes/cm. Acidity expressed as hydroehloric acid less than 3.0% Sp. gr., 0.98. Titre 50°C.-52°C. (Contains no soaps). Non-irritating to skin and emollient. Disperses readily in water. Suggested Uses: Acid emulsifier for cosmetic and pharmaceutical creams such as anti-perspirant creams and lotions containing aluminum chloride or other salts with acid reaction. Emulsol Corp.

Anhydrous $AlBr_3$. Molecular weight, 266.72. Sp. Gr., 3.0. Melting Point, 97°C. Brown, strongly fuming coarse powder. Reacts vigorously with water. Very soluble in most organic compounds. Used in organic synthesis—like aluminum chloride anhydrous. Eimer and Amend.

ALUMINUM FORMATE SOLUTION

Aluminum formate solution consists of approximately 21 per cent basic aluminum formate in water. It has a specific gravity of 1.160 (20.0° B'e) at 25°/25°C., and contains the following: Aluminum oxide (as Al_2O_3), 8%; formate (as HCOO), 17%. This solution of basic aluminum formate is used as a mordant in dyeing and printing of textiles. It also has valuable properties as a waterproofing and fireproofing material for textiles. Available in commercial quantities. Heyden Chemical Corp.

ALUMINUM PYROPHOSPHATE

$Al_4(P_2O_7)_3$. Physical Form. White powder or granular material. Properties: Insoluble in water, slightly soluble in acids. Suggested Uses: Phosphate glasses. Ceramic compositions. Also as catalyst. Limited quantities available for experimental investigations. Monsanto Chemical Co.

AMERSOL VO-30C

Clear, transparent flexible pressure sensitive adhesive suitable for laminating papers, plastic films and metallic foils. Amersol VO-30C is available in both inflammable and non-inflammable systems. It is adaptable to knife coating or any other standard coating equipment. Due to the almost indefiniate period of pressure sensitivity of the adhesive film, lamination can take place either immediately upon application or after a lapse of several days with equally satisfactory results. American Resinous Chemicals Corp.

AMINE OXIDES

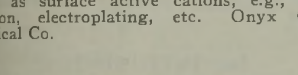
$(CH_3)_2RNO$, R being $C_{12}H_{25}$ (dodecyl); $C_{16}H_{33}$(cetyl) or $C_{18}H_{35}$ (9-octadecynyl). Available in 20% solutions. Color of the aqueous solutions, light yellowish. Chemical properties, highly surface active, foaming. Stable in presence of acids, alkalis, and salts. Suggested Uses: as surface active cations, e.g., in ore flotation, electroplating, etc. Onyx Oil & Chemical Co.

2- AMINODICYCLOHEXYL

$C_6H_{11}C_6H_{10}NH_2$. Appearance, Colorless liquid. Mol. wt., 181.19. Boiling point, @ 760, 270°C. Sp. gr., 0.933—0.936 @ 25°/25°C. Ref. ind., 1.495 @ 25°C. Suggested Uses: A possible intermediate for pharmaceuticals, dyes, rubber chemicals, insecticides, plasticizers, etc. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

Para AMINO HIPPURIC ACID

A yellowish material which crystallizes from



water in monoclinic prisms. M. W., 194. M. P., 199°C. Very soluble in water and aqueous solutions; least soluble in a pH range of 2.8-3.2; fairly insoluble in aromatic solvents. A very stable organic material and is hydrolyzed only with very strong hot caustic solutions. Recent work has indicated that it may be a valuable adjunct in the use of penicillin. Available in limited quantities. National Aniline Div.

AMMONIUM ETHYL PHOSPHATE

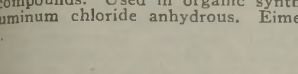
75% solution in water. Color, water white to yellow tinge. Odor, ammoniacal. Sp. gr., 1.23 at 25°C. Wt. per gal., 10.37 lbs. pH 75% sol., 7.0 — 7.2. Viscosity, 60 centipoises. Hygroscopic, in thin film is liquid at relative humidities above 40%. Suggested Uses: Flameproofing for paper, textiles, etc., humectants, wool lubricants. Availability: For government contracts or upon allocation. Monsanto Chemical Co.

AMMONIUM THIOGLYCOLLATE

$HSCH_2COONH_4$. Mol. wt., 109.15. White crystalline powder having a slightly ammoniacal odor—freely soluble in water and alcohol-oxidizes easily in air to form a disulfide. Suggested Uses: Cold permanent waving solutions. Martin Labs.

S-AMYLTHIOMALIC ACID
(S-Amylmercaptosuccinic Acid)

M. W., 220.27. White, waxy crystals. M. P. 115-116°. Slightly soluble in water. Very soluble in alcohol, benzene and many organic solvents. Chemical properties of a dibasic acid; of a thioether; of an aliphatic hydrocarbon. Suggested Uses: Organic syntheses, especially in the pharmaceutical and oil processing industries. Available in sample quantities. National Aniline Div.



ANHYDROUS DIFLUOROPHOSPHORIC ACID

$POF_2.OH$ or HPO_2F_2. Mol. wt., 102.04. Thin, colorless, fuming liquid with very irritating vapors. Boiling Point, 115.9°C; distillation at atmospheric pressure results in slight decomposition. Heat of vaporization, 7,925 calories per mole. Trouton's constant, 20.4. Sp. gr., 1.583 @ 25°/4°C. Melting Point, —96.5° ± 1°C. Pronounced reactivity and more corrosive action. Boiling acid attacks glass rapidly. Non-explosive. Non-oxidizing. Displays to some extent the analytical reactions of perchloric acid. The salts, difluorophosphates, are stable in air and their aqueous solutions react neutral. They are similar to the perchlorates but their solubilities are greater. Suggested Uses: Catalyst for polymerization, condensation, alkylation reactions. Organic derivatives such as insecticides, fumigants, germicides, etc., non-oxidizing refining of oils, etc., with an anhydrous acid. The Di Acid possesses greater reactivity than does the Mono Acid. Available for experimental investigations. Ozark Chemical Co.

ANHYDROUS MONOFLUOROPHOSPHORIC ACID

$POF(OH)_2$ or H_2PO_3F. Mol. wt., 100.04. Sp. gr., 1.818 @ 25°/4°C. Oily liquid, practically odorless. Appearance and viscosity very similar to those of concentrated sulfuric acid. Cannot be distilled, relatively stable thermally with only moderate decomposition on heating at 185°C under reduced pressure; decomposes at higher temperatures. Does not attack glass when dry. Displays to large extent the analytical reactions of sulfuric acid. Alkali salts are very stable toward hydrolysis. Suggested Uses: Catalyst for polymerization, condensation, alkylation reactions. Organic derivatives such as insecticides, fumigants, germicides, etc., non-oxidizing refining of oils, etc., with an anhydrous acid. Available for experimental investigations. Ozark Chemical Co.

"ARIDEX" DCX

Aluminum salts wax dispersion. Suggested Use: Solvent type water repellent finish applied either in a standing bath or in a washer from dry cleaning solvents by dry cleaners. E. I. du Pont de Nemours & Company., Inc.

"ARIDEX L"

Aluminum salts wax dispersion. Suggested Use: Emulsion type water repellent finish applied from a water solution. E. I. du Pont de Nemours & Company, Inc.

AROCLOR 1232

$C_{12}H_8Cl_2$. Physical Form: Practically colorless mobile oil. Properties: Sp. gr., 1.265 @ 25°/25°C. Distillation range, 290-325°C. (corr.) Refractive index, 1.620 @ 20°C. Viscosity, @ 37.8°C. —50 S.U.S. Suggested Uses: As a plasticizer in synthetic resin finishes and for resins and plastic materials. Available in pilot plant quantities. Monsanto Chemical Co.

AROCHEM 524

Glycerine free, modified maleic resin with high melting point. Good tolerance for ethyl alcohol and lacquer plasticizing oils. Acid number, 20-30. Melting point, 118-125°C. Sp. gr., 1.10. Suggested Uses: In lacquers; also in air drying and baking "soft oil" varnishes. U. S. Industrial Chemicals Co.

AROCHEM 595

High melting point modified maleic resin. Acid number, 30-40. Melting point, 145-155°C. Sp. gr., 1.10. Suggested Uses: Manufacture of high viscosity "soft oil" varnishes and also fast setting printing ink vehicles with good hold out. In varnishes and cold cuts, it has fast solvent release. U. S. Industrial Chemicals Co.

AROCHEM 600

Glycerine free hard resin similar to Arochem 605 but lower in melting point. Melting point 130-140°C. Acid value, 25-30. Sp. gr., 1.15. Suitable for same purpose, but not as rapid in bodying and drying characteristics; also imparts less hardening effect to "soft oil" varnish films. U. S. Industrial Chemicals Co.

AROCHEM 605

New variety of glycerine free, modified hard resin. Melting point, 155-165°C. Acid value, 25-35. Sp. gr., 1.12. Suggested Uses: In fast bodying, fast drying "soft oil" varnishes; spar or general purpose. Imparts hardness and toughness to "soft oil" varnishes. U. S. Industrial Chemicals Co.

AROFENE 775

Pure phenol-formalydehyde condensate. Non-reactive, oil soluble. Melting point, 121-138°C. Sp. gr., 1.05. Suggested Uses: To be combined with oils in manufacture of spar varnishes, reinforcing varnishes and varnishes with high chemical resistance. U. S. Industrial Chemical Co.

AROPLAZ S-284

Short oil, oxidizing alkyd resin. (60% solids in xylol). Fast in solvent release and rapid drying; good flexibility. Viscosity (G.H.), Z1-Z3. Color (G.H. 1933), 6-8. Acid value of plastic, 18-25. Wt./gal., 8.45-8.50. Soluble in aromatic hydrocarbons; will tolerate addition of some petroleum solvents. Suggested Uses: In aeronautical primers and finish coats; also in other fast drying, high quality paints and enamels. U. S. Industrial Chemicals Co.

AROPLAZ S-252

Non-oxidizing, oil modified alkyd resin. (70% solids in xylol). Lends flexibility, has film forming and resistance characteristics. Soluble in aromatic hydrocarbons and lacquer solvents. Viscosity (G.H.), Z2-Z4. Acid value of plastic, 6-8. Color (G.H. 1933), 15-25. Wt./gal., 8.15-8.20. Suggested Uses: As plasticizer for nitrocellulose, ethyl cellulose, vinyl compounds, other alkyds, etc., in various protective coating formulations. U. S. Industrial Chemicals Co.

AROPLAZ 1326

Short oil, hard resin modified, oxidizing alkyd resin. (50% solids in xylol). Fast solvent release and drying characteristics. Dries to very hard and resistant film. Soluble in aromatic hydrocarbons and lacquer solvents. Viscosity (G.H.), Z2-Z4. Color (G.H. 1933), 9-11. Acid value of plastic, 25-35. Wt./gal., 8.40-8.45. Suggested Uses: For fast drying primers and finish coats; also can be utilized in lacquer formulation. U. S. Industrial Chemicals Co.

AROPLAZ 1328

Medium long, oil modified, oxidizing alkyd resin. (50% solids in mineral spirits). Has unusual flexibility characteristics. Good solubility in petroleum hydrocarbons. Viscosity (G.H.), W-Y, Color (G.H. 1933), 5-10. Acid value of plastic, 6-10. Wt./gal., 7.70-7.76. Suggested Uses: In Maritime Specification Red Lead Primer MC-52-A1. Adaptable for other exterior, interior or marine protective coatings. U. S. Industrial Chemicals Co.

dl ASPARAGIN

$CONH_2CHNH_2CH_2COOH$ — alpha amino succinamic acid. M. wt., 132.12. Colorless rhombic crystals. Density, 1.543. Exists in open chain and inner salt forms distinguished by their different solubilities in water. Decomposes on melting. Solubility (Inner salt form): 85.6 g. per 100 cc boiling water, 2.46 g. at 25 deg.; nearly insoluble in alcohol; insoluble in most organic solvents. One of the amino acids essential in nutrition. Uses: Protein and nutrition studies, organic syntheses, photographic experimentation. Available in quantities sufficient for laboratory experiment. Polo-Myers, Inc.

BARIUM METAPHOSPHATE

$Ba(PO_3)_2$. Physical Form: White powder. Properties: Insoluble in water. Slowly soluble in acids. Suggested Uses: Constituent of glasses, porcelains and enamels. Available in limited quantities from pilot plant operations. Monsanto Chemical Co.

BEACOLEIN D

Light color non-drying oil. Acid value, .25. Saponification No. 193. Iodine No. 170. Sp. gr., 0.925. Viscosity, .5 poises @ 25°C. Suggested Uses: In paint, varnish and allied industries; extender for tung oil. Beacon Co.

BEACOLEIN R

Light color drying oil. Acid value, 0.1. Saponification No. 187. Iodine No. 200. Sp.

gr., .929. Viscosity, 0.5 poises @ 25°C. Suggested Uses: In paint, varnish and allied industries; replacement and extender for tung oil. Beacon Co.

BEACOLEIN U

Light color semi-drying oil. Acid value, .19. Saponification No. 190. Iodine No. 185. Sp. gr., .927. Viscosity, 0.5 poises @ 25°C. Suggested Uses: In paint, varnish and allied industries; replacement and extender for tung oil. Beacon Co.

BENZENE SULFONAMIDE

$C_6H_5SO_2NH_2$. Mol. wt., 157. Approx. solubility in water, 0.4% @ 16°C. to 20% @ 100°C. Light tan granular material, purity 85-90%. Approx. solubility in acetone 34%, ethanol 11%, ether 4.5%, carbon tetrachloride 2.5%, benzene 0.4%. Melting point, 140-156°C. Reacts with sodium hydroxide. With alkaline hypochlorite soln. it yields Chloramine-B. Reacts with alkyl halides in alkaline solution yielding N-substituted amides. Suggested Uses: Organic syntheses. It should be of interest to manufacturers of dyestuffs, pharmaceuticals, plasticizers and other fields. Available in wooden barrels, 250 pounds net. Wyandotte Chemicals Corp.

BENZENE SULFONCHLORIDE

$C_6H_5SO_2Cl$. Mol. wt., 176. A dark brown liquid. Sp. gr. approx. 1.36 @ 15°C., containing a minimum of 85% chloride. It melts @ 8-14.5°C., and distills from 220-425°C. It is only slightly soluble in water. Wt. per gallon @ 25°C. is 11.3 pounds. Reacts with alcohols to form esters or with ammonia to give amides, or with phenol in aqueous alkali to give the phenolic ester. Reacts as typical acid chloride and under certain conditions acts as a chlorinating agent or oxidizing agent. Hydrolyzes slowly in cold water. Suggested Uses: In the manufacture of dyestuffs, pharmaceuticals, plasticizers and other organic chemicals. Available in drums, 590 pound net. Wyandotte Chemicals Co.

n-BENZYL ACETAMIDE

$C_6H_5.CH_2.NHCOCH_3$. Mol. wt., 149.19. Technical grade. Yellowish crystals. Melting point, 60-61°C. Soluble in ether, ligroin. Insoluble in water. Suggested Uses: Pharmaceutical intermediate. Availability: manufactured to order. Edwal Lab.

BENZYLAMINE

$C_6H_5CH_2NH_2$. Appearance, colorless liquid. Mol. wt., 107.15. Boiling point, @ 760 mm., 184.5°C. Sp. gr., 0.982 @ 20°/4°C. Soluble in water, alcohol, ether. Suggested Uses: A possible intermediate for pharmaceuticals, dyes, rubber, chemicals, insecticides, plasticizers, etc. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

BENZYL AMINE, DI-

$C_{14}H_{15}N$. Molecular weight, 197°C. Colorless oil. Boiling point at 2 mm., 127°C. Specific gravity at 25°/15.6°C., 1.027. Suggested Uses: As an intermediate in the preparation of pharmaceuticals and dyestuffs. An interesting property of this colorless liquid is its ability to absorb hydrogen sulfide by an additive reaction. This would be of considerable value in a system for collecting H_2S or separating it from other gases, provided the other gases were such that they would not also be absorbed. Upon heating the H_2S is driven off, leaving the original dibenzyl amine. Available in small quantities for experimental purposes. Heyden Chemical Corp.

BENZALDEHYDE, 2-CHLOR-5NITRO-

$C_7H_4O_3ClN$. Molecular weight, 185.5. Pale yellow needles. Melting point, 81.3-81.8. Suggested Uses: As an intermediate in the preparation of pharmaceuticals and dyestuffs and in other organic syntheses. When 2-chlor-5-nitro benzaldehyde is treated with a solution of sodium hydroxide in methanol the chlorine is replaced with CH_3O— to form nitromethoxy benzaldehyde. When reacted with sodium disulfide, the chlorine is removed and two molecules of nitro benzaldehyde are connected by a disulfide linkage to form a substituted diphenyl disulfide. It reacted with sodium thiosulfate replacement of the chlorine leads to the formation of a derivative of diphenyl sulfide. These and other interesting reactions open the way for considerable investigation. Available in small quantities for experimental purposes. Heyden Chemical Corp.

BENZYL AMINE, MONO-

C_7H_9N. Molecular weight, 107. Colorless oil. Boiling point at 60 mm., 100-105°C. Specific gravity, at 20°/15.6°C., 0.984. Suggested Uses: as an intermediate in the preparation of pharmaceuticals, dyestuffs and other organic compounds. Available in small quantities for experimental purposes. Heyden Chemical Corp.

BENZYL AMINE, TRI-

$C_{21}H_{21}N$. Molecular weight, 287°C. White crystals. Melting point, 91°C. Suggested Uses: As an intermediate in the preparation of pharmaceuticals and dyestuffs. Available in small quantities for experimental purposes. Heyden Chemical Corp.

BENZYL CYANIDE

$C_6H_5CH_2CN$. Mol. wt., 117.06. B.P., 85-87 @ 2 mm. Index of Refraction, 1.5202 @ 25°C. Density, 1.011 @ 25°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, sharp, geranium-like. Appearance, colorless liquid, darkens on standing. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in limited quantities. Mallinckrodt Chemical Works.

BENZYLDISULFIDE

$(CH_2C_6H_5)S_2$. Melting point, 65-66°C. White. Suggested Use: Product is used in 3 to 5% ointment form for the treatment of various skin disorders. Fine Organics, Inc.

BENZYLPHENYLMALONIC ESTER

$C_6H_5CH_2C(C_6H_5)(COOC_2H_5)_2$. Mol. wt., 326.4. M.P., 47°C. B.P., 173° @ 1 mm. Odorless. Appearance, white crystalline solid. Insoluble in water. Solubility in ethyl alcohol, 30 g. in 100 cc. Miscible with toluene. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

BENZYLTRIMETHYLAMMONIUM CHLORIDE

$C_6H_5CH_2N(CH_3)_3Cl$. A neutral salt, highly soluble in water. Chemical Properties: The anhydrous material is stable up to about 140°C., but with further heating it decomposes to form benzyl chloride and trimethylamine. Offered in the form of an aqueous solution containing approximately 62% benzyltrimethylammonium chloride by weight. Properties of 62% aqueous solution: Sp. gr., 20°/20°C., 1.07; pH (0.1 M solution), 8; refractive index, 20°C., 1.472; freezing point, °C., less than 50. Commercial Solvents Corp.

BERYLLIUM METAPHOSPHATE

$Be(PO_3)_2$. Physical form: White, porous powder or granular material. Properties: Has a high melting point, insoluble in water. Suggested Uses: As a raw material for special ceramic compositions; as a catalyst carrier. Availability: Laboratory samples. Monsanto Chemical Co.

BETANOL 107

Acid stable ester. Melting point, 53-56. White waxy solid. Soluble in wide variety of compounds, disperses easily in water. Dispersions stable over wide range of pH and in presence of metallic ions. Suggested Uses: Acid emulsifiers for cosmetic and pharmaceutical creams and in the textile industry. Beacon Co.

BETANOL 114

Acid stable ester. M.P. 56-59. White waxy solid, soluble in wide variety of compounds. Disperses easily in water. Dispersions stable over wide range of pH and in presence of metallic ions. Suggested Uses: Acid emulsifiers for cosmetic and pharmaceutical creams and in the textile industry. Beacon Co.

BETANOL 152

Acid stable hydroxy ester. M.P. 50-53. White waxy solid, soluble in wide variety of compounds. Disperses easily in water. Dispersions stable over wide range of pH and in presence of metallic ions. Suggested Uses: Acid emulsifiers for cosmetic and pharmaceutical creams and in the textile industry. Beacon Co.

BETANOL 564

Acid stable hydroxy ester. Amber liquid, soluble in wide variety of compounds. Disperses easily in water. Dispersions stable over wide range of pH and in presence of metallic ions. Suggested Uses: Acid emulsifiers for cosmetic and pharmaceutical creams and in the textile industry. Beacon Co.

BORON NITRIDE

Grayish to white amorphous powder. Insoluble in water, decomposes on boiling with dilute and concentrated mineral acids. Suggested Uses: As catalyst and deoxidizing agent in metals and alloys. In ceramics because of its high melting point. Fairmount Chemical Co., Inc.

BROMETONE
(1,1,1-Tribromo-tert-Butyl Alcohol)

$C_4H_7Br_3O$. Mol. wt., 310.85. Fine white crystals with camphor-like odor and taste. Slightly soluble in water and soluble in alcohol and ether. Melting point, about 167°C. Suggested Uses: Pharmaceutical. Sedative in insomnia, hysteria, cough, epilepsy, etc. Dow Chemical Co.

BUBENE

Essentially sec-Butyl Benzene ($C_{10}H_{14}$). Molecular weight, 134. Specific gravity @ 15.6/15.6°C., 0.866. Boiling range, 165—174°C. Refractive index, 1.4915 @ 20°C. Clear, water-white, aromatic solvent. Insoluble in water but miscible with hydrocarbons and alcohols. Suggested Uses: General solvent, synthetic organic chemicals, extenders, and diluents. The Neville Co.

BUNNATOL-G

Synthetic and reclaimed rubber plasticizer. Available to fit the requirements of industry. 4½ to 10% gives an equal flexibility to approximately 25%. Dibutyl Phthalate. Acts as a wetting agent for pigments. It allows a minimum of milling and grinding for maximum dispersion throughout the stock. Is insoluble in mineral and vegetable oils, giving the finished rubber a greater resistance to greases and oils. Beacon Co.

Sec. BUTYL BENZENE

Empirical formula $C_{10}H_{14}$. Mol. wt., 134.112 Sp. gr., at 25°C/25°C. 0.8577. Pounds per U. S. Gallon 25°C. 7.14. Boiling point 171.0°C. Freezing point —82.7°C. Refractive index at 25°C. 1.4880 Color, white. Soluble in hydrocarbons, insoluble in water. Suggested Uses: As an intermediate in the manufacture of detergents, as a starting material for organic syntheses, as a solvent, as a high octane motor fuel (blending value, 119). Koppers Co. Tar and Chemical Division.

BUTYL "CELLOSOLVE" OLEATE (S 817)

$C_{24}H_{46}O_3$. Mol. wt., 382.6. Sp. gr., 0.89 @ 25°C. Consistency, fluid. Color, dark yellow. Solidif. point, —45 to —10°C. Sap. value 140-148. Iod. value, 63-71. Volatility, 0.04% (4 hrs. @ 105°C.). Acidity, 0.1 mg. KOH/g max. Soluble in alcohols, ketones, esters, aromatic and aliphatic hydrocarbons. Insoluble in water. Compatible with nitro-cellulose and ethyl cellulose. Suggested Uses: Plasticizer for nitro-cellulose, ethyl cellulose, synthetic resins. Glyco Products Co., Inc.

BUTYL CHLORACETATE, TECHNICAL

$ClCH_2COOC_4H_9$. Mol. wt., 150.61. Appearance, light brownish to greenish colored liquid. Boiling point, 178-182°C. Free acidity: Neutral to very slightly acid. Sp. gr. 25°C.—1.064. Suggested Uses: As an intermediate in chemical synthesis. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

BUTYL CINNAMOYL PYRUVATE

$C_6H_5CH=CHCOCH_2COCOOC_4H_9$. Mol. wt., 274. Melting point, 63.5°C. Crystalline Solid, brilliant yellow flakes. Suggested Uses: A powerful sun-screen compound. Used in suntan and sun-screen preparations. U. S. Industrial Chemicals Co.

CADMIUM CITRATE c. p.

$Cd_3[CH_2COHCH_2(COO)_3]_2$. M.W., 721.47. White crystalline powder. Slightly soluble in water. Insoluble in alcohol and other organic solvents, soluble in acids and in ammonia. Uses: Preparation of colloidal cadmium sulfide, mordant for dyes, basic dye lakes, preparation of cadmium and cadmium oxide catalysts, addition agent in cadmium plating. Available in experimental quantities. Palo-Myers, Inc.

CADMIUM CYANIDE

$Cd(CN)_2$ m.w. 164.45. White crystalline powder. Decomposes above 200 deg. C. Solubilities, 1.7 g. per 100 cc water at 15 deg. Soluble in ammonia and in KCN. Uses: Cadmium plating baths, preparation of nitriles, amides, organic acids, phenolic aldehydes, perfume and flavoring materials and pharmaceuticals. Available for laboratory use. Palo-Myers, Inc.

CALCINED MAGNESITE

Indian product. Amorphous, while low in impurities. Uses: General. Golwynne Chemicals Corp.

CALCIUM IODOBEHENATE

Consists principally of calcium monoiodobehenate, $(C_{21}H_{42}ICOO)_2Ca$, and contains, when dried at 100°C. for 2 hours, not less than 13.5 per cent of I. Action probably depends entirely on the liberation of iodine and therefore resembles in its general action the alkaline iodides. Its solubility relations, however, give it certain advantages over the older iodides. Being practically insoluble in the gastric juice, it is not irritating to the stomach. Suggested Uses: In the treatment of chronic bronchitis, asthma, arteriosclerosis, chronic arthritis and other chronic conditions where the iodides are indicated. Fine Organics, Inc.

CALCIUM METAPHOSPHATE

$Ca(PO_3)_2$. Physical form: white powder. Melting point, approximately 975°C. Very slowly soluble in water and acids. Suggested Uses: Constituent of glasses, porcelains and enamels. Limited quantities can be made in existing pilot plant equipment. Monsanto Chemical Co.

CALCIUM THIOGLYCOLLATE

Mol. wt., 184.23, pH about 11. Loses its water above 100° and decomposes at 250°. $CH_2COOCa \cdot 3H_2O$. White crystalline powder having a slight sulfidic order. It is 7% soluble in cold water and 27% soluble in water at 95°. On exposure to air it gradually decomposes to $CaCO_3$. Uses: dehairing of hides, depilatory preparations. Martin Labs.

CALCIUM VANILLIN

$C_{16}H_{14}O_6Ca_2$. Mol. wt., 171. White salt soluble in water, insoluble in alcohol, ether, chloroform, benzol. One part per hundred at room temperature. Suggested Uses: As a food and confectionery flavoring agent. Caramel vanilla flavor. General Drug Co.

CAPROLACTAM

White crystalline solid; F.P. 68.8°C.; B.P. 260 mm.), 136-138°C. Suggested Use: Making high molecular weight polyamides. E. I. du Pont de Nemours Co., Inc.

"CARBOWAX" COMPOUNDS 1000, 6000

$HO(CH_2CH_2OCH_2)_xCH_2OH$. Higher polyethylene glycols, wax-like solids, possessing the unique property of dissolving in water to form solutions as clear and transparent as water itself. "Carbowax" 1000 has an approximate molecular weight of 1000 and "Carbowax" 6000 has a molecular weight of approximately 6000. They are chemically stable and non-corrosive, and are soluble in many aliphatic ketones, esters, alcohols, glycol ethers, and even in the aromatic hydrocarbons. Suggested Uses: Superior ointments, jellies, and waxes as lubricants, binders, plasticizers, or ointment bases. Show promise where advantage can be taken of their solubility in water, low vapor pressure, slight hygroscopicity, solubility in aromatic hydrocarbons. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

CARBON TETRAIODIDE

CI_4. Mol. wt., 510.69. Dark red crystals. Soluble in water. Soluble in most organic solvents. Sensitive to oxygen, and to light. Suggested Uses: Syntheses of compounds with single carbon atom, iodinating agent, photo chemical studies, reagent for aldehydes. Available in suspension in liquid petrolatum in laboratory quantities. Palo-Myers, Inc.

CARBOXYMETHOCEL A (Aluminum Cellulose Glycolate)

Finely ground white powder, insoluble in water but soluble in dilute solutions of many alkaline reagents. Films cast from ammoniacal solutions are transparent, hard, and possess excellent tensile strength. Suggested Uses: Paper coating, thickener for dyestuffs, warp sizing agent, textile finish, cosmetic thickener, thickener for paint and varnish removers, creaming agent. Dow Chemical Co.

CARBOXYMETHOCEL S (Sodium Cellulose Glycolate)

Produced in the form of a white granular powder, it is soluble in hot and cold water, but insoluble in most organic solvents. Unaffected by oily or greasy materials of animal, vegetable, or mineral origin. Tough, flexible films are produced upon drying Carboxymethocel S solutions. Suggested Uses: In formulations requiring a thickener, stabilizer, adhesive binder, emulsifying agent or protective colloid, print paste thickener, warp sizing agent, assistant or base for water soluble printing inks, paper sizing, etc. Dow Chemical Co.

CARNUBE WAX

Hard wax, light brown color. Melting point, 80-82. Acid No. 78-80. Suggested Uses: Partial replacement for Carnauba Wax. Beacon Co.

CATIONIC AMINE 220

Mol. wt., 350. Eq. wt., 175. B.P., 235.0 (1 mm.). Flash pt., 465°F. (open cup). Sp. gr., at 20°/20°C., 0.9300 to 0.9360. Brown, high-boiling, oil-soluble liquid having strong cationic surface-active properties. Soluble in mineral oil, vegetable oils, and dilute aqueous solutions of mineral acids, and in the common organic solvents. Only slightly soluble in water. Readily emulsifies Diesel oil, hydrocarbons and mineral oils, vegetable oils, and pyrethrum and phenothiazine concentrates — a property making it useful in agricultural sprays, printing inks, and synthetic rubber polymerization. Can bring about flotation of certain minerals and shows promise as a collector in the flotation of oxidized lead ores, copper silicate, and sheelite ores. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

"CELLOSOLVE" RICINOLEATE (S 816)

$C_{22}H_{42}O_4$. Mol. wt., 370.57. Sp. gr., 0.929 @ 25°C. Consistency—fluid, color—yellow. Sap. value, 150 to 155. Iod. value, 69 to 73. Volatility, 0.14% (4 hrs. @ 105°C.). Solidif. point, not frozen at —70°C. Acidity, 0.1 mg. KOH/g max. Soluble in alcohols, ketones, esters, aromatic and aliphatic hydrocarbons. Insoluble in water. Compatible with nitrocellulose and ethyl cellulose. Suggested Uses: Low temperature plasticizer for nitrocellulose, ethyl cellulose, synthetic resins, polyvinyl butyral. Glyco Products Co., Inc.

"CELLOSIZE"* HYDROXYETHYL CELLULOSE WS

Aqueous solution containing 10% of hydroxyethyl cellulose. Sp. gr., 1.035 to 1.040 at 20°/20°C. Solubility in water, complete. Flash point, none (dried film burns less readily than paper). pH 6.0 to 7.0. Good light and heat stabilities. On drying, produces an almost colorless film of moderate tensile strength. Used for sizing applications in textile finishing, paper sizing, and in shoe and leather dressings. An excellent thickener and dispersant in textile printing pastes. Is a good protective colloid for the aqueous dispersion of oils, fats, waxes, and pigments. Shows promise in the field of emulsion polymerization in the manufacture of synthetic resins and elastomers and in water paints since it can bind large amounts of pigments. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

* Registered trade-mark

"CELLOSIZE"* HYDROXYETHYL CELLULOSE WS (Dried Form)

A dried form of "Cellosize" Hydroxyethyl Cellulose WS is available in limited quantities. Easily soluble in water but solutions containing more than 10% solids are gels. It is a snow-white, free-flowing powder whose aqueous solutions have the same properties as those listed for the "Cellosize" Hydroxyethyl Cellulose, 10% solution. Available in research quantities. Carbide and Carbon Chemicals Corp.

* Registered trade-mark

CEMENT VO-44E

A resin modified compounded Neoprene solvent cement for general adhesive work. It is particularly suitable for various folding and sole attaching operations in the shoe industry or where prolonged pressure sensitivity is a factor. Adhesive VO-44E is adaptable for brush application. For specific applications requiring maximum strength, vulcanization may be realized at 275°F. for one hour. American Resinous Chemicals Corp.

CEREX

Thermoplastic compounds. Injection molding temperature: Cylinder, 370-450°F.; mold, 170-250°F. Sp. gr., 1.07. Flexural strength p.s.i., 13,000. Deflection, 0.169". Distortion temperature, std., 212-230°F. Burning rate, slow. Water absorption A.S.T.M. 24 hrs., 0.30%. Effect of weak acids, none; oxidizing acids attack, none. Clarity: Amber transparent. Color possibilities: Extensive. Cerex should be considered for any application where injection molding is desirable but where the standard thermoplastics are unsuitable because of low heat resistance. Molded parts maintain dimensions and mechanical strength during prolonged exposure at temperatures over the boiling point of water. Suggested Uses: Surgical instruments, electronic instrument parts, sterilizable combs, plumbing hardware, etc. Available in experimental quantities only. Monsanto Chemical Co.

CETYL DIMETHYL AMINE

$(CH_3)_2C_{16}H_{33}N$. Mol. wt., 269. Boiling range of the technigrade: 175 to 210°C./6 mm. Hg. Forms water soluble surface active salts with acids. Suggested Uses: As a surface active cation and as an intermediate for the preparation of quaternary ammonium compounds. Onyx Oil & Chemical Company.

CETYL DIMETHYL ETHYL AMMONIUM BROMIDE

$(CH_3)_2C_2H_5C_{16}H_{33}NBr$. White powder. Mol. wt., 378. Soluble in water and organic solvents. Chemical Properties: Surface active, foaming, wetting. Withstands prolonged boiling. Stable in the presence of acids, alkalis, and salts. Suggested Uses: Disinfectant, germicide and fungicide, textile finishing agent. Onyx Oil & Chemical Company.

CETYL DIMETHYL BENZYL AMMONIUM CHLORIDE

$(CH_3)_2C_6H_5CH_2C_{16}H_{33}NCl$. Soluble in water and most organic solvents. Available in aqueous solutions and in anhydrous form. Color: Light yellowish. Chemical Properties: Highly surface active, foaming, wetting. Withstands prolonged boiling. Stable in the presence of acids, alkalis, and salts. Suggested Uses: Germicide and fungicide; renders textiles resistant against bacteria, mildew, moths; imparts a soft hand to textiles; increases the resistance of direct dyes on cotton and rayon to wet treatment. Available in commercial quantities. Onyx Oil & Chemical Company.

CETYL TRIMETHYL AMMONIUM BROMIDE

$(CH_3)_3C_{16}H_{33}NBr$. Mol. wt., 326. White powder. Soluble in water and organic solvents. Chemical Properties: Highly surface active, foaming, wetting. Withstands prolonged boiling. Stable in the presence of acids, alkalis and salts. Suggested Uses: Disinfectant, germicide, and fungicide, textile finishing agent. Onyx Oil & Chemical Company.

CHLORINE DIOXIDE

ClO_2. A highly reactive gas which cannot be transported in conventional cylinders, but must be generated as required at the consumer's plant by the reaction of solid sodium chlorite, technical, and chlorine gas. Mol. Wt., 67.457. Vapor Density, approximately 2.4. Odor, irritating and unpleasant. Color, yellow to red. Chemical Properties: Powerful oxidizing and bleaching agent. Suggested Uses: Bleaching wheat and soy bean flours, starch and similar products in a dry state. The Mathieson Alkali Works, Inc.

deca CHLORO METAPERPHENYL DIQUINONE

$C_{18}Cl_{10}O_4$. Physical Form: Orange powder. Properties: Water insoluble; soluble in alcohol. Suggested Uses: Insecticide. Oil addition

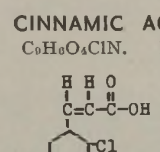
agent. Available in laboratory quantities. Monsanto Chemical Co.

2,2-bis-p-CHLOROPHENYL-1,1,1 TRICHLORETHANE (D.D.T.)

$C_{14}H_9Cl_5$. Mol. wt., 354.51. Appearance: White to cream-colored powder. Crystallizing pt., 88.0°C. Insoluble in water. Soluble in alcohol, petroleum, hydrocarbons, gamma valero lactone. Suggested Uses: An excellent insecticide. Availability: Full production large quantities, under allocation. Monsanto Chemical Co.

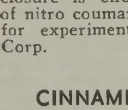
CINNAMIC ACID, 2-CHLOR-5-NITRO-

$C_9H_6O_4ClN$. Molecular weight, 227.5°C. Pale yellow, microscopic crystals. Melting point, 200-204°C. Suggested Uses: As an intermediate in the preparation of pharmaceuticals and dyestuffs. When treated with methyl alcohol solution of sodium hydroxide the chlorine is replaced by CH_3O— to give nitro methoxy cinnamic acid. If treated with aqueous caustic instead of the alcohol solution a ring closure is effected resulting in the formation of nitro coumarin. Available in small quantities for experimental purposes. Heyden Chemical Corp.



CINNAMIC ACID, ORTHO-CHLOR-

$C_9H_7O_2Cl$. Molecular weight, 182.5. Light yellow powder when precipitated from water. White needles when crystallized from toluene. Melting point, 207-209°C. (toluene recrystallized material, 210-212°C.) Suggested Uses: As an intermediate in the preparation of pharmaceuticals and dyestuffs. An interesting property of this cinnamic acid derivative is that the chlorine is not replaced with aqueous sodium hydroxide up to 230°C. Available in small quantities for experimental purposes. Heyden Chemical Corp.



CHOVIS

Synthetic phosphatide-like material. Dark brown heavy viscous liquid; practically odorless and stable. Edible grade. Sp. Gr., 1.05. Suggested Uses: As a viscosity reducing agent for chocolate and other confectionery. Also used as a protecting agent to prevent moisture absorption. Emulsol Corp.

CLOTH COATING Q6-33

Q6-33 is a clear lacquer designed for knife coating of cloth for mattress covers, dress shields, shower curtains, crib sheets, etc. It offers a single unit system. Two coats are generally sufficient. The need for a different base and top coat is thereby avoided. Solids 42.5%. Wt./gal. 8.15. American Resinous Chemicals Corp.

COATINGS FOR SYNTHETIC PATENT LEATHER

Emulsion P6-16 and Resin Coatings P6-10, P6-11, and P6-12, are a unique system designed to replace the traditional drawn out Japanning process for preparation of patent leather. The use of this swift drying machine knife-coating system provides a product of deep gloss, permanent flexibility, and reduced cost. Applicable to rubberized and unrubberized fabrics and paper as well as leather. Modifications are available for spray coating. American Resinous Chemicals Corp.

COHESIVE EMULSION FOR SURGICAL BANDAGES, W4-11

Emulsion W4-11 is used for impregnation of gauze for cohesive bandages. It provides a colorless, odorless non-yellowing film, not harsh, and possessing good strength and oil resistance at low cost. For use it is diluted with an equal or greater volume of water. Solids 50%, pH 4. American Resinous Chemicals Corp.

COMPOUND 222

$C_{65}H_{102}O_{33}N_6$ (approx.). A low linear polymer of the triethanolamine ester of carbonic acid. Mol. wt., about 1,000. Index of refraction, 1.4615 @ 25°C. Density, 1.200 @ 25°C. Insoluble in water. Miscible with alcohol and toluene. Odor, amine-like. Appearance, viscous reddish liquid. Chemical properties: Undergoes further polymerization on heating; easily hydrolyzable to water-soluble end-products. Suggested Uses: Plasticizer. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

COMPOUND 222A

$C_{165}H_{272}O_{79}N_{18}$ (approx.). A high linear polymer of the triethanolamine ester of carbonic acid. Mol. wt., about 4,000. Index of refraction, 1.4714 @ 25°C. Insoluble in water and ethyl alcohol. Miscible with toluene. Odor, amine-like. Appearance, very viscous reddish syrup. Chemical Properties: Undergoes further polymerization on heating; easily hydrolyzable to water-soluble end-products. Suggested Use: Plasticizer. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

COMPOUND 222B

$(C_{15}H_{24}O_9N_2)_n$. Three dimensional polymer of the triethanolamine ester of carbonic acid. Mol. wt., very high. Insoluble in water and ethyl alcohol. Some swelling in toluene. Odor, amine-like. Appearance, rubbery sponge-like solid. Chemical Properties: Easily hydrolyzable to give water-soluble end-products. Suggested Use: Plasticizer. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

COPPER 8-HYDROXYQUINOLINE

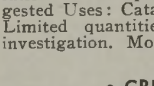
$Cu(OC_9H_6N)_2$. Mol. wt., 351.87. Appearance: Yellowish green amorphous powder. Insoluble in water and common organic solvents; soluble in strong acids; insoluble in alkali and weak acids. Chemical Properties: Very stable and non-reactive. Suggested Uses: Fungicide for the preservation of cellulosic materials, particularly cotton fabrics; preservative for proteins such as leather. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

COPPER PYROPHOSPHATE

$Cu_2P_2O_7 . XH_2O$. Physical Form: Pale blue, light, fluffy powder. Properties: Insoluble in water; soluble in acids; soluble in aqueous solution of tetrapotassium pyrophosphate. Suggested Uses: Catalyst, fungicide and insecticide. Limited quantities available for experimental investigation. Monsanto Chemical Co.

o-CRESOLPHTHALEIN

$C_{22}H_{18}O_4$. Mol. wt., 346.14. White to pinkish; crystalline powder. Slightly soluble in water; soluble in alcohol or dil. aq. alkali hydroxides. Suggested Use: As indicator; pH range; 8.2 colorless, 9.8 red. Fine Organics, Inc.



CYCLOHEXANONE OXIME

White crsytalline solid; M.P. 88°C. Suggested Use: Intermediate in Caprolactam synthesis and in other oxime reactions. E. I. du Pont de Nemours Co., Inc.

CYCLOHEXYL LEVULINATE

$CH_3.CO.(CH_2)_2.COOC_6H_{11}$. Mol. wt., 198. Appearance: Mobile liquid. Sp.gr., 1.0246-1.0256 @ 25°/25°C. Ref. ind., 1.4568-1.4574 @ 25°C. Boiling point, 100°-102°C. @ 0.8 mm.; about 265°C. at 760 mm. Crystallizing pt., fluid at −70°C. (−94°F.). Solvent for cellulose nitrate, cellulose aceto-propionate, ethyl cellulose, benzyl cellulose, polyvinyl acetate, polyvinyl acetal, polyvinyl butyral, chlorinated rubber and polystyrene. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

CYCLOTENE

An aromatic chemical soluble in ethanol, propylene glycol and water in decreasing order respectively. Sensitive to small amounts of alkali and iron. Suggested Uses: A flavoring agent. Dow Chemical Co.

n-DECANE

$C_{10}H_{22}$. Mol. wt., 142.28. Sp. gr., 0.7298 @ 20°/4° C. Boiling Point, 174°C. (760 mm.). Melting Point, −29.7°C. Refractive index, 1.4120 @ 20°C. Color, water white. Soluble in common organic solvents. Insoluble in water. Relatively inert, can be chlorinated and nitrated. Suggested Uses: Intermediate for organic synthesis and as a reaction solvent. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

DECENE-1

$C_{10}H_{20}$. Mol. wt., 140.26. Sp. gr., 0.7396 @ 20°/4°C. Boiling Point, 171°C. (760 mm.). Melting Point, −66.3°C. Refractive index, 1.4220 @ 20°C. Color, water white. Soluble in common organic, petroleum and coal tar solvents. Insoluble in water. Normal olefin actively forming usual addition products. Sug-

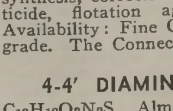
[redacted] facture of pharmaceuticals, dispersing agents, resins, oil additives, and insecticides. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

DECYL MERCAPTAN-1

$C_{10}H_{21}SH$. Mol. wt., 174.34. Boiling Point, 114°C. (13 mm.). Melting Point, −26°C. Sp. gr., 0.8410 @ 20°/20°C. Refractive index, 1.4536 @ 20°C. Colorless liquid with a mild mercaptan odor. Soluble in common organic, petroleum and coal tar solvents. Insoluble in water. Forms metallic mercaptides. Suggested Uses: Polymerization catalyst, intermediate for synthesis, corrosion inhibitor, oil additive, insecticide, flotation agent, and alarm odorant. Availability: Fine Chemical grade and technical grade. The Connecticut Hard Rubber Co.

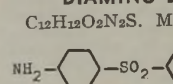
4-4' DIAMINODIPHENYLSULFONE

$C_{12}H_{12}O_2N_2S$. Almost colorless solid crystallizing from alcohol in plates. M. P., 176-7°C. (corr.) M. W., 248. Soluble in dilute acids and in hot alcohol. Gives reactions characteristic of aromatic amines. The sulfone linkage is very stable. Possesses a high anti-bacterial activity but is more toxic than sulfanilamide. Solubilized derivatives such as diasone and promin have shown promise in the treatment of tuberculosis. The diamine itself can be used as an intermediate for azo and other dyestuffs. Available in sample quantities. National Aniline Div.



DIAMINO-DIPHENYL SULFONE

$C_{12}H_{12}O_2N_2S$. Molecular weight, 248. White crystalline solid. Melting point, 146.5-147°C. Suggested Uses: As an intermediate in the preparation of pharmaceuticals, dyestuffs and other organic compounds. Available in small quantities for experimental purposes. Heyden Chemical Corp.



DIAMYLAMMONIUM PHOSPHATE

$((CH_3.(CH_2)_4)_2NH)H_2PO_4$. Physical Form: Hard non-crystalline gum of yellow color. Properties: Very hygroscopic. Soluble in water or alcohol. Slightly soluble in benzene. Almost insoluble in acetone. No sharp melting point but gradually softens as heated, and is mobile liquid at 110°C. Suggested Use: Constituent of rust inhibiting paints. Available in pilot plant quantities. Monsanto Chemical Co.

DIBENZYL CARBONATE

$(C_6H_5CH_2O)_2CO$. Mol. wt., 242. M.P. 29-30°C. B.P., 165-167 @ 2 mm. Index of refraction, 1.5428 @ 30°C. Density, 1.131 @ 28°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, sweet, clinging. Appearance, white crystals or pale yellow liquid. Suggested Uses: In perfumes and synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

5, 7 DIBROMO-8-HYDROXY QUINOLINE

$C_9H_5O\ N\ Br_2$. Mol. wt., 302.98. Color: Buff colored. Insoluble in cold water and dilute acids. Slightly soluble in ether. Readily soluble in concentrated hydrochloric acid, chloroform, alcohol and benzene. Chemical Properties: Oxidized by permanganate to form pyridine 2,3 dicarbonic acid. Forms salts with acids and metals. Suggested Uses: As a fungicide and bactericide. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

DIBUTYL "CARBITOL"*

$C_4H_9OCH_2CH_2OCH_2CH_2OC_4H_9$. Sp. gr. 24/20°C., 0.8836. B.P., 250 to 252°C. (7... mm.). Low water solubility. Suggested Use: Extractant, mutual solvent. Combination of its hydrocarbon and ether groups makes it a stable compound which can be used as an inert reaction medium. Available in limited quantities. Carbide and Carbon Chemicals Corp.

* Registered trade-mark

DICALITE 228-V

A diatomaceous silica filteraid, finely divided powdered material white in color; prepared especially for filtration in purifying water for drinking or cooking. Developed as a war necessity for use in water purification units. Dicalite filteraid assists in removing suspended solid impurities, which may have been in the water originally or may be solids precipitated by the treatment. Positive removal of impurities is assured, including bacteria, giving the water brilliant clarity at high rates of flow. Post-

interest of municipal organizations and industrial plants for use in many places where pure water is not readily available. The Dicalite Co.

DICALITE 234-V

A diatomaceous silica filteraid, finely divided powdered material white in color; prepared especially for filtration in purifying water for drinking or cooking. Developed as a war necessity for use in water purification units. The Dicalite filteraid assists in removing suspended solid impurities, which may have been in the water originally or may be solids precipitated by the treatment. Positive removal of impurities is assured, including bacteria, giving the water brilliant clarity at high rates of flow. Post-war use is indicated by work in progress, and by interest of municipal organizations and industrial plants for use in many places where pure water is not readily available. The Dicalite Co.

DICALTE 240-V

A diatomaceous silica filteraid, white in color and finely divided; specially prepared for removal of lubricating oil from steam condensate by a continuous filtration process. This material is a wartime development for ships powered with reciprocating engines. A small percentage of the oil used in the cylinders is carried with the steam to the condensers and becomes emulsified in the condensate water. Assists in breaking the emulsion and removing the oil; operating efficiency is such that effluent from the filters shows only 1/10th to zero p.p.m. High flowrates are secured with cycles of 24 hours or more at comparatively low pressure. Suggested for post-war use on ships as well as in industrial plants employing reciprocating engines. Prevents scale formation and foaming in tubes caused by oil in boiler feed water. The Dicalite Co.

DICALITE 241-V

A diatomaceous silica filteraid, white in color and finely divided; specially prepared for removal of lubricating oil from steam condensate by a continuous filtration process. This material is a wartime development for ships powered with reciprocating engines. A small percentage of the oil used in the cylinders is carried with the steam to the condensers and becomes emulsified in the condensate water. Assists in breaking the emulsion and removing the oil; operating efficiency is such that affluent from the filters shows only 1/10th to zero p.p.m. High flowrates are secured with cycles of 24 hours or more of comparatively low pressure. Suggested for post-war use on ships as well as in industrial plants employing reciprocating engines. Prevents scale formation and foaming in tubes caused by oil in boiler feed water. The Dicalite Co.

DICETYL CARBONATE

$(C_{15}H_{31}CH_2O)_2CO$. Mol. wt., 510.5. M. P., 44-45.5°C., Insoluble in water. Solubility in alcohol, 0.1% @ 25°C. Solubility in toluene, 50% @ 25°C. Odorless. Appearance, white crystalline waxy solid. This material possesses water-repellent properties. Suggested Uses: As a special wax, and as a water repellent. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

5, 7-DICHLOR 8-HYDROXYQUINOLINE

$C_9H_5ONCl_2$. Mol. Wt., 214.07. Buff-tan powder. Insoluble in cold water. Soluble in benzene and acetone. Not readily soluble in cold alcohol. Soluble in acids and alkali. Chemical Properties: Forms salts with acids and metals. Suggested Uses: Fungicide and bactericide. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

Di-p-CHLOROPHENYL PHENYLPHOSPHINATE

Physical State, Liquid, colorless, phosphinic odor. Mol. wt., 363. Chemical Properties: Hydrolyzes very slowly in water. Contains trivalent phosphorus capable of oxidation to pentavalent state. Suggested Uses: Lubricating oil-additive; anti-oxidant; plasticizer. Victor Chemical Works.

DICRESYL PHENYLPHOSPHONATE

Physical state, Heavy liquid, colorless. Mol. Wt., 338. Boiling Point, 206-211°C. (1 to 2 mm.). Insoluble in water; soluble in common organic solvents. Suggested Uses: Plasticizer; lubricating oil-additive; additive for cellulose plastics as fire-retardant. Victor Chemical Works.

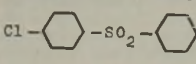
DICRESYL THENYTHIOPHOSPHONATE

S

$C_6H_5P(OC_6H_4CH_3)_2$. Physical state, Liquid, colorless. Mol. Wt., 354. Analysis, P: Calcd. -8.75%; Found -8.8%. Chemical Properties: Stable in water. Suggested Uses: Plasticizer; lubricating oil-additive. Victor Chemical Works.

DICHLOR-DIPHENYL SULFONE

$C_{12}H_8O_2Cl_2S$. Molecular weight, 287. White crystalline solid. Melting point, 145-147°C. Suggested Uses: As an intermediate in the preparation of pharmaceuticals, dyestuffs and other organic compounds. Available in small quantities for experimental purposes. Heyden Chemical Corp.



DICYCLOHEXYL

$C_6H_{11}C_6H_{11}$. Physical Form: Clear mobile liquid. Aromatic odor. Properties: Freezing pt., 2.2°C. Sp. gr., 0.884 @ 25/15.6°C. Ref. ind., 1.4790 @ 25°C. Distillation range, 5 to 95% between 238-240°C. (corr.). Flash pt., 215°F. Flame pt., 220°F. Viscosity 34.2 S.U.S. at 100°F. Insoluble in water. Soluble in organic solvents. Suggested Uses: High boiling solvent, plasticizer, dielectric. Available in pilot plant quantities. Monsanto Chemical Co.

DICYCLOHEXYL CARBONATE

$(C_6H_{11}O)_2CO$. Mol. Wt., 226.18. M.P., 42-42.5°C. B.P., 110-112° @ 1.5 mm. Odor, pleasant, fruity. Appearance, white crystalline solid. Insoluble in water. Miscible with ethyl alcohol and toluene. Suggested Uses: In perfumes and as a special wax. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

DIDECYL DISULFIDE

$(C_{10}H_{21})_2S_2$. Mol. Wt., 346.66. Boiling point, 236-8°C. (5 mm.). Melting point, 17°C. Sp. gr., 0.8892 @ 20°/4°C. Refractive index, 1.4782 @ 30°C. Water white liquid. Soluble in acetone, ether, benzene. Slightly soluble in alcohol, glacial acetic acid, petroleum solvents. Insoluble in water. Suggested Uses: As a stabilizer, anti-blocking agent, oil additive, intermediate for synthesis, insecticide, and flotation agent. Availability: In limited quantities for experimental investigation. The Connecticut Hard Rubber Co.

DIDECYL ETHER

$(C_{10}H_{21})_2O$. Mol. Wt., 298.54. Sp. gr., 0.819 @ 20°/4°C. Boiling Point, 170-80°C. (6 mm.). Melting Point, 16°C. Refractive index, 1.4418 @ 20°C. Color. water white. Soluble in acetone, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As a plasticizer, impregnating agent, heat transfer liquid, solvent, softening agent, and in cosmetic formulations. Availability: Technical grade and fine chemical grade. The Connecticut Hard Rubber Company.

DIDECYL THIOETHER
(Didecyl Monosulfide)

$(C_{10}H_{21})_2S$. Mol. Wt., 314.60. Boiling point, 205-6°C. (4 mm.). Melting point, 22°C. Sp. gr., 0.831 @ 25°/4°C. Refractive index, 1.4569 @ 33.5°C. Color, water white. Soluble in acetone, alcohol, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: Intermediate for synthesis, stabilizer, plasticizer, insecticide, oil additive, and flotation agent. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

DIDODECYL DISULFIDE
(Dilauryl Disulfide)

$(C_{12}H_{25})_2S_2$. Mol. Wt., 402.76. Boiling point, 255-7°C. (4 mm.). Melting point, 34.5-5°C. Sp. gr., 0.8686 @ 35°/4°C. Refractive index, 1.4740 @ 39°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in alcohol, glacial acetic acid, petroleum solvents. Insoluble in water. Suggested Uses: As an intermediate for synthesis, stabilizer, anti-blocking agent, oil additive, insecticide, and flotation agent. Availability: In fine chemical grade and a cast technical grade. The Connecticut Hard Rubber Company.

DIDODECYL ETHER
(Dilauryl Ether)

$(C_{12}H_{25})_2O$. Mol. Wt., 354.64. Sp. gr., 0.8147 @ 33°/4°C. Boiling Point, 190-5°C. (1 mm.). Melting Point, 33°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As a plasticizer, impregnating agent, mold lubricant, softening agent, heat transfer liquid, anti-blocking agent, solvent, and for cosmetic formulation. Availability: Fine chemical grade and a cast technical grade. The Connecticut Hard Rubber Co.

DIDODECYL THIOETHER
(Dilauryl Monosulfide)

$(C_{12}H_{25})_2S$. Mol. Wt., 370.70. Boiling point, 260-3°C. (4 mm.). Melting point, 40-40.5°C. Sp. gr., 0.8275 @ 40°/4°C. White, crystalline, wax-like solid. Soluble in acetone, alcohol, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As an intermediate for chemical synthesis, plasticizer, stabilizer, insecticide, oil additive, and flotation agent. Availability: Fine chemical grade and cast technical grade. The Connecticut Hard Rubber Co.

5 DIETHYLAMINO PENTANONE 2

$CH_3COCH_2CH_2CH_2N(C_2H_5)_2$. Mol. Wt., 157. Sp. Gr., 0.865 @ 20/20°C. Refractive Index, 1.435 @ 20°C. Boiling Pt., 90-92°C. @ 20 mm. Hg. abs. Colorless liquid. Turns dark on storage in contact with air. Suggested Uses: Organic chemical synthesis. U. S. Industrial Chemicals Co.

DIETHYL DICHLOROSUCCINATE

M.W., 243.04. A water white oily liquid with a boiling range of 112-114°C. at 3 mm., and a specific gravity at 15.5°C. of 1.237. Soluble in organic solvents such as alcohols, esters, ethers, ketones, aliphatic hydrocarbons, and aromatic hydrocarbons. Insoluble in water. Chemical Properties: It reacts as an ester and has two reactive chlorine atoms, one of which is very labile. Suggested Uses: As a fungicide and as an intermediate in organic synthesis. Available in limited quantities. National Aniline Div.

DIETHYL FUMARATE

Mol. wt., 172.18. Appearance: Colorless liquid. Boiling Point, 218°C. Melting Point, 1.1°C. Ref. ind. @ 25°C., 1.4383. Sp. gr., 25/4°C., 1.0454. Use: Intermediate in chemical synthesis. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

DIETHYL MALEATE

M. W., 172.2. A water white oily liquid having a boiling range of 222-223.6°C. and a specific gravity of 1.067 at 20/15.5°C. Soluble in organic solvents such as alcohols, esters, ethers, ketones, and aliphatic and aromatic hydrocarbons. Insoluble in water. Chemical Properties: It reacts as an ester and also adds a variety of compounds at the C=C double bond. Suggested Uses: In the manufacture of plastics and like materials, and in organic synthesis. Available in commercial quantities. National Aniline Div.

N, N DIETHYL NICOTINAMIDE

$C_5H_4N—CO—N—(C_2H_5)_2$. Mol. wt., 178.22. Appearance: Clear, colorless to very pale, somewhat viscous liquid. Ref. Ind. @ 25°C., 1.522. Solubility: Miscible in all proportions with water, alcohol and ether. Suggested Uses: Intermediate for chemical synthesis and a respiratory stimulant. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

DIHEXADECYL DISULFIDE
(Dicetyl Disulfide)

$(C_{16}H_{33})_2S_2$. Mol. wt., 514.97. Boiling point, decomposes. Melting point, 53-4°C. Sp. gr., 0.8583 @ 54°/4°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in alcohol, glacial acetic acid, petroleum solvents. Insoluble in water. Suggested Uses: As an anti-blocking agent, stabilizer, intermediate for chemical synthesis, oil additive, insecticide, and flotation agent. Availability: Fine chemical grade and cast technical grade. The Connecticut Hard Rubber Co.

DIHEXADECYL ETHER
(Dicetyl Ether)

$(C_{16}H_{33})_2O$. Mol. Wt., 466.85. Sp. gr., 0.8117 @ 54°/4°C. Boiling Point, decomposes. Melting Point, 54°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene.

Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As a plasticizer, impregnating agent, mold lubricant, anti-blocking agent, heat transfer liquid, solvent, and in the cosmetic field. Availability: Fine chemical grade and a cast technical grade. The Connecticut Hard Rubber Co.

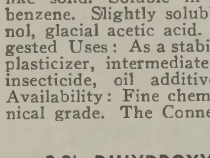
DIHEXADECYL THIOETHER (Dicetyl Monosulfide)

$(C_{16}H_{33})_2S$. Mol. Wt., 482.91. Boiling point, decomposes. Melting point, 57-8°C. Sp. gr., 0.8253 @ 60°/4°C. White, crystalline, wax-like solid. Soluble in acetone, alcohol, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As a stabilizer, anti-blocking agent, plasticizer, intermediate for chemical synthesis, insecticide, oil additive, and flotation agent. Availability: Fine chemical grade and cast technical grade. The Connecticut Hard Rubber Co.

2,2' DIHYDROXY 5,5' DICHLORO DIPHENYL METHANE

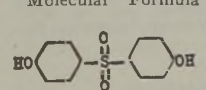
$(HOC_6H_3Cl)_2CH_2$. Mol. wt., 269. White crystalline solid. Melting point, 177-178°C. Soluble in alkaline solutions, alcohols and ketones; insoluble in water. Color, technical—light tan; pure—near white. Odor, very slightly phenolic. Suggested Uses: Mildew- and rot-proofing agent, germicide, fungicide, and antiseptic. Ship. reg., NOIBN. Givaudan-Delawanna, Inc.

4,4-DI (HYDROXYMETHYL)-2-OXAZOLIDONE



Mol. wt., 147. M.P., 111°C. Solubility 73 g. in 100 cc water @ 32°C. Solubility 17 g. in 100 cc ethyl alcohol @ 32°C. Solubility in toluene, 0.1% at 32°C. Odor, none. Appearance, small needle-sharp glistening white crystals. pH of 0.1M solution, 5.95 @ 32°C. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

4, 4'—DIHYDROXY DIPHENYL SULFONE



Molecular Formula $C_{12}H_{10}O_4S$. Molecular Weight 205.3. Properties: Light tan powder with a faint odor. Melting point, 232-244°C. Solubility: Grams per 100 grams solvent. Acetone at 25° C, 94; benzene at 25° C, 0.6; carbon tetrachloride at 25° C, 0.2; ether at 25° C, 9; methanol at 25° C, 93; water at 25° C, 0.2; V. M. P. naphtha at 25° C, 0.1. Use: For Synthesis of organic chemicals, resins, and pharmaceuticals. Dow Chemical Co.

3-5 DI-IODOTYROSINE

White to light cream colored, odorless crystaline powder. Mol. wt., 432.92. Iodine 58.63%. Nitrogen 3.24%. Melting Pt., 200°-213°. Found in skeletal proteins of sponges, coral and other marine organisms, also produced by iodisation of tyrosine. Suggested Uses: Pharmaceutical as iodine compound. Fairmount Chemical Co., Inc.

DIINDENE

$(C_9H_8)_2$. Molecular weight, 232. Melting point above 53°C. A white, crystalline powder, soluble in most organic solvents, insoluble in water. Soluble in hot methanol and glacial acetic acid, sparingly soluble in the cold. Suggested Uses: Synthetic organic chemicals, starting material for alkylation and condensation reactions. Available in research quantities. The Neville Co.

DIISOBUTYL CARBINOL

Colorless liquid. Mol. wt., 144.26. Sp. gr., 20/20°C. 0.8123. Boiling Point, 760 mm. 178.5°C. Refractive index 20/D, 1.4223. Solubility in water, Less than 0.5% by weight at 20°C. Flash point, tag closed cup, 158°F. Flash point, tag open cup, 168°F. Pounds per gallon 20°C, 6.77. Suggested Uses: Defoaming agent, manufacture of wetting agents and esters for employment in perfumes, solvent for resin varnishes designed for roller coating, additive to enamels to improve gloss and flow-out. R. W. Greeff & Co., Inc.

DIISOBUTYL KETONE

Colorless liquid. Mol. wt., 142.24. Sp. gr., 20/20°C. 0.809. Boiling point 760 mm., 168.1. Refractive index 20/D, 1.4118. Solubility in water, 0.08% by weight at 20°C. Flash point tag closed cup, 121°F. Flash point, tag open cup, 131°F. Pounds per gallon 20°C., 6.74. Suggested Uses: Solvent for manufacture of nitrocellulose lacquer emulsions. Promote leveling and increase blush resistance of nitrocellulose lacquer. Solvent for Methyl Methacrylate and more soluble types of vinyl resins chemical raw material for manufacture of dyes, rubber chemicals and resins. R. W. Greeff & Co., Inc.

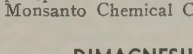
DI-LEAD ORTHOPHOSPHATE

$PbHPO_4$. Physical Form: White non-hygroscopic powder. Properties: Soluble in acids. Hydrolyzes in water to form a more basic lead phosphate. Available in pilot plant quantities. Monsanto Chemical Co.

DIMAGNESIUM PHOSPHATE

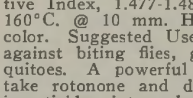
$MgHPO_4.3H_2O$. Physical Form: White crystals. Properties: Slightly soluble in water. Soluble in acids. Suggested Uses: As opacifying agent for enamels and frits. Available in pilot plant quantities. Monsanto Chemical Co.

α, α, DIMETHYL α CARBOBUTOXY DIHYDRO γ PYRONE



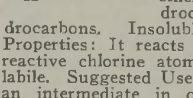
$(CH_3)_2CCH_2COCH{=}COOC_4H_9$. Mol. wt., 226. Sp. gr., 1.057-1.062 @ 20/20°C. Refractive Index, 1.477-1.481 @ 20°C. Boiling Pt., 160°C. @ 10 mm. Hg. abs. Yellow to brown color. Suggested Uses: Insectifuge. Effective against biting flies, gnats, chiggers and mosquitoes. A powerful organic solvent, used to take rotonone and derris resinates and other insecticides into solution in kerosene. U. S. Industrial Chemicals Co.

DIMETHYL DICHLOROSUCCINATE



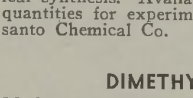
M. W., 215. A water white oily liquid with a boiling range of 98-100°C. at 4-5 mm., and a specific gravity of 1.360 at 15.5°C. Solubility: Soluble in organic solvents such as alcohols, esters, ethers, ketones, aliphatic hydrocarbons and aromatic hydrocarbons. Insoluble in water. Chemical Properties: It reacts as an ester and has two reactive chlorine atoms, one of which is very labile. Suggested Uses. As a fungicide and as an intermediate in organic synthesis. Availability: In limited quantities. National Aniline Div.

DIMETHYL FUMARATE



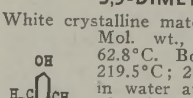
Mol. wt., 144.12. Appearance: White crystalline solid. Melting Point, 102°C. Boiling Point, 192°C. Suggested Use: Intermediate in chemical synthesis. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

DIMETHYL MALEATE



M. W., 144.1. A water white, oily, liquid with a boiling range of 204.0°C-205.0°C. and a specific gravity of 20/14.5 1.152. Solubility—soluble in organic solvents such as alcohols, esters, ethers, ketones, and both aliphatic and aromatic hydrocarbons. Insoluble in water. Chemical Properties: It possesses the reactivity of esters and also is capable of adding a variety of compounds at the C=C double bond. Suggested Uses: In the manufacture of Plastics and like materials, and in organic synthesis. Available in limited quantities. National Aniline Div.

3,5-DIMETHYLPHENOL

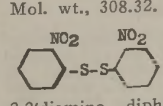


White crystalline material. Structure: Mol. wt., 112.16. Melting Point, 62.8°C. Boiling Point at 760 mm., 219.5°C; 20 mm., 118°C. Solubility in water at 25°C., 0.43 gr./100 gr. of solution. Because of the high activity of the ortho and, to a lesser extent, the para positions of 3,5-dimethylphenol, its use in phenol-formaldehyde type resins enables increased rates of cure, or, conversely, use of less reactive cresylic acid fractions. Beneficial effects of 3,5-dimethylphenol appear usually when it is added after preliminary condensation; addition prior to preliminary condensation is in general not recommended. R. W. Greef & Co., Inc.

DI-n-AMYL CARBONATE

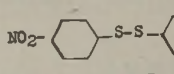
$(C_5H_{11}O)_2CO$. Mol. Wt., 202. B.P., 120°C. @ 12 mm., 129°C. @ 20 mm. Index of Refraction, 1.4208 @ 25°C. Density, 0.921 @ 25°C. Odor, sweet. Appearance, colorless liquid. Miscible with ethyl alcohol and toluene. Insoluble in water. Suggested Uses: In personal and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

2,2' DINITRODIPHENYLDISULFIDE



Mol. wt., 308.32. Appearance: Yellow crystals. Melting Point, 193°C. Insoluble in water, alcohol, acetone. Chemical Properties: The nitro groups can be reduced to produce 2,2'diamino diphenylsulfide. Upon reduction under some conditions it yields 2 methyl benzothiazole. Uses: Useful as intermediate in chemical synthesis. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

4-4', DINITRODIPHENYLDISULPHIDE



Mol. wt., 308.32. Appearance: Yellow crystals. Melting Point, 181°C. Relatively insoluble in most of the common organic solvents. Uses: Intermediate in chemical synthesis. May be reduced to 4,4' diaminodiphenyl disulfide. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

DIOCTADECYL DISULFIDE (Distearyl Disulfide)

$(C_{18}H_{37})_2S_2$. Mol. wt., 571.07. Boiling point, decomposes. Melting point, 62.5°C. White crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in alcohol, glacial acetic acid, petroleum solvents. Insoluble in water. Suggested Uses: As an anti-blocking agent, stabilizer, intermediate for chemical synthesis, oil additive, insecticide, and flotation agent. Availability: Limited quantities for experimental investigation. The Connecticut Hard Rubber Co.

DIOCTADECYL ETHER (Distearyl Ether)

$(C_{18}H_{37})_2O$. Mol. wt., 522.95. Boiling point, decomposes. Melting point, 58-60°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As a plasticizer, impregnating agent, mold lubricant, anti-blocking agent, heat transfer liquid, solvent, and for cosmetic preparations. Availability: Fine chemical grade and a cast technical grade. The Connecticut Hard Rubber Co.

DIOCTADECYL THIOETHER (Distearyl Monosulfide)

$(C_{18}H_{37})_2S$. Mol. wt., 539.01. Boiling point, decomposes. Melting point, 68-9°C. Sp. gr., 0.8148 @ 70°/4°C. White, crystalline, wax-like solid. Soluble in acetone, alcohol, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As an intermediate for cynthesis, plasticizer, stabilizer, anti-blocking agent, insecticide, oil additive, and flotation agent. Availability: Fine chemical grade and cast technical grade. The Connecticut Hard Rubber Co.

DIOCTYL DISULFIDE

$(C_8H_{17})_2S_2$. Mol. wt., 290.55. Boiling point, 210°C. (5 mm.). Melting point, —4°C. Sp. gr., 0.895 @ 20°/4°C. Water white liquid. Soluble in acetone, ether, benzene. Slightly soluble in alcohol, glacial acetic acid, petroleum solvents. Insoluble in water. Suggested Uses: As a stabilizer, insecticide, anti-blocking agent, oil additive, and flotation agent. Availability: In limited quantities for experimental investigation. The Connecticut Hard Rubber Co.

DIOCTYL ETHER

$(C_8H_{17})_2O$. Mol. wt., 242.43. Sp. gr., 0.805 @ 17°/17°C. Boiling point, 291.7°C. (760 mm.). Melting point, 7°C. Refractive index, 1.4329 @ 24°C. Color, water white. Soluble in acetone, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As a plasticizer, impregnating agent, heat transfer liquid, softening agent, solvent, and in cosmetic preparations. Availability: Technical grade and fine chemical grade. The Connecticut Hard Rubber Co.

DIOCTYL I-OCENTYLPHOSPHONATE

Physical state, liquid, straw to colorless. Mol. wt., 416. Acidity, 0.5 cc 0.1 N NaOH/10 cc to phenol. Boiling point, 214°C at 4mm. Insoluble in water. Soluble in organic solvents; hydrocarbons. Hydrolysis, 0.04 cc 0.1 N NaOH/10 g./2 hrs. to phenol. in 100 cc, boil-

vent; anti-10...
tive. Victor Chemical Works.

DIOCTYL PHENYLPHOSPHONATE

Physical state, mobile liquid, water clear to light straw color. Mol. $C_6H_5P\text{-}(OCH_2C_4H_9)(C_2H_5)$ wt., 382. Sp. gr., 0.969 at 28°C. Acidity, less than 0.4 cc. 0.1 N N_2OH/10 cc. to phenolphthalein. Analysis P: Calc—8.12% found—8.5%. Boiling point, 204-207°C (4 mm). Surface tension, 32.3 dynes/cm. at 27°C. Insoluble in water, soluble in alcohol, acetone, ether, benzene, butyl acetate, chloroform, carbon tetrachloride, V.M.P. naphtha. Melting point, semi-solid at —70°C., syrupy at .45°C. Victor Chemical Works.

DIOCTYL STYRYLPHOSPHONATE

Physical state, liquid. Straw to colorless. Mol. wt., 408. Acidity 0.5 cc 0.1 N NaOH/10 cc to phenol. Boiling point, 238-40°C at 3 mm. Insoluble in water; soluble in organic solvents; hydrocarbons. Hydrolysis, 0.01 cc 0.1 N NaOH/10 g/2 hrs. to phenol. in 100 cc boiling water. Suggested Uses: Plasticizer; solvent; anti-foaming agent; lubricant; oil-additive. Victor Chemical Works.

DIOCTYL THIOETHER
(Dioctyl Monosulfide)

$(C_8H_{17})_2S$. Mol. wt., 258.49. Boiling point, 180°C. (10 mm.). Melting point, 0.5°C. Sp. gr., 0.8419 @ 17°/17°C. Refractive index, 1.4606 @ 26°C. Water white liquid. Soluble in acetone, alcohol, ether, and benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: As an organic intermediate, plasticizer, stabilizer, insecticide, oil additive, and flotation agent. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

DIPHENYL PHENYLPHOSPHONATE

Physical state, Crystalline solid, color, white to light straw color. Mol. Wt., 310. Boiling Pt., 215-217°C. (2-3mm.). Solubility, Insoluble in water, soluble in alcohol, ether, benzene, and common organic solvents. Melting Point, 73°C. Suggested Uses: Plasticizer; lubricating oil-additive; additive for cellulose plastics as fire-retardant. Victor Chemical Works.

O-DIPHENYL BIGUANIDE

$C_{14}H_{15}N_5$. Mol. wt., 273. Melting point, above 150°C., pH of a 0.1% water solution, 8.0. Solubility in water, 0.1% @ 25°, in alcohol, 10% @ 25°, in acetone, 5% @ 25°. Appearance, pinkish white. Suggested Uses: As an antioxidant in soap and oils. Available in commercial quantities. Monsanto Chemical Co.

DIPHENYL SULFONE

Melting point, (Technical Grade) 120-125° C; (Pure Grade) 127-129°C. Boiling point, (Pure Grade) 380°C. at 760 mm.; 230°C. at 15 mm. Solubility: Slightly soluble in hot water; soluble in most usual organic solvents. Suggested Uses: Intermediate in organic syntheses and in the preparation of diphenyl sulfides, selendides and their derivatives. Can be chlorinated and sulfonated. Heating with sulfur or selenium produces diphenyl sulfide or selenide. Possible softener or plasticizer in rubber compounding. Availability: At present diphenyl sulfone is available only in laboratory quantities in both technical and pure grades. Monsanto Chemical Co.

DIPOTASSIUM PHOSPHATE, ANHYDROUS

K_2HPO_4. Physical form: White, hygroscopic powder. Solubility: One hundred grams of water will dissolve 233 grams of K_2HPO_4 at 25°C. Insoluble in alcohol. Concentrated aqueous solutions miscible with glycerine. pH of pure K_2HPO_4 is 9.2. Very hygroscopic. At 25°C and 35% relative humidity, K_2HPO_4 absorbs water to form a 70% solution. A good electrolyte in aqueous solution. Suggested Uses: Humectant; anti-static agent for textile fibers; in fermentation; for correcting salt balance in evaporated milk. Availability: Pilot-plant quantities. Monsanto Chemical Co.

DITETRADECYL ETHER
(Dimyristyl Ether)

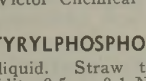
$(C_{14}H_{29})_2O$. Mol. wt., 410.74. Sp. gr., 0.8127 @ 45°/4°C. Boiling point, 238-48°C. (4 mm.). Melting point, 38-40°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in methanol, isopropanol, glacial acetic acid. Insoluble in water. Suggested Uses: Plasticizer, impregnating agent, mold lubricant, anti-blocking agent, heat transfer liquid, solvent, and in cosmetic formulation. Availability: Fine chemical grade and a cast technical grade. The Connecticut Hard Rubber Co.

DITETRADECYL THIOETHER
(Dimyristyl Monosulfide)

$(C_{14}H_{29})_2S$. Mol. wt., 426.80. Boiling point, decomposes. Melting point, 49-50°C. Sp. gr., 0.8258 @ 50°/4°C. White, crystalline, wax-like solid. Soluble in acetone, alcohol, ether, benzene; slightly soluble in methanol, isopropanol, glacial acetic acid; insoluble in water. Suggested Uses: As a stabilizer, plasticizer, anti-blocking agent, intermediate for organic synthesis, insecticide, oil additive, and flotation agent. Availability: Fine chemical grade and cast technical grade. The Connecticut Hard Rubber Co.

DISODIUM TRIISOBUTENYL SUCCINATE

Mol. wt., 328.47. Appearance: Cream-colored flakes. Very soluble in water. Uses: An excellent wetting agent, virtually non-foaming. Is most effective in the range of pH 5-6.5. Available only in small quantities for experimental investigation. Monsanto Chemical Co.



DITETRADECYL DISULFIDE
(Dimyristyl Disulfide)

$(C_{14}H_{29})_2S_2$. Mol. wt., 458.86. Boiling point, 275-7°C. (4 mm.). Melting point, 45.5-46.5°C. Sp. gr., 0.8655 @ 46°/4°C. White, crystalline, wax-like solid. Soluble in acetone, ether, benzene. Slightly soluble in alcohol, glacial acetic acid, petroleum solvents. Insoluble in water. Suggested Uses: As a stabilizer, anti-blocking agent, intermediate for synthesis, oil additive, insecticide, and flotation agent. Availability: In limited quantities for experimental investigation. The Connecticut Hard Rubber Co.

n-DODECANE

$C_{12}H_{26}$. Mol. wt., 170.33. Sp. gr., 0.7493 @ 20°/4°C. Boiling point, 216.2°C. (760 mm.). Melting point, 9.6°C. Refractive index, 1.4218 @ 20°C. Color, water white. Soluble in alcohol, acetone, ether, petroleum and coal tar solvents; insoluble in water. Relatively inert but can be chlorinated and nitrated. Suggested Uses: Intermediate for synthesis, as a reaction solvent, and a primary standard for calibration of viscosimeters. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

DODECANOL-1
(Lauryl Alcohol)

$C_{12}H_{25}OH$. Mol. wt., 186.33. Sp. gr., 0.8309 @ 24°/4°C. Boiling point, 259°C. (760 bb.). Melting point, 24°C. Refractive index, 1.4408 @ 24.5°C. Color, water white. Soluble in alcohols, acetone, and ether. Insoluble in water. Suggested Uses: Intermediate for synthesis, solvent, and in cosmetic formulations. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

DODECENE-1

$C_{12}H_{24}$. Mol. wt., 168.31. Sp. gr., 0.7600 @ 20°/4°C. Boiling point, 213°C. (760 mm.). Melting point, —33.6°C. Refractive index, 1.4327 @ 20°C. Color, water white. Soluble in common organic solvents. Insoluble in water. Active double bond forming usual addition products. Suggested Uses: Intermediate for the preparation of dispersing agents, resins, pharmaceuticals, oil additives, and insecticides. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

DODECYL DIMETHYL AMINE

$(CH_3)_2C_{12}H_{25}N$. Mol. wt., 213. Boiling range of the technical grade 100-125°C/5 mm. Hg. Forms water soluble surface active salts with acids. Suggested Uses: As a surface active cation and as an intermediate for the preparation of quaternary ammonium compounds. Onyx Oil & Chemical Co.

DODECYL MERCAPTAN-1
(Lauryl Mercaptan)

$C_{12}H_{25}SH$. Mol. wt., 202.39. Boiling point, 153-5°C. (24 mm.). Melting point, —7.5°C. Sp. gr., 0.8408 @ 25°/4°C. Refractive index, 1.4589 @ 20°C. Colorless liquid with mild mercaptan odor. Soluble in acetone, alcohol, ether, petroleum and coal tar solvents. Insoluble in water. Forms metallic mercaptides. Suggested Uses: As a polymerization modifier, organic intermediate, corrosion inhibitor, oil additive, insecticide, and flotation agent. Availability: Fine chemical grade. The Connecticut Hard Rubber Co.

DODECYL SULFONIC ACID-1
(Lauryl Sulfonic Acid)

$C_{12}H_{25}SO_3H$. Approximate mol. wt., 250.39. Brown, amorphous, wax-like solid. Chemical acid content approximately 90%. Soluble in water, acetic acid, alcohol, and toluene. Suggested Uses: As a hydrogen soap, and the salts as oil detergents, dispersing agents, stabilizers, and wetting agents. Availability: In small quantities for experimental investigation. The Connecticut Hard Rubber Co.

DN DUST NO. 5

Slightly yellowish powder, very fluffy with ideal dusting characteristics. Suggested Uses: Insecticide for controlling leaf Hoppers on beans and Irish potatoes. Dow Chemical Co.

DP SOLUTION—4519

Color, pale straw. Wt. per gal., 8.2 lbs. Chemical Constitution: An alcohol solution of an organic pyrophosphate. Suggested Uses: DP Solution—4519 is an effective inhibitor for preventing discoloration of clear nitro cotton solution stored in steel drums. Permits use of steel drums rather than tin lined drums for this purpose. Availability: Commercial quantities for war uses. Monsanto Chemical Co.

DRIOCEL

Drying adsorbent prepared from activated bauxite. Bulk density, 55-58 lbs./cu. ft. Specific heat, about 0.24 cal. per g. Typical mesh sizes, 4/8, 4/14, 10/20. Absorbs from 8% to 12% of its weight of water, depending on conditions, before moisture is detectable in the effluent. The total water adsorption capacity is about 22%. Suggested Uses: Desiccant for dehydrating both liquids and gases to low dew points at ordinary and high pressure. The adsorbent can be regenerated repeatedly by heating at 300°-500°F. For drying gaseous and liquid charges to various hydrocarbon conversion processes, *e.g.*, isomerization, alkylation (HF), the dehumidifying of natural gas to prevent hydrate formation, the protection of anhydrous organic chemicals from moisture, and the drying of various gases. Also used for anhydrous packaging of metal parts, and instruments. Available in any quantity desired. Attapulgus Clay Co., sales agents for Porocel Corp.

DU PONT ADHESIVE 77

Vinyl resin-base adhesive. Suggested Uses: As adhesive for production of solid fibre weatherproof containers ("V-boxes") employed in overseas shipment of military supplies. E. I. du Pont de Nemours & Co., Inc.

DU PONT ADHESIVE 78

Vinyl resin-base adhesive. Suggested Uses: As adhesive for production of solid fibre weatherproof containers ("V-boxes") employed in overseas shipment of military supplies. E. I. du Pont de Nemours & Co., Inc.

DU PONT AMMATE WEED KILLER

Active ingredient is ammonium sulfamate. Non-toxic to human beings, pets or livestock; non-flammable and non-explosive; fire retardant properties. Suggested Uses: To control poison ivy, poison oak, poison sumac, ragweed, and many other noxious weeds; exerts only temporary soil sterilizing effects. E. I. du Pont de Nemours & Co., Inc.

E 607

Cationic quaternary ammonium derivative of pyridine-betaine type with excellent foaming and detergent properties. Reddish brown viscous liquid, pH 4-4.5, surface tension 36 dynes/cm. Suggested Uses: Ore beneficiation processes, textile and fur processing, impregnation, dyeing. Emulsol Corp.

ELASTOBOND CEMENT

A reclaim rubber dispersion fortified with synthetic resins, plasticizers, and non-resin materials. Contains no inorganic fillers. Appearance: Dark gray, fluid cement, miscible in water but water resistant when in the dried state. Non-inflammable. Provides fast bonding of paper, asphalt laminated or impregnated papers and fabrics, leathers, felt, and similar porous or rough surfaced materials. Permanent flexibility of glued joint or lamination. Can be used for bonding paper, fabrics, etc. to plain or coated metals, wood, plastics in fabricating and assembly operations. Suggested Uses: Shoe, luggage, gloves, container sealing, packaging operations. Installation of acoustical tile, insulations, wall coverings, linoleum, auto trimming. Toy and novelty assembling, weatherstrip application, paper laminant, general sealing work. Available in packings from 1 gallon to 55 gallon drums. Paisley Products, Inc.

EMCOL 3L-CRUDE

Water soluble cationic reagent with good

foaming and detergent properties in low pH range. Suggested Uses: Flotation agent in mining industries such as silica from phosphate, manganese ores, etc.; textile and fur processing. Emulsol Corp.

EMCOL #3160

Aqueous solution, clear, amber, fatty acid derivative. Excellent foaming and detergent properties. Practically odorless. Suggested Uses: Cosmetic detergent base such as for shampoos, bubble bath, liquid soaps, cleaners. Emulsol Corp.

EMCOL 3812-B

Clear, practically colorless aqueous solution of a sulpho succinamide derivative. Suggested Uses: Soapless shampoo, wetting and cutting agent in cosmetic preparations, detergent and bubble bath base, penetrating and lathering agent. Emulsol Corp.

EMCOL SP

A light-caramel colored waxy solid, faint odor, water dispersible. Titre 50.1°C; surface tension of a 1% suspension 41 dynes/cm.; pH of 1% disperion—8.52; Sp. gr., 1.05. Suggested Uses: Dispersing agent for dyes, softening agent, plasticizer. Emulsol Corp.

EMULSEPT

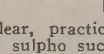
10% aqueous solution of n-(acyl colamino formyl-methyl) pyridinium chloride. A quaternary ammonium germicidal detergent. Pale amber, oderless solution pH 5 to 5.5; surface tension 35.7 dynes/cm. Sp. Gr. 1.0. Toxicity Index less than 0.6 by methods of Welch & Brewer and Hirsch and Novak. Phenol coefficients (averages) according to F. D. A. method for active ingredient at 370 C: S. aureus 500, E. typhi 340. Suggested Uses: Germicide for medical and hospital applications. Sanitizing agent for bacteriological control in food processing industry. General disinfectant field where combination of high germicidal potency, good detergency, low toxicity and lack of odor are desired. Emulsol Corp.

EMULSION 247-21

A high solids resin modified synthetic rubber latex suitable for coating fabric, paper and compositions in the manufacture of gasket stock. The system was formulated for dipping application. A complete cure will take place at 275°F. in 1 hour. Recommended particularly where resistance to cold flow, oil and grease are of primary importance. American Resinous Chemicals Corp.

EPICHLOROHYDRIN

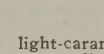
Molecular Wt., 112.16. Freezing Point, −57.2°C. Boiling Point, 116.11°C. (760 mm.). Sp. Gr. 20/4, 1.1805. Refractive Index 20/4, 1.1805. Solubility in water at 30°C., 6.6% wt.



Suggested Uses: Organic synthesis, solvent for resins and gums. R. W. Greeff and Co., Inc.

1,2-EPOXY-3-BUTENE

Mol. wt., 70.088. Sp. Gr., 0.8693 at 25°/4°C. Refractive Index 1.4170 at 20°C. Boiling Point 69°C. (739 mm.). Partially soluble in water. Odor, sharp, gasoline-like.



Color, water white. Chemical Properties: The epoxy group undergoes epoxide type polymerization, adds to anhydrides to yield esters of 3,4-dihydroxy-1-butene, and exhibits other typical addition reactions involving opening of the ring with active hydrogen compounds such as water, ammonia, acids, alcohols, and primary and secondary amines. The double bond also exhibits typical reactions such as polymerization and the addition of halogens and hypohalous acids. Suggested Uses: In the production of polymerizable alkyds, synthesis of unsaturated alcohol ethers, and other organic chemicals and pharmaceuticals. Available only in small quantities for experimental investigation. Columbia Chemical Division, Pittsburgh Plate Glass Co.

ETHALDEHYDE

$C_2H_5O(CH_3O)C_6H_3CHO$. Methoxy-4-Ethoxy Benzaldehyde. Mol. wt., 180.20. Vanillin ethyl ether; protocatechuicaldehyde-3 Methyl-4 Ethyl. Melting Pt., 64-65°C. Sublimes. Slightly soluble in hot water and alcohol; soluble in ether. Suggested Uses: In perfume bases in opoponax, ambre etc. as sweetening agent. General Drug Co.

b-ETHOXY ETHYL PROPIONATE

$C_2H_5OCH_2CH_2COOC_2H_5$. Molecular Weight, 146. Specific Gravity, 0.943-0.953 @ Refractive Index, 1.405-1.406. @ 25°C. Boiling Range, 98% between 165-172°C. @ 760 mm. Colorless liquid. Suggested Uses: Organic chemical synthesis. Preparation of Vitamin B_1. U. S. Industrial Chemical Co.

ETHOXYTRIGLYCOL
(Ethyl ether of triethylene glycol)

$C_2H_5OC_2H_4OC_2H_4OH$. Mol. wt., 178. Sp. gr., at 20°/20°C. 1.0215. B.P., 257°C. (760 mm.). F.P., minus 19°C. Suggested Uses: Solvent for nitrocellulose, plasticizer intermediate, and mutual solvent in cosmetics, perfumes, textile oil specialties, and cutting oils. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

2-ETHYLBUTYL "CELLOSOLVE"
(Mono 2 Ethylbutyl Ether of Ethylene Glycol)

$(C_2H_5)_2CHCH_2OCH_2CH_2OH$. Mol. wt., 146.22. Sp. gr., 0.8952 at 20°/20°C. B.P. 197.4°C. (760 mm.). F.P. below —90°C. Refractive index, 1.4305 at 20°C. Flash pt., 180°F. Solubility in water, 1.4% at 20°C. Solubility of water in it at 20°C., 10.0%. Colorless liquid. Shows promise as a mutual solvent or coupling agent. Should be useful in dry-cleaning soaps, soluble oils for textile and leather applications, and metal-cutting and insecticide oils. Is a plasticizer intermediate, and has good solvent properties for dyestuffs and wood stains. Available in limited quantities. Carbide and Carbon Chemicals Corp.

2-ETHYLHEXANEDIOL-1, 3

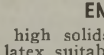
$C_3H_7CHOHCH(C_2H_5)CH_2OH$. Sp. gr., 0.9422 at 20°/20°C. Vapor pressure, at 20°C., less than 0.01 mm. Flash point, 260°F. B.P. 243°C. (760mm.). Solubility in water at 20°C. is 4.2% and water in it, 11.7%. A high boiling, non-volatile, colorless glycol with a faint odor, reminiscent of witch-hazel. Probable application in cosmetic field since it resembles glycerine in its softening action on the skin. A promising intermediate for manufacture of plasticizers and synthetic resins where it results in products with greater hydrocarbon solubility and water resistance than those made from water soluble glycols. Exceedingly potent insect repellent for mosquitoes, biting flies, gnats, chiggers and fleas. Produced in commercial quantities. Carbide and Carbon Chemicals Corp.

ETHYL MORRHUATE

The ethyl ester of cod liver oil, fatty acids, contains less than 1/10% of free fatty acid. Sp. Gr. at 25/25 is 0.882. Suggested Uses: Similar to that for sodium morrhuate. Fine Organics, Inc.

ETHYL OXALYL PROPIONATE

Mol. Wt., 202. Sp. Gr., 1.0977 @ 20/20°C. Refractive Index, 1.433 @ 20°C. Boiling Point, 108-109 @ 5.5 mm. Hg. abs. Light yellow to colorless liquid. Suggested Uses: Organic chemical synthesis. U. S. Industrial Chemicals Co.



ETHYL CAPROYLACETATE

$C_5H_{11}COCH_2COOC_2H_5$. Mol. Wt., 186. B.P., 91-96°C. @ 4 mm. Index of Refraction, 1.429 @ 25°C. Density, 0.949 @ 25°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, sweet. Appearance, colorless liquid. Chemical Properties: Reactive and versatile intermediate which undergoes alkylation and condensation reaction. Suggested Uses: Synthesis of pharmaceuticals, pyrazolones, isoxazolones and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

ETHYL CHLORACETATE, TECHNICAL

$ClCH_2COOC_2H_5$. Mol. Wt., 122.56. Appearance: Light brownish to greenish colored liquid. Boiling Point, 141-144°C. Sp. gr. @ 20°C.—1.150. Suggested Use: Intermediate in chemical synthesis. Free acidity: Neutral to very slightly acid. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

ETHYL ISOVALERYLACETATE

$CH_3CH(CH_3)CH_2COCH_2COOC_2H_5$. Mol. Wt., 172. B.P., Enol form, 97°C. @ 14 mm. Keto form, 89°C. @ 14 mm. Index of Refraction, 1.4272 @ 25°C. (Equilibrium mixture of keto and enol forms). Density, 0.957 @ 25°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, sweet, ester-like. Appearance, colorless liquid. Chemical Properties: [illegible] goes alkylation and condensation reactions. Suggested Uses: Synthesis of pharmaceuticals, pyrazolones, isoxazolones, and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

ETHYL PHENYLBENZYLCYANOACETATE

$C_6H_5C(C_6H_5CH_2)(CN)COOC_2H_5$. Mol. Wt., 279. B.P., 170-185° @ 2 mm. Index of refraction, 1.546 @ 25°C. Density, 1.10 @ 25°C. Odor, very slight. Appearance, viscous, slightly yellow liquid. Insoluble in water. Miscible with ethyl alcohol and toluene. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

ETHYL α-PHENYLBUTYRATE

$C_2H_5CH(C_6H_5)COOC_2H_5$. Mol. Wt., 156. M.P., −41.5 to − 39.5°C. B.P., 95-97°C. @ 4 mm. Index of Refraction, 1.4874 @ 25°C. Density, 0.992 @ 25°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, sweet. Appearance, colorless liquid. Suggested Uses: In perfumes and synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

ETHYL PHENYLCYANOACETATE

$C_6H_5CH(CN)COOC_2H_5$. Mol. Wt., 189. B.P., 153°C. @ 10 mm. Index of Refraction, 1.5010 @ 25°C. Sp. Gr., 1.08 @ 25°C. Odor, very slight characteristic. Appearance, nearly colorless liquid. Miscible with ethyl alcohol and toluene. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

ETHYL PHENYLETHYLCYANOACETATE

$C_6H_5C(CN)(C_2H_5)COOC_2H_5$. Mol. Wt., 217. B.P., 147-8°C. @ 11 mm. Index of Refraction, 1.4948 @ 25°C. Sp. Gr., 1.05 @ 25°C. Odor, very slight, characteristic. Appearance, practically colorless liquid. Insoluble in water. Miscible with ethyl alcohol and toluene. Suggested Uses: In the synthesis of pharmaceutical and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

FERROUS AMMONIUM OXALATE

$FeC_2O_4.2(NH_4)_2C_2O_4$. Mol. Wt., 392.04. Tan colored crystals. Soluble in saturated ammonium oxalate solution. Light sensitive. Suggested Uses: Iron and stainless steel plating experiments, ferrotype and blue print experimentation, reducing agent. Available for laboratory and small manufacturing uses. Palo-Myers, Inc.

FERMATE
(Ferric Dimethyl Dithiocarbamate)

Fungicide compatible with other standard insecticides and fungicides, which is effective in low concentrations. Suggested Uses: For application as spray or dust to control fungus diseases affecting fruits, vegetables, field crops and ornamentals. E. I. du Pont de Nemours & Co., Inc.

"FLEXOL"* PLASTICIZER DOP
(Di-2-Ethylhexyl Phthalate)

Mol. wt., 390.54, B.P. 229°C. (5 mm.). Sp. gr., at 20°/20°C., 0.9861. Solubility in water at 20°C., <0.01% by weight. Viscosity at 20°C., 81.4 centipoises. Refractive index, 1.4859. Flash pt., 425°F. Vapor pressure <0.01 mm. Hg at 20°C. Stable, light colored, high-boiling, liquid which is miscible with most organic solvents but is extremely insoluble in water. Evaporation rate is considerably lower than butyl phthalate. Suggested Uses: Excellent plasticizer for resins, particularly the vinyl chloride-acetate copolymer and polyvinyl chloride types; it is compatible with nitrocellulose, polystyrene and urea-formaldehyde resins, as well as the buna and neoprene elastomers. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

* Registered trade-mark

"FLEXOL"* PLASTICIZER 4GO
(Polyethylene Glycol Di-2-Ethylhexoate)

Mol. wt., 446.6. Sp. gr., at 20°/20°C., 0.9892. Solubility in water at 20°C., <.01% by weight. Viscosity at 20°C., 25.1 centipoises. Refractive index, 1.447. Flash pt., 395°F. Light colored, mild-odored liquid.

As plasticizer it develops flexibility at low temperatures, possesses very low volatility. Compatible with "Vinylite" resins, polystyrene, nitrocellulose, ethyl cellulose, and methyl methacrylate resins, as well as synthetic rubbers. Suggested Uses: Excellent plasticizer useful in molding, calendering, and extrusion compounds of the vinyl chloride and vinyl chloride-acetate resins, and synthetic rubber, as well as lacquers incorporating those resins with which it is compatible. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

* Registered trade-mark

GALEX
(Dehydroabietic Acid)

A non-oxidizing rosin having the benzenoid nucleus. Lends itself to most chemical reactions of aromatic compounds, such as sulfonation, nitration, Friedel-Craft reactions, etc. Sp. Gr., 1.082. Melting Point, 66°C. Soluble in ordinary organic solvents such as alcohols, ethers, esters, benzine, carbon-tetrachloride, etc. Is plasticized by castor oil, perilla oil, cotton seed oil, soya bean oil, etc. Is miscible in high concentrations with natural and synthetic resins. Suggested Uses: Adhesives of water insoluble type; extender for natural and synthetic resins, for manufacture of exter gum, soaps, soldering fluxes, metal salts, waterproofing compounds. Givaudan-Delawanna, Inc.

G-1165

A glucoside ether oleate. A water in oil type emulsifier having an unusually high water absorption value. Bland, oily liquid of particular interest in the manufacture of cosmetics and pharmaceuticals. Useful in preparing emulsions stable to electrolytes. Shipping weight 8.5 lbs. per gallon. Supplied in 1, 5 and 55 gal. containers. Atlas Powder Co.

GLYCAID

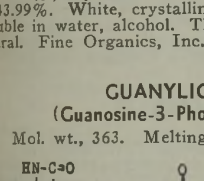
A non-ionic surface active agent. Light yellow fluid, with a slight odor. 5% solution has a pH of 6.9—7.2. Completely soluble in water and alcohol, but insoluble in hydrocarbons and oils. Suggested Uses: Dye assistant in the dyeing of cotton and rayon with substantive colors, vat colors, diazo colors and acetate colors. Also used in the prevention of lime soap precipitation. Glyco Products Co., Inc.

GUANIDINE HYDROCHLORIDE

CH_5N_3HCl. Mol. Wt., 95.53. Guanidine, 61.83%; Hydrochloric acid, 38.17%; Nitrogen, 43.99%. White, crystalline powder. Freely soluble in water, alcohol. The aq. solution is neutral. Fine Organics, Inc.

GUANYLIC ACID
(Guanosine-3-Phosphoric Acid)

Mol. wt., 363. Melting point, 180 (decomp.)



White crystalline powder soluble in water. Solutions are levorotatory $[\alpha]_D^{25} = -8°.0$. The guanosine nucleotide of yeast nucleic acid. On hydrolysis, guanine, guanosine, d-ribose, and phosphoric acid are obtained. Suggested Uses: Preparation of hydrolysis products, biochemical and medicinal research. Available in small amounts. Schwarz Laboratories, Inc.

HB-40

A light-colored, mobile, high-boiling, oily hydrocarbon. Specific gravity: 1.00—.01 at 25/15.6°C. Refractive Index: 1.5540—1.574 at 25°C. Coefficient of Expansion: 0.000741 c.c./c.c./°C. Stability to Heat: Does not readily oxidize. Flash point, 345°C. Fire point, 385°C. Pour point, –28°C. Viscosity: 136.5 S.U.S. at 100°F. 38.4 S.U.S. at 210°F. Solubility: Insoluble in water; slightly soluble in 95% alcohol; miscible in all proportions with usual organic solvents. Compatible with many gums and resins, in all proportions with polystyrene, to the extent of 70 parts HB-40 to 30 parts ethyl cellulose, and to the extent of two parts HB-40 to 98 parts cellulose acetate. Suggested Uses: Solvent, plasticizer; as an oil for high vacuum diffusion pumps. Availability: Introductory quantities. Monsanto Chemical Co.

HEAVY CALCINED MAGNESIA

Indian product. High in MgO, less than .001 manganese. Low in Silica and Iron. Uses: Rubber. Golwynne Chemicals Corp.

HEXADECENE-1
(Cetene)

$C_{16}H_{32}$. Mol. Wt., 224.42. Sp. Gr., 0.7825 @ 20°/4°C. Boiling Point, 274°C. (760 mm.). Melting point, 4°C. Refractive index, 1.4417 @ 20°C. Color, water white. Soluble in common organic solvents. Insoluble in water. Double bond actively forms addition products. Suggested Uses: Intermediate for synthesis of pharmaceuticals, resins, dispersing agents, oil additives, plasticizers, and insecticides. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

HEXADECYL MERCAPTAN-1
(Cetyl Mercaptan)

$C_{16}H_{33}SH$. Mol. Wt., 258.49. Boiling point, 185-90°C. (7 mm.). Melting point, 18°C. Sp. Gr., 0.8474 @ 20°/4°C. Refractive index, 1.4638 @ 20°C. Colorless liquid with a mild mercaptan odor. Soluble in common organic solvents. Insoluble in water. Forms metallic mercaptides. Suggested Uses: As an intermediate for synthesis, polymerization conditioner, corrosion inhibitor, oil additive, insecticide, and flotation agent. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

HEXAMETHYL-DIAMINO ISOPROPANOL-DIIODIDE

Also known by trade names of Iodisan and Endoiodin. Mol. wt., 430-04. Iodine, 59.03%. White, crystalline powder. Melts about 275° with decomposition, but becomes brown at 240°. Freely soluble in water, slightly in alcohol; insoluble in ether, acetone. Suggested Use: Parenteral iodine therapy in syphilis, arteriosclerosis. Fine Organics, Inc.

HEXADECYL SULFONIC ACID-1
(Cetyl Sulfonic Acid)

$C_{16}H_{33}SO_3H$. Approximate Mol. Wt., 306.49. Brown, amorphous, wax-like solid containing approximately 90% active ingredient. Soluble in water, acetic acid, alcohol, and coal tar solvents. Suggested Uses: As a hydrogen soap, and the salts as oil detergents, dispersing agents, stabilizers, and wetting agents. Availability: In small quantities for experimental investigation. The Connecticut Hard Rubber Co.

HOT MELT Q6-47

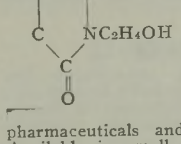
Amorphous wax — synthetic rubber — resin concentrate for use in fortifying wax coatings and lamination compounds. The synthetics provide improved adhesion, flexibility at low temperatures, and minimized flow at elevated temperatures. Blends readily with wax in the melting pots. Available also in complete formulations. American Resinous Chemicals Corp.

HYDRINDYLPHENOL

($C_{15}H_{13}OH$). Molecular Wt., 210. Melting Point, 85 to 88°C. A white crystalline powder. Soluble in aromatic solvents, alcohols, hot petroleum benzene and cyclohexane, sparingly soluble in the cold. Insoluble in water. Suggested Uses: Intermediate for synthetic resins and synthetic organic chemicals; has an active hydroxy group which should lend itself to a variety of reactions; insecticides and repellents. Available in research quantities. The Neville Co.

3-HYDROXYETHYL-2-OXAZOLIDONE

Mol. Wt., 131. Index of Refraction, 1.4820 @ 25°C. Density, 1.267 @ 25°C. Odor, mild, amine-like. Appearance, clear, yellow, viscous liquid. Miscible with water and ethyl alcohol. Solubility in toluene, 0.6% @ 32°C. pH of 0.1M solution in water, 9.0 @ 30°C. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.



8-HYDROXYQUINOLINE

$HO.C_9H_6N$. Mol. Wt., 145.15. Appearance: Small buff colored crystals. Melting Point, 75-76°C. Boiling Point, 267°C. Slightly soluble in cold water, ether, alcohol, acetone, dilute alkali; very soluble in glacial acetic acid, strong acids. Amphoteric acting as weak acid and strong base. Readily forms salts and addition compounds such as benzoate, salicylate, sulfonamide, etc. Couples with diazo compounds. Suggested Uses: In the synthesis of fungicides, ovicides, bactericides, dyes and other organic chemicals. Available only in small sample quantities for experimental investigation. Monsanto Chemical Co.

IMPREGNANT T8-10

A synthetic rubber latex composition in black color designed for impregnation of fabric materials as belting, felt, flannel, or any general type cotton fabric. Being used for manufacture of synthetic shoe soles. Available in all colors. Give good strength, abrasion and water resistance. American Resinous Chemicals Corp.

IMPREGNANT U7-31

Resin modified GRS latex dispersion formulated to give rapid and complete saturation for paper, fabrics, and felts. It is recommended for improving tear and tensile strength and increased water resistance. When nitrocellulose lacquer is applied over a surface treated with this compound, good adhesion will result; similarly no discoloration will be noted. Lacquers applicable to the above described system are also available on request. American Resinous Chemicals Corp.

IMPREGNANT W5-16

A high solids impregnating system for paper derived from a resin modified processed synthetic rubber latex. Formulated for application where high solids take up and maximum internal cohesive and ply strength are required. It is possible to employ up to 50% solids in the impregnating bath and attain almost instantaneous saturation of the stock. The material will cure during the normal drying operation thereby rendering maximum strength to the treated paper. American Resinous Chemicals Corp.

IMPREGNANT W5-17

A resin modified processed synthetic rubber latex formulated for use in the manufacture of high speed canvas belting. Rapid and complete penetration of four ply belting may be realized in a 30 second dip. The system will cure on heat drying to bond the fibres uniformly and completely producing a system of excellent internal strength. Surface coating systems applicable to the above described system are available on request. American Resinous Chemicals Corp.

IN-2555 FUNGICIDE

Active ingredient is 10% solution of phenyl mercury oleate in mineral spirits. Suggested Uses: Powerful fungicide and bacteriacide in concentrations of 1-2%; surface-applied wood preservative alone or in combination with finishes such as wood sealers; highly effective preservative for cotton fabric to control fabric-rotting organisms, such as Chaetomiun globosum and Mitarrhizium sp. E. I. du Pont de Nemours & Co., Inc.

IN-5499 FUNGIIDE

Active ingredient (10%) is phenyl mercury oleate in oil-in-water emulsions. Compatible with various kinds of water repellants. Suggested Use: As fabric preservative; can be applied on fabrics from water bath containing this fungicide in combination with Aluminum Salt wax-emulsion types of finishes. E. I. du Pont de Nemours & Co., Inc.

ISOCEL

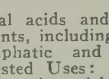
An isomerization catalyst composed of activated bauxite impregnated with anhydrous aluminum chloride. $AlCl_3$ content, 15-20%. Bulk density, 65 lbs./cu. ft. Typical mesh sizes, 4/8, 4/14, and 6/14. Suggested Uses: As a catalyst for the vapor phase isomerization of hydrocarbons, e.g., butane to isobutane. Also known uses of $AlCl_3$ as a catalyst for alkylation, polymerization, Friedel-Crafts reactions. Available in any quantity desired. Attapulgus Clay Co., sales agents for Porocel Corp.

ISOPROPYL PALMITATE

$C_{19}H_{38}O_2$. Water white liquid. Insoluble in water, soluble in alcohol. Boiling Point, 180°C. (10 mm.). Suggested Uses: Non-toxic base in cosmetic and pharmaceutical industries. Available after the war. Beacon Co.

ISOQUINOLINE

Purity: 95% minimum. Distillation Range: 95% shall distill within a range of 2°C. including the temperature of 243°C. Freezing Point: 23°C. minimum. Solubility: Sparingly soluble in cold water; soluble in dilute mineral acids and in most common organic solvents, including alcohols, ethers, esters, ketones, aliphatic and aromatic hydrocarbons. Suggested Uses: Manufacture of pharmaceuticals, dyes, insecticides, rubber accelerators, and in organic syntheses. Shipping Containers: 450-lb. drums; 45-lb. cans. Reilly Tar & Chemical Corp.



ISOTHAN Q 15

An alkyl isoquinolinium salt. Easily soluble in acidic, alkaline, saline solutions and many organic solvents. Odor, mildly aromatic. Surface, active; catonic. Suggested Uses: Fungicide, germicide, mothicide; emulsifying agent. Onyx Oil and Chem. Co.

ISOTHAN DL1

A quaternary ammonium halide. Easily soluble in aqueous solutions and organic solvents. Strongly surface active; valuable as penetrating and wetting agent. Very slight odor. Suggested Uses: Fungicide, germicide; as a penetrating, wetting and emulsifying agent. Onyx Oil & Chem. Co.

2 ISOVALERYL 1, 3 INDANEDIONE

$C_6H_4(CO)_2CHCOCH_2CH(CH_3)_2$. Mol. Wt., 230. Melting Point, 68°C. Light yellow crystalline powder. Suggested Uses: A powerful insecticide. U. S. Industrial Chemicals Co.

K-200 OIL

Sorbitan ester of selected soya acids. Acid Number 20-25, Viscosity F-G (Gardner Holdt) Iodine Number 160-165. A fast bodying, fast drying synthetic oil. Varnishes prepared with this oil dry as fast as Tung Oil and compare favorably in alkali resistance. Available in experimental quantities. Atlas Powder Co.

K D OIL

Sorbitan ester of dehydrated castor oil acids. Acid Number 20-25, Viscosity O-Q (Gardner Holdt). A fast drying synthetic oil which overcomes the poor drying of dehydrated castor oil, but retains its advantages. Obtainable in experimental quantities. Atlas Powder Co.

K-OIL

Sorbitan ester of linseed fatty acids. Acid Number 18-22, Viscosity F-G (Gardner Holdt) Iodine Number 160-165. A synthetic drying oil useful for making fast drying varnishes, having good alkali resistance and hardness. K-Oil has replaced tung oil in many applications because of these superiorities. Shipping weight 8.5 lbs. per gallon. Supplied in 1, 5 and 55 gallon containers. Atlas Powder Co.

LAURENE #110

Amber color liquid, water soluble, ashless. High sudsing properties. Suggested Use: Shampoo base. Beacon Co.

LAURYL FORMATE

Physical state, liquid, colorless. Sp. Gr., 0.858 (30°C.). Refractive Index, 1.432 (ND). Saponification Equiv., 236 to 243. Boiling Pt., 130-178°C. at 20 mm. Solubility: Insoluble in water; soluble in PVM naphtha, benzol, carbon tetnochloride, acetone, methanol, butyl acetate. Victor Chem. Works.

LAUXITE PF90-C

Lauxite PF90-C, warm temperature setting resorcinol resin adhesive (phenolic type), liquid. Sets at room temperature of 70°F. for laminating veneering and assembly gluing; slightly elevated (110°-140°F.) for denser hardwoods. Boilproof, waterproof, meets U. S. Army Air Forces Specification No. 14124. I. F. Laucks, Inc., subsidiary of Monsanto Chemical Co.

LEAD METAPHOSPHATE

$Pb(PO_3)_2$. Physical Form: Dense white powder or granular material. Melting Point, approximately 700°C. Properties: Very slightly soluble in water. Suggested Uses: As raw material for lead bearing phosphate glasses, etc. Limited quantities available for experimental investigations. Monsanto Chemical Co.

LOW PRESSURE LAMINATING RESIN

Completely reactive thermosetting resin used for producing high strength laminates under contact pressure. Produces a hard, rigid panel in a short curing cycle. Can be bag molded or cured in a platen press to produce curved parts or flat panels. Furnished as a syrup with viscosity of approximately 18 poises. A catalyst, and in some instances, suitably inhibited styrene monomer are supplied separately. Can be used to bond glass, cotton fabric, or paper. Available on allocation but only in small quantities for war end uses. Monsanto Chemical Co.

"LUCITE" (HM-122)

(Heat resistant molding powder)

Combines the latest advance in heat resistance and molding properties. Developed to meet needs for a molded methyl methacrylate thermoplastic with increased heat stabil[illegible] a material of lower heat distortion point cannot be used. A shorter molding cycle is possible through fast setting properties and greater uniformity. Provides improved optical properties in the finished product. Available in wide range of colors and recommended for both indoor and outdoor use. May be used in compression, injection and extrusion equipment. The yield temperature of articles molded may be 30 to 40° F. higher than for articles molded of other acrylic powders. Suggested Uses: Flying light lenses, dial and meter faces, medical and dental instruments, airport signal light lenses, electric switchboard color caps, railroad signal light lenses, etc. E. I. du Pont de Nemours & Co., Inc.

LUMINESCENT PIGMENT No. 1

A fluorescent organic pigment which has a light yellow color in natural light and gives off a yellow glow in the dark under the influence of ultra violet radiation. It is soluble in methanol, slightly soluble in acetone and insoluble in water, linseed oil, and butyl acetate. Suggested Uses: As an active ingredient in useful and decorative fluorescent paints, coatings, and plastics. Heyden Chemical Corporation.

LUPERCO ATP

A stable catalyst compound comprised of 50% benzoyl peroxide with an aryl phosphate. White powder containing 3.3% active oxygen. Insoluble in water but easily soluble in acetone and other organic solvents. Dissolves easier in most allyl type resins than granular benzoyl peroxide. Two grades are available. No. 1, a product suitable for production of clear resins and, No. 2, a product suitable for resins where extreme clarity is not required. Suggested Uses: Catalyst for the polymerization of allyl type monomers. The Lucidol Corp.

LUPEROX 2

A catalytic oil paste consisting of 40% benzoyl peroxide in No. 3 castor oil. Active oxygen 2.6%. Insoluble in water but easily soluble in acetone and other organic solvents. Easily soluble in most oils and resin monomers. Suggested Uses: Catalyst for the polymerization of various monomers, oils or mixtures of same. The Lucidol Corp.

MAGNESIUM BORIDE

Mg_3B_2—Amorphous brown powder. Forms brown colloidal solution in water. Insoluble in moderately strong acids and alkalies. Electrical conductivity increases on heating. Suggested Uses: Reducing ingredient in welding fluxes, antioxidant for molten metals, preparation of abrasives, thermoelectric equipment. Available for small experimental use. Palo-Myers, Inc.

MAGNESIUM CARBONATE (Low Sodium)

$MgCO_3$. Mol. Wt., 84.3. Appearance, white crystalline powder. Designed as a starting material for the production of fluorescent phosphors such as magnesium tungstate; particularly low in heavy metal, alkali, and alkaline earth impurities. Partial tentative specifications: Iron, less than 10 p.p.m.; other heavy metals, less than 20 p.p.m.; sodium, less than 20 p.p.m.; barium, less than 20 p.p.m.; calcium, less than 0.02%. Available in limited quantities. Mallinckrodt Chemical Works.

MAGNESIUM METAPHOSPHATE

$Mg(PO_3)_2$. Physical form: White crystalline powder. Insoluble in water. Non-hygroscopic. Suggested Uses: Mineral supplement for foods; constituent of glasses, glazes and porcelain enamels. Availability: Limited quantities available for experimental investigation. Monsanto Chemical Co.

MAGNESIUM OXIDE S.L.

MgO. Mol. Wt., 40.3. Appearance, fine white powder. Specially produced to high purity requirements for the production of fluorescent phosphors such as magnesium tungstate. Partial specifications: Iron, less than 50 p.p.m.; manganese, less than 10 p.p.m.; other heavy metals, less than 50 p.p.m.; calcium, less than 0.05%; sulfate and sulfite, less than 50 p.p.m.; silica, less than 0.030%. Suggested Uses: Starting material for phosphors; source of pure magnesium compounds. Availability, commercial quantities. Mallinckrodt Chemical Works.

MANGANESE CARBONATE S. L.

$MnCO_3$. Mol. Wt., 114.9. Appearance, fine pink to pale brown powder. Specially produced to high purity requirements as an activator for fluorescent phosphors. Partial specifications: Iron, not more than 10 p.p.m.; nickel, not more than 0.01%; zinc, not more than 0.05%; other heavy metals, not more than 20 p.p.m. Suggested Uses: Activator for phosphors; [illegible] Mallinckrodt Chemical Works.

MENTHOL, RACEMIC

$C_{10}H_{20}O$. Mol. Wt., 156.2. Colorless crystals. Congealing point, 28° (initial), gradually rising to 32°. Melting point, 34-36°. Boiling point, 216° @ 760 mm.; 75° @ 3 mm. Very slightly soluble in water. Soluble in organic solvents. Suggested Uses: For ointments and pharmaceutical preparations where U.S.P. grade is not required. Givaudan-Delawanna, Inc.

MERCAPTOETHANOL

$HSCH_2CH_2OH$. Mol. wt., 78.13. Sp. gr., at 20°/20°C., 1.1168. B.P., 157.1°C. (760 mm.). Vapor pressure, 1.0 mm. at 20°C. Solubility in water, complete. Refractive index, 1.5011. Flash pt., 165°F. (open cup). Viscosity at 20°C., 3.43 centipoises. Water-white, mobile liquid with a characteristic odor, resembling both hydrogen sulfide and ethyl alcohol. Miscible with water, benzene, ether, and most organic solvents. Uses: Promising raw material in the synthesis of pharmaceuticals, dyestuffs, rubber chemicals, flotation agents, pickling inhibitors, insecticides, synthetic resins, and plasticizers for synthetic resins. Readily forms metallic salts or mercaptides. Available in research quantities. Carbide and Carbon Chemicals Corp.

MERSIZE

Viscous liquid. Mersize is a 50% alkaline water solution of a resin containing three active carboxyl groups. Suggested Uses: Rosin plus Mersize is a more efficient paper engine sizing agent than rosin alone. This is due to free carboxyl groups of Mersize which afford an opportunity to make use of the high bond density points on a pulp fiber. Availability: Working quantities are available. Monsanto Chemical Co.

MERSOLITE-3

(Phenyl Mercuric Stearate)

$C_6H_5OOC(CH_2)_{16}CH_3$. Mol. Wt., 560.9. Freezing point, 71°C. Odorless, white, wax-like solid of low vapor pressure. Uses: As an industrial, oil-soluble fungustatic agent. Available in limited quantities. F. W. Berk & Company, Inc.

MERSOLITE-6

(Phenyl Mercuric o-Benzoic Sulfimide)

$C_6H_5Hg.N.SO_2.CO.C_6H_4$. Mol Wt., 459.7. Melting point, 205-210°C. White, crystalline solid, very slightly soluble in water. Uses: Industrial fungastatic agent. Available in limited quantities. F. W. Berk & Company, Inc.

METALDEHYDE

$(CH_3CHO)_4$. Mol. wt., 176.2. White crystals. Sublimes 112-116°C. Insoluble in water, slightly soluble in benzene, alcohol, ether. Odorless when pure. Converts to acetaldehyde on heating in the presence of mineral acids. Suggested Uses: Extermination of slugs and snails, solid fuel, synthesis. Available in small quantities. Niacet Chemicals Corp.

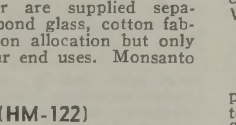
METHIDE

A synthetic organic chemical containing approximately 9% free stearic acid. Appearance: Waxy in nature, with a white to gray color. Odor: Slightly fatty acid. Melting Point, approx. 135°C. Density: .99. Solubility: 25%. Water: Insoluble but easily dispersible for application. Suggested Uses: Wax coating or impregnating material for paper, leather, textiles or wood where exceptional resistance to water and a wide range of solvents and chemicals is desired. Availability: Commercial quantities. Monsanto Chemical Company.

METHOXYTRIGLYCOL ACETATE

(The acetate of the methyl ether of triethylene glycol)

Mol. wt., 206.3. Sp. gr., 1.094 at 20°/20°C. B.P., 240°C. (760 mm.). Solubility in water, complete. Flash point, 260°F.



Colorless liquid. Low volatility. Has excellent solvent powers for cellulose esters and synthetic resins, and is therefore of interest for protective coatings and printing inks. Absence of reactive groups and its non-hygroscopicity suggests its trial as an inert reaction medium and as an "anti-dusting" agent for finely powdered materials. Available in commercial

qua... Corp.

METHYL CYCLOPROPYL KETONE

$CH_3COCHCH_2CH_2$. Mol. wt., 84. Sp. Gr., 0.903 @ 20/20°C. Refractive Index, 1.426 @ 20°C. Boiling Point, 111-113°C. @ 760 mm. Hg. Colorless liquid. Suggested Uses: Organic chemical synthesis. U. S. Industrial Chemicals Co.

METHYL METHACRYLATE MONOMER B1-24

This product can be used in general bulk, solvent, and emulsion polymerization work. When polymerized by itself it yields tough, hard, water clear sheets or rods. In copolymerization with other monomers as styrene, acrylonitrile, and butadiene, specialty rubbers of unusual toughness and other desirable characteristics may be obtained. Useful as base for organic synthesis and ester interchange. Specifications 95% boiling between 99.3 and 101°C., b.p., 100.3°C. Specific gravity, 0.935 25/15°C. American Resinous Chemicals Corp.

METHYL ISOBUTYL CARBINOL

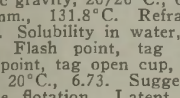
Colorless liquid. Molecular weight, 102.17. Specific gravity, 20/20°C., 0.808. Boiling point, 760 mm., 131.8°C. Refractive index 20/D, 1.4110. Solubility in water, 1.6% by weight at 20°C. Flash point, tag closed cup, 105°F. Flash point, tag open cup, 116°F. Pounds per gallon 20°C., 6.73. Suggested Uses: Frother for ore flotation. Latent solvent for use in nitrocellulose lacquers to increase blush resistance and improve flow. Solvent for use in enamels to increase leveling and gloss. Ingredient of baking type coatings based on alcohol soluble phenolic resins. R. W. Greeff & Co., Inc.

METHYL ISOTHIOUREA SULFATE

Appearance: White needles. Melting Point with decomposition—236°C. Soluble in water, alcohol. Insoluble in benzene, petroleum ether and carbon tetrachloride. Suggested Uses: For preparation of pure methyl mercaptan. Available in sample quantities only. Monsanto Chemical Co.

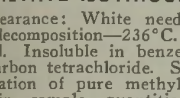
METHYLPENTADIENE

Mixture containing approximately 85 per cent 2-methyl and 15 per cent 4-methyl-1,3-pentadiene. Colorless liquid. Molecular weight, 82.08. Boiling range, 75.77°C. Sp. Gr., 20/4, 0.7185. Refractive index, 20/D, 1.4460. Flash point (O. C.), -30°F. Reactions are those characteristic of conjugated dienes: Polymerization, copolymerization, Diels Alder type of reaction to produce interesting cyclics, etc. R. W. Greeff and Co., Inc.



METHYLPENTANEDIOL (Hexylene Glycol)

Colorless Liquid. Mol. Wt., 118.11. Boiling Point at 760 mm., 195-196°C. Sp.Gr., 0.9217. Refractive index, 1.4274. Flash point, 205-210° F. This material is completely miscible with water at room temperature. R. W. Greeff and Co., Inc.



2-METHYL-2,4-PENTANEDIOL

$CH_3C(CH_3)OHCH_2CH_2OHCH_3$. Mol. wt., 118.17. Sp. gr., 20°/20°C., 0.922. Distillation range, °C., 192-199. Flash point, °F., 201. Suggested Uses: Coupling agent in making single phase mixtures of water, petroleum naphtha, coal-tar hydrocarbons, castor oil, and the common organic ketones and esters. It also serves as a stabilizing agent in various types of emulsions. It has mild humectant properties over a range of humidity which indicate applications in the paper and textile industry. Commercial Solvents Corp.

METHYL PHOSPHORIC ACID

Liquid 97% Acid. Color, amber on standing. Sp. Gr., 1.439. Wt. per gal., 12.4 lbs. Suggested Uses: As catalyst in reaction such as urea aldehyde molding compounds and also of value as rust and corrosion inhibitor. Availability: For government contracts or upon allocation. Monsanto Chemical Co.

METTAP

Dispersion. Suggested Uses: Coolant, specialty cutting lubricant. E. I. du Pont de Nemours & Co., Inc.

MONOCHLORAMINE-B

$C_6H_5SO_2NClNa$. Mol. wt., 240. Available chlorine 29.4% theoretical. Commercial sodium benzene sulfonchloramide is a slightly off white crystalline product. Water solutions of Chloramine-B are much more stable than hypochlorites. Suggested Uses: Water soluble chlorine bearing germicide. Available in wooden barrels, 250 pounds, net. Wyandotte Chemicals Corp.

MONOMANGANOUS PHOSPHATE

$Mn(H_2PO_4)_2.2H_2O$. Physical Form: Gray powder. Properties: Soluble in water and acids. Insoluble in alcohol. Suggested Use: For rustproofing steel. Availability in laboratory samples. Monsanto Chemical Co.

MONSANTO CASTING SEALANT

The cured resin is a somewhat rubbery nonporous solid, insoluble in aromatic gasoline, lubricating oil, ethylene glycol, isopropyl alcohol, and water. Because the material is thermosetting it has a good thermal stability. In either uncured or cured form does not attack magnesium or ferrous metals. Combines maximum efficiency in sealing porosity in metal castings with ease of handling in plant or foundry. Available on allocation but only in small quantities for war end uses. Monsanto Chemical Co.

MP-646-S PASTE

Synthetic Detergent. Suggested Use: In soaps for hard, soft or sea water for toilet use. E. I. du Pont de Nemours & Company, Inc.

MYRISTILENE

Synthetic Fatty Acid. Iodine number, 40.3. Saponification number, 204. Titre, 40°. Suggested Uses: For cosmetics, shampoos, shaving creams, household soaps, dry cleansing soap, wetting agents, rubber softeners, alkyd resins, metal polishes, insecticides, base chemical for synthesis and metallic soaps. Beacon Co.

beta NAPHTHALENE SULFONIC ACID

$C_{10}H_8O_3S.H_2O$. Mol. Wt., 226.14. Anhydr. acid, 92.03%. H_2O, 7.97%; naphthalene, 56.63%; SO_3, 28.33%. Made by sulfonating naphthalene with H_2SO_4 at 160°. White to slightly brownish, crystalline leaflets; very hygroscopic. Melts 124-125°. This product is C.P. in grade which is so highly essential to oil analytical chemists. Fine Organics, Inc.

NAPHTHENIC ACID #175

Dark Oil. Acid value, 165. Suggested Uses: Metallic drier, gasoline refinement, dry cleaning soaps, special lubricating oils. Beacon Co.

NEUTRONYX 228

Fatty acid ester of a polyglycol. Amber colored oily liquid. Miscible with water and common organic solvents. Resistant to high concentrations of electrolytes. Compatible with cationic and anionic surface active agents. Suggested Uses: Detergent and emulsifying agent. Available in anhydrous form and in aqueous solutions. Onyx Oil & Chemical Company.

NEUTRONYX R

Non-ionic surface active agent. Amber colored oily liquid. Miscible with water and common organic solvents. Resistant to high concentrations of electrolytes. Compatible with anionic and cationic surface active agents. Suggested Uses: Detergent, emulsifying and wetting agent. Available in anhydrous form as well as in the form of a 50% aqueous gel. Onyx Oil & Chemical Company.

NEUTRONYX S

Non-ionic surface active agent. Amber colored oily liquid. Miscible with water and common organic solvents. Resistant to high concentrations of electrolytes. Compatible with anionic and cationic surface active agents. Suggested Uses: Detergent, emulsifying and wetting agent. Available in anhydrous form as well as in aqueous solutions. Onyx Oil & Chemical Company.

NEVILLAC OA

Clear amber viscous oil, having a sweet characteristic odor and good color retention. Molecular weight, 230. Specific gravity at 30/15.6°C., 0.980 to 1.00. Distillation by volume is essentially between 300 and 375°C. Nevillac OA is an alcohol soluble, phenol modified resinous oil. With the exception of glycerine and water, it is soluble in almost all liquids, is completely compatible with cellulose derivatives, synthetic rubbers, terpene, phenolic, alkyd, vinyl and coumarone-indene resins, and partially compatible with polyvinylchloride. Suggested Uses: As plasticizing oil, in impregnants, and in paper coatings. The Neville Co.

NEVILLAC TS

Clear amber, very viscous, slow flowing resinous oil. Molecular weight, 200-400. Distillation essentially above 300°C. with slow decomposition beginning at about 370°C. Vague phenolic odor. A phenol modified synthetic material, it is miscible with most common solvents, including alcohols, with the exception of glycerine and water. Compatible with zein, cellulose derivatives, synthetic rubbers, terpene, alkyd, phenolic, vinyl and coumarone-indene resins. Suggested Uses: Plasticizer, softener, impregnants, and in paper coatings. The Neville Co.

NEVILLOID C-10

Water soluble coumarone-indene resin emulsion. About 65% solids. (50 weight % solution in water) at 15.6/15.6°C. about 1.0. Essentially neutral but is stable over a wide range of pH. May be diluted with water and is resistant to break by freezing. A film cast from aqueous solution on glass is tacky and translucent. Is compatible with emulsions of polystyrene, ethyl cellulose and alkyd resins, neoprene and other synthetic rubbers. Suggested Uses: Wax polishes and finishers, water paints, impregnants, adhesives and coatings. The Neville Co.

NEVILLOID C-55

Water soluble coumarone-indene resin emulsion, 65% solids. Sp. Gr.: 1.044 to 1.049 at 15.6/15.6°C. Isoelectric point, 2.9 approx. Essentially neutral but is stable over a range of pH from 3.5 to 10.5. It may be diluted with water and is resistant to break by freezing. A film cast on glass from a 50% aqueous solution is slightly tacky, free from grains and is translucent. Is compatible with emulsions of polystyrene, ethyl cellulose, alkyd resins, neoprene and other synthetic rubbers. With suitable treatment, it is compatible with natural rubber latices. Suggested Uses: Wax polishes, water paints, adhesives, stiffeners, and impregnants. The Neville Co.

NICKEL CATALYST (In liquids)

Fully reduced nickel with carrier, protected in distilled water or other media. Non-pyrophoric. Uses: As catalyst in hydrogenation and organic synthesis. Availability: Pilot plant quantities. Rufert Chemical Co.

NICKEL CATALYST, FLAKE

Fully reduced nickel without carrier protected in hardened oil, in the form of black flakes. Non-pyrophoric. Uses: Catalyst in hydrogenation of oils. Availability: Commercial quantities. Rufert Chemical Co.

NICKEL CATALYST, PELLETS

Unreduced nickel with carrier, in form of pellets. Uses: Catalyst in hydrogenation and organic synthesis. Availability: Pilot plant quantities. Rufert Chemical Co.

NICKELOUS SULFIDE, GAMMA FORM

NiS. Mol. wt., 90.75. Black. Insoluble in moderately strong acids. Excellent absorbent for radiant heat. Suggested Uses: Ingredient of acid resistant and antifouling paints, studies in heat absorption and radiometry. Available for laboratory and small manufacturing use. Palo-Myers, Inc.

NICKELOUS SULFIDE COLLOID

NiS. Dark green solution containing nickelous sulfide in stable colloid form. Suggested Uses: Therapeutic experimentation as a source of unionized nickel. Available in small quantities for laboratory use. Palo-Myers, Inc.

NICOTINIC ACID

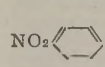
C_5H_4N COOH. Mol. Wt., 123.11. Appearance: White crystalline powder. Melting Point, 234-237°C. Very slightly soluble in cold water. Freely soluble in boiling water and boiling alcohol and in aqueous solutions of alkali hydroxides and carbonates. Suggested Uses: Fortifying agent for foods. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

NICOTINE SALICYLATE

$C_{10}H_{14}N_2C_7H_6O_3$. Mol. Wt., 300.17. Nicotine 54.01%; salicylic acid 45.99%. White, odorless

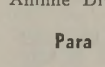
crystals. Poisonous. Melts 117-118°. [a] 20/D +11° to +13° in aq. soln. Freely soluble in water or alcohol. Suggested Use: Has been used externally as 0.1% ointment with, or dissolved in traumaticin, for scabies, eczema, sycosis and other acute and chronic itching skin diseases. Fine Organics, Inc.

Para NITROBENZENE SULFONIC ACID



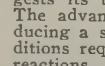
Substantially colorless prisms. M.W., 203. M.P., 100-105°C. Very hygroscopic and very soluble in aqueous solutions but only slightly soluble in organic solvents. A strong acid, comparable with mineral acids. Is of value in organic synthesis, is a mild oxidizing agent and may be used in place of mineral acids. Available in limited quantities. National Aniline Div.

Para NITROBENZENE SULFONYL CHLORIDE



Yellowish white lustrous needles, generally soluble in aromatic solvents and insoluble in water, acids, etc. M.W., 221.5. M.P., 89°C. Readily hydrolyzes in acids and alkalies to the corresponding Para Nitrobenzene Sulfonic Acid and Salts thereof. Condenses readily with amines; the nitro group is easily reduced to the corresponding amine. This suggests its use in the synthesis of sulfa drugs. The advantage in using this method of introducing a sulfanilyl group lies in the mild conditions required for condensation and reduction reactions. Available in commercial quantities. National Aniline Div.

Para NITROBENZOIC ACID



M.W., 167. M.P., 240-241°C. Light yellow crystals, insoluble in water, cold benzene, toluene, xylene, and alcohol. Soluble in hot alcohol. Chemical Properties: Those of an aromatic acid, forms soluble sodium salt, esters, acid chloride and amides. The nitro group is easily reduced to an amino group. Suggested Uses: Organic syntheses, intermediate for dyestuffs and pharmaceuticals. Available in sample quantities. National Aniline Div.

NITROGEN TETROXIDE

N_2O_4. Heavy brown liquid at room temperature. Mol. wt., 92.02. Boiling Point, 21°C. Freezing Point, −11.30°C. Critical temperature 158°C. Critical pressure 99 atmospheres or 1455 pounds absolute. Latent heat of vaporization 99 cal./gm. at 21°C. Density of liquid 1.45 at 20°C. Vapor pressure 14 pounds absolute at 20°C. uggested Uses: Addition to organic unsaturated compounds, nitration of organic compounds, oxidation (e.g. cellulose), explosives; catalyst, flour bleaching. Available in steel cylinders containing ten pounds for research. Larger cylinders for industrial use The Solvay Process Co.

NITROSO BETA NAPHTHOL

$C_{10}H_7O_2N$. Yellow to brown powder. M.W., 173. M.P., 109.5°C. pure, Commercial grade about 106°C. Solubility in water 0.2 g/liter at 20°C. in boiling legroin (60-90°C.), 2 g/15 cc. Easily soluble in ether, benzene, carbon disulfide, and acetic acid. Very soluble in hot alcohol. Easily oxidized to the nitronaphthol or reduced to the aminonaphthol. Forms a $NaHSO_3$ addition compound. Can cause skin irritation and dust produces sneezing. Suggested Uses: Intermediate in dyestuff manufacture and organic synthesis. In rubber manufacture. As an analytical reagent for cobalt. Available in commercial quantities. National Aniline Div.

NITROSYL CHLORIDE

NOCl. A reddish brown gas with an irritating odor. Mol. wt., 65.47. The gas is more than twice as heavy as air and condenses to a red liquid when the temperature is lowered to −5.7°C. at 1 atm. Non-explosive but dissociates into nitric oxide and chlorine as temperature is increased. Boiling Pt., −5.7°C. Freezing point, −69.5°C. Critical temperature, 167.5°C. Critical pressure about 80 atms. Latent heat of vaporization, 90 cals./gm. Density of liquid, 1.30 at 20°C. Density of gas, 3.0 gms./liter at 0°C. and 760 mm. Suggested Uses: Flour bleaching, shrinkproofing wool, polymerization catalyst, dye intermediates, metal pickling, digesting cellulosic materials, chlorination of hydrocarbons, preparation of sulfur monochloride. Available in small cylinders for research purposes. The Solvay Process Co.

NONAETHYLENE GLYCOL MONOOLEATE (S 725)

$C_{36}H_{70}O_{11}$. Mol. wt., 678.56. Sp. gr., 1.050 @ 25°C. Consistency — fluid. Color, dark amber. Soluble in alcohols, ketones, esters, aromatic hydrocarbons. Limited compatibility with naphtha, mineral oil, vegetable oil. Soluble in water with a pH of 5. Suggested Uses: Emulsifier, surface active agent. Glyco Products Co., Inc.

NONAETHYLENE GLYCOL MONO STEARATE (S 541)

Consistency, soft solid. Color, cream. Melting Point, 27-29°C. Specific Gravity (25°/25°C.) 1.005, pH (5% aqueous dispersion at 25°C.), 3.4. Dispersible in water. Completely soluble in alcohol and hydrocarbons. Completely soluble hot in mineral oil and vegetable oils. Suggested Uses: Emulsifying agent, thickening agent. Ingredient for the manufacture of textile sizing and finishing compounds. Glyco Products Co., Inc.

NORANE

Long chain length pyridinium compound. U. S. Patent #2,261,097, #2,285,948 et al applied for. Supplied in the form of a 70% tan-colored paste. Odor, pyridine. For treatment of all types of fabric to impart durable water repellency. Applied in aqueous solution, dried into the fabric and subjected to elevated temperatures to insolubilize the compound on the fiber. Use has been confined thus far to Army fabrics but it is now available in limited quantities for civilian work. Warwich Chemical Co.

NS DETERGENT

Synthetic organic detergent of the sodium alkyl sulfonate type derived from a petroleum base. Contains about 17.5% carbon equivalent to 35% organic content. Light buff colored flakes. Soluble in soft water, hard water and alkaline solutions. Stable in solutions of high alkali concentration. High solubility permits preparation of concentrated solutions. pH 8.5-9.2 in dilute aqueous solutions. Density (flakes) 31 pounds per cu.ft. Good surface tension depressant and emulsifying agent at low concentrations. Suggested Uses: Textiles, foods and beverages, laundries, pulp and paper, metal degreasing, insecticides, soap, rubber, transportation equipment. Available in 100 pound bags with priority restrictions. The Solvay Process Co.

NYLON MOLDING POWDER FM-1

An injection molding composition of nylon which possesses unusual toughness and flexibility; extremely slow-burning, and practically unaffected by age. Can be injection-molded in thin sections. Under low service loads molded articles withstand distortion at temperatures up to approximately 380°F. Density, 1.14 gr. per cc. Suggested Uses: Electrical spools and switch housings for aircraft; slide fasteners which are immune to dry-cleaning solvent and unharmed by ironing temperatures (post war). E. I. du Pont de Nemours & Company, Inc.

OCTA CHLORO DIPHENOQUINONE

$C_{12}Cl_8O_2$. Physical Form: Orange-colored powder. Properties: Water insoluble. Soluble in alcohol. Suggested Use: Insecticide. Availability: Laboratory quantities. Monsanto Chemical Co.

n-OCTADECANE

$C_{18}H_{38}$. Mol. wt., 254.48. Sp. gr., 0.7767 @ 28°/4°C. Boiling point, 308°C. (760 mm.). Melting point, 28°C. Refractive index, 1.4367 @ 28°C. White, wax-like solid. Soluble in alcohol, acetone, ether, petroleum and coal tar solvents. Insoluble in water. Relatively inert, can be chlorinated and nitrated. Suggested Uses: Organic intermediate, and reaction solvent. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

OCTADECENE-1

$C_{18}H_{36}$. Mol. wt., 252.47. Sp. gr., 0.793 @ 20°/4°. Boiling point, 179°C. (15 mm.). Melting Point, 27-29°C. Specific Gravity (25°/25°C.), 20°C. Color, water white. Soluble in alcohol, acetone, ether, petroleum and coal tar solvents. Insoluble in water. Actively forms common addition products. Suggested Uses: Intermediate for preparation of dispersing agents, resins, oil additives, pharmaceuticals, and insecticides. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

9-OCTADECENYL DIMETHYL ETHYL AMMONIUM BROMIDE

$(CH_3)_2 \cdot C_2H_5 \cdot C_{18}H_{35}NBr$. Molecular wt., 406. Soluble in water and most organic solvents. Available in 10% aqueous solution and its [illegible] highly surface active, foaming, wetting. Withstands prolonged boiling. Stable in the presence of acids, alkalis, and salts. Suggested Uses: Disinfectant, germicide, and fungicide. Renders textiles resistant against bacteria, mildew, moths. Imparts a soft hand to textiles, increases the resistance of direct dyes on cotton and rayon to wet treatments. Dispersing and emulsifying agent. Available in commercial quantities. Onyx Oil & Chemical Co.

9-OCTADECENYL DIMETHYL AMINE

$(CH_3)_2C_{18}H_{35}N$. Mol. wt., 295. Boiling range of the technical grade 175-210°C/6 mm. Hg. Forms water soluble surface active salts with acids. Suggested Uses: As a suractive cation and as an intermediate for the preparation of quaternary ammonium compounds. Onyx Oil & Chemical Company.

OCTADECYL MERCAPTAN-1 (Stearyl Mercaptan)

$C_{18}H_{37}SH$. Mol. wt., 286.54, Boiling point, 205-9°C. (11 mm.). Melting point, 25°C. Sp. gr., 0.8420 @ 25°/4°C. Refractive index, 1.4591 @ 34°C. White, crystalline, wax-like solid with a slight mercaptan odor. Soluble in acetone, alcohol, ether, petroleum and coal tar solvents. Insoluble in water. Forms metallic mercaptides. Suggested Uses: As a conditioner in the production of copolymers, organic intermediate, oil additive, corrosion inhibitor, insecticide, and flotation agent. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

n-OCTANE

C_8H_{18}. Mol. wt., 114.22. Sp. gr., 0.7028 @ 20°/4°C. Boiling point, 125.6°C. (760 mm.). Melting point, —56.8°C. Refractive index, 1.3976 @ 20°C. Color, water white. Soluble in alcohol, acetone, ether, petroleum and coal tar solvents. Insoluble in water. Relatively inert, can be chlorinated and nitrated. Suggested Uses: Solvent for organic reactions and intermediate for synthesis. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

OCTENE-1

C_8H_{16}. Mol. wt., 112.21. Sp. gr., 0.7159 @ 20°/4°C. Boiling point, 122.5°C. (760 mm.). Melting point, —104°C. Refractive index, 1.4103 @ 20°C. Color, water white. Soluble in common organic solvents. Insoluble in water. Actively forms addition products. Suggested Uses: Intermediate for organic synthesis, particularly as a starting material for dispersing agents, resins, oil additives, pharmaceuticals, and insecticides. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

OCTYL FORMATE

Physical state, liquid; colorless. Boiling pt., 184-192°C. Soluble in most organic solvents. Victor Chemical Works.

OCTYL MERCAPTAN-1

$C_8H_{17}SH$. Mol. wt., 146.28. Boiling point, 199.1°C. (760 mm.). Melting point, —49.2°C. Sp. gr., 0.8395 @ 25°/4°C. Refractive index, 1.4497 @ 25°C. Colorless liquid with a mild mercaptan odor. Soluble in acetone, alcohol, ether, petroleum and coal tar solvents. Insoluble in water. Forms metallic mercaptides. Suggested Uses: Polymerization conditioner, intermediate for synthesis, corrosion inhibitor, oil additive, insecticide, flotation agent, and alarm odorant. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

OCTYL SULFONIC ACID-1

$C_8H_{17}SO_3H$. Approximate mol. wt., 194.28. Dark brown, viscous liquid. Sulfonic acid content approximately 90%. Soluble in water, alcohol, and acetic acid. Suggested Uses: As a hydrogen soap, and the salts as dispersing agents, stabilizers, wetting agents, and oil detergents. Availability: In small quantities for experimental investigation. The Connecticut Hard Rubber Co.

OIL 202

Oxidizing oil of terpenic origin. With addition of customary driers, it dries at about the same rate as linseed to a hard, rather brittle film. Will not polymerize further with heat. Viscosity (G.H.), V-Y. Acid value, 17-23. Color (G.H. 1933), 13-15. Iodine value (Wijs), 125-145. Wt./gal., 8.10-8.30. Suggested Uses: As critical oil extender in

various pro... in printing inks; also as vehicle binder in emulsion paints and in high heat-resistant coatings. U. S. Industrial Chemicals Co.

OLEYL FORMATE

Physical state, liquid, yellow color. Sp. Gr. 0.866 (30°C.). Refractive Index, 1.448(ND). Saponification Equiv. 282-294. Boiling Pt., 140-170°C. at 8 mm. Solubility: Insoluble in water; soluble in PVM naphtha, benzol, carbon tetrachloride, acetone, methanol, butyl acetate. Victor Chemical Works.

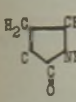
ONYX B. T. C.

$(CH_3)_2 \cdot C_6H_5CH_2 \cdot C_{12}H_{25}NCl$. Powerful disinfectant, germicide, and fungicide. Soluble in water and most organic solvents. Available in aqueous solutions and in anhydrous form. Color: slightly yellowish. Chemical properties: highly surface active, foaming, wetting, dispersing. Withstands prolonged boiling. Stable in the presence of acids, alkalis, and salts. Substantive to wool, cotton, and rayon. Renders textiles resistant against bacteria, mildew, moths. Suggested Uses: As surface active cation, e.g., in ore flotation, electroplating, etc. Onyx Oil & Chemical Co.

ORATOL L-48

A sulphonated aliphatic amide. Suggested Uses: A water soluble paste used as a penetrator, emulsifier, and dispersing agent for textile and leather processes. Jacques Wolf & Co.

2-OXAZOLIDONE



Mol. wt., 87. M.P., 91°C. Odorless. Appearance, small, slender, glistening white crystals. Solubility 150 g. in 100 g. water @ 30°C. Solubility 31 g. in 100 cc ethyl alcohol @ 30°C. Solubility in toluene, 0.2% @ 30°C. pH of 0.1M solution in water, 6.2. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.

PADDING ADHESIVE V9-6

V9-6 was developed for use in brush applications. It will set in five minutes so that it can be removed from the press and will dry completely in a few hours. The end film is hard and tough and binds the sheaf thoroughly. Individual sheets are firmly secured to the pad when subjected to normal pull but are easily and cleanly removed by exerting a torque force. American Resinous Chemicals Corporation.

PALATONE

An aromatic chemical soluble in ethanol, propylene glycol and water in decreasing order respectively. It is sensitive to small amounts of alkali and iron. Suggested Uses: Enhances fruit flavors, particularly raspberry and strawberry type. Also produces a sweetening effect. Dow Chemical Co.

PALMALENE

Palm fatty acid of medium titre, synthetically made. Commercially available. Saponification number, 180-185. Iodine value, 55-60. Titre, 35. Suggested Uses: Textile specialties, soap making, alkyl resins, polishes, wetting agents, cosmetics, rubber compounding, kier assistants, driers, and pulp and paper manufacture. Beacon Co.

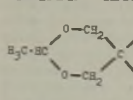
PARAFFIN, CHLORINATED, RESINOUS (Chlorowax)

White pulverized resin; chlorine content, 69-73%; specific gravity, 1.64; melting point, (Ball and Ring) 90°C., minimum; insoluble in water; soluble in hydrocarbons, ketones, esters, nitroparaffins, and chlorinated hydrocarbons; compatible with vinylite, chlorinated rubber, synthetic rubbers, polystyrene, nitrocellulose, urea formaldehyde resins, alkyds, Piccolyte, natural waxes and gums, and other film-forming materials; chemically inert; does not oxidize, undergo condensation nor polymerization; decomposes at 135°C. with evolution of hydrogen chloride gas; in presence of calcium carbonate, the decomposition is controlled and the reaction products (CO_2 and $CaCl_2$) act as flame retardants. Suggested Uses: In flame retardant paints; in compositions for treating textiles to render them flame resistant, waterproof and mildew proof; for waterproofing paper; for reducing flammability of combustible materials; in electric cable coating compositions; in lacquers to increase adhesion; and in adhesives. Diamond Alkali Company.

PAREZ 607

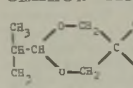
Spray dried melamine formaldehyde resin. Chemical Properties: Can be prepared as a positively charged colloid. Suggested Uses: In colloidal condition the resin may be added to dilute paper stock at any point in the paper making process prior to the sheet formation, and be retained by these fibers. The resulting paper has a good degree of wet strength, and the dry strength properties of the treated paper, particularly the folding endurance, are increased. American Cyanamid & Chemical Corp.

PENTAERYTHRITOL DIACETAL



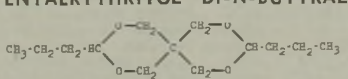
$C_9H_{16}O_4$. Molecular weight, 188.22. White crystals. Melting point, 40-41°C. Boiling point, at 760 mm., 215-216° C., at 1.1 mm., 66-67°C. Soluble in normal butanol, methylethylketone, water, benzene, Varsol No. 1, chloroform, ethyl acetate, ethyl lactate, dioxane, chlorbenzene. Suggested Uses: As a solvent and plasticizer. Available in small quantities for experimental purposes. Heyden Chemical Corporation.

PENTAERYTHRITOL DI-ISOBUTYRAL



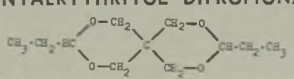
$C_{13}H_{24}O_4$. Molecular weight, 245.32. Melting point, 94°C. Boiling point; at 760 mm., 276-277°C., at 0.75 mm., 95-96°C. Soluble in acetone, methylethylketone, benzene, chloroform, dioxane, chlorbenzene. Insoluble in water. Suggested Uses: As a solvent and plasticizer. Available in small quantities for experimental purposes. Heyden Chemical Corporation.

PENTAERYTHRITOL DI-N-BUTYRAL



$C_{13}H_{24}O_4$. Molecular weight, 245.32. Melting point, 23.7-24°C. Boiling point; at 760 mm., 289-290°C., at 2.5 mm., 126-128°C. Soluble in methanol, normal butanol, acetone, methylethylketone, benzene, Varsol No. 1, chloroform, ethyl lactate, dioxane, chlorbenzene. Suggested Uses: As a solvent and plasticizer. Available in small quantities for experimental purposes. Heyden Chemical Corporation.

PENTAERYTHRITOL DIPROPIONAL



$C_{11}H_{20}O_4$. Molecular eight, 218.27. Melting point, 27.7-24°C. Boiling point; at 760 mm., 258-259°C., at 0.5 mm., 76°C. Soluble in normal butanol, acetone, methylethylketone, benzene, chloroform, ethyl acetate, ethyl lactate, Carbitol, dioxane, chlorbenzene. Insoluble in water. Suggested Uses: As a solvent and plasticizer. Available in small quantities for experimental purposes. Heyden Chemical Corporation.

PENTANEDIONE-2,4

$CH_3COCH_2COCH_3$. Mol. wt., 100.11. Sp. gr. at 20/20°C., 0.975. Refractive index, at 25.6°C., 1.4465. B.P., 139°C. (746 mm. Hg). Flash pt., 110°F. Solubility in water at 25°C., 12% by weight. Clear, colorless liquid with mild ketone-like odor. Completely miscible with most organic solvents. Reacts with many metallic salts to form metallo-organic compounds, some of which may be distilled, providing method for recovery of certain metals in a pure form. Valuable intermediate for the preparation of many dyestuffs, pharmaceuticals, plasticizers, insecticides, resin stabilizers, and corrosion inhibitors. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

PENTACHLORCUMENE

$C_9H_7C_6Cl_5$. Pentachlorcumene is a hard white crystalline wax with a mild odor and extremely high stability. May be distilled at atmospheric pressure without decomposition. Mol. wt., 286.5. Melting range °C., 70-85. Boiling range °C., 300-325. Flash point °C., 175-180. Hydraulic stability test, below 0.05. Solubility: Benzene and most chlorinated solvents, insoluble in water. Suggested Uses: Plasticizer, fire safe dielectric, extreme pressure lubricant, heat transfer fluid when blended with other solvents, fire and water resistant, textile impregnating agent particularly when blended with a softening agent. Availability: Experimental quantities. Hooker Electrochemical Co.

PENTAMULL 87

A mono ester made from Pentek (a technical grade of pentaerythritol) and soy bean oil fatty acid. It is an amber colored oil with an acid number of approximately 5. Solubility is as follows in gms. per 100 gms. at 25°C.: varsol No. 1, 45 gms.; xylol, 70 gms.; mineral oil, 0.5 gms.; water, 0.1 gms.: Pentamull 87 is used as a non-ionic emulsifying agent for water-in-oil emulsions. Available in commercial quantities. Heyden Chemical Corporation.

PENTAMULL 126

Pentamull 126 is a technical grade of pentaerythritol mono-oleate in the form of a clear amber colored oil with an acid number of approximately 5. Solubility is as follows in gms. per 100 gms. at 25°C.; light mineral oil, 5 gms.; xylol, 60 gms.; varsol No. 1, 40 gms.; water, 0.1 gms. Pentamull 126 is used as an industrial, all purpose emulsifying agent of the water-in-oil type. Available in commercial quantities. Heyden Chemical Corporation.

PENTAMULL 126-S

Pentamull 126-S is a self-emulsifying technical grade of pentaerythritol mono oleate. It is a semi-solid, amber colored jelly with an acid number of approximately 5. It is soluble in aliphatic and aromatic hydrocarbons, and insoluble in lower alcohols. Pentamull 126-S is used as an emulsifying agent of the oil-in-water type. It is especially applicable to the manufacture of lotions, cosmetic creams, and other industrial products where emollient, spreading, and vanishing properties are important. Available in commercial quantities. Heyden Chemical Corp.

PETROLEUM CATALYST

White powdery petroleum catalyst produced by Diakel Corp. Free flowing and highly adsorptive, non-hygroscopic. For U. S. Government distribution for the duration of World War II. Diamond Alkali Co.

PHENYLACETIC ACID

$C_6H_5CH_2COOH$. Mol. wt., 136.14. M.P., 76-77°C. B.P., 265.5°C. Density, 1.081 @ 30°C. Odor, characteristic. Appearance, colorless leaflets. Solubility in water, 1.72% @ 25°C. Solubility in ethyl alcohol, 65 g. per 100 cc of solution @ 20°C. Solubility in benzene, 43 g. per 100 cc of solution @ 29°C. Chemical properties: Readily esterified by common alcohols; condenses with aldehydes; alkali and ammonium salts are very soluble. Suggested Uses: Ingredient of perfumes; plant growth stimulant; synthesis of pharmaceuticals, perfumes, and other organic chemicals. Available in limited quantities. Mallinckrodt Chemical Works.

PHENYLACETIC ESTER

$C_6H_5CH_2COOC_2H_5$. Mol. wt., 164.19. M.P., —26.8°C. B.P., 226°C @ 760 mm. Index of Refraction, 1.4949 @ 25°C. Density, 1.027 @ 25°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, pleasant. Appearance, clear colorless liquid. Suggested Uses: Ingredient of perfumes, plant growth stimulant, synthesis of perfumes, pharmaceuticals, and other organic chemicals. Available in limited quantities. Mallinckrodt Chemical Works.

N-PHENYLCYCLOHEXYLAMINE

$C_6H_5NHC_6H_{11}$. Appearance: Light straw-colored liquid. Mol. wt., 175.14. Boiling point, @ 760 mm., 276—7°C. Sp. gr., 0.998 @ 25°C. Suggested Uses: A possible intermediate for pharmaceuticals, dyes, rubber chemicals, insecticides, plasticizers. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

PHENYL CYCLOHEXANE

$C_6H_5C_6H_{11}$. Physical Form: Clear mobile liquid. Aromatic odor. Properties: Freezing point, 4.8°C. Sp. gr., 0.935 at 25/15.6°C. Ref. ind., 1.5205 at 25°C. Distillation range, 5 to 95% between 239-241°C. (corr.) Flash pt. 210°F. Flame pt., 220°F. Viscosity, 31.2 S.U.S. at 100°F. Insoluble in water. Soluble in organic solvents. Suggested Uses: High boiling solvent, plasticizer, intermediate for syntheses, dielectric. Available in pilot plant quantities. Monsanto Chemical Co.

β-PHENYL ETHYLAMINE

$C_6H_5CH_2CH_2NH_2$. Appearance: Colorless liquid. Mol. wt., 121.18. Boiling point, @ 760 mm., 198°C. Sp. gr., 0.958 @ 24°/4°C. Solubility: Soluble in water, alcohol, ether. Suggested Uses: A possible intermediate for pharmaceuticals, dyes, rubber chemicals, insec-

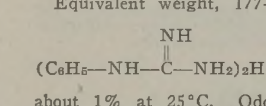
ticides, plasticizers, etc. Available only in small quantities for experimental investigation. Monsanto Chemical Co.

PHENYLETHYLMALONIC ESTER

$C_6H_5C(C_2H_5)(COOC_2H_5)_2$. Mol. wt., 264.31. M.P., —6.2°C. B.P., 104° @ 1 mm. Index of Refraction, 1.4890 @ 25°C. Density, 1.0690 @ 25°C. Odor, bland, esterlike. Appearance, colorless oily liquid. Insoluble in water. Miscible with ethyl alcohol and toluene. Chemical properties: Reactive intermediate which condenses readily with urea and similar nitrogen compounds. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in limited quantities. Mallinckrodt Chemical Works.

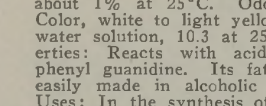
PHENYL GUANIDINE CARBONATE

Equivalent weight, 177-180. Purity around 92%. Melting point, 135-137° C. with decomposition. Solubility in water about 1% at 25°C. Odor, almost negligible. Color, white to light yellow. pH of saturated water solution, 10.3 at 25°C. Chemical Properties: Reacts with acids to form salts of phenyl guanidine. Its fatty acid salts can be easily made in alcoholic solution. Suggested Uses: In the synthesis of rubber accelerators, in the preparation of fatty acid salts for use in textile finishing or generally where an organic alkali is needed. Available in quantities for experimental investigation. American Cyanamid and Chemical Corp.



PHENYL GUANIDINE STEARATE

Waxy solid, light tan colored, softening point around 60°C. Soluble in alcohol and benzene. Dispersible in small quantities in warm water. pH of saturated aqueous solution about 8.5 at 25°C. Suggested Uses: In soaps, as emulsifying agent, as detergent in dry cleaning fluids. Available in quantities for experimental investigation. American Cyanamid & Chemical Corp.

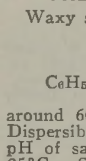


PHENYLMALONIC ESTER

$C_6H_5CH(COOC_2H_5)_2$. Mol. wt., 236.26. M.P., 18.4°C. B.P., 146°C @ 6 mm. Index of Refraction, 1.4887 @ 25°C. Density, 1.0915 @ 25°C. Insoluble in water. Miscible with ethyl alcohol and toluene. Odor, pleasant, esterlike. Appearance, colorless liquid. Chemical properties: Reactive and versatile intermediate; readily alkylated; easily condensed to form a variety of ring compounds. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in limited quantities. Mallinckrodt Chemical Works.

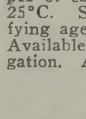
3-PHENYL-2-OXAZOLIDONE

Mol. wt., 163. M.P., 121°C. Solubility in water, 0.05% @ 31°C. Solubility in ethyl alcohol, 2.5% @ 31°C. Solubility in toluene, 3.0% @ 31°C. Odor, none. Appearance, small, glistening, flaky white crystals. Suggested Uses: Synthesis of pharmaceuticals and other organic chemicals. Available in small quantities for experimental purposes. Mallinckrodt Chemical Works.



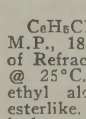
PHENYLPHOSPHINIC ACID

Physical State, crystals, white. Mol. wt., 142. Solubility: Slightly soluble in ether; soluble in water and alcohol. Melting point, 81-82°C. Chemical Properties: Stable in air. Strong monobasic acid. Forms inorganic salts. Trivalent phosphorus oxidizes to phenylphosphonic acid with ordinary oxidation agents. Suggested Uses: General anti-oxidant organic amine salts as lubricating oil-additive and anti-oxidants for rubber. Acid catalyst for urea-formaldehyde type resin. Heavy metal salts as disinfectants. Improves fastness of dyed cellulose to light. Soap preservative. Victor Chemical Works.



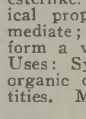
PHENYLPHOSPHONIC ACID

Physical state, Crystals, white. Mol. wt., 158. Sp. gr., 1.475 at 4°C. Solubility: insoluble in benzene, soluble in alcohol, ether, water. Melting point, 158°C. Chemical Properties: Stable in air; strong dibasic acid; forms inorganic salts. Suggested Uses: Intermediate for metallic salts. The heavy metal salts may be used as anti-fouling agent in paint, seed disinfectants, and oxidation catalysts. Organic amine salts may be used as extreme pressure lubricant additive. The acid may improve fastness of dyed cellulose to light; retard development of color in molasses. Catalyst for hardening of urea-formaldehyde and related resins. Victor Chemical Works.



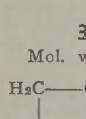
PHENYLPHOSPHORUS DICHLORIDE

Physical state, liquid, colorless to light yellow, unpleasant phosphinic odor. Mol. wt., 179. Sp. gr., 1.319 at 20°C. Boiling point, 224.6° C. Soluble in common inert organic solvents. Chemical Properties: Fumes in air. Hydrolyzes in water to form phenylphosphinic acid. Two reactive chlorine atoms capable of reacting with alcohols, phenols, amines, and aldehydes. Adds oxygen, sulfur and halogens. Suggested Uses: Intermediate for organic synthesis. Preparation of phosphinic acid derivatives. Anti-oxidant intermediate. Oil-additive. Victor Chemical Works.



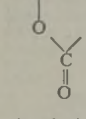
PHENYLPHOSPHORUS OXYDICHLORIDE

Physical state, liquid, colorless, slight fruity odor. Mol. wt., 195. Sp. gr., 1.375 at 20°C. Boiling point, 258°C. Soluble in carbon tetrachloride, benzene, chloroform, and common inert organic solvents. Chemical Properties: Two reactive chlorine atoms capable of reacting with alcohols, phenols, and amines to form the corresponding esters and amides. Hydrolyzes in water to form phenylphosphonic acid. Suggested Uses: Intermediate for organic synthesis. Plasticizer and oil-additive intermediate. Victor Chemical Works.



PHENYLPHOSPHORUS THIODICHLORIDE

Physical State, liquid, colorless, aromatic. Mol. wt., 211. Sp. gr., 1.376 at 13°C. Boiling point, 205°C (130 mm.). Soluble in common inert organic solvents. Chemical Properties: Decomposes slowly in water. Two reactive chlorine atoms capable of reacting with alcohols, phenols, amines to form the corresponding neutral esters and amides. Suggested Uses: Intermediate for organic synthesis. Extreme pressure lubricant additive. Plasticizer intermediate. Victor Chemical Works.



PHOSPHATE NO. 12

Non-Ionic surface active phosphorus compound. Physical state, liquid, amber color. Sp. gr., 1.121 (28°C). Analysis, 16.0% P_2O_5. Surface Tension (0.2% Soln). Solubility: Insoluble in naphtha; soluble in alcohols, acetone, toluol; milky solution in water. Suggested Use: Non-ionic wetting agent. Victor Chemical Works.

PHOSPHATE NO. 24-C

Non-ionic surface active phosphorus compound. Physical state, liquid. Amber color. Analysis, 15.0% P_2O_5. Surface tension (.2% soln). Solubility: Soluble in water. Suggested Use: Non-ionic wetting agent. Victor Chemical Works.

PHOSPHATE NO. 67

Phosphate Emulsifiers. Physical state, liquid, amber color. Sp. gr., 1.018. Analysis, 16.0% P_2O_5. Solubility: Soluble in methanol, acetone, kerosene; opalescent solution in water, naptha, toluene. Suggested Uses: Emulsifier; oil-additive; surface-active agent. Victor Chemical Works.

PHOSPHATE NO. 89

Phosphate Emulsifiers. Physical state, liquid, amber color. Sp. gr., 1.100. Analysis, 16.0% P_2O_5. Solubility: Soluble in water, organic solvents, naptha, kerosene. Suggested Uses: Emulsifier; surface-active agent; oil-additive. Victor Chemical Works.

PLASTIC CEMENT

Resin Emulsion adhesive compounded from Vinyl Polymers and plasticizers, together with complex non-resin materials. Appearance: Soft, white, fluid cement, reducible with water. Produces a semi-transparent, glossy, flexible coating with excellent heat sealing properties. Can be used for bonding dis-similar materials in light assembly and cementing operations. Applied to one or both surfaces. Good heat and cold resistance; water, oil and solvent resistance. Available in fast drying, medium and slow drying grades. Suggested Uses: For combining paper, cardboard, wood, plywood, pressboard, asbestos, cotton or rayon flocks, wool, cotton and hair felt, abrasive grains, plain or treated fabrics, cork, leather, [illegible], insulation, and many painted, lacquered and coated surfaces. Packings: 1 gallon, 5 gallon, 30 gallon and 55 gallon containers. Paisley Products, Inc.

PLYWOOD GLUE S-273

Liquid thermosetting plywood glue (80% solids in ethyl alcohol) viscosity, 8-12 poises; pH, 7.80-8.00. Sp. gr., 1.16. Suggested Uses: Manufacture of aeronautical, marine and general purpose plywood veneers which meet specifications AN-G-8 and AN-NN-P-51 1b. In combination with Accelerator S-288 this glue requires pressure of 50 #/sq. in., temperature of 250°F. and curing time of 7 minutes. U. S. Industrial Chemicals Co.

POLYCHLORO METATERPHENYL

Physical form: Crude—grayish, crystalline solid, friable. Distilled, yellow-tinted, white crystalline powder. Properties: Variable depending upon degree of chlorination. Highly chlorinated product (67-68% Cl_2) crystalizes at 230-260°C. and, at 3 mm. absolute pressure, distills in the range of 330-380°C. (Decomposes below boiling point at atmospheric pressure.) Suggested Uses: Fire retardant for paints. Modification of waxes and resins. Availability: Crude, pilot plant quantities; distilled—laboratory samples. Monsanto Chemical Co.

POLYCHLORO PARATERPHENYL

Physical form: Grayish crystalline solid. Can be vacuum distilled, giving a white crystalline powder. Properties: Variable depending upon chlorine content. Product containing 65 to 66% Cl_2 crystallizes at 275 to 290°C. and distills in the range of 320-340°C. at 3 mm. pressure. Decomposes below boiling point at atmospheric pressure. Suggested Uses: Fire retardant for paints. Modification of waxes and resins. Available in pilot plant quantities. Monsanto Chemical Co.

POLYETHYLENE GLYCOL 600

$HO(CH_2CH_2O)_xH$. Rather viscous, light-colored, somewhat hydroscopic liquid, having average molecular weight of 600. Melts at about room temperatures and is approximately one-half as hygroscopic as glycerine. Uses: Solvent for nitrocellulose, a property expected from the combination of alcohol and ether groups. Also, as a plasticizer for casein and gelatin compositions, glues, cork, polyvinyl alcohol, and special printing inks, where advantage can be taken of its low vapor pressures, decreased hygroscopicity. Complete water solubility and excellent solvent power for resin vehicles. The two alcohol groups can be esterified with dibasic acids to form resins of the alkyd type which possess different and unusual properties. When esterified with only one molecule of fatty acid it forms excellent emulsifying agents and detergents. Available in commercial quantities. Carbide and Carbon Chemicals Corp.

POLYTHENE

A plastic possessing flexibility and toughness over a wide range of temperature, unusually low water absorption and water vapor transmission, chemical inertness and excellent dielectric properties. With a Sp. Gr. of 0.92-0.93 it is among the lightest of all plastics. Suggested Uses: Covering for electrical wiring and cable; gaskets; battery parts; waterproof coatings; adhesive; ice cube trays; bottle stoppers and jar tops. E. I. du Pont de Nemours & Company, Inc.

POLYVINYL ACETATE EMULSION G5-36

High solids system possessing considerably improved water resistance than customarily associated with polyvinyl acetate emulsions. May be plasticized directly by addition of plasticizer or plasticizer emulsion. Dried films are colorless, flexible, and heat sealing. Versatile in bonding and impregnating a wide variety of materials. Suggested formulations available. Solids 55-60%, pH of 4, Wt. per Gal. 9 lbs. Packaged in wooden barrels. American Resinous Chemicals Corporation.

POLYFIBRE

A fine plastic fibre based on polystyrene, ranging in size up to five microns in diameter. It is supplied in bats of parallel fibres running crosswise of the bat. It is difficult to wet, thermoplastic. A high degree of orientation exists in polyfibre. Suggested Uses: Low pressure moldings, as a low temperature insulation and as a replacement for kapok in applications requiring buoyancy. Dow Chemical Co.

POTASSIUM ACID ACETYLENEDICARBOXYLATE

KOOC—C≡C—COOH. White crystals.

M.W., [illegible] water. Decarboxylates in hot aqueous solution to potassium propiolate. Contains a reactive triple bond, capable of various additives reactions, including the Diels-Alder diene synthesis. Also possesses properties of a dibasic acid. Suggested Uses: In the synthesis of dyes, pharmaceuticals, plastics and other organic chemicals. Available in sample quantities. National Aniline Div.

POTASSIUM METAPHOSPHATE

KPO_3. Physical Form: White powder. Practically insoluble in water. Insoluble in alcohol. Hygroscopicity: Non-hygroscopic. Melting Point: Approximately 810°C. Reactivity: With concentrated solutions of NaCl, forms complex sodium-potassium metaphosphates which are water soluble and form viscous aqueous solutions. Suggested Uses: Ceramic glazes; phosphate glasses; water insoluble polishing agent. Availability: Samples are available for experimental investigation. Monsanto Chemical Co.

POTASSIUM SILICATE (865 Grade)

2.10 SiO_2 : 1 K_2O (Wt. ratio). Suggested Uses: Manufacture of A. C. Welding rods. E. I. du Pont de Nemours & Company, Inc.

POTASSIUM THIOCARBONATE

K_2CS_3. Mol. wt., 188.38. Yellow crystalline powder. Very soluble in water, slightly soluble in alcohol, insoluble in ether. Slowly forms carbon disulfide with carbon dioxide in the air. Suggested Uses: Source of carbon disulfide in water solution, in insecticides for destroying plant lice, synthesis of rubber accelerators, flotation agent. Available for laboratory use. Palo-Myers, Inc.

POTASSIUM THIOCYANATE N. F.

KCNS. Mol. wt., 97.17. Contains at least 99% KCNS. White crystals. Deliq. Soluble in water; alcohol, 10-12%; and acetone, 20%. Suggested Use: Medicinials. Availability: From stock. Edwal Lab.

POTASSIUM THIOCYANATE, Tech.

KCNS. Mol. Wt., 97.17. White crystals. Deliq. Soluble in water. Solubility in alcohol, 10-12%, solubility in acetone, 20%. Suggested Uses: In printing and dyeing textiles, intensifier in photography. Availability: Stock. Edwal Lab.

PROPYLENE GLYCOL BORATE (S-785)

A complex propylene glycol borate. Consistency, viscous fluid. Color, water white to pale straw. Soluble in water. Insoluble in most organic solvents. pH of 10% aqueous solution, 7.85, of 50% aqueous solution, 6.80. Suggested Uses: Water-soluble resin, humectant, plasticizer, glycerine substitute. Glyco Products Co., Inc.

PROPYLENE GLYCOL OLEATE

Non emulsifiable, pale yellow liquid. Boiling Point, 210°C. (25 mm.). Suggested Uses: As plasticizer and lubricant: in cosmetic, pharmaceutical and textile industries. The Beacon Co.

PYRIDYLMERCURIC ACETATE TECHNICAL

$C_5H_4NHgO_2CCH_3$. Mol. wt., 337.8. M.P., 178-180°C. Practically odorless. Solubility in water, about 700 gm. per liter @ 25°C. Solubility in alcohol, 13% @ 25°C. Moderately soluble in hot toluene. Appearance, white granules. Chemical properties: Reacts readily with numerous mineral and organic acids and acidic substances to give water-insoluble pyridylmercuric compounds. Suggested Uses: Fungicide for cork and coating compositions. Available commercially as an 80% technical product. Mallinckrodt Chemical Works.

PYRIDYLMERCURIC CHLORIDE TECHNICAL

C_5H_4NHgCl. Mol. wt., 314.2. M.P., 250°C (decomp.) Stable at temperatures up to 200-225°C. Practically odorless. Appearance, white powder. Very slightly soluble in water, alcohol, and hydrocarbon solvents. Soluble in trations well above those required for effective pyridine. Tolerated by human skin in concentrations well above those required for effective fungicidal protection. Suggested Uses: Fungicide and bactericide for textiles, paint, rubber, cork, synthetic resins, and felt. Commercially available as a 95% technical product. Mallinckrodt Chemical Works.

PYRIDYLMERCURIC STEARATE TECHNICAL

$C_5H_4NHgO_2C(CH_2)_{16}CH_3$. Mol. wt., 562.2. M.P., 120-130°C. Odor, slight fatty. Appearance, white powder. Insoluble in water and alcohol. Soluble in hot toluene. Readily soluble in mixed cellosolvehydrocarbon solvents. Well tolerated by human skin in effective fungicidal concentrations. Possesses marked water-repellent as well as powerful fungicidal properties. Suggested Uses: Fungicide and bactericide for textiles, felt, cork, paints, lacquers, varnishes, oils, greases, wax, paper, and wood. Commercially available as a 95% technical product. Mallinckrodt Chemical Works.

RESIMENE

Melamine formaldehyde resins and molding materials. Properties of typical Resimene molding compound: Sp. gr., 1.44-1.46; water absorption, 0.51%; flexural strength, 9,000 p.s.i.; deflection, 0.066 in.; compressive strength, 32,-700 p.s.i.; deformation, 0.130 in.; Izod impact, 0.34 ft. lbs./in. notch; abrasion resistance (Taber), 6.8 x gen. purpose phenolic; dielectric strength 60 cycles S/T, 390 v.p.m.; S/S, 320 v.p.m., arc resistance, 120 sec. Can be produced in colorless base resins and light-colored molding or impregnating compounds. Suggested Uses: Specifically developed for the molding of electrical connector inserts. Availability: Subject to allocation control by Chemical Division, War Production Board. Monsanto Chemical Co.

RESINOX 200

Plywood adhesive. Supplied as a water soluble powder. Is a medium temperature-curing phenolic adhesive designed primarily for bonding Douglas Fir plywood. Approved by the Douglas Fir Plywood Association for exterior grade plywood. Special advantage of this material is its fast curing cycle. Availability: Subject to allocation control by Chemical Division War Production Board. Monsanto Chemical Co.

RESINOX 800

An excellent dielectric material with high arc resistance. Especially adapted for engine ignition parts such as magneto housings and rotors, relay housings and connectors, and other parts requiring high performance dielectric material. It can be readily molded around inserts. Machinability is fair. Availability: Subject to allocation control by Chemical Division, War Production Board. Monsanto Chemical Co.

RESINOX 801

A powdered melamine resin soluble in water to form solutions as low as 35% solids. More dilute solutions may be formed by using mixtures of alcohol and water. A resin of broad utility for the production of impregnated and laminated structures and parts. Availability: Subject to allocation control by Chemicals Division, War Production Board. Monsanto Chemical Co.

RESINOX 803

A cellulose filled, melamine molding material with an improved cure time permitting faster production cycles. Has excellent dielectric strength and high arc resistance. This material can be readily molded around inserts, possesses good impact strength and can be tapped or machined easily. Especially suitable for connectors, switch and relay housings and for any other electrical insulation uses where a non-tracking material is desired. Availability: Subject to allocation control by the Chemicals Division of the War Production Board. Monsanto Chemical Co.

RESINOX 840

A melamine plywood resin developed particularly for the lamination of plywood and the laminating and impregnating of paper and fiber for the production of high-strength parts. Low curing temperatures and faster cycles of cure are special advantages. Availability: Subject to allocation control by Chemicals Division, War Production Board. Monsanto Chemical Co.

RESINOX 841

A melamine impregnated film developed especially for the bonding of high quality plywood including hardwood laminated structures for boat and aircraft use. Resinox 841 laminating film is noted for its short bonding cycles and low curing temperatures permitting maximum production efficiency. Availability: Subject to allocation control by Chemicals Division, War Production Board. Monsanto Chemical Co.

RESIN-THERMOSETTING PHENOLIC

Liquid water-dilutable thermosetting resin of the phenol-formaldehyde type possessing an unusually adaptable long storage life for hot press bonding of wood, veneers, press board, etc. Bond is not affected by hot or cold water, mold, weather or vermin proof (the resin also tends to make the wood itself vermin proof), and also proof against acids and weaker alkalis. Assembly times may be cut as short as 15 minutes. Recommended where highest resistances to water, embrittlement, temperature, and weather conditions is required. Especially advantageous in airplanes, ships and exterior types of plywood for barracks, desks, skies, furniture, lockers, etc. Solids 40-50%. American Resinous Chemicals Corporation.

RESIN-THERMOSETTING PHENOLIC

Phenal X8-3—Phenol formaldehyde varnish for lamination of canvas and paper base materials. Quick curing at pressures of 1000-2500 p.s.i., and temperatures of 300-340°F. it gives laminates of good dielectric and structural strength and low water absorption. Suitable for panels, gears, molded and stamped goods. Solids content 57-62%. Viscosity 300-500 cps. at 25°C. Dilutable with alcohol. American Resinous Chemicals Corporation.

RESIN-THERMOSETTING (PHENOLIC)

Water soluble thermosetting phenolformaldehyde in powdered form. Give hot and cold water, acid, mold, vermin proof bond. Meet CS-35-42 and CS-45-42 exterior plywood specifications and Army and Navy Aeronautical Spec. AN-NN-P-511b. A 3 ply panel of 1/10" Douglas fir pressed and tested according to CS-45-42 in boiling water shows shear strength of 310 lbs. p.s.i. and 100% wood failure. Suitable for hot press, flexible gag, assembly, and high frequency molding techniques. American Resinous Chemicals Corporation.

RESIN-THERMOSETTING (PHENOLIC)

Liquid phenol formaldehyde resin in water solution. Long storage life. Designed particularly for lamination work at room temperatures and low pressures. Meets Army Air Force Spec. 14124, Navy Spec. 52-G-12, and AN-G-8. Available in modifications for varying assembly times, curing temperatures, and costs 65% solids. American Resinous Chemicals Corp.

RESIN-THERMOSETTING (UREA)

Ural Y2-6—Liquid water-dilutable urea-formaldehyde resin for hot and cold press-bonding of plywood. Because of high bonding strength large extension with flour is possible. Good water resistance. Solids content 62-70%. Viscosity 1000-2000 cp. at 70°F. Can be furnished in any desired viscosity. American Resinous Chemicals Corporation.

RESIN-THERMOSETTING (UREA)

Water-soluble urea-formaldehyde resin in powder form. Stable for a year or more if properly stored. Suitable for hot press, bag molding, and cold press work. Meets Army-Navy Aeronautical Specifications AN-6-8, AN-NN-P-511b and Bureau of Ships 52-G-11. Used for plywood and furniture. American Resinous Chemicals Corporation.

RESLOOM HP

Form: Dry very hygroscopic powder. pH, 9.5. Color: White. Slight toxicity. Non-inflammable. Stability on storage is permanent if kept dry. Suggested Uses: Resloom HP is a dried organic resin of similar character to the liquid product Resloom M-75 and may be used for the same purposes and effects. Developed particularly for applications where extreme softness of goods is required. Availability: Two of the raw materials are on allocation; however, with the proper end use Resloom HP can be supplied in limited commercial quantities. Monsanto Chemical Co.

RESLOOM M-75

Sp. gr., 1.18. pH, 9.0 to 9.5. Wt./gal. 9.9 lbs. Flash pt. 158°F. but will not burn. Toxicity, slight. Stability on storage, permanent. Form: Aqueous water-white solution of an organic resin. Suggested Uses: Developed for textile application and may be used on cotton or wool, viscose rayon or acetate rayon, linen or aralac as well as mixtures of these fibers. It is possible by proper application to modify fibers and fabrics with the use of M-75 to obtain effects that cannot be produced by other means. Availability: Two raw materials are on allocation; however, with proper end use, Resloom M-75 can be supplied in limited commercial quantities. Monsanto Chemical Co.

RESLOOM NC-50

Sp. gr., 1.15, pH, 9.0 to 9.5. Wt./gal. 9.6 lbs. Flash pt. 158°F. but will not burn. Toxicity, slight. Form: An aqueous solution of an organic resin. Color: Water white. Suggested Uses: Similar to Resloom M-75 and offers the same advantages and effects. Par-

ticularly developed for applications where chlorine pick-up is the problem. Availability: Two raw materials used in manufacture of Resloom NC-50 are on allocation; however, it is available for textile application carrying the proper end use, in limited commercial quantities. Monsanto Chemical Co.

SAFLEX 2112

An ideal heat-sealing plastic resin for paper, fabric, cellophane, and metal-oil packaging materials. Solutions can be applied by conventional methods including spreading and roll coating. Provides strong, uniform bonds over temperatures ranging from −40°F. to −170°F. Used extensively as a heat-sealing agent for packaging munitions and military equipment. Solids content solutions can be varied to meet process requirements. Availability: Subject to allocation control by Chemicals Division, War Production Board. Monsanto Chemical Co.

SANTOWAX MH

(Hydrogenated m-terphenyl)

$C_{18}H_{32}$. Melting Point, about 50°C. (Literature gives m.p. for pure compound as 62.5-63.5°C.) Soluble in acetone, benzene and ethanol; insoluble in water. Description: White crystalline solid. Suggested Uses: As plasticizer. Availability: Laboratory samples. Monsanto Chemical Co.

SANTOWAX OM

71% O-terphenyl and 29% m-terphenyl. Freezing pt., 38°C. Solubility: Soluble in benzene, acetone and ethanol; insoluble in water. Physical form: A yellow, crystalline solid. Suggested Uses: As a plasticizer. Availability: Pilot plant samples. Monsanto Chemical Co.

SANTOMERSE B

Physical Form: Soft, white, waxy flakes or powder. Properties: Soluble in water. Somewhat hygroscopic. Non-toxic. Suggested Uses: As a detergent where high purity is required. Available in pilot plant quantities. Monsanto Chemical Company.

SANTOVAR O

An alkylated polyhydroxy phenol. Sp. gr., 1.095 @ 25°C. Melting pt. above 190°C. Appearance: White solid. Solubility: 10 grs. in 50 c.c. of acetone. Suggested Uses: For preventing the deleterious action of oxygen and sunlight on uncured rubber and oils. Available in commercial quantities. Monsanto Chemical Co.

SANTOWAX OSA

A synthetic waxy solid. Density, 0.99 at 29°C. Softening point, 59-59.2°C. Crystallizing pt., 50-52.2°C. Flash pt., 246°C. Fire pt., 279°C. Decomposition pt., 232°C. Acid number, 4.7. Solubility: Insoluble in water. Soluble in benzene, trichlorobenzene, naphtha and turpentine; slightly soluble in ethanol. Suggested Uses: Good gloss characteristics. For use in polishes, wax finishes, paints, cosmetics and paper. Also as opacifier and sealing compound. Availability: Pilot plant quantities. Monsanto Chemical Co.

SANTOWAX PH

$C_{18}H_{32}$. High melting isomer of hydrogenated p-terphenyl. Freezing pt., 160°. Soluble in benzene and ethanol; insoluble in water. Description: White crystalline solid. Suggested Uses: As an opacifying agent for molded paraffin articles; as a plasticizer. Availability: Laboratory samples. Monsanto Chemical Co.

SANTOWAX PSA

A high melting, synthetic waxy solid. Refractive index, 1.58. Density, 1.04 at 29°C. Crystallizing pt., 135.5-136°C. Flash pt., 268°C. Fire pt., 318°C. Decomposition pt., 193-204°C. Acid no., 0-1. Solubility: Insoluble in water; soluble in hot benzene or trichlorobenzene; slightly soluble in hot ethanol, naphtha and turpentine. Suggested Uses: Polishes, wax finishes, paints, cosmetics and paper. Also opacifier and sealing compound. Availability: Pilot plant quantities. Monsanto Chemical Co.

SANTOWHITE

Poly-alkylated phenol monosulfide. Sp. gr., 1.07 @ 25°C. Appearance: Soft brown resin at 25°C. Insoluble in water. Soluble in carbon tetrachloride, benzene, ether, carbon bisulfide, acetone and alcohol. Suggested Uses: As a non-discoloring antioxidant for natural and synthetic rubbers. Available in pilot plant quantities. Monsanto Chemical Co.

SELLOGEN

A sodium alkyl aryl sulphonate. Suggested Uses: A powdered wetting agent with detergent properties, used as a wetting agent, penetrator, etc. Jacques Wolf & Co.

SILICIC ACID

(Special Bulky)

H_2SiO_3 (approx.). Appearance, white amorphous powder, extremely fine and bulky. Specially produced as a starting material for the production of fluorescent phosphors such as zinc silicate and zinc-beryllium silicates. Yields phosphors of high covering power. Properties: Essentially a silica gel of high adsorptive activity toward water, oils, and solvents. Particles fall mainly in the 1-5 micron range. Low in metallic impurities. Partial specifications: Iron, less than 10 p.p.m.; other heavy metals, less than 5 p.p.m.; sodium compounds, less than 0.1%; assay, not less than 85% SiO_2; bulk density, 6-9 lbs. per cu. ft. Suggested Uses: As a starting material for phosphors; as an adsorbent carrier for liquids desired to be distributed as dusts; as a catalyst or carrier. Availability: Commercial quantities. Mallinckrodt Chemical Works.

SODIUM FUROATE

$C_4H_3OCOONa$. Mol wt., 134.0. Soluble in water, methanol, ethanol. Insoluble in ether, acetone, chloroform, petroleum ether, and benzene. pH of a molar soln 8.6. White powder. Moisture, 1% maximum. Sodium chloride, 0.5% maximum. Suggested Uses: Synthesis of furoic acid esters and other derivatives. Preservative. Available in limited semi-commercial quantities. The Quaker Oats Co.

SODIUM METAPHOSPHATE, Insoluble

Generally stated to be the monometaphosphate—$NaPO_3$. Physical Form: White powder. Properties: Insoluble in water. Soluble in hot concentrated H_2SO_4. Has mild polishing power. Softens hard water, probably by base exchange method. Suggested Use: Mild abrasive. Available in commercial quantities. Monsanto Chemical Co.

SODIUM META SULFO CETYL BENZOATE

Physical Form: White waxy flakes. Properties: Soluble in water. Suggested Uses: Detergent for neutral or moderately acid solutions. Available in laboratory quantities. Monsanto Chemical Co.

SODIUM MORRHUATE

A mixture of sodium salts of fatty acids of cod liver oil and may be made by action of sodium hydroxide on cod liver oil. Occurs as light brown granules of powder with a slightly fishy but not rancid odor and faintly acrid taste. Suggested Uses: The most frequent use of the drug has been as a sclerosing agent for the obliteration of varicose veins. Storage: Sodium morrhuate should be protected from light and kept in a well-closed container. Fine Organics, Inc.

SODIUM PHOSPHATE, HEMIBASIC

$NaH_5(PO_4)_2$. Physical Form: Hygroscopic crystals or granular material. Properties: Solubility 190 gms/100 gms. of water at 32°C. pH of 1% solution 2.2. Melting Point approximately 128°C. Suggested Uses: For treating silage. As a strong phosphoric acid in solid form. Metal cleaning. Available in pilot plant quantities. Monsanto Chemical Co.

SODIUM POTASSIUM AMYL PHOSPHATE

60% solution in water. Color, straw. Odor, slightly of Pentasol. Sp. Gr., 1.339. Wt. per gal., 11.2 lbs. pH, 7.0-7.3. Slightly hygroscopic. Anhydrous form gelatinous. Suggested Uses: Flameproofing, for paper, textiles, etc. Humectants. Wool lubricants. Availability: For government contracts or upon allocation. Monsanto Chemical Co.

SODIUM POTASSIUM ETHYL PHOSPHATE

60% solution in water. Color, water white, slight haze. Odor, slight ester. Wt. per gal., 11.4 lbs. Sp. gr., 1.37 at 25°C. pH 60% solution, 7.0-7.4. Viscosity, 128 centipoises at 25°C. Suggested Uses: Flameproofing for paper, textiles, etc. Humectants, Wool lubricants. Availability: For government contracts or upon allocation. Monsanto Chemical Co.

SODIUM SULFATE, ANHYDROUS

Na_2SO_4. Molecular Weight, 142.05. This product is a white to ivory granular powder. Assay, 99.4%; moisture, 0.05%; loss on ignition, 0.3%; free acid, none; chloride, 0.001%; Particle Size (Approx.) 99% thru No. 30 sieve; 90% on No. 140 sieve. Sodium sulfate is useful as a mordant in dyeing cotton, bleaching fabrics, tanning leather, in dyeing and printing textiles and in many other industrial [illegible] quantities, Heyden Chemical Corporation.

SODIUM THIOGLYCOLLATE

$HSCH_2COONa$. Mol. wt., 114.2. White crystalline powder, easily soluble in water and alcohol. Readily oxidizes in air. Suggested Uses: Sterility testing, penicillin, dehydrated blood plasma and various sulphur drugs. Several very important bacteriological culture media require as an ingredient sodium thioglycollate; in the preparation of certain toxins; in the preparation of penicillin. Martin Labs.

SODIUM TRIMETAPHOSPHATE

$(NaPO_3)_3$. Physical Form: White powder. Properties: Neutral, water soluble salt. Non-hygroscopic. Available in pilot plant quantities. Monsanto Chemical Co.

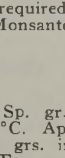
SODIUM ZINCATE, ZA-30

A slightly gray flaked solid zincate corresponding to the approximate analysis of 30% zinc oxide, 54% caustic soda and 15% water. Meta stable water solutions can be made in concentrations as low as 20% zincate. Suggested Uses: Textiles, treatment of acid and cannery waste waters, electroplating, boiler water treatment and other uses. Available for experimental investigation. Wyandotte Chemicals Corp.

SODIUM ZINCATE, ZA-4

A slightly gray flaked solid zincate corresponding to the approximate analysis of 4% zinc oxide, 92% caustic soda and 2% water. Stable solutions can be made in low concentrations. Suggested Uses: Textiles, treatment of acid and cannery waste waters, boiler water treatment and other uses. Available for experimental investigation. Wyandotte Chemicals Co.

1-SORBOSE



Mol. wt., 180. Melting point, 164. A ketohexose, easily soluble in water, difficultly soluble in cold or hot alcohol. Not fermentable by yeast but is attacked by numerous other organisms. On reduction with sodium amalgam, sorbitol and iditol are produced. Used for production of ascorbic acid. Suggested Uses: Microbiological media, production of l-idose, biochemical research on sugars and their derivatives. Readily available. Schwarz Laboratories, Inc.

SPI-5708

Light brown powder. Suggested Use: Low cost emulsifier for synthetic rubber manufacturing and industrial purposes. Beacon Co.

STRONTIUM METAPHOSPHATE

$Sr(PO_3)_2$. Physical Form: Gray powder. Insoluble in water. Suggested Uses: Constituent of glasses, porcelains and enamels. Availability: Laboratory samples. Monsanto Chemical Co.

STYRAMIC

Polystyrene base molding compound. Colors: Styramic 28, gray; Styramic 20, natural. Flow temperature, °F., 280. Water absorption, 24 hrs., %, 0.046. Tensile strength, lbs./sq. in., 3,000-3,500. Flexural strength, lbs./sq. in., 6,000-7,000. Compressive strength, lbs./sq. in., 10,000-12,000. Combines non-inflammability and excellent form stability, up to 175°F., with the superior electrical characteristics, moisture resistance and moldability of Lustron. Suggested Uses: Particularly suitable for electrical insulation purposes in the radio and television fields over entire range of frequencies encountered. Available in commercial quantities on allocation. Monsanto Chemical Co.

STYRAMIC HT

Injection molding temperatures °F., 475-550. Compression molding temperatures °F., 360-400. Sp. gr., 1.38. Water absorption, 24 hrs. % (D570-42), 0.03. Flammability in./min. (D568-41T, D635-41T), self extinguishing. Heat distortion pt. °F. (D648-41T), 236. Styramic Ht. overcomes the low heat resistance of polystyrene with electrical characteristics somewhat better, enabling its use in ultra high frequency and super high frequency insulating parts. Availability: Subject to allocation control by the Chemical Division of the War Production Board. Monsanto Chemical Co.

STYRENE DIBROMIDE

$C_8H_8Br_2$ = 264.0. Properties: Slightly colored,

persistent characteristic odor. Melting Point, 71-73°C. Solubility: Grams per 100 Grams at 25°C.: Acetone, 154; benzene, 158; carbon tetrachloride, 50; methanol, 12; VMP naphtha, 18; water, insoluble. Uses: Corn ear worm control and synthesis of organic chemicals and pharmaceuticals. Dow Chemical Co.

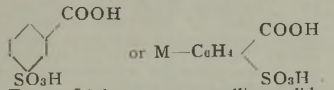
SUBLAN 848

A lanolin substitute of a grease-like nature and consistency. Suggested particularly for compounding with acid-free mineral oil in the manufacture of anti-corrosion films for steel. Such films suppress latent fingerprints on polished steel surfaces. The films are readily removed from the surface by cold-solvent wash or dip. Glyco Products Co., Inc.

SULFASAN

Bis-ethyl xanthogen. Sp. gr., 1.260 @ 25°C. Melting Point, 18-20°C. Appearance: Light brown oil at room temperature which changes to a light brown solid when cooled below 20°C. Soluble in alcohol, ether, CS_2, CCl_4 and benzene. Insoluble in water. Suggested Uses: As a vulcanizing agent for synthetic rubber. Available in pilot plant quantities. Monsanto Chemical Co.

Meta SULFOBENZOIC ACID

Formula: 

Physical Form: Light gray, crystalline solid. Properties: Melting Point, ca., 140°C. Very hygroscopic and water soluble; forms dihydrate. Strong acid. Very easily esterified on the carboxyl group. Suggested Uses: Intermediate for chemical synthesis. Available in pilot plant quantities. Monsanto Chemical Co.

SULFO PHTHALIC ANHYDRIDE

Physical Form: Dark brown super cooled liquid which may crystallize on standing. Properties: Strong acid. Becomes flowable at 70°C. Very hygroscopic and water soluble. Suggested Uses: Intermediate for chemical synthesis. Oil addition agent. Available in laboratory quantities. Monsanto Chemical Co.

SYTON W-20

Sp. gr., 1.10. pH, 8.0 to 9.0. Wt./gal., 8.6 to 8.7 lbs. Stability permanent at 25°C. Non-inflammable. Non-toxic and non-irritant. Colorless. Form: A colloidal water dispersion of inorganic polymer. Suggested Uses: Syton W-20 is developed for textile application. Availability: Syton W-20 is not under any government restriction and is available in limited commercial quantities for all purposes. Monsanto Chemical Co.

TACKIFIER FOR SYNTHETIC RUBBER

Resin VI-2 was developed primarily for compounding with vistanex and polyisobutylenes for the manufacture of adhesive tapes either by calender coating or spreading from solvent cements. M.p., 40°F. (ring and ball method). Harder modifications available for use with Buna S and reclaim. American Resinous Chemicals Corporation.

TACKIFIER W5-15

A 100% active elastomeric tackifier for the various synthetic rubber systems. This material is unique as a rubber tackifier in that it possesses rubber like properties in its own right. Tackifier W5-15 may be incorporated into the rubber on a regulation mill and employing standard rubber technology. This material is also available in latex form for admixtures with synthetic rubber latices to impart tack and pressure sensitivity to the system. American Resinous Chemicals Corporation.

TANNOFORM

Tannin-formaldehyde. A condensation product of tannic acid with formaldehyde. Reddish, odorless, tasteless, bulky powder. Melts a out 230° with decomposition. Insoluble in water; soluble in alcohol, alkaline fluids. Tannoform has been used in enteritis and other forms of diarrhea with the idea that it will be decomposed by the intestines, the tannic acid radical acting as an astringent and the formaldehyde as an antiseptic. Frequently employed as local ... treatment of eczema, bed sores, and hyperidrosis of the feet. Fine Organics, Inc.

"TERGITOL"* PENETRANT 4 PASTE

Concentrated form of "Tergitol" penetrant 4 contains 50% sodium tetradecyl sulfate in an aqueous gel or paste with minimum of inorganic salts and no mutual solvent. Used as a detergent, foam builder, emulsifying agent, and to enhance the activity of antiseptics and bactericides. Available in commercial quantities. Carbide and Carbon Chemicals Corporation.

* Registered Trade-Mark.

TETRACHLORCUMENE

$C_3H_7C_6HCl_4$. A colorless, mild smelling liquid of low viscosity and extremely high stability. Mol. Wt., 258. Melting Range, °C, 15-25. Boiling Range °C, 280-295. Flash Point °C, 155-160. Fire Point °C, none. Hydraulic stability test, below 0.05. Soluble in benzene and most chlorinated solvents, insoluble in water. Suggested Uses: Plasticizer, fire safe dielectric, extreme pressure lubricant, heat transfer fluid. Availability: Available in experimental quantities. Hooker Electrochemical Co.

n-TETRADECANE

$C_{14}H_{30}$. Mol. wt., 193.38. Sp. gr., 0.7636 @ 20/°4°C. Boiling Point, 251°C. (760 mm.). Melting Point, 5.5°C. Refractive index, 1.4290 @ 20°C. Color, water white. Soluble in alcohol, acetone, ether, and other common organic solvents. Insoluble in water. Relatively inert but can be chlorinated and nitrated. Suggested Uses: Reaction solvent, intermediate for synthesis, and as a standardized hydrocarbon. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

TETRADECANOL-1 (Myristyl Alcohol)

$C_{14}H_{29}OH$. Mol. wt., 214.38. Sp. gr., 0.8236 @ 38°/4°C. Boiling Point, 167-70°C. (15 mm.). Melting Point, 38-9°C. White, crystalline, wax-like solid. Soluble in alcohols, acetone, and ether. Insoluble in water. Suggested Uses: Intermediate for synthesis, solvent, and in cosmetic formulations. Availability: Research grade in pilot plant quantities. The Connecticut Hard Rubber Co.

TETRADECENE-1

$C_{14}H_{28}$. Mol. wt., 196.36. Sp. gr., 0.772 @ 20/°4°C. Boiling Point, 127°C. (15 mm.). Melting Point, –12°C. Refractive index, 1.4365 @ 20°C. Color, water white. Soluble in common organic solvents. Insoluble in water. Readily forms common addition. products. Suggested Uses: Intermediate for the synthesis of dispersing agents, pharmaceuticals, resins, insecticides, and oil additives. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

TETRADECYL MERCAPTAN-1 (Myristyl Mercaptan)

$C_{14}H_{29}SH$. Mol. wt., 230.44. Boiling point, 176-80°C. (22 mm.). Melting point, 6.5°C. Sp. gr., 0.8398 @ 25°/4°C. Refractive index, 1.4612 @ 20°C. Colorless liquid with a mild mercaptan odor. Soluble in acetone, alcohol, ether, petroleum and coal tar solvents. Insoluble in water. Forms metallic mercaptides. Suggested Uses: As a catalyst for polymerization, intermediate for synthesis, corrosion inhibitor, oil additive, insecticide, and flotation agent. Availability: Fine chemical grade and technical grade. The Connecticut Hard Rubber Co.

TETRAHYDROFURFURYL OLEATE (S 804)

$C_{23}H_{42}O_3$. Mol. wt., 366.6. Sp. gr., 0.923 @ 25°C. Consistency—fluid. Color, dark yellow. Solidif. point, 2-5°C. Volatility, 0.05% (4 hrs. @ 105°C.). Acidity, 0.1 mg. KOH/g max. Soluble in alcohols, ketones, esters, aromatic and aliphatic hydrocarbons. Compatible with nitrocellulose, ethyl cellulose, vinyl acetate-chloride copolymer. Suggested Uses: Plasticizer for nitrocellulose, ethyl cellulose, vinyl acetate-chloride copolymer. Glyco Products Co., Inc.

TETRAHYDROFURFURYL PHTHALATE (S 774)

$C_{18}H_{22}O_6$. Mol. wt., 432.4. Sp. gr., 1.194 @ 25°C. Consistency—fluid. Color, amber. Solidif. point, less than –15°C. Volatility, 1.2% (4 Hrs. @ 105°C.). Acidity, less than 4 mg. KOH/g max. Soluble in alcohol, ketones, esters, aromatic and aliphatic hydrocarbons. Insoluble in water. Suggested Uses: Plasticizer for cellulose acetate, nitrocellulose, ethyl acetate. Glyco Products Co., Inc.

TETRAHYDROFURFURYL RICINOLEATE (S 758)

$C_{23}H_{42}O_4$. Mol. wt., 382.6. Sp. gr., 0.955 @ 25°C. Consistency—fluid. Color, pale amber. Solidif. point, –40 to –45°C. Volatility, 0.047% (4 hrs. @ 105°C.). Acidity, 0.1 mg. KOH/g max. Soluble in alcohols, ketones, esters, aliphatic and aromatic hydrocarbons; insoluble in water. Compatible with nitrocellulose and ethyl cellulose. Suggested Uses: Plasticizer for nitrocellulose, ethyl cellulose, synthetic resins. Glyco Products Co., Inc.

Tetra-LEAD PYROPHOSPHATE

$Pb_2P_2O_7$. Physical form: White powder. Properties: Insoluble in water. Suggested Uses: As a pigment for white paints. Has a high index of refraction and good hiding properties. Paints prepared from it give a very white dried film, which is quite desirable since most lead pigments tend to produce yellowing in the dried film. Available in pilot plant quantities. Monsanto Chemical Co.

THALLIUM METHOXIDE

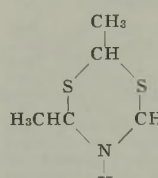
$TlOCH_3$. Mol. wt., 235.42. White to slightly yellowish powder. Decomposed by water. Soluble in methanol and in benzene. Suggested Uses: Synthesis of organic thallium compounds, special esterifications, photoelectric cells. Available for laboratory use. Palo-Meyers, Inc.

THIOGLYCOLLAMIDE

$HSCH_2CONH_2$. Mol. Wt., 91.13. White needles having a disagreeable odor. Melting Point, 52°. Freely soluble in water and alcohol; easily oxidized in air to dithiodiglycolldiamide. Suggested Uses: Used in the preparation of various salts, such as the bismuth and antimony salts which are valuable in the biological field. Martin Labs.

THIALDINE

Density, 1.191. Flash point, 225°F. A white crystalline solid melting at 44 to 46°C. Soluble in alcohol, ether, hydrocarbons, but almost insoluble in water. The odor of the free base resembles that of hydrogen sulphide but this odor is almost non-existent in its salts. A promising heterocyclic intermediate containing both sulphur and nitrogen in the ring. Exhibits reactions typical of secondary amines. Of interest to manufacturers of dyestuffs, insecticides, pharmaceuticals, and rubber chemicals. Available in commercial quantities. Carbide and Carbon Chemicals Corporation.



THIOGLYCOLLIC ACID

$HSCH_2COOH$. Mol. wt., 92.09. Physical Properties: Colorless liquid with an unpleasant odor. Sp. gr., 1.325. Melting Point, 16°. Boiling Point, 104-106° at 15mm. Completely miscible with water, alcohol, ether and many organic solvents. Chemical properties: An excellent reducing agent. A 0.1 solution will reduce protein tissue. Thioglycollic acid gives an extremely sensitive color reaction with ferric salts at pH range 5-10. Suggested Uses: Many physiological and biological uses because of its reducing properties; intermediate in preparation of drugs. Martin Labs.

THIOGLYCOLLIC ACID

Mercaptoacetic Acid. $HS\text{-}CH_2\text{-}COOH$. Mol. weight 92.09. Colorless liquid. Available in any concentration up to 90%. Anhydrous acid boils at 104-106° at 15 mm. Miscible with water. Suggested uses: manufacturing hair waving preparations, depilatories; synthesis of pharmaceuticals and dyestuffs; analytical reagent for iron; as sodium salt, in biological infusion media. Winthrop Chemical Company, Inc.

THYMOLPHTHALEIN

$C_{28}H_{30}O_4$. Mol. Wt., 430.23. Obtained by heating phthalic anhydride with thymol at 110° in the presence of stannic chloride. White needles. Melts about 245°. Insoluble in water; soluble in alcohol, acetone; also soluble in dil. alkalies with a blue color, in H_2SO_4 with a carmine-red color. Suggested Use: As pH indicator: colorless 9.3 to blue 10.5. Also as reagent for blood after decolorizing the alkaline solution by boiling with zinc dust. It is used in conjunction with phenolsulfonphthalein as a rust formation indicator of boiler water. Fine Organics, Inc.

THIOLACTIC ACID

$HSCH_2CH_2COOH$. Colorless liquid, unpleasant specific odor. Suggested Uses: Research, pharmaceutical, to manufacture Thiolactates.

THIOMALIC ACID

Nearly white, crystalline powder. M.W., 152.14. M.P., 139°. Easily soluble in esters, alcohol and acetone; rather easily soluble in ether; insoluble in benzene and petroleum solvents. Chemical properties of a mercaptan and of an aliphatic dibasic acid. Titrates as a dibasic acid with alkali. Suggested Uses: In the manufacture of anthiomaline (di-lithium-S-antimonythiomalate) for the pharmaceutical trade. As a depilatory in the form of the calcium salt. As a hair waving agent in the form of the ammonium salt. Organic synthesis, especially in synthetic polymers and oil processing fields. As mild antioxidant. Available in sample quantities. National Aniline Div.

THIOTAX A

Mercaptobenzothiazole of 97% purity. Sp. gr., 1.42 @ 25°C. Melting Point above 175°C. Soluble in acetone, alcohol, benzene, chloroform and dilute caustic. Appearance: Cream or light yellow powder. Suggested Uses: As an accelerator for crude and synthetic rubber. Available in commercial quantities. Monsanto Chemical Co.

TIN TETRAPHENYL

$C_{24}H_{20}Sn$. Physical form: White, crystalline material. Melting Point, 224-226°C. Boiling Point, 420°C. Soluble in benzene, carbon tetrachloride, chlorobenzene, etc. Slightly soluble in alcohol, insoluble in water and ether. Suggested Uses: Organic synthesis. Availability: Laboratory samples. Monsanto Chemical Co.

"TI-PURE" R-610
(Rutile Titanium Dioxide)

TiO_2. Mol. wt., 79.9; Sp. Gr., 4.13; **Ref.** Index, 2.71; pH, 7-8. Meets following government specifications: Federal TT-T-425 Type III Class C; Army-Navy Aeronautical Board AN-TT-T 436a Type II; Tank Automotive Center ES-680b; U. S. Army 3-175, 3-177, 3-178; Maritime Commission 52-MC-9, and others. Suggested Uses: Manufacture of tinted exterior protective coatings where pigment of maximum hiding power (130% that of anatase TiO_2) and resistance to chalking and fading is desired. E. I. du Pont de Nemours & Company, Inc.

m-TOLYLDIETHANOLAMINE

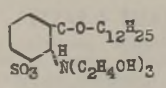
$C_6H_4CH_3N(CH_2CH_2OH)_2$. B.P., 173°C. (2.5 mm.). Slightly soluble in water at room temperature, but completely soluble in boiling water. White crystalline solid, melting at 71°C. Commercial material melts at 66 to 68°C. Chemical properties similar to those of phenyl diethanolamine, but its derivatives are usually more soluble in hydrocarbons and less soluble in water. By coupling it with diazotized nitroanilines, dyes are obtained which impart brown to red-brown shades to leather. Couplings with other diazotized bases to give violet dyes for cellulose acetate. May be condensed with o-chlorbenzaldehyde to yield a dyestuff, that produces fast yellowish-green shades on cotton. Insecticides or dyestuff intermediates are formed by reaction with vinyl p-tolyl sulfone. Available in limited quantities. Carbide and Carbon Chemicals Corporation.

TRICHLORCUMENE
(Isopropyl Trichlorbenzene)

$(CH_3)_2$—CH—$C_6H_2Cl_3$. Molecular Wt., 223.5. Analysis, % Trichlorcumene Isomers (2,3,5-, 2,5,6-, 3,4,6,-), over 90. Major impurities, less than 10%. Acidity (as HCl), max. %, 0.001. Freezing Range, °C., –30 to –45. Boiling Range °C., 245 to 265. Refractive Index n20/D, 1.535 to 1.560. Sp. Gr., 15.5°/15.5°C. 1.26 to 1.32. A colorless liquid with a mild aromatic odor. Insoluble in water, soluble in alcohol, ether, and most common solvents. Highly stable, not being readily oxidized or hydrolyzed; stable in glass at the boiling point (260°C.). Suggested Uses: Hydraulic fluid; transformer and dielectric fluids; antifreeze additive for hydraulic and dielectric fluids and heat transfer fluids; solvent for fats, oils, waxes, coal tar dyes, asphalt, gilsonite; solvent, diluent, and plasticizer in coating and insulating compositions. Availability: In experimental quantities. Hooker Electro Chemical Co.

TRIETHANOL AMINE SALT OF SULFO LAUROALKYL BENZOATE

Physical Form: Dark, amber-colored liquid.



Properties: Soluble in water, ethanol, benzene, carbon tetrachloride. Suggested Uses: Liquid detergent. Shampoo formulations. Available in laboratory quantities. Monsanto Chemical Co.

TRI-IODO ACETIC ACID

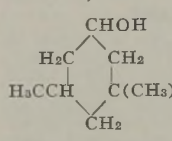
CI_3COOH. Mol. Wt., 437.70. Yellow solid. Soluble in water, alcohol and ether. Suggested Uses: Organic syntheses, iodinations, metallographic etching. Available for laboratory use. Palo-Myers, Inc.

TRI-LEAD ORTHOPHOSPHATE

Essentially $Pb_3(PO_4)_2$. % PbO = 81.8; % P_2O_5 = 18.0; % H_2O = 0.2. Physical Form: White dense micro-crystalline powder. Properties: Insoluble in water. Suggested Uses: Pigment. Availability: Pilot plant quantities. Monsanto Chemical Co.

3,3,5-TRIMETHYCYCLOHEXANOL-1

Mol. wt., 142.0. Sp. gr., 0.878 at 40/20°C. B.P., 198°C. (760 mm.). M.P., 35.7°C. Possesses an odor resembling both camphor and menthol. Soluble in most organic solvents, hydrocarbons, and oils, but insoluble in water. Should have value as an anti-foaming agent. Useful for the introduction of the trimethlycyclohexyl group into other compounds to increase their hydrocarbon solubility and decrease water-solubility. Other possible applications include preparation of plasticizers, xanthates, and wetting agents. Available in limited quantities. Carbide and Carbon Chemicals Corp.



TRIMETHYL PHOSPHATE

Physical State, mobile liquid, colorless, clear. Mol. Wt., 140. Sp. Gr., 1.2052(25°C.). Refractive Index, 1.3950 (ND). Acidity, 0.1 cc 0.1 NaOH/10 cc to phenolphthalein. Boiling Point, 89°C. (17.5 mm); 196°C. (760 mm.). Surface Tension, 29.82 dynes/cm (17.5°C.). Insoluble in naphtha; soluble in water, alcohols, acetone, ether, toluene, carbon tetra-chloride. Melting Point, 49°F. Viscosity, 3.6 centipoises (32° F.); 6.5 centipoises (0°F.). Suggested Uses: Plasticizer; methylating agent; solvent. Victor Chemical Works.

TRIOCTYL PHOSPHATE

Physical State, Mobile liquid, straw. Mol. Wt., 434. Sp. Gr., 0.924 (26°C.). Refractive Index, 1.442 (ND). Acidity, 0.1 cc 0.1 N NaOH/10 cc to phenolphthalein. Boiling Point, 185-90°C. (3 mm.). Surface Tension, 29.2 dynes/cm. Insoluble in water; soluble in toluol, alcohols, ether, acetone, butylacetate, naphtha, carbon tetrachloride. Melting Point, Very viscous at –80°C. Flash Point, 300°F. (closed cup). Hydrolysis 0.08 cc 0.1 N NaOH/10 g/2 hrs. to phenol. in 100 cc boiling water. Suggested Uses: Plasticizer; solvent; anti-foaming agent; lubricant; oil-additive. Victor Chemical Works.

TRIPHENYL PHOSPHINE SULFIDE

$(C_6H_5)_3PS$. Organic phosphorus and phosphorus thio-compound. Physical state, solid, light yellow color. Mol. wt., 294. Acidity, neutral. Analysis, 10.5% P. Boiling Point above 360°C. Solubility: Insoluble in water; soluble in benzol, chloroform, carbon disulfide; slightly soluble in alcohol and ether. Melting Point, 158°C. Suggested Uses: Plasticizer; oil additive. Victor Chemical Works.

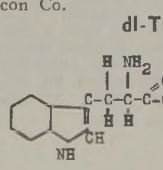
TRISODIUM MONOHYDROGEN PYROPHOSPHATE

$Na_3HP_2O_7$. Physical Form: Colorless, crystalline solid varying in water of composition from the anhydrous salt to $9H_2O$. Properties: Very soluble in water, pH 1% solution—7.4. Water softening properties about equal to tetrasodium pyrophosphate. Suggested Uses: Water softener in conjunction with organic detergents. Standard buffer for pH control. Available in laboratory quantities. Monsanto Chemical Co.

UNDECYLENIC ACID

$C_{11}H_{20}O_2$. Boiling Point, 290-300. Suggested Uses: Intermediate in organic synthesis. Beacon Co.

dl-TRYPTOPHANE



$C_{11}H_{12}O_2N_2$. White crystalline powder, not less than 99% Tryptophane. Uses: Pharmaceutical. In treating nutritional deficiency. Dow Chemical Co.

URAL RESIN A

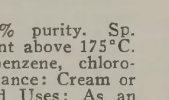
A stable water-soluble urea-formaldehyde liquid resin. Sp. gr., (25°/25°C.), 1.22, pH (5% solution) 7.2-7.5. Consistency—viscous fluid, color—water white to slightly hazy. Completely soluble in water. Insoluble in alcohol, hydrocarbons and oils. Polymerizes on heating in the presence of acid catalysts. Suggested Uses: Finishing agent in textile treatment, crease-resistant finishes for textiles, binding agent for pigments. Glyco Products Co., Inc.

UTILITY GREENS

Utility greens are similar in characteristics to Chromium oxides. They are considered to be permanent, acid and alkali resistant, and to withstand temperatures up to approximately 400 degrees F. Since they are manufactured from non-critical raw materials, they are available without government restriction or allocation. Utility Color Co.

Gamma VALEROLACTONE

Mol. wt., 100.06. Appearance: Colorless liquid. Crystallizing Point, Minus 37°C. Boiling Point, 205-206°C. Sp. gr., @ 25°C. — 1.0518. Ref. Ind. — 1.4310. Solubility: Miscible in all proportions in water, alcohol, ether, esters, chlorinated hydrocarbons. Insoluble in aliphatic hydrocarbons. Flash pt., Cleveland Open Cup—205°F. Fire pt., Cleveland Open Cup—220°F. Suggested Uses: One of the best solvents known for paint, varnish and synthetic resins. Also excellent solvent for DDT. Available only in small quantities for experimental investigation. Monsanto Chemical Co.



VERATRALDEHYDE

$(CH_3O)_2C_6H_3CHO$. 3,4 Dimethoxybenzaldehyde. Mol. wt., 166.17. Colorless needles from ether. Melting point, 44-45°C.; boiling point, 283°C. Insoluble; slightly soluble in hot water; very soluble in alcohol and ether. Suggested Uses: Vanilla-maple-caramel aroma and flavor. Used in flavors and perfume bases. General Drug Co.

VERATRALDEHYDE SODIUM BISULFIDE

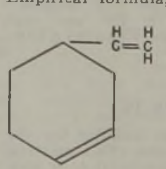
$C_9H_{10}O_3$ $NaHSO_3$. Sodium bisulfite addition compound of Veratraldehyde. Mol. wt., 270. White crystals from sodium bisulfite solution. Very soluble in water. Insoluble in most organic solvents. Decomposes at temperatures above 60°C. Suggested Uses: As an intermediate in manufacture of various chemicals. General Drug Co.

VINYL COPOLYMER EMULSION V9-8

Emulsion V9-8 is prepared from a plasticized copolymer base. It forms tough non-flammable films which develop their greatest film strength under drying at elevated temperatures of 200-300°F. Recommended for coatings and impregnants where oil, solvent and fire resistance of the vinyl chloride type of resin is required. 52% solids. American Resinous Chemicals Corp.

1-VINYL CYCLOHEXENE, 3 (4-VINYL CYCLOHEXENE-1)

Empirical formula, C_8H_{12}. Mol. Wt., 108.096. Sp. Gr., 20°C./4°C., 0.832. Pounds per U. S. Gallon, 6.94. Refractive Index at 70°C., 1.4655. Boiling Point, 129.5-130.5°C. Color, white. Soluble in hydrocarbons, insoluble in water. Suggested Uses: Solvent for butadiene, starting material for organic syntheses. Available in purity of about 85-90%. Koppers Co., Tar and Chemical Division.

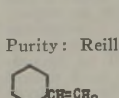


VINYL PLASTICIZER EMULSION V9-3

A high solids emulsion of a non-fugitive plasticizer blend formulated for compounding with polyvinyl acetate aqueous dispersions. The material is compatible with both acid and alkaline systems in any proportion. Dispersed plasticizer systems for practically all synthetic and natural resins and rubbers are available on request. American Resinous Chemicals Corp.

2-VINYLPYRIDINE

Purity: Reilly 2-Vinylpyridine contains an inhibitor to prevent polymerization. This inhibitor can be eliminated by vacuum distillation. Boiling Point: Boils (with resinification) at about 159°C. (760 mm.). Solubility: Soluble in water to the extent of about 2.5% and is freely soluble in dilute aqueous



acid solutions. [redacted] solvents, including aromatic and aliphatic hydrocarbons, alcohols, ketones, esters, etc. About 15% water dissolves in 2-vinylpyridine. Suggested Uses: Manufacture of synthetic elastomers, pharmaceuticals, and in organic syntheses. Approximate weight per gallon: 8 lbs. Reilly Tar & Chemical Corp.

VINYLSOL Q6-42

A solvent system depositing a tough, colorless, clear non-inflammable film possessing excellent resistance to oils, fats, waxes, petroleum greases, acids and alkalies. It is recommended as a coating system for paper and textiles where chemical and oil resistance is required. Particularly useful for heat seal coatings. American Resinous Chemicals Corporation.

X-20

Heavy viscous brown liquid; soluble in oil and freely dispersible in water, with good wetting-out, detergent and emulsifying properties. Suggested Uses: Ore beneficiation. Emulsol Corp.

1,2,4 XYLENOL

Purity: 95% minimum. Distillation Range: 95% shall distill within a range of 2°C. including the temperature of 226.5°C. Freeing Point: 62°C. minimum. Solubility: Very slightly soluble in water. Soluble in most common organic solvents, including alcohols, ethers, ketones, esters, aliphatic and aromatic hydrocarbons, and chlorinated aliphatic and aromatic hydrocarbons. Suggested Uses: In production of resins, various organic syntheses. Approximate weight per gallon: 8.45-lbs. (melted liquid). Shipping Containers: 325-lb. open head drums; 225-lb. wooden barrels; 25-lb. cans. Other Grades of 1,2,4 Xylenol: According to buyer's specifications. Reilly Tar & Chemical Corp.

ZINC METAPHOSPHATE

$Zn(PO_3)_2$. Physical Form: White powder. Properties: Melts at approximately 920°C. Has a very low thermal coefficient of expansion. Insoluble in water. Slowly soluble in acids. Suggested Uses: Constituent of glasses, porcelains and enamels. Available in limited quantities from pilot plant operations. Monsanto Chemical Co.

Additional Descriptions

ACETYL PEROXIDE
(Indimethyl Phthalate Solution)

Mol. wt., 118. Available as a 30% solution in dimethyl phthalate. Active oxygen content of the solution: 4%. Color: crystal clear. Sp. gr., 1.18. Flash point (Open Cup Method): 45°C. Solubility: Soluble in all proportions in many organic liquids such as acetone, ether, vegetable oils, mineral oils, methyl methacrylate, and most monomers. Suggested uses: Its high activity and ease of application suggest its use as a catalyst for many polymerization reactions, as a bleaching agent (particularly for non-aqueous mediums), as a germicide, as a vulcanization agent, and as a raw material for organic syntheses. Buffalo Electro-Chemical Company, Inc.

8-AMINO-6-METHOXYQUINOLINE

Mol. weight 174. Brown solid. M. P. 47-49°. Slightly soluble in water, soluble in alcohol, benzene and chloroform. Suggested uses: synthesis of antimalarials and other pharmaceuticals. Winthrop Chemical Co., Inc.

CELLUFLEX 179

$((CH_3)_2C_6H_3O)_3PO$. Mol. wt. 410. An amber viscous liquid, insoluble in water and soluble in organic solvents. Suggested Uses: As a plasticizer it imparts qualities of fire retardance, dielectric and tensile strength, pigment wetting, and lack of tackiness or exudation. Celanese Chemical Corp.

2, 9-DICHLORO-2-METHOXYACRIDINE

Mol. weight 194. Yellowish green crystalline powder. M. P. 163-164°. Almost insoluble in water; soluble in alcohol and chloroform; soluble 1:80 in benzene, 1:400 in glacial acetic acid. Suggested uses: synthesis of antimalarials and other pharmaceuticals. Winthrop Chemical Co., Inc.

5-DIETHYLAMINO-2-PENTANOL

$Et_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CHOH\text{-}CH_3$. Mol. weight 159. Colorless liquid, soluble in water, alcohol, benzene and ether. Refractive index at 20°-1.445-1.446. Suggested uses: synthesis of antimalarials and other pharmaceuticals. Winthrop Chemical Co., Inc.

COMPANIES WHOSE NEW PRODUCTS ARE DESCRIBED IN "NEW CHEMICALS FOR INDUSTRY"

Allied Chemical & Dye Corp.
National Aniline Division
1051 South Park Ave.
Buffalo, New York

American Cyanamid & Chemical Corp.
30 Rockefeller Plaza
New York, N. Y.

American Resinous Chemicals Corp.
Peabody, Mass.

Attapulgas Clay Co.
260 So. Broad St.
Philadelphia, Pa.

Atlas Powder Co.
Wilmington, Del.

The Beacon Company
97 Bickford St.
Boston 30, Mass.

F. W. Berk & Co.
Wood Ridge, N. J.

Buffalo Electro-Chemical Co.
Buffalo 7, N. Y.

Carbide and Carbon Chemicals Corp.
30 E. 42nd St.
New York, N. Y.

Celanese Chem. Corp.
180 Madison Ave.
New York 16, N. Y.

C. C. Chapman Bldg.
Los Angeles 14, Calif.

Connecticut Hard Rubber Co.
207 East St.
New Haven 9, Conn.

Commercial Solvents Corp.
Terre Haute, Ind.

Diamond Alkali Co.
Painesville, Ohio

The Dicalite Co.
756 South Broadway
Los Angeles

The Dow Chemical Co.
Midland, Michigan

The Edwal Laboratories, Inc.
752 Federal St.
Chicago 5, Ill.

Eimer & Amend
635 Greenwich St.
New York 14, N. Y.

Electrochemicals Department
E. I. du Pont de Nemours & Co.
Wilmington 98, Delaware

The Emulsol Corp.
59 East Madison St.
Chicago 3, Ill.

Fairmount Chemical Co.
600 Ferry St.
Newark, New Jersey

Fine Organics, Inc.
211 E. 19th St.
New York 3, New York

General Drug Co.
644 Pacific St.
Brooklyn, N. Y.

Givaudan-Delawanna, Inc.
330 West 42nd St.
New York 18, N. Y.

G. & A. Laboratories
Savannah, Ga.

R. W. Greeff & Co., Inc.
10 Rockefeller Plaza
New York, N. Y.

Glyco Products Co., Inc.
230 King St.
Brooklyn, N. Y.

Golwynne Chemical Corp.
420 Lexington Ave.
New York, N. Y.

Heyden Chemical Corporation
393 Seventh Ave.
New York, N. Y.

Hooker Electrochemical Co.
Niagara Falls
New York

Koppers Company
Tar and Chemical Division
Pittsburgh 19, Pa.

Lucidol Corporation
1740 Military Rd. (P. O. Box 446)
Buffalo 5, New York

Mallinckrodt Chemical Works
St. Louis 7, Mo.

Martin Laboratories
251 East 139th St.
New York 51, New York

Mathieson Alkali Works, Inc.
60 East 42nd St.
New York 17, N. Y.

Monsanto Chemical Co.
St. Louis 4, Mo.

Niacet Chem. Corp.
Pine Ave. and 47th St.
Niagara Falls, N. Y.

The Neville Co.
Pittsburgh, Pa.

Onyx Oil & Chemical Co.
15 Exchange Pl.
Jersey City 2, N. J.

Ozark Chemical Co.
Tulsa, Oklahoma

Paisley Products
1770 Canalport Ave.
Chicago 16, Ill.

Palo-Myers, Inc.
81 Reade St.
New York 7, N. Y.

Pittsburgh Plate Glass Co.
Barberton, Ohio

Quaker Oats Co.
345 East 25th St.
Chicago 16, Ill.

Reilly Laboratories
Indianapolis, Indiana

Schwarz Laboratories, Inc.
202 East 44th St.
New York, N. Y.

The Solvay Process Co.
40 Rector St.
New York 6, N. Y.

Utility Color Co.
377 Frelinghuysen Ave.
Newark, N. J.

U. S. Industrial Chemicals, Inc.
390 Doremus Ave.
Newark, New Jersey

Victor Chemical Works
Eleventh and Arnold Sts.
Chicago Heights, Ill.

Warwick Chemical Co.
West Warwick
Rhode Island

Jacques Wolf & Co.
Passaic, N. J.

Winthrop Chem. Co.
33 Riverside Drive
Rensselaer, N. Y.

Wyandotte Chem. Corp.
Wyandotte, Mich.

BETWEEN THE LINES

The Foreign Trade Outlook

After four years of rigid controls, foreign trade is now just beginning to return to its normal operating channels. The restoration will take place gradually and will be tempered by the course of the war, but progressive releasing of restrictions on exports to all but enemy countries is expected from now on. On imports, more of the buying will be done by private firms.

RELAXATION of tight Federal controls over export trade with most normally friendly areas, and a shifting of intensive economic warfare procedure to the Far East, will follow collapse of German resistance.

Since the first of the year a gradual easing of stringent war controls over United States foreign trade has been taking place, first to Latin America, and now, as of October 1, to the British Empire, Soviet Union, Middle East, and French, Belgian and Dutch possessions. License procedures governing exports to these countries of most supplies not on general license have been discontinued. With the definite defeat of Germany a still greater withdrawal of controls over exports to allied areas will be ordered.

However, the war will be swinging more fully against Japan, and the degree of modification, especially as it affects strategic commodities, will be governed by war needs against the Japanese. Availability of shipping and conservation of supplies needed for increasing domestic production may be other factors.

Efforts to Restore Normal Trade

Actual steps to encourage foreign trade are reported by Foreign Economic Administration, under which agency this phase of the war has been directed. Mentioned in this connection by FEA recently was the restoration to normal trade channels of most civilian textile, drug and pharmaceutical exports to the Middle East. Similar action has been taken in the case of most goods exported to the French West Indies.

Commercial exports from the United States in the first half of this year showed a higher value annually than for the prewar average of exports to all areas, including those cut off by the Axis, FEA has reported. If lend-lease is included, the rate for this first half of 1944 is annually at a level of more than $14,400,000,000, nearly treble the peace-time level at its peak.

U. S. export controls have now been in effect for four years. Beginning in July, 1940, with a list of 40 commodities, they had been extended to 2,500 commodities by 1943. These commodities have been handled by approximately 16,000 U. S. business firms engaged in export, and have been going in the past to individuals and firms in more than 140 foreign countries. Several thousand applications for export licenses come into FEA daily, and the annual volume ranges up to 2,000,000.

Not only is this huge activity due to be reduced with the defeat of Germany, but a corollary function of FEA also will be curtailed: the purchase of strategic materials from which the U. S. and its industries have been cut off by enemy action. This is especially the case with Far Eastern materials such as vegetable fats and oils, shellac, manganese, pharmaceuticals, rubber.

The fall of Malaya and the East Indies lost to the allies 90 percent of the world's natural rubber, 95 percent of its quinine. If India had also fallen, an important source of shellac would have been lost. Accordingly new sources of vegetable oils and fats for lubricants have been opened up; the jungles in Latin America have furnished cinchona bark after this source had been virtually abandoned for 60 years. Last year, it is reported by FEA, approximately $800,000,000 worth of foreign strategic materials were bought with Government funds under FEA direction, exclusive of preclusive buying. Although commodities were bought by the U. S. Commercial Company, a subsidiary of FEA, for importation under the War Production Board or War Food Administration, the facilities and services of many private importers have been utilized, it is stated. Private importers also bought extensively, with their own funds, certain essential raw materials.

Private Importing Encouraged

FEA is now found putting considerable emphasis on the degree of private participation in the buying program, doubtless with the implication that with the relaxation of controls the normal channel of such business will be found operative.

Thus, FEA states, it has been the policy in foreign procurement to have the U. S. Government engage in actual procurement only where the required amounts of strategic commodities could not be brought in effectively through ordinary commercial channels. Even in Government purchases, however, FEA now emphasizes that it was this agency's policy to encourage the greatest possible participation by private business.

The necessity of this foreign purchasing program is shown, it is claimed, by the revelation of WPB that at the outset of the war, 48 of the 136 raw materials listed as strategic and critical were virtually unprocurable in the United States. Among various items that have caused trouble at times have been castor oil for aircraft engine lubricants, molasses for alcohol, rotenone and red squill, block talc for insulators, kapok. Even with world markets open to importers, the size of war demands for many such items would have made the task of getting enough a tremendous one.

The emphasis has been on the aggressive side of these operations, however: the problem of keeping Germany and Japan from getting things they needed, even more than getting the commodities needed here. War trade agreements have been used in dealing with Sweden, Spain, Portugal and Switzerland—agreements by which these countries could import through the blockade essential supplies carefully held down to quantities that would alleviate the needs of their own peoples, but leave no excess for German buying.

While the expected 40 percent cut-back in war production after V-E Day will entail corresponding cuts in war procurement, many commodities will still be needed for continuing the war against Japan.

However, the anticipated release from controls of U. S. export trade in some quarters of the world will furnish an index to the postwar momentum that industries on this side may expect from foreign buying, and perhaps, from the related purchases this country may make in the course of normal commercial relations abroad once more.

Thus, U. S. commercial exports to Latin America, except the Argentine, have gained more than 50 percent over prewar levels. Pointing out that a greatly expanded U. S. foreign trade after the war will be essential to the maintenance of the high production levels engendered in the war, and the full employment incident thereto, the FEA reports that "It has always been the policy of this agency to encourage private foreign trade so far as possible in accordance with the primary objective of winning the war as quickly as possible."

MONSANTO GVL

A Completely Water-Miscible Solvent with a Wide Range of Possibilities

SEND FOR SAMPLE

Gamma Valerolactone is an unusual solvent that has a wide range of possibilities in the manufacture of war-essential products. Samples for experimental purposes will be sent free and without obligation in response to requests on company letterheads.

Monsanto GVL, which is non-irritating and safe for all normal uses, is completely miscible with water. It also is miscible with most organic solvents and plasticizers and with resins, waxes, oils, fats and acids, except anhydrous glycerine, polyvinyl alcohol, glue, casein, gum arabic and soya bean protein. It is slightly miscible with zein, degras, beeswax, petrolatum and mineral spirits.

If physical properties of Monsanto GVL suggest possible applications in your war production, we shall be pleased to supply you with a sample. Please address your inquiry to the nearest Monsanto Office to MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

PHYSICAL PROPERTIES

Appearance	Colorless, mobile liquid
Formula	$C_5H_8O_2$
Molecular Weight	100.06
Boiling Point (760 mm.)	205-206.5° C.
Flash Point (Cleve. Open Cup)	205° F.
Fire Point (Cleve. Open Cup)	220° F.
Crystallizing Point	−37° C.
Specific Gravity @ 25/25° C.	1.0518
Refractive Index @ 25° C.	1.4301
Surface Tension @ 25° C.	39. dynes/cm.
Viscosity @ 25° C.	2.18 Centipoises
pH (Anhydrous)	7.0
pH of 10% Solution in Distilled H_2O	4.2

POSSIBLE FIELDS OF APPLICATION

1. As a coupling agent in dye baths. **2.** In brake fluids. **3.** In cutting oils. **4.** As a solvent for insecticides and fungicides. **5.** As a lacquer solvent to reduce blush. **6.** As a solvent for adhesives.

MONSANTO CHEMICALS
SERVING INDUSTRY...WHICH SERVES MANKIND

NEW PRODUCTS AND PROCESSES

New Glycols

Polyethylene glycol 600 and "Carbowax" compounds 1000 and 6000 are now being produced by Carbide and Carbon Chemicals Corporation in addition to polyethylene glycols 200, 300, 400 and "Carbowax" compounds 1500, 1540, and 4000. Polyethylene glycols 200, 300, 400, and 600 are viscous, light-colored, non-volatile liquids while the "Carbowax" compounds vary from soft to hard waxy solids. They are very soluble in water and many organic solvents, but dissolve in aliphatic hydrocarbons to only a slight extent. The polyethylene glycols and "Carbowax" compounds are useful intermediates, show promise as plasticizers for glue, protein coatings, cork, and other products, and also form interesting bases for cosmetic and pharmaceutical creams and ointments.

Rust Inhibitor

A new rust preventive coating for protection of metal parts and equipment during storage, shipment, and, in some cases, in service, has been developed by Witco Chemical Company, New York. Known as Witco #673 Rust Inhibitor, this new product offers a combination of advantages: it is a cold-dip, rapid drying coating that may be applied either by dipping or spraying, as its viscosity is comparable to that of water. It is non-abrasive, non-corrosive, and easily removed with ordinary solvents.

Zinc Stripper

The Enthone Company, New Haven, announce the development of an alkaline stripper called "Enthone Zinc Stripper" for the rapid removal of zinc plate. This new product quickly strips zinc plated coatings of all types. Due to the alkaline nature of the solution, the tendency for rusting of the steel after stripping is largely removed, whereas this is a serious problem when acid strips are used. The Stripper is effective for removing zinc coatings that have been treated with various chromate processes and for all types of bright zinc plates.

New "Thiokol" Blend Announced

Thiokol "ST," a new type of synthetic rubber developed by the Thiokol Corporation is marked by extreme low temperature flexibility without the addition of plasticizers plus excellent resistance to solvents, ozone and sunlight, the makers state. Equally important, the new "ST" has proved itself to be the first successful solution to the problem of "cold flow" among the polysulphide synthetics. Also the unpleasant odor commonly associated with these polysulphides has been reduced to such a negligible factor in "ST" that it should add considerably to the new polymer's workability and versatility.

Plastic Tape

"Fibron," a new many-purpose plastic tape of widely divergent applications, has been announced by Irvington Varnish & Insulator Company, Irvington, N. J. It is used for insulating wires, cables and electrical equipment; for splicing cables; and for protecting wiring, piping, and equipment exposed to caustic or corrosive fumes, oil, grease, acids, alkalis or moisture. Fibron Tape is manufactured from "Vinylite" resin, a product of the Carbide and Carbon Chemicals Corporation. It is heat-sealing, flame resistant, and high in dielectric and mechanical strength.

Synthetic Resin Adhesive

A new synthetic resin adhesive announced by Paisley Products, Inc., Chicago and New York, is a soft white fluid cement that may be used in its natural state or reduced with water. Application is by brush, gumming machine, spreader, dipping, flow or spray gun. The film, when dry, is a semi-transparent, glossy, flexible coating with excellent heat sealing properties. When used in the liquid state for bonding materials it can be applied to one or both surfaces, the speed of setting being dependent upon the porosity of the materials used. According to the company "Pliastic Cement" is applicable in many industrial operations as a replacement for rubber latex.

Detection of Porosity in Plated Coatings

A new test paper for detecting porosity in plated coatings has been announced by the Hanson-Van Winkle-Munning Co., Matawan, N. J., called Fotopor Paper. It is most commonly used for determining the porosity of nickel deposited on iron and steel. However, it can also be used to test the porosity of chromium, copper, brass and tin over iron and steel; as well as these same metals over copper and brass. Blue spots will appear on the paper wherever iron or steel is exposed, and brown spots in the case of copper and brass.

Filling Compound

The Sterling Varnish Company has developed a new filling compound, designated as S-182, for lifting magnet cases, potting small transformers and for general filling work. It is a very firm material with considerable resiliency and withstands extremely high or low temperatures. S-182 Compound has great internal cohesion, minimizing the danger of disintegration and severe stresses.

The compound is supplied in two separate parts—S-182A, a viscous liquid, and S-182E of low viscosity—which must be mixed immediately prior to use since they react slowly at room temperature. The mixture retains sufficient liquidity for pouring for a period of 4-5 hours. Though very heavy, the compound penetrates into small interstices.

S-182 Compound has a high dielectric strength, a low coefficient of expansion and is water resisting and oil proof. It will withstand temperatures up to 200° C. without resoftening and does not become brittle at temperatures as low as minus 60° C.

Plastic Gun-Barrels

It has been revealed that the barrels of the flying bazookas which the Army Air Forces have installed on the Thunderbolt and other types of fighter planes are made from a special paper plastic developed by General Electric's plastic division and the Bryon Weston Co. Thousands of these amazing weapons, offsprings of the famed infantry bazooka, have been produced in the General Electric plant in Lowell, Mass. According to General Electric officials tons of special paper are needed to make the flying bazooka's barrel.

Plastic was adopted because it is lighter than other types of material and better adapted for this job. Exactly what resins were used was not revealed, but undoubtedly the plastic is fire-resistant in order to withstand the fiery blast of the rocket missile when it is launched.

Improved GR-S Carcass Stocks

Research recently conducted at the research laboratories of the National Lead Company definitely establishes the fact that litharge-activated GR-S compounds can be achieved with far superior aging properties with desired curing rate, stable over an extremely wide curing range, and with improved heat build-up. This has been accomplished by using litharge as an activator for thiazole or thiuram accelerators with low sulfur.

The National Lead Company research

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laboratories developed an accelerator combination which proved efficient for fast cures. It was found that when 0.5 to 2.0 parts of FBS litharge was used with the proper quantities of thiuram or thiazole type accelerators, a curing rate could be developed to meet recognized requirements without leading to the development of undesirable physical characteristics than usually accompany over-acceleration.

They have recommended that 0.75 to 2.0 per cent zinc oxide and 0.75 to 1.5 per cent sulfur with 1.5 per cent FBS litharge and 1.0 per cent dibenzothiazyl disulfide be employed for all general purposes.

Lacquer Application Costs Reduced

An important reduction in the cost of lacquer applications has been made in Hercules Powder Company laboratories.

The reduction in cost is obtained through a saving in solvent and a reduction in the number of finishing coats required without sacrificing the recognized high-quality performance of nitro-cellulose lacquers. The saving in solvent and the reduction in the number of finishing coats is a result of using nitrocellulose lacquers of increased solids content at spraying viscosity. Data were presented which demonstrated that the solids content in nitrocellulose lacquers can be increased by using lower-viscosity type nitrocellulose and larger proportions of non-oxidizing alkyd resins with either a more active solvent or by applying the lacquer by a hot-spray method.

Drying-Oil Type Coating Resin

A new, low cost, drying-oil type resin is now available without restrictions as to end use, the Resinous Products & Chemical Company of Philadelphia has announced. Known as Duraplex AL-210, the resin is adapted to airdrying finishes and is designed for use in protective paints. The new resin contains only 50% reportable oil—thus providing a practical means of extending oil quotas.

Resembling bodied linseed oil in speed of dry and ultimate hardness and the phthalic alkyds in its outstanding pigment wetting and binding properties, the resin produces coatings that are flexible, possess good adhesion and excellent wearing qualities.

Announcement of this resin is the outgrowth of study in the company's research laboratory of polybasic acids as replacements for phthalic anhydride. It differs from conventional phthalic anhydride resins in that its "alkyd" component is a permanently soft elastic material which does not accelerate the drying of the oil component. The resin is supplied as a dark-colored, viscous liquid which pours slowly at room temperature. Although many applications have not been fully explored, it promises to work well as an oil base for oleoresinous varnishes. In combining the elasticity of Duraplex AL-210 with the drying effect and through hardness of a hard resin, a tough elastic varnish film can be produced.

Films of the resin are not heat reactive and remain essentially unchanged after short bakes as high as 400° F. No long-term exposure data has yet been made available, but it is expected that coatings based on the resin will retain their elasticity longer than those formulated with straight drying oils or phthalic alkyds. The resin is a good general purpose binding medium for air-drying paints and enamels. It is soluble in mineral spirits and other aliphatic hydrocarbons, turpentine, xylol, toluol, esters and ketones. It tolerates addition of cold cut resins, raw and bodied oils, and certain blending varnishes.

Duraplex AL-210 is produced from raw materials that are readily available and can be sold without restriction.

Allyl Alcohol Commercially Available

Allyl alcohol is now being produced in commercial quantities by Carbide and Carbon Chemicals Corporation. Most of the production of allyl alcohol up to now has been for high-priority uses, but substantial amounts are now available for new users and for expanded consumption by those already using the chemical. Now that allyl alcohol is available in commercial quantities, the company believes it may become economically feasible as an intermediate for the manufacture of industrial chemicals.

Adhesive Announced by Resinous Products

An adhesive for joining metal to metal or metal to wood has been announced by the Resinous Products & Chemical Company, Philadelphia. Known as "Redux," it consists of two components—a clear reddish-brown liquid and a colorless granular solid.

Tests on aluminum showed that the metal-to-metal bond had tensile and shear strengths in excess of 4000 lbs. per square inch. The bond strength of maple to aluminum could not be measured since the wood yielded before the junction.

This product is expected to find wide application in the aircraft industry, where the use of a wood-metal "plywood" has been suggested to combine the unique advantages of each of those materials.

Solvent Resistance for Cellulose Esters

A method whereby the usefulness of cellulose ester plastics may be increased has been announced by the Tennessee Eastman Corporation. It has been found that, by producing surface hydrolysis (the reconversion of the surface composition back toward cellulose) of the molded plastic, the effects of exposure to certain organic solvents are largely overcome. Contact with some solvents or solvent plasticizers causes cellulose ester plastics to become tacky, to swell, or distort; and the more active solvents, such as acetone or acetic acid, will finally dissolve the base material upon continued contact.

Surface hydrolysis is obtained by dipping the cellulose ester plastic in a solution containing an active hydrolyzing agent, such as sodium hydroxide, and a softening or penetrating agent, such as methanol. After a thorough rinsing in water, the hydrolyzed samples are dried, preferably in a 150° F. oven.

This form of solvent resistance makes possible cleansing operations on articles molded from cellulose ester plastics which have not heretofore been considered practical. Surface hydrolysis does not give immunization against continued exposure to very active solvents, such as acetone and the Cellosolves.

The physical properties of the dipped plastics are apparently unchanged by the treatment. Tests for flow temperature, elongation, tensile strength, moisture absorption, and leaching were run on dipped and undipped samples. There was no difference between the two lots, which would indicate that the toughness of the plastic is unimpaired by surface hydrolysis.

Plastic Matting

Plastics have been adapted to the manufacture of matting by the American Mat Corporation, Toledo.

This new product which is being marketed under the name of Ameritred, is a solid plastic friction type mat made by firmly binding friction compound together by a plastic. It is a substitute for rubber matting in building entrances, shower and locker rooms, hall runners, and the like. It does not swell as rapidly as rubber where exposed to various types of oils.

Synthetic Rubber Processing Improved

A new process which cuts milling time of synthetic rubber by one-third has been put into production by General Tire & Rubber Company in a Government-owned plant in Baytown, Texas.

The new development permits the mixing of the emulsion with carbon black before coagulation. The previous technique involved incorporation of the carbon into the rubber by milling. Tires made from the new "homogenized" rubber are superior to synthetic tires now being made because the new system affords perfect mixing of the ingredients.

Large economies in milling time, manpower and power costs will lead to an increased market for the lower-cost syn-

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thetic product even when natural rubber is again available, company officials believe.

The new process was developed by General's research staff in Akron in collaboration with the Carnegie Institute of Technology and Purdue University.

Laboratory Apron

The Hydro-Tex Corporation, producers of Hydro-Tex water-proofed material, has announced a new waterproofed laboratory apron specially designed for laboratory technicians and workers, chemical handlers, photographers, etc. and equally suitable for men or women. This new apron is described as made of black Hydro-Tex material, thoroughly impregnated, synthetic coated, and specially treated to resist acids. The apron is said to have been subjected to the most severe test and it is claimed to be unique in that it will not shrink, stick, peel or crack, but will always stay soft and pliable regardless of temperature changes and is readily washable. It is also claimed that the apron is reinforced at all points of stress with double cross-stitching.

Itaconic Acid by Fermentation

Itaconic acid, useful in the production of plastics, can be produced by a new method at a cost of approximately 50 cents a pound. Present prices run as high as ten dollars a pound.

The method, developed by Drs. Andrew J. Moyer, Lewis B. Lockwood, and George E. Ward of the Northern Regional Laboratory of the Agricultural Research Administration, involves the fermentation of corn sugar with a mold, *Aspergillus terreus*. The mold is seeded onto the surface of a 20 percent sugar solution containing other necessary nutrients. It grows as a thick brown mat on the surface of the solution, which is kept in large shallow pans, and in the course of 10 or 12 days produces one pound of recoverable itaconic acid for each 4 pounds of sugar used.

O. E. May, chief of the Bureau of Agricultural and Industrial Chemistry, said that the low cost of producing itaconic acid by this new mold fermentation process and the strengthening effect it has on the methacrylate types of plastics may lead to its use in that field.

Flame-Spraying of Polythene Plastic

Application of polythene plastic by the flame-spraying method previously used to apply coatings of metals has been described by Dr. F. C. Hahn, of the Plastics Department of E. I. du Pont de Nemours & Company. Films of polythene thus applied are tough and highly impermeable, he disclosed, and when applied over metal surfaces provide a high degree of protection against brines, chemicals, and other corrosive agents.

Polythene is the generic name that has been given to the new series of hydrocarbons of high molecular weight now being produced on an industrial scale in this country by the polymerization of ethylene under high pressure.

"In coating by flame-spraying," Dr. Hahn said, "particles of finely ground material pass through a flame and are either softened on the surface, or completely melted, before they come in contact with the article to be coated. Successive particles impinge on those previously deposited before the particles solidify, and thus continuous coatings are obtained. Films or coatings applied in this way are so free from even microscopic holes that the use of a Tesla coil shows them to be entirely non-porous. Such coatings may be deposited not only on metals but also on wood, glass, plastics, and even paper.

"Coatings of polythene applied to steel by flame-spraying have exhibited an unusual degree of protection against corrosion by brine and chemicals. For example, coatings on steel test specimens showed excellent adhesion aften nine months' immersion in brine, and there was substantially no corrosion of the underlying metal."

Milkweed Seed Oil

Milkweed seeds, which now are commercially discarded as a waste product, have been revealed as a new natural resource for oil to use in paints and varnishes and in edible oils by scientists of the Polytechnic Institute of Brooklyn.

Dr. Paul E. Spoerri, associate professor of chemistry at the Polytechnic Institute of Brooklyn, with his associates Herman J. Lanson and David Habib, reported on the work which the Polytechnic Institute during the past year was commissioned to carry out by the Office of Production Research and Development of the War Production Board to determine what commercial use could be made of the milkweed seeds now being accumulated as a by-product in the manufacture of a kapok substitute. The research, which has produced an entirely new oil never before known, has been carried out under an agreement with the Institute of Paper Chemistry.

According to Dr. Spoerri, with the introduction of the use of milkweed floss, milkweed seeds are now being accumulated in great quantities. It was believed that to prevent their waste, oil could be extracted from these seeds. Currently, after separation from the floss, the seeds from the milkweed are being discarded. The tremendous demand for fats and oils for both technical and edible uses growing out of the present world war has spurred the search for these new materials. The acute shortage of fats has stimulated practical investigations on oils which previously had been overlooked. The milkweed seeds were believed to be a new source of oil which could be obtained for practically nothing.

The Polytechnic group has found that oil occurs in the milkweed seeds to the amount of 23% of the total weight of the seed.

In character, milkweed seed oil comes very close to soybean oil. Under tests with the weatherometer, a machine which simulates outdoor conditions but accelerates weathering in 300 hours to the equivalent of three or four years, the resin made from the milkweed seed oil showed that it is somewhat superior to soybean oil paint. There is less tendency to "yellow." Other tests show that the milkweed oil when blended with fast drying oils produces resins which meet all navy specifications for sturdy paints. It can be used on anything that is painted for reasons of protection or decoration, such as battleships, refrigerators, or furniture. In having superior "non-yellowing" qualities it is a good outdoor paint.

The milkweed seed oil also has been found very desirable for edible use. It has a pale yellow color, a bland taste, and hardly any odor. An advantage it has over other oils is that it does not solidify in cold weather and is stable under normal conditions. The Polytechnic group believes that milkweed seed oil can take the place of soybean oil in some of its uses and in certain respects it is superior to soybean oil. Since there is a shortage of edible oil, milkweed seed oil can help fill out the nation's supply.

New Ethanolamine

Dimethylethanolamine has been added to the list of ethanolamines produced by Carbide and Carbon Chemicals Corporation. It is a water-white, hygroscopic liquid with an amine-like odor, completely miscible with water, alcohol, and benzene. It undergoes reactions typical of a tertiary amine, forming light-colored esters with high molecular weight organic acids. It is of value in the synthesis of compounds used as pharmaceuticals, corrosion inhibitors, acetate rayon dyestuffs, and textile auxiliaries and lubricants.

Alkyd Resin-Treated Asbestos Garments

Asbestos garments can be made more wear-resistant by treatment with alkyd resins. In a patent (Brit. Pat. 551,513) granted to G. Angus & Co. and M. Balkin it is specified that asbestos garments are impregnated with a liquid containing glycerine-phthalic acid type resin as the major ingredient. A phenol-formaldehyde resin, chlorinated or synthetic rubber compositions, or an oil-varnish composition may also be used.

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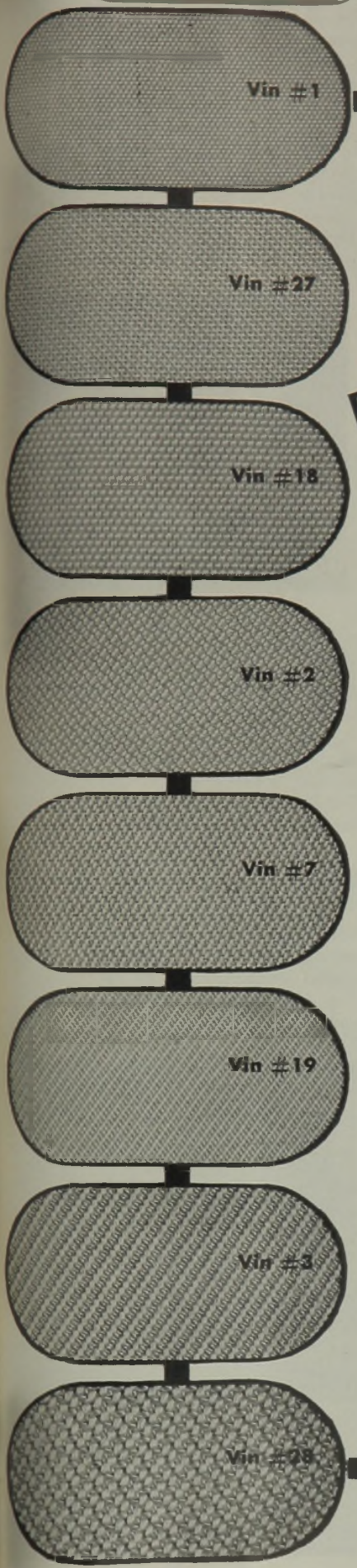

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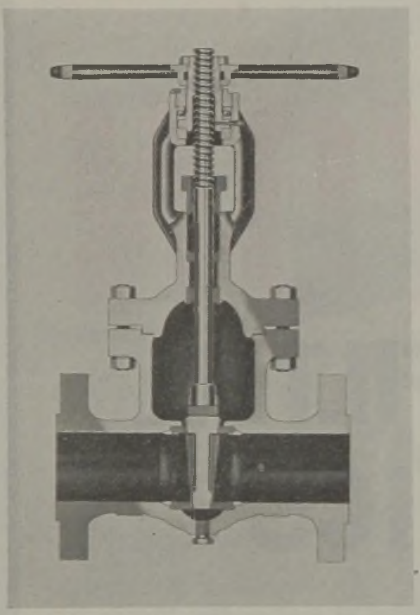
NEW EQUIPMENT

Gate Valves QC 459

A completely new line of cast steel gate valves has been introduced by The Edward Valve & Mfg. Co., Inc.

To achieve perfect alignment of all working parts, close fitting wedge guide ribs are constructed by a new method which eliminates unnecessary and wear-producing drag across seating faces.



Seat rings are hard surfaced and welded integrally to the body. Specially built fixtures permit hydrostatic test of both seating faces simultaneously, in contrast with the customary procedure of testing one face at a time. All valves 4 in. and larger are ball bearing equipped. In the smaller sizes bearing plates for yoke bushings are treated by a special plating process to reduce operating effort.

The new gate valves are being built in 300, 600, 900 and 1500 lb. classes and in sizes 2½ to 12 in. inclusive.

Shield for Kiln Ends QC 460

A segmented shield has been devised by Amsco engineers which aids in keeping nose ring segments on rotary kilns at a lower operating temperature, thereby increasing their load carrying strength. The inner segments are thus kept at a temperature low enough to withstand the thrusts of the brickwork. The segmented shield can also be removed without entirely cooling down. A further advantage of this design is that the retaining bolts of the shield have been moved back to a point where they are less affected by the heat. Made of Amsco Alloy, which is a high-temperature metal, the segments do not "grow" like iron or steel. There is no noticeable scaling under normal conditions.

Electrical Tachometer QC 461

A new electrical tachometer for speed measuring requirements is being introduced to industry by the R. B. Brigham Co. A simplified design of a smaller power unit affords flexibility in permanent installations. The power unit is equipped with special sealed ball bearings and a permanent magnet rotor, designed for long, trouble free operation. No brushes, commutators or gears are used.

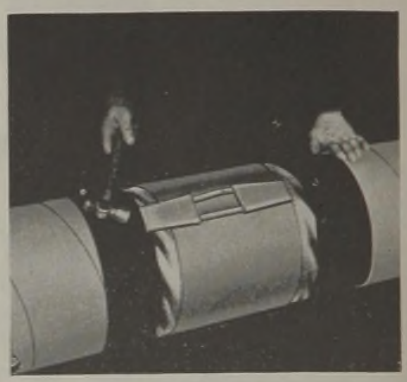
By special calibrations on the scale of the indicator, units of miles per hour—revolutions per minute—feet per minute—frames per second—gallons per hour—pounds per minute—and any other unit of measure can be quickly read. These direct readings from the scale eliminate the necessity of using conversion tables or charts.

The model described is designed as a portable testing instrument. The power unit has a plastic housing to permit an easy hand hold. Four rubber tips are provided so that speeds of any type shaft, whether centered or uncentered, can be easily determined. The indicating instrument is mounted in a hardwood case—with a flexible cord and plug-in jack. The complete unit, power generator—meter—electric cord, etc., are all enclosed in a carrying case. The manufacturer guarantees the unit for 10 years.

Simplified Coupler for Conduit QC 462

Making final field connections on Ric-wiL prefabricated insulated pipe conduit has been greatly facilitated by a new drive coupler, eliminating the need for skilled workmen and still further reducing installation time. The coupler is adaptable to mechanical or welded closure—the operations in either case being much simpler than former methods.

Ric-wiL insulated conduit is shipped in 21-foot sections. Ends of helical corrugated conduit are expanded smooth at the factory, removing corrugations for a distance of 3 inches. Bare pipe extends beyond ends of conduit for 3 more inches. After pipe has been coupled or welded, and insulation applied over exposed portions, smoothed ends of conduit are coated with waterproof sealing cement. A heavy-gauge split connector sleeve is then slipped over the opening. Clamps are driven onto wedge-shaped channels over lapped joint, quickly making a strong watertight mechanical coupling. Where a welded closure is required, cement is omitted and ends of sleeve lap-welded to conduit after clamps have been applied. Clamps are then removed and longitudinal seam lap welded. For extra strength, clamps may again be driven onto channels after weld is made.

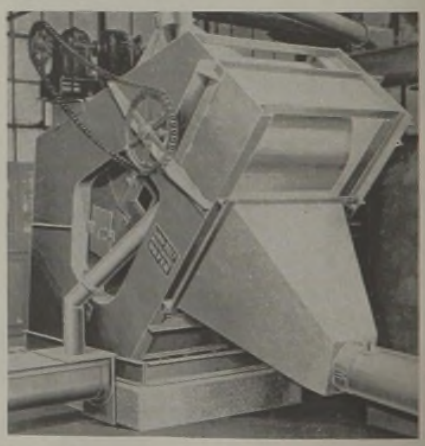


When conduit coupling is completed, an asphalt blanket, applied with heat over the entire closure area, fuses with factory applied asphalt, assuring uniform protection at all points.

Accessories for the complete system—including expansion loops, elbows, tees, anchors, reducers, etc., are prefabricated and equipped with the same drive coupler for assembly with conduit sections.

Multi-Louvre Dryer QC 463

The Dryer Division of Link-Belt Company, Chicago, has announced a new type of dryer, the Link-Belt Multi-Louvre Dryer, for the low cost drying (or cooling) of bulk materials which do not require long retention periods.



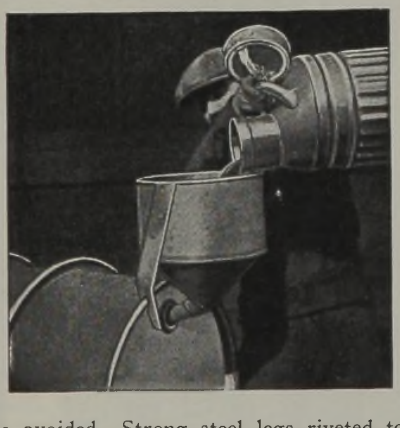
The new dryer is described as a very compact, fully enclosed unit, containing moving louvres supported on power-operated endless chains. The function of these moving louvres is to present the material as it flows to secure the most

efficient drying (or cooling) action.

This mixing action and thorough contacting of the material with the heated air introduced into the unit is said to promote efficient drying and assure a uniformly dry material. The air which is drawn in through the moving mass of material and exhausted at the top of the dryer can be heated to the temperature best suited to the material being dried. Ample passages between louvres permit air circulation at low velocity. The principle of passing air through a constantly mixing bed of material is the same as that employed in the company's Roto-Louvre Dryer, in which, however, the louvres are secured in a fixed position to the inside of revolving drum of dryer. It permits the use of relatively high temperatures without danger of overheating and results in rapid drying with none of the detrimental effects of forcing air into dryer at high temperature. Fine materials can be carried on the louvres without clogging. The louvre-supporting chains are not in the path of the heated air, neither do they come in contact with the material being dried. This should result in longer life of the moving parts.

Funnel for Drum Filling QC 464

A funnel made by the Industrial Products Company, Philadelphia, provides a safe, easy means of refilling drums in a horizontal position. Time is saved and strains are prevented in that the troublesome job of lifting the drums on end

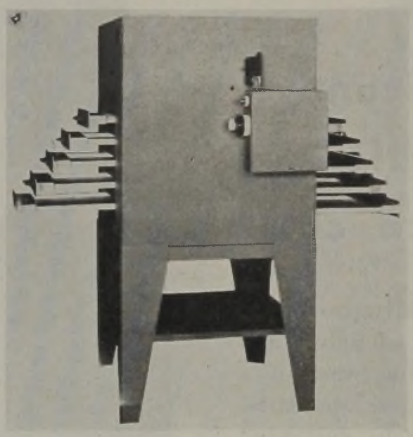


is avoided. Strong steel legs riveted to the sides of the funnel clamp tightly to the drum chime; there is no chance of tipping or spilling, and hands are free for pouring with ease and speed.

Preheating Oven for Plastics QC 465

The Despatch Oven Company has designed an oven for phonograph record manufacturers, but it is also adaptable for the preheating of plastic preforms. The oven has been purposely built narrow to fit between presses, and it is arranged with 12 sliding drawers, half of which pull out at either end. This permits two operators to use the oven at the same time without interference.

Electrically heated and provided with forced draft air circulation, the oven maintains uniformity of plus or minus 4 degrees F. in all portions of the working chamber. Automatic temperature control is provided so that any degree of heat from 150-500 degrees F. may be obtained as required. The heating system affords fast preheating of the plastic materials, and by working from one drawer to another, a perfect time cycle to coordinate with the press operation may be obtained.



The net working space of each drawer is 20 x 19 x 1¼ inches, but other sizes, or other numbers of drawers or their arrangement, can be made available.

Wax Melting and Dipping Equipment QC 466

A melting and dipping tank with a capacity of 70 lbs. of wax has been announced by the Aeroil Burner Company. Known as the Waxmaster Major, it is electrically heated and controlled by a built-in thermostat to any temperature from 100 to 550 degrees F. A built-in dial thermometer is provided for quick checking of the wax temperature.

In addition to providing a large dipping space, 48 x 20 x 15 inches, the tank is equipped with a specially designed "never-freeze" draw-off cock to permit drawing off the melted wax. Efficient insulation, permitting an average loss of only 8 degrees per hour with all the heat turned off, reduces power costs to a minimum. It is designed to operate on 220 volts AC.

Truck Pumps QC 467

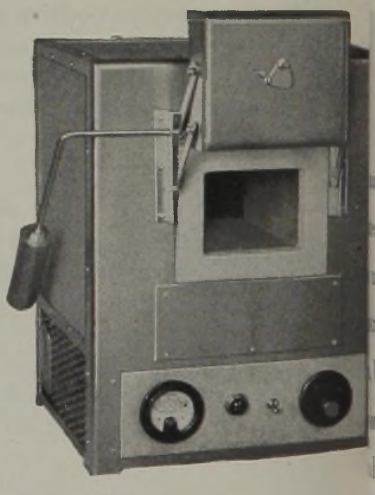
Two new truck pumps, in capacities of 50 and 90 GPM have recently been put into production by the Blackmer Pump Company, Grand Rapids, Michigan. The outstanding construction feature appears to be the double anti-friction bearings—one on either side of the rotor—which should virtually eliminate shaft "whip" and distortion. The action of the buckets (swinging vanes) prevents loss of capacity during the life of the buckets which may easily be replaced when worn. The pumps are compact and light in weight are designed for standard power take-off drive, and will deliver their rated capacity at 460 RPM. A relief valve is built in the pump casing and will bypass the entire capacity of the pump without end thrust on the working parts.

Electric Furnace QC 4

A new electric furnace, providing temperatures up to 1850° F., and incorporating several unusual features of design, has been announced by the Therm Electric Manufacturing Company. Known as the Model OFE, this new furnace will find wide application for general industrial and laboratory use.

The front of the furnace is formed of heavy steel plate, rounded at corners and has an instrument panel built right into the base. Construction features a heavy steel, welded frame, with transite sides, and with 4¾ inches of insulation around the heating chamber. The heating element is of highest quality nickel chromium alloy in coiled form, which completely surrounds the four sides of the muffle core.

A welcome feature of this new furnace is the door arrangement. Instead of being hinged at the bottom or suspended on a cable, the door is supported by two sets of parallel levers, so that when opened it moves upward and out of the way. It is heavily insulated and being properly counter-balanced, operates very easily.



Close heat selection is provided by an input controller, mounted on the instrument panel, which automatically turns the current ON and OFF for any desired portion of a one minute cycle. No external rheostat is required, and since the entire power is consumed within the heating chamber, maximum efficiency is achieved. Instrument panel also includes an indicating pyrometer calibrated to 2000°, a pilot light to indicate operation, and an ON and OFF switch.

This new Model OFE furnace may

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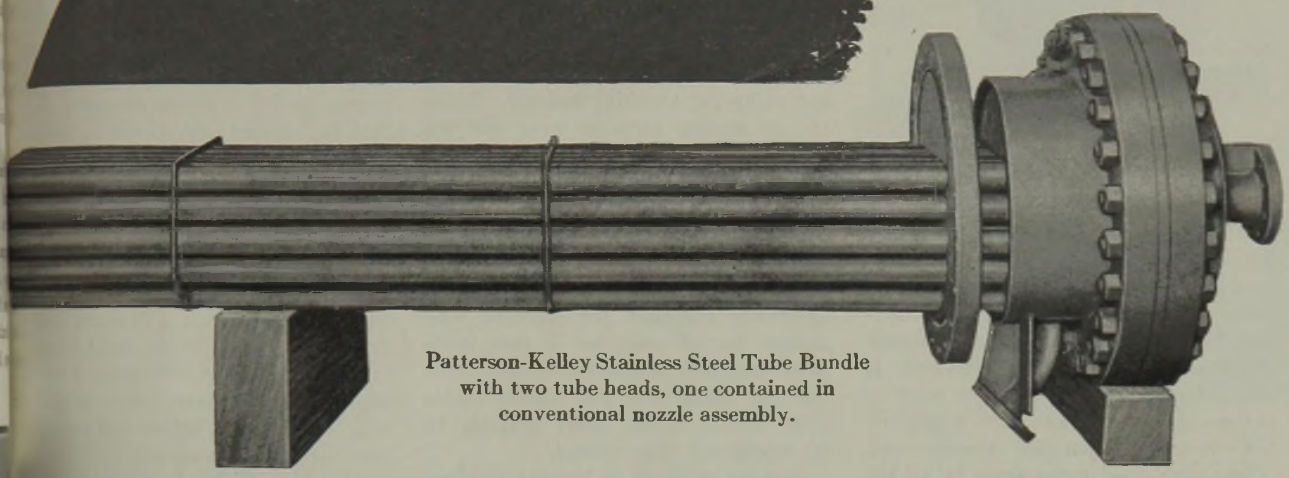

Patterson-Kelley Stainless Steel Tube Bundle with two tube heads, one contained in conventional nozzle assembly.

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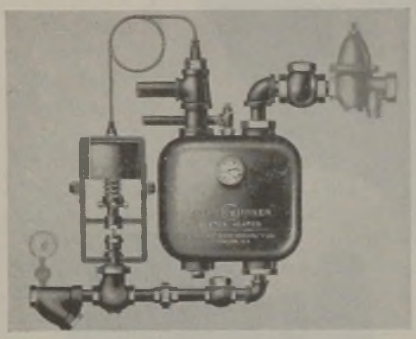
ures 21 inches wide, 31 inches high, and 18 inches deep; the heating chamber itself is 5½ inches wide, 4½ inches high, and 10½ inches deep. It is built for operation on either 115 or 230 volts, and is rated at 2000 watts.

Water Heater QC 469

The new O'Brien steam mixer water heater is a complete packaged unit including heater, temperature regulator, temperature-pressure relief valve, thermometer and, where necessary or desired, water pressure regulator and steam and water pressure gauges.



Employing a new muffler-diffuser type mixing nozzle, the O'Brien heater is efficient and quiet. Not only is all the heat of the steam delivered to the water, but the condensate itself is utilized as hot water. There is no waste of condensate, and no condensation return system is required. The unit is designed for steam pressures of 50 to 150 p.s.i. It can easily be installed near the point of use to deliver an adequate supply of hot water at controlled temperatures. Steam pipe sizes range from ½ to 1½ in., with capacities ranging up to 5500 GPH. There is also a wide selection of temperature ranges available, making the unit practical as either a primary or booster heater. While copper alloys remain on the critical list, the mixer body is being supplied in close-grained iron. When conditions again permit, the body will be cast bronze. In either metal, there is a considerable saving in space and materials as compared with indirect heaters of equal capacity.

Apparatus for Water Analysis QC 470

The Aero-Titrater, a product of Chief Chemical Corporation, furnishes the plant operator and laboratory technician with a rapid, precise method for the determination of hardness, calcium and magnesium in waters, both industrial and potable. It is also widely applicable to water problems in the process industries.

False endpoints are absent, and air agitation eliminates tedious shaking by hand. The accuracy is comparable with lengthy and laborious gravimetric methods, and substances ordinarily present in water do not interfere.

The apparatus makes use of a new endpoint, based on the foam-meter principle. This endpoint is unmistakable and is reproducible with a high degree of precision. Determinations are made within ten minutes and there is no waiting time to observe stability of lather.

The instrument is supplied calibrated and ready for assembly and use. There are no moving parts to wear out and no delicate features to go out of adjustment. All vital parts are of durable plastic construction.

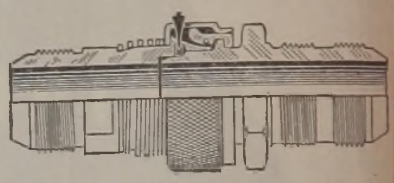
The Aero-Titrater is devoid of the inherent and personal errors of conventional hardness analysis procedures. It effectively supplants the standard soap method for all uses, but it does much more—not only is it definitely more precise and rapid, it is also readily usable with waters which resist analysis by the traditional soap method.

Samples of 50 ml. or less are required. This is in contrast with gravimetric methods involving evaporation of one-half liter or more and subsequent precipitation waiting periods. The apparatus is equally at home in the field and in the plant. Chemists will find it a precision instrument thoroughly reliable in research work of the highest order.

So well does it function in the presence of interfering substances that it can be used directly with samples which contain chlorides up to 2000 ppm. Sulfates up to 1000 ppm are also without effect. Large iron concentrations, and the treating and conditioning chemicals and compounds used in boiler waters do not interfere.

Simple and accurate determinations of Ca and Mg in boiler scales, minerals, plant ash and the like can be made in the presence of most of the impurities.

Quick Coupler QC 471



The above illustration shows one of the new line of Wiggins Quick Couplings developed for use on fuel, oil, instrument and air lines on aircraft and for which many marine, automobile and chemical applications have been found. To disconnect the coupling it is simply necessary to pull back the knurled ring. Connection is made by pushing the two ends of the coupling together and sliding the ring forward.

The new model incorporates a "4 way" seal of synthetic rubber which can be used with either a standard "O" ring or square gasket. It is out of the line of fire and is said to insure a pressure drop no greater than that in an equal length of tubing. This design eliminates all critical edges whose damage might impair the seal, and is much lighter and more compact than previous models.

This new design is available for line sizes from ¼" to 1¼" for tubing or pipe and from 1¼" to 2" for hose connections. Other models of threaded or flanged couplings available for ¾" to 10" lines.

Time Switches QC 47

A new development is the Paragon 700 Series 7-day-calendar dial time switch for timing automatic heat, ventilating, lighting, pumping or flushing operations. These switches are equipped with 6-inch calendar dials which make one complete revolution every 7 days. Dial trippers can be independently set for different daily ON and OFF schedules. Settings can be made in advance for an entire week. Any day or day operations may be omitted entirely from a pre-set program.

Each day of the week is clearly separated from other days and graduated in hours and half-hours with day and night distinctly separated. Operations from ON to OFF or from OFF to ON can be set as close as three hours apart and can be separately adjusted throughout each 24-hour day in the week.

CHEMICAL INDUSTRIES TECHNICAL DATA SERVICE

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Please send me more detailed information on the following new equipment.

QC 459	QC 462	QC 465	QC 468	QC 471
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QC 461	QC 464	QC 467	QC 470	

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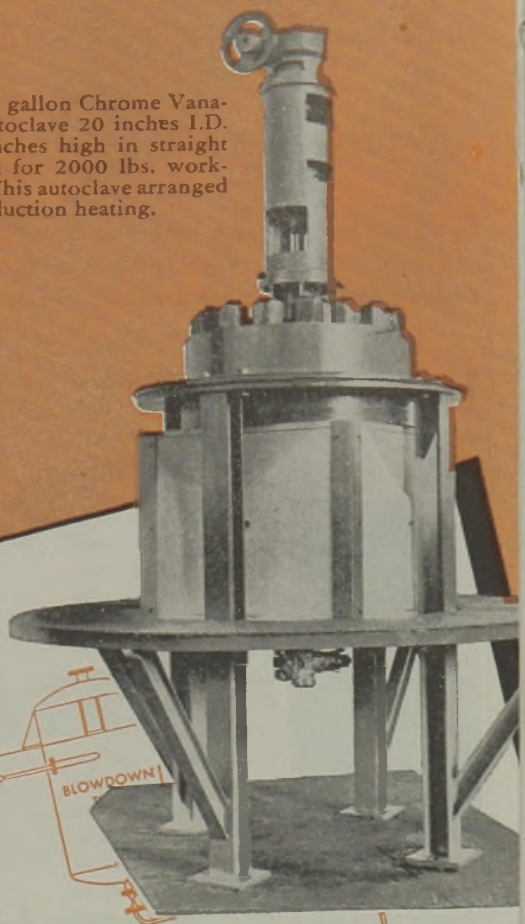
Blaw-Knox shoulders the problem from flow sheet to performance—COMPLETE HIGH PRESSURE PROCESSING UNITS—in which the principal piece of equipment is a Blaw-Knox High Pressure Autoclave arranged for electric induction heating and internal cooling.

Blaw-Knox technical specialists are fully able to carry your processing problems through from inception to completion. Your inquiries are welcome and will be promptly acted upon.

Blaw-Knox 42 gallon Chrome Vanadium Steel Autoclave 20 inches I.D. by 2 feet 4 inches high in straight shell designed for 2000 lbs. working pressure. This autoclave arranged for electric induction heating.



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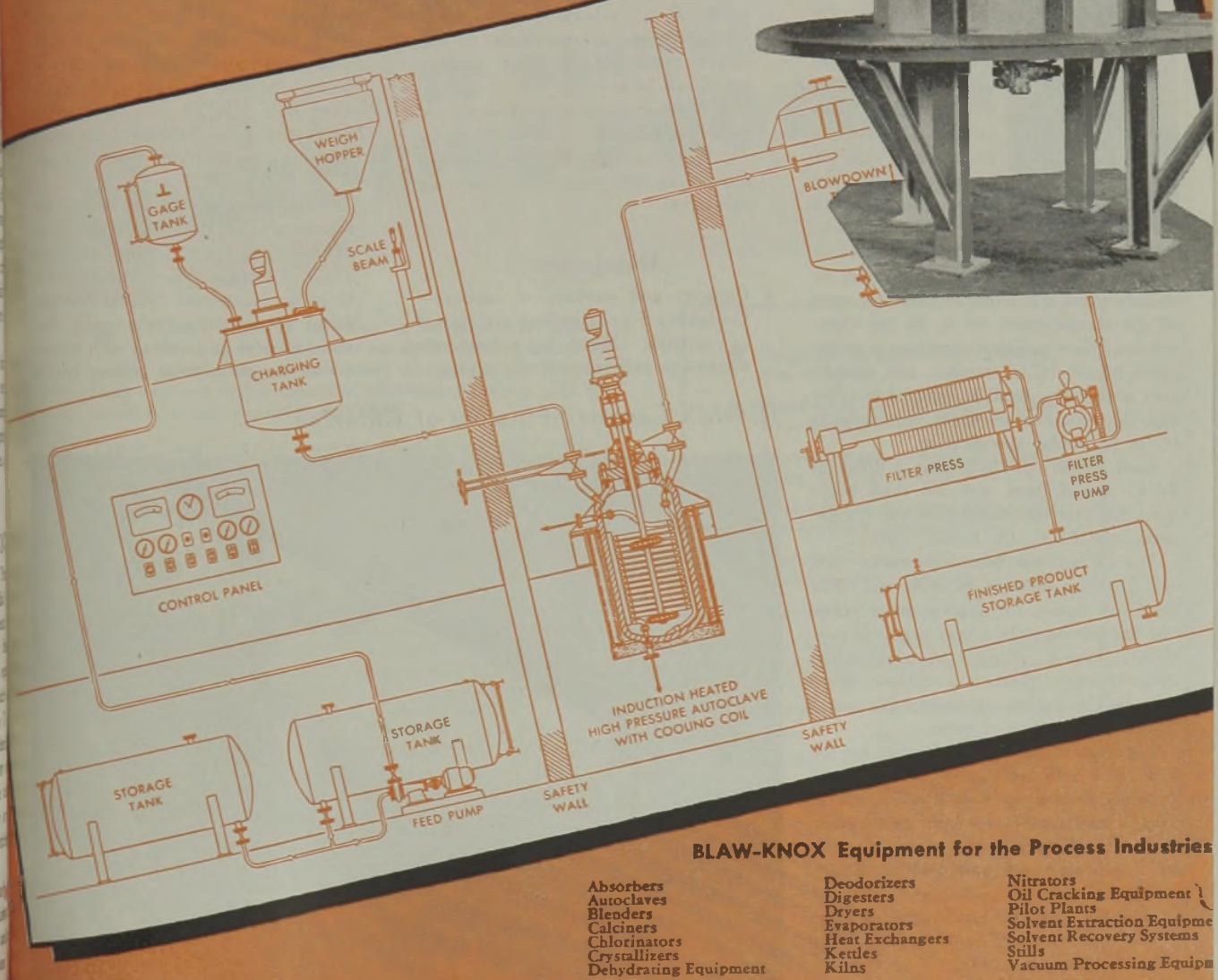

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BLAW-KNOX PROCES
EQUIPMEN

PACKAGING & SHIPPING

by T. PAT CALLAHAN

Regulations Govern Use of Carboys

In this, the first of a series of articles on the use of specification containers, Mr. Callahan discusses boxed carboys and the regulations governing their construction and use.

IN ORDER that readers of this column may become better acquainted with specified I.C.C. containers, we are inaugurating a series of explanations of the provisions of the individual specifications and the uses to which certain containers are usually put. The reader is probably familiar with the fact that the Interstate Commerce Commission prescribes specific containers for the transportation of all articles designated by them as explosive or dangerous, and these containers must be manufactured and tested so that they meet all the specifications set up by the Commission. Each specified container is designated by an I.C.C. number, and compliance with every detail is required in order that the container meet the requirements of the particular specification.

T. Pat Callahan

Each month we shall treat a different I.C.C. specification, and we shall begin with the first specification in the regulations—the I.C.C. 1A Boxed Carboy.

The carboy has been universally used for the transportation of acids and other corrosive liquids for a great many years, and has proved to be a very practical container. Due to changes in construction over the years, there is a marked difference in the carboy of twenty-five years ago and the carboy of today.

We quote from the specification for the I. C. C. 1A Boxed Carboy the following excerpts, familiarity with which is necessary if carboys are used in transporting dangerous chemicals:

1. Compliance:—Required in all details.
2. (a) Reuse of packages:—Parts of outside container and cushioning must be replaced when broken, decayed, or inefficient in any way.
   (b) Carboys with lip cracked or badly chipped not authorized; gasket seat must be even. Packages must be capable of passing tests prescribed in paragraph 9.
3. Closing devices required:—As follows except when otherwise authorized in the packing regulations:
   (a) Acidproof stoppers or other devices, with gaskets, securely fastened; closures to be vented or sufficiently porous to vent off pressure; gaskets to be of ¼" asbestos-rope or other resilient material equivalent in efficiency; gaskets cut from asbestos board not authorized.
   (b) Glass stoppers ground to fit and securely fastened.
   (c) Cork or other efficient device; authorized only when contents are not corrosive.

Manufacture

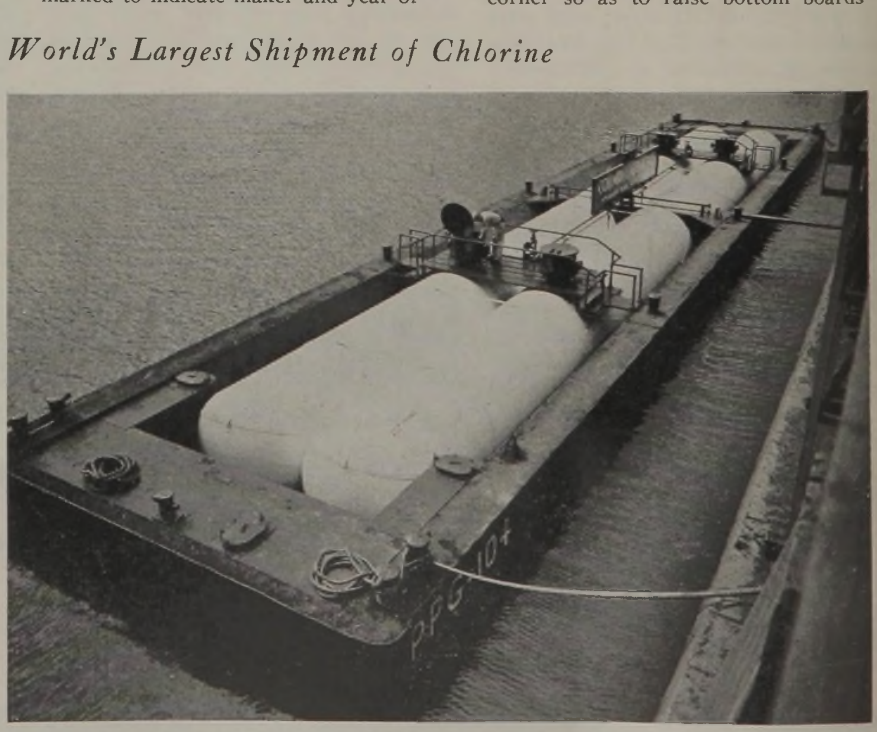
4 Capacity and marking of carboy:—Containers 5 to 13 gallons are classed as carboys. Must be permanently marked to indicate maker and year of manufacture; mark of maker to be registered with the Bureau of Explosives.

5. Glass carboys: — Thoroughly annealed; top of lip smooth and even; must contain at least 20 pounds of glass for 12-gallon carboys and 21 pounds for 13-gallon carboys. Glass in side walls should be well distributed and at least 1/16" thick. Defective carboys not authorized.
6. Earthenware, clay, or stoneware carboys:—Of acidproof material.
7. (a) Outside containers: — Wooden boxes completely enclosing body of carboy or wooden boxes completely enclosing body and neck of carboy, with 4 vertical corner posts, two cleats for shoes and two carrying cleats. (See Par. 7 [e])
   (b) Lumber to be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.
   (c) Assemble sides and ends with grain of wood horizontal and nail as specified. Nail bottom to sides and ends; fasten top by an efficient means. Cleats for shoes to be along edges of bottom parallel to carrying cleats. (See Par. 7 [e])

The Section 7 (e) referred to in above manufacture specifications reads as follows:

"7. (e) In place of bottom cleats, the following is authorized: 2 angle irons at least 1¼ x 1¼ x 1/16" applied across grain of bottom boards from corner to corner, supported by acid resistant metal corner supports securely fastened to sides and ends at each bottom corner so as to raise bottom boards

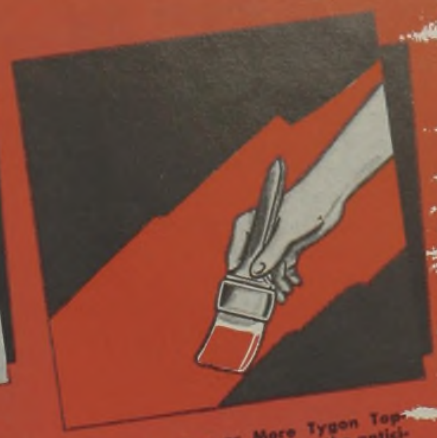
World's Largest Shipment of Chlorine



Removal of government restrictions has made possible the shipment of liquid chlorine by barge. These tanks contain 380 tons of chlorine.

1. Remove Rust, Scale, Old Paint, Grease and Dirt.

2. Apply Tygon Primer by Spray Gun or Brush.



3. Apply One or More Tygon Topcoats — depending upon the anticipated severity of attack.

3 Simple Steps TO ACHIEVE CORROSIVE PROTECTION

● TYGON Paint is an effective safeguard for metal, concrete or wood surfaces against corrosive attack by acid or alkali fumes, condensates or spillage, or for surfaces exposed to oil, gasoline, alcohols, moisture, salt air or other tough weather conditions.

Tygon Paint is not an ordinary paint. It is pure Tygon — the chemically inert, rubber-like plastic used to line acid tanks — liquefied by the addition of proper solvents. On evaporation of the solvents a tough, sturdy, durable film of pure Tygon remains. Unlike ordinary paints Tygon is not subject to oxidation and does not chemically deteriorate with age.

Tygon Paint is easily applied by spray gun or brush. Surfaces should be clean, free from old paint, rust, grease or dirt. One coat of rust-inhibiting Tygon primer is applied, followed by one or more Tygon topcoats. Tygon Paint air dries quickly to a lustrous, easily cleaned surface that resists accumulations of greasy scum or dirt.

Make your own tests: On request we will be glad to send you a test sample of Tygon Paint so you may determine its effectiveness in your own plant.

- Resistant to most acids, alkalies, and alcohols
- Unaffected by oil, grease, gasoline, fresh or salt water
- Non-oxidizing — does not crack, chip, craze or "weather"
- Non-flammable when dry — will not support combustion
- Can be formulated to be non-toxic, tasteless, odorless
- May be air-dried or baked
- Available in white, black, clear, gray, green, red, blue, aluminum

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of box at least ¾" above bottom of corner supports; nailing along end grain of bottom boards not required."

The I.C.C. 1A specification also includes the parts and dimensions of wood used, the markings required, the test prescribed and the method of reporting tests. Under certain conditions wirebound boxes of veneer or plywood or both, and nailed plywood boxes which comply with the I.C.C. 1A specification with slight exceptions and additions are authorized.

The specification does not cover the kind of cushioning material to be used. However, the most common cushioning materials used are cork or rubber blocks and elastic wooden strip packing.

As we mentioned before, the carboy is a very practical container for dangerous liquid chemicals and has proved invaluable over the years. Its most common use is in the shipping of sulfuric, nitric and hydrochloric acids but it is specified for use for most corrosive liquids.

The use of the carboy is limited in some cases by the strength of the acid and other conditions; and when the carboy is used for the packaging of any acid or corrosive liquid, one must be sure that any restrictions or limitations in its use are followed. For example, the I.C.C. 1A carboy can only be used for sulfuric acid when the acid is not over 100.5 percent H_2SO_4. It can also only be used for nitric acid when the acid is not over 1.43 specific gravity. It can never be used as a container for chlorosulfonic acid.

While we have discussed the use of carboys for acids and corrosive liquids, the I.C.C. 1A carboy is also permitted in limited sizes for the shipment of other dangerous materials, such as inflammable or poisonous liquids. Particular attention must be paid, however, to the use of carboys for these materials; for example, the maximum capacity of a carboy for inflammable liquids is five gallons.

We point out these restrictions because experience has proved that if carboys are used for dangerous liquids when they are not authorized by the Regulations, accidents are bound to follow. The I.C.C. 1A carboy has proved a very safe container in transportation and in general use by the chemical industry, and it will continue to be if it is properly used and handled.

Manual on Paper Shipping Sacks

To meet the need resulting from a substantial increase in the use of paper shipping sacks for the packaging of chemicals and allied products, the M.C.A. has prepared a new 6-page manual on recommended practice for the handling and storing of multiwall paper bags. These handling instructions provide a valuable guide for both shippers and consignees to the proper use of these containers. Written in language easily understood by the average workman, descriptive text is supplemented by 14 illustrations and deals with such specific operations as lifting, carrying and loading of bags on trucks; spot repairs; use of overslip bags; exposure to elements; handling equipment (hand and platform trucks, skids, pallets, conveyor systems); unloading freight cars, auto trucks and vessels; storage; stacking; and methods of opening bags.

Chlorine Moved by Barge in Huge Shipment

A new departure in the transportation of chlorine which holds great promise for postwar development was initiated by the Pittsburgh Plate Glass Company with the delivery to Charleston, West Virginia, of 380 tons of the chemical by barge, the largest single shipment in one unit ever made anywhere. The tanks are the largest single transportation units ever used, and the barge load was the equivalent of thirteen 30-ton cars (see photo on page 610).

From the year 1909, when liquid chlorine was first shipped in the U. S., great strides have been made in the transportation of this chemical. Small cylinders of 10 to 20 pounds capacity and 15-ton single-unit cars were first. Then came the one-ton tanks in 1910. In 1917, 100- and 150-pound cylinders were introduced. The special cradle car holding 15 one-ton tanks made its appearance in 1922. The forge welded 30-ton single-unit car came in 1928. In 1941 came the 30-ton improved type fusion welded cars, and shortly thereafter was introduced the 55-ton car. River shipments had been limited to one-ton containers until last June, when this restriction was removed by the U. S. Coast Guard after application by Pittsburgh Plate Glass Company.

The chlorine is carried in four fusion-welded steel tanks with a minimum thickness of 1¼ inch. They are built to withstand a pressure of 300 pounds per square inch. The steel barge is 135 feet long with a beam of 26 feet. The cylindrical tanks are 55 feet, 4½ inches long, and 7 feet, 8½ inches in diameter, and are mounted in the barge in pairs on steel cradles.

The piping on the barge is so designed as to permit loading and unloading from either side. The connection to the tank for either loading or unloading has been made to prevent manifolding of the tanks.

The use of chlorine has jumped by leaps and bounds during the war, and its sale is under strict WPB allocation. The industry is predicting in the postwar period it will become a most important chemical because of the part it will play in making plastics, synthetic rubbers, dry cleaning fluids, high-test gasoline, vitamins, sulfa drugs, dyes, medicines, and many other things such as waterproofing and fireproofing materials.

Before the war chlorine was used principally to bleach paper and textiles, purify water, and for making other chemicals. Its output has jumped from 514,000 tons in 1939 to 1,211,000 tons last year.

It is expected that additional barges and improvements in transportation equipment will increase the demand.

Amendments to ICC Regulations

At a session of the Interstate Commerce Commission, Division 3, September 7, 1944, the following amendments of interest to the chemical industry were approved and ordered to be a part of the Regulations for the Transportation of Explosives and Other Dangerous Articles:

Section 166A adds calcium resinate to the regulations, specifying that it be packed in specification containers as listed under this section.

Section 212A eliminates the maximum weights which may be packaged in Specification 21A fibre drums and Specification 22A plywood drums.

Section 275 is an addition to the regulations and adds anhydrous di- and monofluorophosphoric acids to the regulations and specifies the package in which both may be shipped. Both of these products may be packed in Specification 15A, 15B, 15C, 16A or 19A containers—wooden boxes with inside containers. The specifications are as follows:

"*Difluorphosphoric acid, anhydrous,* must be packed in inside cylindrical containers; capacity not to exceed 5 pounds of material, made of stainless steel (18-8) not less than 16 gauge U. S. Standard, having all seams welded to full penetration and properly annealed after all welding has been completed; each container to withstand an air test of 15 pounds per square inch without evidence of leak; closures must be of threaded plug type, adequate to prevent leakage.

"*Monoflurophosphoric acid, anhydrous,* must be packed in glass bottles containing not more than 4 ounces of material, closed by means of threaded-type acid-resistant caps with a gasket or lining impervious to the acid and sufficiently resilient, or cushioned, to give an acid-proof closure; caps must have at least one complete continuous thread and be wired to the bottle to prevent turning of cap when bottle is closed for shipment; or in glass bottles containing over 4 ounces but not over 5 pounds of material, with glass stoppers ground to fit and securely held in place by means of hard drying wax placed over and around the stopper.

"Inside containers must be cushioned by not less than 1-inch thickness infusorial earth (Kieselguhr) on all sides, top, and bottom."

Section 360-D adds Specification 21A fiber drum with a gross weight limitation of 400 lbs. for the shipment of paranitraniline.

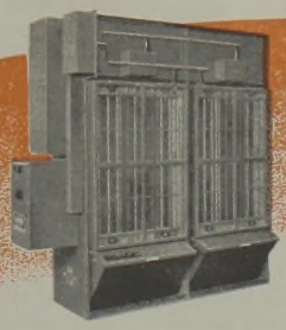
ICC Specifications 10B and 10C which cover tight wooden barrels are amended to provide that heads of these barrels can be constructed with 7 pieces rather than 6 as formerly specified by the regulations:

"Because of the present emergency and until further order of the Commission, for barrels of not over 50 gallons capacity, maximum number of pieces may be 7 provided they have a minimum thickness of ⅞ inch."

Specification 12B fiber boxes has been amended by the inclusion of an emergency table showing weights per thousand square feet which may be used in lieu of thicknesses.

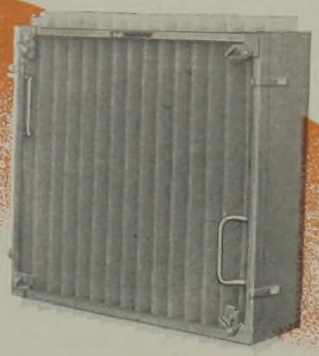
Get the Facts at the National Chemical Exposition

for ATMOSPHERIC DUST CONTROL



ELECTRO-MATIC AIR FILTER

MULTI-DUTY AUTOMATIC AIR FILTER



AIRMAT FILTER

AIR CONTAMINATION resulting from both airborne impurities and process dust created by manufacturing operations must be controlled, and AAF research into the control of chemical dusts, has resulted in the creation of many effective types of dust control equipment now in wide use by the industry.

Shown on this page are some of the many American Air products serving to protect workers and processes. Complete information on the AAF line of atmospheric and process dust control equipment will be available at the show.

ELECTRO-MATIC air filter combines electrical precipitation with automatic air filtration to obtain highest efficiency in the removal of atmospheric dust, smoke, vapors and fumes. Bulletin 250 E.

MULTI-DUTY AUTOMATIC self cleaning filter is ideal for most large ventilating and air conditioning installations. Provides multi-stage air cleaning by means of filter media of graduated density. Bulletin 241 A.

AIRMAT TYPE PL dry filter is designed for ventilating and air conditioning service where dust concentration is not abnormal. Bulletin 230 B.

AIRMAT DUST ARRESTER is available as a Dust Box with fan unit for the collection of fibrous and flaky process dusts. Requires only piping and electrical connections to be ready to operate. Uses standard Airmat filtering material with proven performance and economy advantages. Bulletin 280.

ROTO-CLONE TYPE "D"—for collecting process dust in dry form combines fan and dust collector in a single unit. Available in all sizes and capacities, also as self-contained unit including dust hopper and a filter to clean the exhaust air for recirculation into the workroom. Bulletin 272.

ROTO-CLONE TYPE "N"—introduces a new inverted water curtain thru which the air to be cleaned passes. This combined washing and scrubbing provides highest cleaning efficiency. Available in several types for difficult dust problems. Bulletin 277.

AMERICAN AIR FILTER CO. INC. LOUISVILLE, KY.

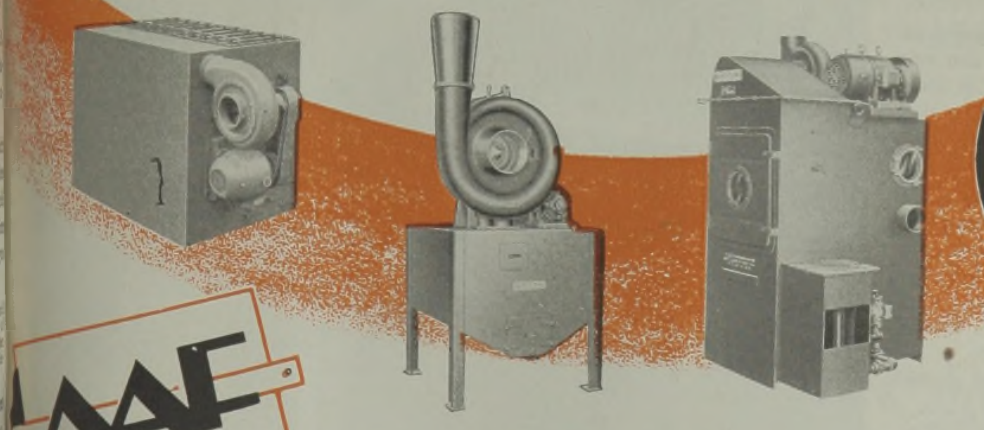
215 Central Avenue

In Canada: Darling Bros., Ltd., Montreal, P. Q.

AIRMAT DUST ARRESTER

TYPE "D" ROTO-CLONE

TYPE "N" ROTO-CLONE



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AAF

ENGINEERED DUST CONTROL

PLANT OPERATIONS NOTEBOOK

Prevention of Ceiling "Sweat"

Chemical plant operators are commonly annoyed by sweating ceilings and walls, drops of condensation sometimes falling into the products of the plant. Many readers may know the solution, but for the sake of those readers who do not, the writer will endeavor to answer the question: Sweating of ceilings and walls can invariably be prevented by proper insulation. The kind of insulation to be used and the manner of applying depends upon the conditions of the problem.

The writer believes that if the cause of ceiling and wall sweating were better understood, and if the necessity of careful insulation were clearly explained, sweating would be less prevalent.

Sweat, or condensation, always comes from the air, of course. Perfectly dry air does not exist in nature. There is moisture in the air over the Sahara desert and over the north pole. Therefore, to understand ceiling and wall condensation it is well to bear in mind that air has a capacity for moisture—or humidity.

Probably the words "relative humidity" sound too complex. It might be better understood if it were called "percentage of maximum moisture." It is then easy to understand why an ordinary pitcher of ice water invariably becomes covered with "dew," and why ceilings and walls are prone to sweat. A thin film of air surrounding the pitcher becomes cooled to such an extent that it is cooled below the saturation point and moisture must, of course, be given up. It therefore virtually "rains" on the pitcher.

In view of the above, since warm air can carry more moisture than can cold air, it is plain that warm air is more likely to give trouble from sweating than is cold air when it comes in contact with a cold surface.

Another characteristic of warm air is its tendency to move upward because it is lighter than cold air. This explains why warm air, containing more moisture than the cooler air in the room, moves to the very top of the room and comes in contact with the ceiling. Obviously, if the ceiling is cold enough, like a cold pitcher precipitation is bound to occur; and if there is no insulation on the roof to keep the cold out, precipitation will continue indefinitely. As long as the ceiling is cold enough to cause precipitation to continue, drops of water will form and there may be some damaging dripping unless cared for in one way or another. In manufacturing plants this dripping on the products can be serious and expensive.

An excellent example of good insulation is the thermos bottle we take out on picnics or to lunch—full of ice water or ice lemonade. Have you ever seen a thermos bottle sweat? Unlike the ordinary ice water pitcher the thermos bottle does not sweat because it is properly insulated.

It is now evident that if walls are insulated either outside or inside with the proper insulator there will be no condensation. By placing the insulation on the inside there will be less condensation than if the insulator is placed on the outside. If placed on the outside, condensation will often form during the process of bringing the temperature of the ceiling or walls up to the temperature of the room. In other words, there will be a temperature lag with the insulation outside. With the insulation inside there will be less or practically no temperature lag.

Tilting Stand

The safety can tilting stand shown in the accompanying illustration was developed by Westinghouse. It facilitates the sorting and handling of inflammable solvents when they frequently have to be poured into smaller containers.

Quart safety cans, which are used at various work stations, must be filled from a stored supply. The girls experienced much difficulty in removing the stopper from the large can and also in lifting it to fill their smaller cans. The tilting stand solves both problems and eliminates spillage. This device eliminates manual lifting by the girls, and the mechanical arrangement provides sufficient leverage automatically to pull the stopper when the can is tilted.

Not only does this device provide cleaner handling, but it also provides a definite safety advantage in that the major supply of inflammable solvent is concentrated in one location. In this way inflammable materials can be stored in a fireproof location removed from hazards.

Tilting Stand for Containers Makes Handling Easier

Brake Fluid puts on "Battle Dress"

EVER since the introduction of hydraulic brakes, the cans in which Lockheed Hydraulic Brake Fluid is packed have been a familiar sight to American motorists.

But now, for service with the fighting forces, Lockheed Hydraulic Brake Fluid has donned "battle dress" . . . and is being shipped in olive drab containers for use in jeeps, command cars, and other motor vehicles.

The cans look entirely different . . . but they are the same in one important respect. For they are both made with the same care . . . by the same Crown organization! For as Crown served the Wagner Electric Corporation of St. Louis in days of peace, Crown serves them now when so much of their output of Lockheed Hydraulic Brake Fluid goes to war!

●

CROWN CAN COMPANY
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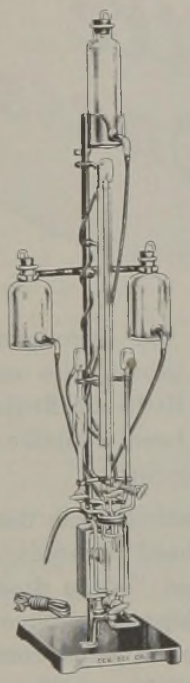
Division of Crown Cork and Seal Company
BALTIMORE, MD.

CROWN CAN

LABORATORY NOTEBOOK

Sulphur Determinator

The Leco Sulphur Determinator provides a fast and accurate method of determining sulphur in coal and coke, ferrous and non-ferrous metals and other similar materials. It is particularly suitable for high alloy steels where high temperatures and fast combustion is necessary for accurate results. A complete determination can be made within five minutes. Since the sample is not dissolved, sulphur determinations can be made on various types of materials with equal speed and accuracy.



The Leco Sulphur Determinator consists of metal support for holding the glassware, an illuminator and milk-glass plate for proper light diffusion placed behind the titration vessel, a special automatic burette, calibrated to show sulphur from .000 to .400%, two automatic dispensing pipettes, the titration vessel, a rinsing device and drain, and three extra jars for solutions.

The following procedure is recommended: The sample to be tested is burned in a stream of oxygen at temperatures ranging from 2100° to 2300° F. The products of combustion pass through a dust trap and enter the titration vessel containing the hydrogen peroxide and sodium hydroxide solutions and an indicator. The SO_2 oxidizes into SO_3 and subsequently forms sulphuric acid. The sulphuric acid in turn neutralizes part of the sodium hydroxide within the titration vessel. The excess sodium hydroxide is then titrated with sulphuric acid, the amount of sulphuric acid left in the burette being a direct indication of the sulphur percentage.

Filling Small Bore Tubes With Mercury

Recently the filling of a long tube of 1mm. bore with mercury presented some difficulty. One end of the tube had a platinum wire sealed into it and a mercury column over the wire was required to complete an electric circuit. After several unsuccessful attempts to fill the tube by means of capillary pipettes and other conventional methods, the difficulties were easily surmounted by using a fine hypodermic needle attached to a hypodermic syringe. The mercury was drawn into the syringe through the needle and then transferred by inserting the needle as far as possible into the tube and slowly pushing the syringe plunger. Then a little tamping on the side of the tube caused the mercury to flow to the bottom of it.

Sintered Glass Filtering Crucible

A new form of sintered glass filtering crucible has been found useful. The outside of the crucible is shaped to one of the standard conical ground glass joints (B. S. 572—1934) and will fit directly into a filter flask having a neck ground to the same taper. The crucible illustrated has a capacity of 30 ml., is 1½ in. diameter at the largest part of the B. 34 cone and stands 2½ in. high. The sintered glass disc is secured in the lower portion of the crucible in the usual manner.

When filtering bituminous solutions it is advisable to wrap a piece of cellophane round the crucible before inserting the filter in the neck of the flask. This will obviate any risk of the crucible sticking in the flask and for normal purposes does not unduly affect the degree of vacuum obtained. This form of crucible has many advantages over the conventional type requiring the use of rubber gaskets.

Test for Boiler Feed Water

A portable apparatus, the Taylor Boiler Water Comparator, is a compact set for determining pH in a range of 7.2 to 11.6 and phosphates in the range of 5 to 100 parts per million. It is important in the maintenance of proper water conditions in steam boilers. The complete apparatus is contained in a durable case only 12" x 6" x 10" and the procedures are simplified so that the chemist can readily explain the operation to a non-technical operator. The results are obtained by matching the color of solutions in small test tubes.

Pencil for Writing on Glass

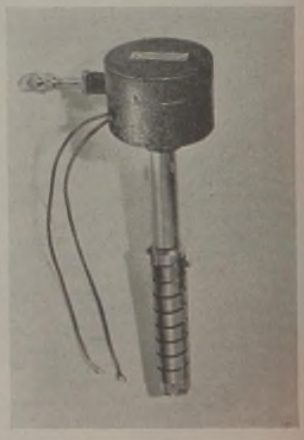
A piece of "Carborundum" fastened in the end of a piece of 8 mm. glass tubing by means of DeKhotinsky cement or sealing wax makes an instrument which finds wide use in the laboratory. With it permanent reference numbers may be scratched easily on vials, beakers, crucibles, etc.

When a number of weighing bottles or other vessels are to be weighed repeatedly, it is convenient to know the approximate weight instantly rather than weighing from the beginning each time or thumbing through notebooks to locate the figure.

The instrument can also be used as a glass-cutter in case of an emergency. Of course a diamond point would work very nicely, but the "Carborundum" instrument can be made in a matter of minutes from articles available in any laboratory.

Thermoregulator

Developed for general application to thermostat baths, and characterized by ease of filling or cleaning, wide adjustment range, small size, permanent durability and complete insulation of electrical system, a regulator is adjustable to use at any temperature between the freezing point and the appreciable vaporization point of mercury.



The instrument consists of a pyrex glass mercury reservoir and a capillary tube assembly, the two parts being assembled by a ground joint in the throat of the mercury reservoir.

The capillary tube carries insulating and mounting equipment for electric connection and fine adjustment for needle height to allow close setting to the limit of sensitivity of the regulator.

This thermoregulator should be used with a relay system limiting the current passed through the regulator to a few microamperes.

INDUSTRY'S BOOKSHELF

Advanced Organic Chemistry

ORGANIC REACTIONS, VOLUME II, by *Roger Adams, Ed.* John Wiley and Sons, Inc., 1944. 461 pp. $4.50. Reviewed by *Dr. John E. Livak,* The Dow Chemical Company.

THE SECOND VOLUME of this extremely informative and timely series, closely patterned in format and style to the first volume, is primarily concerned with the scope, mechanism and limitations of a number of important laboratory reactions. To quote from the preface: "The subjects are presented from the preparative viewpoint, and particular attention is given to limitations, interfering influences, effects of structure, and the selection of experimental techniques. Each chapter includes several detailed procedures illustrating the significant modifications of the method." In all cases the examples of the reaction discussed in the text are supplemented by voluminous tables, in the preparation of which every effort has been made to include all of the compounds which have been prepared by or subjected to the reaction. The unusually comprehensive bibliographies at the end of each chapter should prove very useful to readers who will want to delve further into the subject.

The ten chapters in the present volume have been written by authors who have had especial experience with the reactions or processes described: (1) "The Claisen Rearrangement" (D. Stanley Tarbell); (2) "The Preparation of Aliphatic Fluorine Compounds" (Albert L. Henne); (3) "The Cannizzaro Reaction" (T. A. Geissman); (4) "The Formation of Cyclic Ketones by Intramolecular Acylation" (William S. Johnson); (5) "Reduction with Aluminum Alkoxides—The Meerwein-Ponndorf-Verley Reduction" (A. L. Wilds); (6) "The Preparation of Unsymmetrical Biaryls by the Diazo Reaction and the Nitrosoacetylamine Reaction" (Werner E. Bachmann and Roger A. Hoffman); (7) "Replacement of the Aromatic Primary Amino Group by Hydrogen" (Nathan Kornblum); (8) "Periodic Acid Oxidation" (Ernest L. Jackson); (9) "The Resolution of Alcohols" (A. W. Ingersoll); (10) "The Preparation of Aromatic Arsonic and Arsinic Acids by the Bart, Bechamp, and Rosemund Reactions" (Cliff S. Hamilton and Jack F. Morgan).

In general, the book contains a great deal of valuable information, clearly and accurately presented. It is a unique and worthwhile contribution to the literature of organic chemistry and no chemical library can afford to be without it.

Data on Wood

WOOD CHEMISTRY—By *L. E. Wise,* Reinhold Publishing Corporation, 1944. 900 pages. ACS Monograph Series 97. $11.50. Reviewed by *Carlyle Harmon,* Marathon Chemical Co.

THE AUTHOR selected 13 recognized authorities in specialized fields of wood chemistry from governmental, institutional, and industrial laboratories to collaborate in presenting basic chemical data on wood. Emphasis was placed on recent fundamental investigations in the fields of the chemistry and fine structure of cellulose; surface activity of cellulose materials; chemistry, reactions, and industrial utilization of lignin; the functions of extractives, and other extraneous materials; analytical procedures; and the chemistry of hemi-celluloses.

The comprehensive volume just published is ample evidence that these objectives were fulfilled, and it is certain that this will become the standard reference book on wood chemistry. It is regrettable that many of the chapters contain no bibliographical reference later than 1940, but the author points out that the work was started in 1939 and that many of the collaborates were completely occupied with war activities. With the exception of the industrial section, little or no recognition is made of the scientific value of the patent literature, or of industrial processes which were actually based on extensive work carried on in industrial laboratories. All of the collaborators were sufficiently expert in their respective fields to be able to critically review developments from any source regardless of whether the data had actually been published in books or technical journals.

The 25 chapters are divided into 6 parts dealing with (1) the anatomy and physical properties of wood, (2) components and chemistry of cell wall, (3) extraneous substance, (4) surface properties, (5) chemical analysis, (6) significance of wood as an industrial raw material.

There is some overlapping and duplication as is to be expected in any collection of chapters written by various authors, but the book is well coordinated so that it can be read as a whole and yet each section is complete enough in text and bibliography for the research worker, student or technician.

Colorimetric Procedures

COLORIMETRIC DETERMINATION OF TRA[CE] OF METALS, by *E. B. Sandell.* Interscie[nce] Publishers, Inc., N. Y., 1944; 487 [pp.] $7.50. Reviewed by *John L. Hague,* [Na]tional Bureau of Standards.

THE PRESENT VOLUME is a w[el]come departure from the usual "encyc[lo]pedia" style of presentation of colorimet[ric] procedures for the determination of [the] elements, and should find a place on [the] bench of every chemist engaged in ana[ly]ses for traces of metals.

The first part of the book covers i[n] general manner such problems as sa[m]pling, reagents, blanks, standard so[lu]tions; and the frequently important [as]pect of isolating the substance to be det[er]mined. The theory and practice of colo[r]metry are given in adequate fashion, [and] this part of the book concludes with [a] discussion of some nineteen general colo[r]metric reagents; of which dithizone, 8-[hy]droxyquinoline, thionalide, ammonia, [and] hydrogen peroxide are typical example[s].

The second, special part, comprising [ap]proximately three quarters of the bo[ok] describes methods for the separation [and] determination of 45 elements and the [r]are earths. In general, the plan is first [to] present methods of separation from th[ose] elements most frequently associated [with] the element in question, or those [most] likely to interfere in the subsequent de[ter]mination; followed by selected meth[ods] for the colorimetric determination. In many cases, specific procedures are g[iven] for the more important classes of m[ate]rials. The advantages of such a prese[nta]tion are two-fold; the author has give[n] a clear, concise, and usable form sele[cted] material which in his experience and ju[dg]ment is best suited to the analysis, and [has] pointed out in many instances our in[ade]quate knowledge of methods of sep[ara]tions and of the specificity of the co[lor]metric determination. The analyst sh[ould] feel encouraged to give more attentio[n to] these important phases of chemical an[aly]sis. Future editions will no doubt inc[lude] such additional material of this type [as] available, and the reviewer would pr[efer] to see a few of the frequently determ[ined] non-metallic elements such as boron, [sili]con, and phosphorus included.

For the Organic Chemist

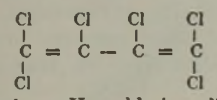
The revised edition of Heilbron, [DIC]TIONARY OF ORGANIC COMPOUNDS published in this country in Septe[mber] 1944 by Oxford University Press. V[ol. I] has been completely revised and Vol[s. II] and III have been reprinted with su[pple]ments. The individual volumes lis[t at] $30.00, the complete set at $75.00.

Five New Hooker Products to Help You

Among Hooker's thirteen new chemicals announced at the Chemical Exposition, December 1943, some have shown especially promising futures. Many chemists all over the country have been trying out these new products. Their work is of course confidential, but we feel that you may find, as they have, chemicals to assist in doing an old job better or to do an entirely new job.

Whether your research or production problems are concerned with present or post war needs, we invite your inquiries about these new products. The Hooker Laboratories have prepared additional data and will be glad to send you such information when requested on your letter head.

HEXACHLORBUTADIENE



Description: Hexachlorbutadiene is a clear, colorless liquid with a mild characteristic odor. It is insoluble in water and soluble in alcohol, ether and most chlorinated solvents. It is highly stable and is resistant to hydrolysis by water or mild alkalies.

Hexachlorbutadiene has been found to be compatible with the following types of plastics. In most cases the resultant material tends to be soft (S) or rubbery (R). In a few cases, tough (T) or even brittle (B) materials are formed.

Chlorinated Piccolyte (S) (R)	Rosin (S)
Modified Phenolic Resin (B)	Polystyrene (R)
Polyvinyl Chloride (R) (T)	Alkyd Resin (S)
Phenol Formaldehyde (S)	Benzyl Cellulose (S)
Chlorinated Rubber (B)	Natural Asphalt (T)
Poly Terpene Resin (S)	Vinyl Polymer (S) (R)

Suggested Uses: Solvent for natural and synthetic rubber, and other polymeric substances; high boiling, non-flammable solvent for degreasing and extraction processes; dielectric fluid for switches and transformers; hydraulic fluid; heat transfer medium; chemical reagent in manufacture of synthetic rubber; plasticizer.

Physical Data:

Molecular Weight	261
Melting Range, °C	−19 to −22
Boiling Range, °C	210 to 220
Refractive Index, n20/D	1.551 to 1.554
Specific Gravity 15.5°/15.5°C	1.65 to 1.70

TRICHLORCUMENE

$(CH_3)_2—CH—C_6H_2Cl_3$

Description: Trichlorcumene (Isopropyl Trichlorbenzene) is a colorless liquid with a mild aromatic odor. It is a mixture of Trichlorcumene isomers. It is insoluble in water and soluble in alcohol, ether, and most common solvents. It is highly stable, being resistant to oxidation and hydrolysis.

Trichlorcumene has been found to be compatible with the following types of plastics. The nature of the resultant material is indicated as soft (S), rubbery (R), tough (T), and brittle (B):

Modified Phenolic Resin (S)	Rosin (S)
Phenol Formaldehyde (S)	Ester Gum (S)
Chlorinated Piccolyte (S)	Polystyrene (R)
Benzyl Cellulose (T) (B)	Piccoumaron (S)
Chlorinated Rubber (R)	Natural Asphalt (S)
Poly Terpene Resin (S)	Polyvinyl Chloride (R)
Methacrylate Interpolymer (T) (R)	

Suggested Uses: Hydraulic fluid, transformer, and dielectric fluids, anti-freeze additive for hydraulic, dielectric and heat transfer fluids, solvent for fats, oils, waxes, coal tar dyes, asphalts, solvent, diluent, and plasticizer for protective coating and insulating compositions; extractant for phenols, etc. from liquids such as waste waters; ingredient of insecticidal compositions, paint and varnish removers, paints, solvents and plastic compositions.

Physical Data:

Molecular Weight (pure Trichlorcumene)	223.5
Freezing Range, °C	−30 to −45
Boiling Range, °C	245 to 265
Refractive Index, n20/D	1.535 to 1.560
Specific Gravity 15.5°/15.5°C	1.26 to 1.32

CHLORPROPANE LIQUID 170

$C_3H_{1.5}Cl_{6.5}$ *(aver.)

Description: Chlorpropane Liquid 170 is a clear, colorless liquid with a characteristic odor, is insoluble in water and soluble in alcohol, ether and most chlorinated solvents. It becomes quite viscous at temperatures below-50°C. It is resistant to oleum, mixed acids, fuming nitric acid and hydrogen fluoride.

Chlorpropane Liquid 170 has been found to be compatible with the following types of plastics:

Methacrylate Interpolymer	Polystyrene
Phenol Formaldehyde	Piccoumaron
Methyl Methacrylate	Vinyl Polymer
Urea Formaldehyde	Natural Rubber
Poly Terpene Resin	Polyvinyl Chloride

Suggested Uses: Plasticizer, rubber and plastic modifier; sealing liquid; paint softener, insecticide.

Physical Data:

Molecular Weight (aver.)	268
Boiling Range °C	160 to 260
Refractive Index n20/D	1.520 to 1.523
Specific Gravity 15.5°/15.5°C	1.70 to 1.75
Analysis* (typical)	
Pentachlorpropane	0 to 5%
Hexachlorpropane	40 to 50%
Heptachlorpropane	40 to 50%
Octachlorpropane	0 to 5%

CHLORPROPANE WAX 130

$C_3H_{0.15}Cl_{7.85}$ *(aver.)

Description: Chlorpropane Wax 130 is a tough white crystalline wax, possessing a mild camphor-like odor. It is a very highly chlorinated propane derivative and therefore nearly saturated. It is insoluble in water and soluble in alcohol, ether, and most chlorinated solvents. It is resistant to oleum, mixed acids, fuming nitric acid and hydrogen fluoride.

Chlorpropane Wax 130 has been found to be compatible with the following types of plastics:

Methacrylate Interpolymer	Rosin
Modified Phenolic Resin	Gilsonite
Methyl Abietate Resin	Ester Gum
Phenol Formaldehyde	Polystyrene
Chlorinated Piccolyte	Alkyd Resin
Chlorinated Rubber	Piccoumaron
Urea Formaldehyde	Natural Rubber
Polyvinyl Chloride	Poly Terpene Resin
Chlorinated Diphenyl Resin	

Suggested Uses: Plasticizer; dielectric wax; chemical resistant lubricant; organic systheses to make synthetic rubber and plastics; ingredient of pyrotechnic compositions.

Physical Data:

Molecular Wt. (aver.)	311
Melting Range °C	110 to 135
Boiling Range °C	210 to 270
Analysis* (typical)	
Octachlorpropane	85%
Heptachlorpropane	15%

CHLORPARAFFIN RESIN 70

$C_{24}H_{29}Cl_{21}$ (aver.)

Description: Hooker Chlorparaffin Resin 70 is a highly chlorinated paraffin. It is a brittle resin having an amber color in lump form. It may be crushed readily to a white powder which exhibits little tendency to agglomerate on standing. It is more stable than chlorinated paraffins containing lesser amounts of chlorine. It is soluble in most aromatic solvents, but is difficult of solution or insoluble in mineral spirits. It begins to soften measurably at about 90°C and is still very viscous at 120°C.

Chlorparaffin Resin 70 has been found to be compatible with the following types of plastics:

Chlorinated Diphenyl Resin	Rosin
Modified Phenolic Resin	Gilsonite
Chlorpropane Wax 130	Ester Gum
Methyl Abietate Resin	Polystyrene
Phenol Formaldehyde	Alkyd Resin
Chlorinated Piccolyte	Piccoumaron
Chlorinated Rubber	Vinyl Polymer
Urea Formaldehyde	Benzyl Cellulose
Poly Terpene Resin	Polyvinyl Chloride
Methacrylate Interpolymer	

Suggested Uses: Ingredient of fire, water and mildew retardant paints, fabrics and other protective coatings. Its stability and chemical inertness relative to most substances make it of particular interest for the impregnation of combustible materials to give fire retardant action. In protective coatings and paints, it does not affect the rate of drying.

Physical Data:

Molecular Weight (aver.)	1063
Analysis (typical) Weight %	
Chlorine	68 to 72
Free HCl (max.)	0.05
Heavy metals (max.)	0.01
Softening Range, °C	90 to 100
Flash Point	None
Fire Point	None
Specific Gravity, 15.5°/15.5°C, (min.)	1.600
Acid Number (mg. KOH/gm.) (max.)	0.50
Stability, mg. HCl/25 gms.	60 to 70

HOOKER CHEMICALS

HOOKER ELECTROCHEMICAL COMPANY

3 Forty-Seventh Street • Niagara Falls, N. Y.

NEW YORK, N. Y. • TACOMA, WASH. • WILMINGTON, CALIF.

BOOKLETS & CATALOGS

Chemicals

A672. ALLYMER. Data Sheet No. 44-2 describes Allymer C. R. 149, a crystalline monomer well suited to the production of cast objects and to use in impregnation processes. The four page leaflet contains four charts and is published by the Pittsburgh Plate Glass Co., Columbia Chemical Division.

A673. CHEMICALS. A price list and brief descriptions of certain products in the food and drug line has been prepared by the Seydel Chemical Co.

A674. CHEMICALS. A price list, including medicinal, nutritional, analytical, industrial and photographic chemicals and dated July 1944, has been issued by Merck & Co., Inc.

A675. CHEMICALS FOR RUBBER INDUSTRY. This attractive 33 page booklet, which is printed on heavy paper and wears a grey cover, lists with complete information, chemicals used as accelerators, antioxidants and colors. Monsanto Chemical Co.

A676. CHEMICALS LIST. Recently published is a list of products from the William D. Neuberg Co.

A677. CLEANER which sterilizes and deodorizes and may be used in housework or in industry for washing floors, porcelain or metal surfaces is named Instant Cleaner and is produced by the Darrow Chemical Co.

A678. CLEANING COMPOUNDS for industry are presented in a four-page brochure from Magnuson Products Corp.

A679. COMPRESSED GASES PRICE LIST including more than fifty gases for laboratory and commercial use and containing pictures and information about valves, has been made available by the Matheson Co., Inc.

A680. IRON PURIFIER. Foseco "Iron R12," a preparation in powder form used for the purification of grey iron and malleable iron, is described in a short leaflet, which also lists other products for casting metals. Foundry Services, Inc.

A681. FIXATION OF PHOTOGRAPHIC MATERIALS. A six page leaflet (with pages about 9 x 12) emphasizing the speed and stating the directions, availability, and cost of a prepared Ammonium thiosulphate fixation bath has been prepared by the Ingraham Research Laboratories.

A682. LIME. A small leaflet outlining the uses of lime for farm and household work, for spray, soil and whitewash has been issued by the Longview-Saginaw Lime Works, Inc.

A683. OINTMENTS for healing skin disturbances caused by contact with cyanide solution, chromium solutions or fumes, and nickel solutions are enumerated in a one page leaflet from the Wambaugh Chemical Co.

Equipment—Methods

F179. ADAPTOR CONNECTIONS for Pyrex piping are displayed in a four page brochure (P-12) by means of sketches and charts which give complete information, including prices. Corning Glass Works.

F180. ADHESIVE PROBLEMS. The analysis of adhesive problems may be speeded with a new questionnaire adopted by Paisley Products, Inc.

F181. BRICKS WITHOUT STRAW, THE STORY OF SYNTHETIC RUBBER, "As told within the B. F. Goodrich Co.," is attractively presented in a 45 page book, complete with glossy paper, informative photographs and charts, and bound in blue stiff cover. B. F. Goodrich Co.

F182. CENTRALIZED LUBRICATION SYSTEMS. Bulletin No. 25 relates in 15 well illustrated pages the advantages of mechanical lubrication for bearings machinery, with both manual and automatic pumping units. The Furval Co

F183. COOLING TOWERS are shown means of photographs and charts, wi information about their application industry for steam condensing, air co ditioning, refrigeration, gas reformi and other purposes, in a new 34 pa booklet from the Marley Co., Inc.

F184. CONTRACTORS GUIDE is the ti of a new 30 page booklet which conta suggestions to war contractors as methods of and preparation for contr termination applying to fixed-price sup contracts of the war department. W Department Pamphlet, No. 34-2.

F185. FAN COOLED WORM GEAR. Ca log No. 300 introduces new Fan Coo Worm Gear Reduction Units and is fu illustrated with photographs, cha diagrams and engineering tables. T Cleveland Worm & Gear Co.

F186. FLOOR AND ROOF resurfac products are described in a series of small colored folders which will be greatest importance to those who considering the improvement of flo etc. Tufcrete Co.

F187. FURNACES. Surface Combust Furnaces for the generation of six ty of prepared atmosphere gases are played in a four page color bulletin fr Surface Combustion.

F188. GLASS VALVES for Pyrex pip are depicted in a two page leaflet (P- with prices, tables and pictures. Corn Glass Works.

F189. FURNACES. Surface combus furnaces in the steel wire industry shown with photographs and charts a recent four page bulletin from Sur Combustion.

F190. MINIATURE (PIVOT TYPE) B BEARINGS, which are made of beryll stainless or chrome steel and come four sizes are enumerated with price a one page leaflet from Miniature P sion Bearings.

F191. MISSOURI MINERAL WEA is the name of a recent booklet whic a summary of mineral raw mate available within the state. The proc discussed include lead, coal, iron, co and other metals. Frisco Lines.

CHEMICAL INDUSTRIES TECHNICAL DATA SERVICE

Chemical Industries, 522 Fifth Ave., New York 18, N. Y. (9-4)
I would like to receive the following free booklets or catalogs.

A672	A676	A680	F179	F183	F187
A673	A677	A681	F180	F184	F188
A674	A678	A682	F181	F185	F189
A675	A679	A683	F182	F186	F190
					F191

Name ..... (Position) .....

Company .....

Street .....

City & State .....

NEWS OF THE MONTH

Uniform Standards in America Sought

Facility in exchange of equipment and technical products to boost inter-American trade and industry relations is objective. A. S. A. is working with Inter-American Development Commission.

A PROGRAM to promote the adoption of uniform technical standards throughout the Americas as an aid to industrial and trade development is being extended as rapidly as possible through the cooperation of groups and individuals in the twenty-one American countries.

Uniform technical standards have been defined as agreement in quality, dimension, design, purpose, procedure and nomenclature in the fields of science, technology, industry, business, their products and their methods.

Resulting from the fact that industries have been established by technicians from many countries and in the absence of uniform technical standards created many discrepancies, differences in standards are a definite detriment to industrial development and trade expansion throughout the Americas. The problems arising as the result of these variations have been emphasized by wartime conditions which have brought an acceleration of industrialization activities in many countries.

The war condition also has focused attention upon the desirability of one American country's being able to use equipment from another. In many cases this has not been possible due to different standards, and as a consequence many countries have suffered because exchange of equipment and technical products has been limited.

Another problem aggravated by the war has been the need for standard classifications of certain raw materials and some semi-manufactured and manufactured products, as to quality, identification and analysis, the lack of which classifications, in some cases, has caused delay in the purchase, shipment or use of much needed materials.

The uniform technical standards program in this hemisphere is being spurred by a joint-action program of the Inter-American Development Commission and its affiliated commissions in the 21 American countries, and the American Standards Assodiation. These organizations are working in cooperation with organized standards bodies, business concerns, engineers, scientists, and governmental officials in the Americas.

This cooperative program is an active step in carrying out one of the 45 resolutions adopted recently by the Inter-American Development Commission and its affiliated national commissions, as part of their general objective of developing mutual economic interests throughout the Americas.

Under the joint-action procedure of these organizations, the furtherance of this resolution is being carried out actively by the American Standards Association which for almost two years has been promoting uniform technical standards in Latin America. At the same time it is receiving assistance from the Inter-American Development Commission and valuable cooperation from that organization's Latin American country commissions.

These organizations and officials have been supplied with sets of United States standards and other valuable technical information in both Spanish and Portuguese. Field representatives of the Standards Association have established contacts throughout Latin America in furtherance of the uniform standards program.

The development of uniform technical standards throughout the Americas, particularly in such important categories as electrical equipment of all types, factory and industrial machinery, and transportation, will add lasting benefits to inter-American trade and industry.

Government Files Borates Trust Suit

Seven corporations engaged in the business of mining, processing, manufacturing, selling, and distributing crude borates, borax, and boric acid were indicted for alleged violation of sections one and two of the Sherman antitrust act by a Federal Grand Jury in San Francisco, Calif., September 14, it was announced by the Department of Justice.

At the same time it was announced by the department that a civil suit was filed in the Federal district court in San Francisco to enjoin the continuance of the alleged violations and to obtain affirmative relief to correct the conditions which were produced by the unlawful acts.

The seven firms named as defendants in the indictment were Borax Consolidated, Ltd., Surrey England; Pacific Coast Borax Co., Los Angeles; American Potash and Chemical Corp., N. Y.; The Three Elephant Borax Corp., N. Y.; Goldfields American Development Co., Ltd., London; and United States Borax Co., Los Angeles.

Stingley Returns to Armour

Dale V. Stingley, who has been a leader in the War Food Administration's policy making in the wartime distribution of fats and oils, has resigned his position as assistant chief of the Industrial Oils Division, Fats and Oils Branch, to return to Armour and Company, Chicago. Back in Chicago Mr. Stingley will be actively engaged in technical sales service and in the promotion of fatty acids and chemical derivatives of fats and oils

WPB Has Rubber Authority

Authority and functions which formerly were those of the Office of Rubber Director have been transferred to the chairman of the War Production Board. The Secretary of Commerce now has direction of activities of the Rubber Reserve Company.

J. A. Krug, chairman of WPB, has set up a rubber bureau in that agency, under the direction of James F. Clark, who has been assistant deputy direction of OPD since October, 1943.

All regulations, rulings, and other directives relative to ORD remain in effect subject to change by the WPB chairman. RRC will have responsibility for the meeting of the national rubber program as determined by the WPB chairman, in the purchase, sale, acquisition, storage and transportation of synthetic and natural rubbers. It will also be responsible for research, development and testing of synthetic rubbers and new monomers there

made from such materials.

Conference to Curb Cartels Proposed

Further unfolding State Department plans for postwar world organization, Secretary Hull projected a United Nations trade conference at which one purpose will be to outlaw international cartels. Plans have already been drawn up and are ready for the President's consideration "for discussions with other United Nations in respect to the whole subject of commercial policy," Hull said. Just as the President had done, Hull declared that elimination of restrictive cartel practices is a proper objective of this Government's "liberal principles of international trade."

The basis for a world trade agreement has already been laid in the Lend-Lease compacts signed by the United States with Allied Nations. These provide that Lend-Lease will be liquidated in such a way as to avoid burdening international commerce and that the signatory nations would meet as soon as possible to work out means of stimulating trade production and employment.

American officials, and British also, are known to regard these economic problems as an essential part of the problem of maintaining peace.

The fact that the American attitude toward arrangements for "liberal" world trade policies is based in Lend-Lease agreements is considered highly significant by officials here. It is taken to mean that this Government will use its enormous economic resources in favor of breaking down trade restrictions.

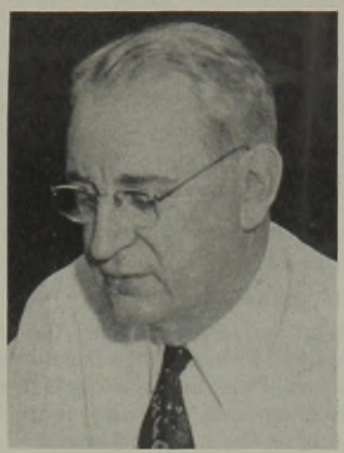
While both the President and Secretary of State spoke of eliminating "restrictive practices of cartels," official experts in this field expressed the view that such cartel practices as may be desirable should not be left to private companies but should be provided in agreements made among governments.

Buyer For Big DPC Plant Sought

The E. I. du Pont de Nemours Co. is reported to be interested in buying the Government-owned magnesium plant at Lake Charles and converting it to sodium production. Although some discussions concerning the purchase have been held the status of the deal is not known.

The Lake Charles magnesium plant was built at a cost of $54,000,000 but has never operated at full capacity to produce the metal. The plant was operated for DPC by the Mathieson Alkali Works until it was shut down earlier in the year. It never exceeded 50 per cent of capacity.

Cox Named to Corn Products



The appointment of Dr. Henry L. Cox as general manager of the chemical division has been announced by the Corn Products Refining Co. Dr. Cox was formerly with Mallon Institute, Carbide & Carbon Chemical Corporation, and recently assistant to the vice president, Rubber Reserve Co., Washington, D. C.

N. J. Standard Loses to Patents Custodian

Interference with the possession of the Alien Property Custodian of securities and patents valued at $35,000,000, which were turned over under protest last June by the Standard Oil Company of New Jersey and affiliated companies, have been refused by Federal Judge Knox in New York.

Judge Knox held that while the court can protect the integrity of property wrongfully taken from a lawful owner, it had not been shown that the custodian was doing or about to do anything in violation of plaintiff's rights. Standard Oil of New Jersey and affiliated companies have pending an injunction suit in United States District Court to compel the return of their assets.

The securities are 20 per cent of the outstanding stock of the Standard Catalytic Company, 50 per cent of that of Jasco, Inc., and 25 per cent of that of Hydrocarbon Synthesis Corporation. The patents, some 675 in number, cover processes for refining crude oil and making synthetic rubber and were acquired in 1929 in a transaction with I. G. Farbenindustrie, which was allowed $35,000,000 in securities of the three companies.

Ickes Announces Bureau of Mines Fuel Surveys

The Bureau of Mines soon will send engineering survey parties into the field to examine potential locations for synthetic liquid fuel laboratories and demonstration plants, Secretary of the Interior Harold L. Ickes has announced.

Authorized by the Synthetic Liquid Fuels Act, these laboratories and plants will conduct a five-year program of research and development to provide the "know how" for private commercial production of oil and gasoline and other petroleum-like products from the Nation's immense reserves of coal, lignite, oil shales, and agricultural and forestry products.

More than 150 different site proposals have been submitted to the Bureau of Mines, Secretary Ickes disclosed. Careful and thorough consideration is being given to the qualifications of each of the many suggested sites, which represent nearly all the coal-producing states.

Industry Criticizes Nitrogen Plan

Spokesmen for the nitrogen industry have challenged the Department of Agriculture's conclusions concerning postwar nitrogen needs in the department's proposal to convert 40 per cent of wartime

Government-owned ammonia capacity to fertilizer production.

It was promptly pointed out by industry spokesmen that current consumption of nitrogen both for fertilizer and industrial uses comes, under inflated wartime conditions, to about 620,000 tons. In 1940, before the war, agricultural as well as industrial nitrogen demand came to a total of 588,000 tons.

While most industry spokesmen doubt that there is need for 40 per cent of the Government-owned capacity after the war, there is general agreement that some of the plants could be utilized. There is also general agreement that some should be kept in standby condition.

Manual Published on "Explosive" Rivets

Uses of explosive rivets in peace-time production jobs—in addition to application in the aviation industry which is taking virtually all the supply now—are discussed fully in a new manual published by E. I. du Pont de Nemours & Co.

The explosive rivet was developed to meet the need for a quick, sure "blind" fastening in the hard-to-get-at places in aircraft.

The du Pont booklet cites the possibilities for post-war uses of explosive rivets in the automotive, refrigeration and housing industries.

CALENDAR OF EVENTS

AMERICAN INDUSTRIAL CHEMICAL ENGINEERS, Annual Convention, Hotel Jefferson, St. Louis, Mo., Nov. 19, 20, 21.
AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, Hotel Jefferson, St. Louis, Mo., Nov. 19-21.
AMERICAN PETROLEUM INSTITUTE, Twenty-fifth Annual Meeting, Stevens Hotel, Chicago, Nov. 13-16.
AMERICAN PHARMACEUTICAL MFG. ASSO., Waldorf Astoria, Dec. 11-12-13, Mid-year Meeting.
AMERICAN SOCIETY OF REFRIGERATING ENGINEERS, 40th Annual Meeting, Hotel Pennsylvania, N. Y. C., Dec. 11-13.
AMERICAN STANDARDS ASSOCIATION, Hotel Roosevelt, New York City, Dec. 8.
AMERICAN INSTITUTE OF CHEMISTS, New York Chapter Testimonial Dinner to Max. Toch, 2 Park Ave., N. Y. C., Oct. 27.
INDUSTRIAL HYGIENE FOUNDATION, Ninth Annual Meeting, Mellon Institute, Pittsburgh, Pa., Nov. 15, 16.
NATIONAL ELECTRICAL MANUFACTURERS ASSOC., Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y., Oct. 23-27.
SOCIETY OF AUTOMOTIVE ENGINEERS, INC., Fuels and Lubricants Meeting, Hotel Mayo, Tulsa, Okla., Nov. 9-10.
SOCIETY OF THE PLASTICS INDUSTRY, INC., Waldorf-Astoria, New York, Nov. 13, 14. Annual Fall Convention.

Government Starts Oil Shale Research

Secretary of the Interior Harold L. Ickes has announced that the Bureau of Mines will establish an oil shale research and development laboratory at the University of Wyoming at Laramie.

As part of the synthetic fuels program recently authorized by Congress to determine the best methods of converting the large deposits of oil shale in the United States into a lasting supply of oil and gasoline for the postwar years, the laboratory will conduct research on the composition of oil shale, shale oil and their products, and study improved methods of processing and using these materials, Secretary Ickes stated.

WPB Plans Further Beverage Alcohol Release

The nation's distillers produced approximately 54,000,000 proof gallons of beverage spirits during their "holiday" from war production in August, according to preliminary figures given by the War Production Board to members of its Industrial Alcohol Producers Industry Advisory Committee.

In response to inquiries, the Chemical Bureau representative predicted that another beverage "holiday" might be warranted "in the not too distant future."

In the meantime, the committee was informed, the War Production Board will permit an increase of 25 per cent in the amount of ethyl alcohol allowed for restricted industrial uses under Order M-3 during the fourth quarter of 1944.

The products affected include adhesives, agricultural poisons, many drugs and pharmaceuticals, embalming fluids, photographic and photo engraving materials, candy glazes, cleaning and polishing preparations other than those used for shoes and floors, shellacs and shellac substitutes, toiletries and cosmetics, antiseptics and mouth washes, vinegar and flavoring extracts.

J. F. Clark, director of WPB's Rubber Bureau, informed the committee that requirements for synthetic rubber production would reach a record figure in 1945, even though the war with Germany ends. This reflects the built-up demand for rubber products and the fact that no substantial increases in the crude rubber supply are anticipated before 1946, he said.

National Chemical Show and Conference Opens in Chicago

Reflecting the importance of industrial chemistry in the war effort and revealing new processes, products and ideas that will enhance peacetime progress, the third biennial National Chemical Exposition and National Industrial Chemical Conference will be held Nov. 15 thru 19 at the Coliseum in Chicago.

Sponsored by the Chicago Section of the American Chemical Society, the show and conference will be of value to a vast cross-section of interests, including chemists, engineers, bankers, educators, manufacturers whose process in some way involves chemistry, and all those holding technical and management positions.

Commercial exhibits will occupy every foot of floor space available for that pur-

The conference will be held on the second floor of the Annex and may be entered from the Coliseum floor. It will be devoted to the field of applied chemistry.

An innovation which will mark the opening of the 1944 exposition and conference, will be a joint luncheon with members of the Chicago Association of Commerce and the Chicago section of the American Chemical Society taking part at the La Salle Hotel on Nov. 15. A discussion of "New Research Developments in Industry" will be given by Roy C. Newton, Swift & Company; J. K. Roberts, Standard Oil Company (Ind.); and Ernest H. Volwiler, Abbott Laboratories.

High Polymer Graduate Program Offered

The Polytechnic Institute of Brooklyn has a plan to offer a unified program at the graduate level having to do with all phases of polymer chemistry, Dr. Raymond E. Kirk, head of the Department of Chemistry, has announced. According to Dr. Kirk, the field has developed so rapidly that no instructional program dealing with all the aspects of the subject has been available. Isolated courses are available in many institutions, but Polytechnic now is coordinating and adding courses to give a complete training in the field of plastic chemistry from ultracentrifugation to X-ray diffraction. Registration for the courses will continue until October 14th.

Under the leadership of Dr. Herman F. Mark, professor of organic chemistry at the Polytechnic Institute, international authority on high polymers, the program is being offered at this time, Dr. Kirk said, to meet the needs of the consuming public for new and better articles made from plastics.

Magnesium Cutback Ordered

The War Production Board ordered 40 percent reduction in primary magnesium ingot production from the current monthly rate of 23,000,000 pounds to a level of approximately 14,000,000 pounds on September 6. The reduction is to take effect over a period of time, WPB said. Reasons for the cuts are changes in military requirements and a rapidly growing stockpile, WPB explained. Plants affected by WPB orders are the Government-owned facilities at Las Vegas and Gabbs, Nev., and at Austin and Velasco, Texas.

New Unit Used in Reporting Rosin Stocks

The Quarterly Naval Stores Report for the period April 1, to June 30, 1944, makes use of a new unit for reporting rosin stocks. The new unit is the "drum" which replaces the term "barrel" that has been in use in the naval stores industry for more than a hundred years.

ch Men in New Posts

Dr. Arthur W. Sloan, left, rubber chemicals research head of The B. F. Goodrich Company, will leave for Cairo, Egypt, in September to take up his duties as chief of chemical allocations in the Middle East for the Foreign Economic Administration. Edward A. Willson has been named resident supervisor of the synthetic rubber laboratoreis operated by The B. F. Goodrich Company at Kent State University, Kent, Ohio, it is announced by Dr. Howard E. Fritz, company director of research.

High Postwar Demand For Lime Forecast

In its survey of lime developments during 1943, the Bureau of Mines reports that newly-developed or greatly expanded uses as well as increased sales to process industries confronting a large backlog of civilian demand, point to an expansion in postwar demand for "open market" lime above prewar levels. Steel, the largest consuming industry, doubtless will require more lime for flux and refractory purposes than in the prewar period. Increased consumption of lime for agricultural purposes as well as for building will also result in increased lime sales.

Synthetic Organic Detergents

Members of the newly formed Industry Advisory Committee of the Synthetic Organic Detergents include: N. A. Collins, Atlantic Refining Co., Philadelphia, Pa.; Kenneth T. King, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware; R. Lenz, General Dyestuff Corporation, N. Y.; George Richardson, Allied Dye & Chemical Corp., N. Y.; R. Von Oesen, Onyx Oil and Chemical Co., Jersey City, N. J.; R. S. Weatherly, Monsanto Chemical Co., St. Louis, Missouri. The Government Presiding Officer is John Conway, Chemicals Bureau, War Production Board.

The committee met on September 12 to discuss Schedule 44 to order M-300, distribution of detergents, allocation policy, and other problems.

For the next few months, the Chemicals Bureau will make adjustments in the distribution of detergents within the available supply, rather than attempt to formulate a rigid policy on allocation, Mr. Conway told the committee. Rubber, which is extremely critical, is perhaps the most important. Also important are metal uses, including shell cleaning operations preparation of metals for painting, etc Textiles and dye stuffs will be considered as of about equal importance. Pulp and paper are important, although the volume of detergents needed is small. Insecticides represent another small though important use. The use of detergents for leather depends to a large extent on the kind of leather produced. At present this volume is small.

Natural Resin Importers

The Natural Resins Importers Industry Advisory Committee met on September 7, 1944, to discuss problems connected with present and future importations of Congo gum copal.

Members of the newly formed committee include: M. M. Gruber, U. S. Industrial Chemicals, Inc., New York, N. Y. O. G. Innes, O. G. Innes Company, N. Y. A. Scharwachter, American Cyanamid Chemical Corp., N. Y.; Ernest H. Winter, H. P. Winter & Co., N. Y.; George Hauxhurst, S. Winterbourne & Co., N. Y.; W. A. Patterson, G. W. S. Patterson Co., N. Y.; Charles F. Walde Thurston & Braidisch, N. Y.; Jol Young, Gillespie-Roger Pyatt & C N. Y. The Government presiding offic of the group was Wells Martin, of t Chemicals Bureau.

Brown Named Westinghous Chemicals Head

The appointment of B. M. Bro as manager of the petroleum chemical section of Westingho Electric & Manufacturing Co. been announced by C. B. Stainb manager of the industrial departm

COMPANIES

Hercules Opens New Off

A new sales office to provide gre service to our customers has been op in Cleveland, Ohio, it has been annou by Dr. W. M. Billing, general man

of the Synthetics Department, Hercules Powder Company.

W. Wallace Trowell, of the Wilmington office, will be manager of the new branch office, and John L. Present, also of the Wilmington office, will serve as technical representative and assist with sales operations.

The new office, which is located in the Union Commerce Building, Cleveland, will handle Synthetics Department sales in Michigan, Ohio, Western New York, Western Pennsylvania, and Ontario.

Koppers Builds Huge Anhydride Plant

A new chemical plant having a capacity to produce annually seven million pounds of phthalic anhydride, used in making a principal ingredient of the new insect repellents adopted by allied troops in jungle warfare, will be built at Kobuta, Pa., according to announcement of J. N. Forker, vice president of Koppers Company and general manager of the Tar and Chemical division.

Construction is to start promptly, he said, and the plant is scheduled to be in operation early next spring.

Decision to build the plant at Kobuta, where Koppers United Company now operates a 200-acre synthetic rubber chemicals plant that last year produced 22 per cent of all butadiene used in the Government's synthetic rubber program, follows the company's plan to establish an increasing amount of its chemical recovery equipment in that Beaver valley community, Mr. Forker stated.

Although the increased demand for phthalic anhydride is based on military requirements, Mr. Forker explained that the chemical, a flaky derivative of naphthalene, is also extensively used in the production of resins for protective coatings. These resins are a main component of such lacquers as are used for finishing automobile bodies. Phthalic anhydride is also used in making ingredients that make plastics tough yet pliable, and in the manufacture of smokeless powder.

Sulphuric Acid Plant Approved

Garfield Chemical & Manufacturing Company, a subsidiary of the Utah Copper Company and the American Smelting & Refining Company, Salt Lake City, Utah, have been granted preference ratings by the War Production Board for construction of a sulphuric acid plant with a daily capacity of 150 tons, at Garfield, Utah. Estimated cost is $1,000,000.

Interchemical Corp. Buys Scriver-Quinn

Scriver & Quinn, Inc., manufacturer of industrial and household finishes and coatings, Los Angeles, is to be acquired as a subsidiary of the Interchemical Corporation, New York. C. E. Burge will continue as president of this Interchemical unit; W. H. Dernell, manager of the corporation's Ault & Wiborg division branch in southern California, will be vice-president. The Scriver & Quinn subsidiary and the Murphy Finishes Corporation acquisition of which is being completed along with the Ault & Wiborg division will operate independently but will be served by the general technical staff of the parent concern.

Mathieson Launches Production in New Ammonia Plant

Production of ammonia from a new plant at Lake Charles, La., has been announced by George W. Dolan, president of The Mathieson Alkali Works (Inc.). The plant is one of the two largest in the country producing ammonia from natural gas.

Built by the Defense Plant Corporation and operated under lease by Mathieson the new plant is fully engaged in war production, the ammonia being used to produce high explosives. After the war the operation is expected to manufacture chemical fertilizers for Southern farmers and anhydrous ammonia for refrigeration.

The new plant is near to its source of raw materials and has the advantage

ONE is to make a *needless* distinction . . . the other, to make a minute, but *necessary*, definition—as when dealing with parts-per-million. It is just such *meticulous* attention to little, but *vital*, things that has earned for V-C products their reputation for *consistently* measuring up to the requirements of *quality* and *performance*. A pioneer in the phosphate field, Virginia-Carolina Chemical Corporation is particularly alert to the ever increasing and exacting applications of the Phosphates to process industries.

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HAND IN HAND WITH INDUSTRY

low fuel costs as well as low shipping costs by water and rail throughout the Gulf States and the Mississippi Valley.

In addition to ammonia, Mathieson produces caustic soda, soda ash and synthetic salt cake at Lake Charles. Other manufacturing centers of the Mathieson organization are located at Niagara Falls, N. Y., and Saltville, Va. The Niagara Falls plant was a pioneer producer of synthetic ammonia in this country.

Du Pont to Establish New Rubber Chemicals Branch Office

The Rubber Chemicals Division of E. I. du Pont de Nemours & Co. will establish a branch office and completely equipped technical service laboratory here, it has been announced by Harry A. Hoffman, Akron representative of the company, who will be manager of the branch. It is expected the new facilities will be ready early next year.

Purpose of the laboratory is to furnish technical service to the Du Pont Company's many customers among the rubber manufacturers in the Middle West. The proper application of chemicals is essential to the compounding of all rubber products, whether made of natural or synthetic rubbers, and these specialty materials have played an important part in the war program. Neoprene synthetic rubber, developed and produced by the Du Pont Company, is also widely used by the rubber industry.

Emulsol Names Thayer Sales Head

E. S. Thayer has been appointed sales manager of the technical products division of The Emulsol Corporation, Chicago. Mr. Thayer will be in charge of the sales of Emulsol's synthetic organic chemical products.

Penn Salt Sells Interest in Taylor Chemical

The Pennsylvania Salt Manufacturing Co. has disposed of its majority ownership in the Taylor Chemical Corporation, selling to that company 51 per cent ownership at plants at Penn Yan, N. Y., and Wyandotte, Mich., its annual report revealed. Pennsylvania Salt has purchased from Taylor, however, the carbon tetrachloride plant and its inventories at Wyandotte. The agreement includes a long-term contract with the Taylor Chemical Corporation for the purchase of carbon bisulphide, the base material used in the manufacture of carbon tetrachloride.

The annual report also indicates that Pennsylvania Salt has sold the American Cyanamid Co. B stock, which it owned, as part payment for Pennsylvania Salt's interest in the Berbice Co., Ltd.

Although supplies of ore are being imported for the company's Kryolith products, such importations have fallen below those of previous years and the company has had to supplement its supplies with purchases from the Metals Reserve Co. The cost is approximately the same as the import cost for the season of 1944.

Sales for the year ended June 30 were $26,068,083 as compared with $26,579,870 for the previous year. Net earnings for the fiscal year were $1,454,931, or $9.70 a share after deduction of $2,318,014 for taxes. This compares with net earnings of $1,399,584, or $9.33 per share for the previous year.

Glyco Begins Operations in Mexico

The Glyco Products Co., Inc., Brooklyn, New York, announces the opening of a factory and offices in Mexico City. The Mexican Company, known as Productos Quimicos Glyco, S. A., is located at Cipres Num. 355, Mexico D. F. Mexico, and is under the direction of Dr. E. Rios and Dr. A. Graf, both eminent Mexican chemical engineers of considerable experience.

This Company is manufacturing many of the products of the American parent company, particularly those which can be made from Mexican raw materials. They are also acting as exclusive sales agents for all the other products manufactured by the Glyco Products Co., Inc., which are not, at present, being produced in Mexico.

Interlake Chemical Acquires Central Process Corp.

Interlake Chemical Corporation has acquired Central Process Corporation, Forest Park, Ill. Interlake Chemical is wholly owned by Interlake Iron Corporation and Great Lakes Steel Corporation, a division of National Steel Corporation.

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Company Notes

B. F. GOODRICH COMPANY celebrated the tenth anniversary of its Twenty Year Service Club on September 15, when 29 employees received 10, 20, 30 and 40 year emblems from John L. Collyer, company president. There were 245 pins presented 20-year employees, 46 to 30-year employees and one to a 40-year veteran, all of whom have had their service anniversaries during the last year.

THE WARREN REFINING & CHEMICAL COMPANY has announced the location of new general offices at 308 Euclid Avenue, Cleveland 14, Ohio.

EMERY INDUSTRIES, INCORPORATED, has opened a branch sales office and warehouse at 401 N. Broad St., Philadelphia 8, Pa. M. Jay Veenstra assumed the responsibilities of district chemical sales manager on October 1.

Maclaren Organizes New Company

F. M. Maclaren recently resigned from the Hooker Electrochemical Co. to organize a new company, the Regent Pulp and Chemical Co., to serve as manufacturers agents and distributors of pulp, heavy chemicals, and fine organics. The company is located at 420 Vanderbilt Avenue, New York.

THE OXYCHLORIDE CEMENT ASSOCIATION at 1010 Vermont Avenue N. W., Washington 5, D. C., was established July 1, 1944 as a non-profit organization to render service in helping to standardize performance tests and application specifications for the benefit of users.

E. F. HOUGHTON & COMPANY has announced that its office for the metropolitan New York area, formerly located at 303 Seventh Avenue, New York City, has been combined with its office and warehouse at 135 Hoboken Avenue, Jersey City, New Jersey.

EIMCO CORPORATION has added a new branch office, under the management of James K. Russell, with offices in the Frank Brown Building, St. Louis, Missouri.

THE RHODES CHEMICAL CORPORATION Jenkintown, Pa., has been organized wi J. Cecil Rhodes as president and L. Hirsh vice president. It is engaged in t manufacture of amines, quatenary amm nium compounds and derivatives of the compounds.

THE VIRGINIA CHEMICAL CORPORATIO a Delaware corporation, has been issu a charter amendment authorizing it to business in Virginia, and changing name to MURPHY FINISHES CORPORATIO

ASSOCIATIONS

British Representatives Attend U. S. Paint Federation Meeting

The annual meeting and fall technic symposium of the Federation of Paint Varnish Production Clubs will be held October 24th and 25th, at the Hotel Per sylvania, New York City. On Mond October 23rd, the various committees w hold meetings.

In the interest of establishing a tech cal liaison of practical technical men fr England and the United States, the Bir ingham Paint, Varnish & Lacquer C of England is sending several repres tatives under the sponsorship of the I partment of Overseas Trade. At t Symposium, these representatives will d cuss the British paint industry's contri tion to the war effort.

The fall technical symposium will a strictly technical meeting.

Forum on Fibers Planned

Comdr. W. F. Prien, SC, USN, cha man of the technical program commit of the New York section of the Ameri Association of Textile Chemists Colorists, announces that the follow will serve as members of his commi during the 1944-45 season:

Dr. Donald Price, vice chairman, terchemical Corporation; C. W. Pat vice chairman, Carbide & Carbon Che cals Corporation; C. E. Dorn, J. C. E ney Co.; Henry E. Millson, Calco Che cal Division, American Cyanamid Dr. W. E. Coughlin, Good Housekeep Institute; Arthur Wachter, American cose Corporation; Dr. H. H. Mos Onyx Oil & Chemical Co.; Frank St Better Fabrics Testing Bureau; F. Richardson, Waldrich Co.

The subject for the first meeting, vember 17, will be a symposium on cent Developments in Synthetic Fi and Their Uses in Fabrics."

PERSONNEL

Moyer Leaves WPB

Warren H. Moyer, consultant to

Chemicals Bureau of the War Production Board in the field of organic chemicals, has severed all connections with the bureau to devote his time fully with the Chipman Chemical Company, Bound Brook, N. J. Mr. Moyer has been a consultant to the bureau since June, 1943, when he resigned as chief of the insecticides and fungicides unit to go with the Chipman Company. He first became connected with the WPB in May, 1942.

Du Pont Rayon Personnel Shifts Made

Five changes in the managerial organization of the rayon department of E. I. du Pont de Nemours & Company have been announced.

Howard J. White and James S. Denham, managers of the rayon division and the acetate division respectively, were appointed to newly-created positions of assistant managers of the rayon department.

Frank B. Ridgway was named manager of the rayon division, succeeding Mr. White, and Willis Shackelford succeeded Mr. Denham as manager of the acetate division. Charles A. Cary, assistant manager of the nylon division since January 1, 1940, was named division manager. He succeeds E. K. Gladding, whose appointment as director of the development department became effective September 1, 1944.

Three new appointments to fill recently-created vacancies in the management of du Pont's acetate, nylon and rayon divisions have been announced.

Emile F. du Pont, nylon division production director since 1941, becomes assistant manager of the acetate division. Robert A. Ramsdell, who has been director of nylon sales since 1940, was appointed assistant manager of the nylon division. Dr. G. W. Filson was named assistant manager of the rayon division.

RCI Research Department Promotions Announced

John J. Bradley, Jr., director in charge of research for Reichhold Chemicals, Inc., has announced the following promotions as of Sept. 1. Arthur C. Lansing, manager of research and assistant to Mr. Bradley; P. Stanley Hewett, director of research, chemicals division; C. John Meeske, director of research, coating resins division; Clinton A. Braidwood, assistant director of research, coating resins division.

Schlueter Promoted in WPB Chemicals Bureau

Appointment of L. A. Schlueter, Kearny, N. J., as acting chief of the Aromatics and Intermediates Branch of Chemicals Bureau, WPB, was announced September 23. He succeeds Dr. Walter Runge, of Reading, Pa. Previously he had been deputy chief of the branch, and had been with WPB since October, 1941. He was formerly production engineer with the White Tar Company, of New Jersey, Inc., Kearny, N. J.

Dr. Runge, before joining WPB, was president of Lasson and Company, an export firm, in New York, and was appointed to WPB in July, 1942, becoming acting chief of the branch he has just left.

Personnel Notes

MERLE L. GRIFFIN has been transferred recently from the Washington Representative Office of Shell Oil Co., Inc., to New York as Eastern Representative for Shell Chemical Division of Shell Union Oil Corporation.

MILTON F. MARTIN, who has been with the sales department since 1935, has been appointed assistant general sales manager of U. S. Industrial Chemicals, Incorporated.

JACK WATSON, vice president of the New York Printing Ink Production Club, joined the technical staff of J. M. Huber, Inc., on September 1, 1944.

LT. GEORGE W. MERCK, JR., son of George W. Merck, president of Merck & Co., Inc., has been cited by Admiral Chester Nimitz for gallant action in the Pacific.

DR. ROBERT EMMETT BURK, former professor of chemistry in the graduate school of Western Reserve University, has joined the Plastics Department of E. I. du Pont de Nemours & Company as special assistant to JOHN L. BRILL, the department's chemical director.

Culpepper Rejoins Synthetic Nitrogen Corp.

Joseph E. Culpepper recently left the American Cyanamid Company to rejoin the Synthetic Nitrogen Products Corporation to head that company's expanding activities in both sales and agricultural promotion.

Dr. Otto Stein, formerly with Rohm nd Haas and Verona Chemical Company, r. Edward Segel, University of Chi-go, 1944, and Miss Ruth Guthier, .S., University of Illinois, 1944, have ined the research and development staff Edwal Laboratories.

Major C. Stewart Comeaux, for the ast two years on service in the office of e Chief of Ordnance, at Washington, . C., has returned to civilian life and assumed his duties as Secretary-Treas-rer of the Institute of Makers of Ex-osives and the Sporting Arms and Am-unition Manufacturers' Institute, at 103 ark Avenue, N. Y.

Maurice L. Macht has been appointed the technical service group of the Plas-cs Department of E. I. du Pont de Ne-ours & Company, was announced today W. A. Joslyn, director of sales.

R. P. O'Rourke of the Woburn Chemical Co., Harrison, N. J., has been promoted from vice president in charge of production, to general sales manager and vice president in charge of production.

James Dudley Ransom of the Woburn Chemical Co., N. J., has been advanced from the position of assistant sales manager to sales manager of the Chemical Division.

Dr. Thomas S. Chambers, formerly associated with the Standard Oil Development Company, has assumed duties as manager of chemical research and engineering for the A. B. Dick Company of Chicago.

Glen C. H. Perry, a Washington correspondent of the New York *Sun*, has been appointed as assistant director of the Public Relations Department of E. I. du Pont de Nemours & Company.

Robert R. Cole, vice president of Monsanto Chemical Company and general manager of the phosphate division, has been elected a member of the Board of Directors. Mr. Cole fills the place on the board left vacant by the recent death of John C. Brooks, vice president and general manager of the company's plastics division.

Martin Promoted at U. S. Industrial Chemicals

Milton F. Martin has been appointed assistant general sales manager for U. S. Industrial Chemicals, Inc., New York. Mr. Martin has been assistant to L. A. Keane, vice-president in charge of sales for the past six years.

NEWS *of* SUPPLIERS

President Paul L. Davies of FOOD MACHINERY CORPORATION announced the appointment of vice president Clarence Frazier as manager of the Peerless Pump division of the firm. Mr. Frazier succeeds the late Vernon Edler.

Recently appointed to the post of sales manager of the DUGAS ENGINEERING CORPORATION is Clifford H. Wyman, formerle manager of the firm's district office in Chicago. In his new position, Mr. Wyman will be responsible for direction of the company's sale of Dugas Dry Chemical Fire Extinguishers.

A. H. Kruger, associated with the industrial heating and processing industries for the past 19 years, has joined WHEELCO INSTRUMENTS COMPANY, Chicago, as application engineer, it has been announced by Richard Schoenfeld, vice-president in charge of sales.

Through Charles Knupfer, vice-president in charge of sales, THE CARBORUNDUM COMPANY announces the opening of three new branch sales offices at Buffalo, N. Y., St. Louis, Mo., and San Francisco, Calif. Mr. Knupfer also announces the appointment of three new district sales managers. G. S. Rogers in charge of Buffalo office, Gordon O. Watson at St. Louis and W. T. McCargo at San Francisco.

V. H. Hiermeier has been named industrial manager of the St. Louis office of the BROWN INSTRUMENT CO., Philadelphia precision industrial instrument division of MINNEAPOLIS-HONEYWELL REGULATOR CO.

Dudley Rice has just been appointed a field engineer in the Chicago district for the EUTECTIC WELDING ALLOYS COMPANY. Mr. Rice is especially qualified to act as a welding consultant on Eutectic "Low Temperature" Welding. He was a sales specialist on the welding products of the American Brake Shoe Company and prior to that was on the staff of the maintenance of way, welding department of the Erie Railroad Company.

U.S.I. CHEMICAL NEWS

October ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1944

U.S.I. Announces Two New Phenolics

Unusual Properties Exhibited by New "Arochem" Resins

Of timely interest to formulators of varnishes and vehicles for protective coatings, and to ink manufacturers and other resin users, is U.S.I.'s introduction of two phenolic-type resins, especially developed for present-day use with soft oils. Both of these resins are currently available for many civilian end-uses, although application must still be made, as usual, under W.P.B. Order M-246.

S&W Arochem 337

S&W Arochem 337 is especially useful in quick-drying varnishes, quick-drying enamels for either general or industrial use, floor paints, spar varnishes, over-print varnishes and printing inks. This high melting point, modified-phenolic resin imparts faster bodying rate, faster drying properties, superior resistance to alkali and water, and greater film hardness and mar resistance than most modified phenolics in varnishes of equivalent oil lengths.

Ease of handling is another feature. Although it has an exceptionally high melting point, it is readily soluble, without special cooking procedures in most high viscosity oils. In nearly all cases, the total resin and oil content may be charged into the kettle at the start and taken to top heat without any "kick-out" or formation of gel particles. Due to the short cooking schedules required, varnishes made with S&W Arochem 337 are light in color.

While this resin is too reactive to be used with tung oil alone, satisfactory varnishes may be produced by the addition of moderate amounts of less reactive resin or oil to the cook.

S&W Arochem 338

S&W Arochem 338 is particularly well suited for use in gloss ink vehicles and over-print varnishes as well as varnishes and enamels for general and industrial use.

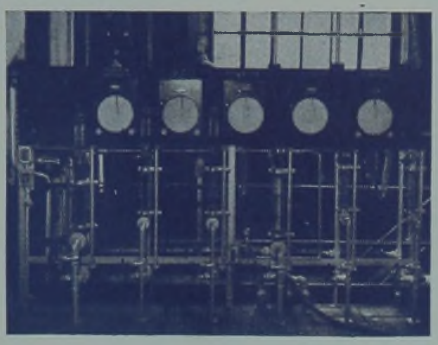
This resin, like S&W Arochem 337, is a modified phenolic, but it has a higher melting point, and being less soluble in solvents and oils, is more rapid in its bodying action. Developed primarily for use in printing inks and over-print varnishes, it produces ink vehicles of exceptionally high viscosity when cooked with linseed or other drying oils. This shortens the manufacturing holding times. Due to the unusually large molecular structure of the resin, the resulting vehicles dry to extremely

(*Continued on next page*)

Tonnage Production of Indalone Involves Novel Claisen Reaction

Manufacture of U.S.I.'s War Important Insectifuge Among First Large-scale Commercial Uses of this Type Condensation

Although every organic chemist has had laboratory experience with Claisen-type condensations, until recently only few have done much with these interesting reactions on a large commercial scale. The sudden demand for atebrin, sulfamerazine, vitamin B_1 and U.S.I.'s Indalone, as a result of the war, has focused wide attention on the tonnage production of such chemicals and has brought many developments of both present and postwar significance. First of these from the standpoint of tonnage is U.S.I.'s manufacture of Indalone, vital ingredient in the government's new all-purpose insect repellent.



Centralized control has played an important part in the successful tonnage-scale production of Indalone. Here you see one group of sensitive controllers, and recording instruments in U.S.I.'s Baltimore plant.

War Demands Met

Starting in the early 1920's with the first commercial production of acetoacetic ester, U.S.I. followed with the commercial-scale operation of a second Claisen reaction to produce sodium oxalacetate. This, in turn, was followed by the commercial introduction of Indalone in 1939. Tremendously stepped-up production of all of these products has been necessary to meet the huge war demands. This is particularly true of Indalone, production of which has been multiplied ten fold.

The reactions employed in the production of Indalone are shown on the next page. Mesityl oxide and dibutyl oxalate are first combined in a Claisen reaction using sodium butoxide as the condensing agent. This forms the sodium salt of Indalone which is then neutralized with dilute sulphuric acid. The process is carried out in the following stages.

Condensation Stage

Carefully measured quantities of mesityl oxide and dibutyl oxalate are added to the reaction vessel together with sufficient benzene to assure complete solution of the sodium salt of Indalone at the end of the reaction. After thorough mixing, a carefully measured quantity of sodium butoxide (in butyl alcohol solution) is added. The reaction vessel is equipped with heat exchangers.

Neutralization

After the reaction has been completed (12-24 hours) the alkaline crude is neutralized with diluted sulphuric acid. This operation is critical and in the past has always been done on a batch basis. However, it is now being done

(*Continued on next page*)

Finds New Short Cut to Zein Solutions

Current practice in preparing zein solutions calls for use of dry extracted zein to which is added a suitable solvent. Production of dry zein is a laborious and costly process involving the separate steps of precipitation, filtering, settling, washing and drying.

A newly patented process claims to greatly simplify the production of zein solutions and coating compounds by preparing them directly from the corn gluten. In the new method the granular or powdered gluten is first treated with a low boiling point zein protein solvent such as ethanol, or a mixture of such solvents.

Next the extract solution is separated from the residual gluten by filtration or centrifuging, and is then mixed with a base solvent of relatively high boiling point, such as ethylene glycol. Distillation removes the low boiling extracting solvent, leaving behind the zein dissolved in the base solvent and ready for use.

U.S.I. Names M. F. Martin Asst. General Sales Manager

Mr. Milton F. Martin, associated with the Sales Department of U.S.I. since 1935, has been appointed Assistant General Sales Manager. For the past six years, Mr. Martin has been assistant to Mr. L. A. Keane, Vice-President in Charge of Sales.

Milton F. Martin

RESIN SPECIFICATIONS

	S&W AROCHEM 337	S&W AROCHEM 338
Acid Number:	30-40	25-35
Melting Point: (Mercury)	150-160° C.	160-170° C.
Color:	N-K	N-K
Specific Gravity:	1.1	1.1
Soluble in:	Coal-tar and petroleum hydrocarbons and the usual solvents; in oils, both high and low viscosity.	Coal-tar hydrocarbons and lacquer solvents; medium and low viscosity oils.

NOTE: S&W Arochem 337 is insoluble in ethyl alcohol. S&W 338 is insoluble in petroleum hydrocarbons, although solutions will tolerate a high proportion of these solvents; it is completely insoluble in ethyl alcohol.

Novel Use of Solvents Improves Moulded Plastics

Color, transparency, and strength of certain transparent moulded plastics, formerly was impaired by small quantities of unreacted olefin and catalyst residue remaining after the reaction was completed. These impurities caused opacity after moulding and adversely affected the mechanical strength of the moulded article.

According to the claims appearing in a recent patent on olefin-sulphur-dioxide resins, a new process entirely eliminates these detrimental features. Crude olefin-sulphur-dioxide resin, in finely divided form, is treated with a blast of air or inert gas carrying vapors of a resin solvent such as acetone. The solvent penetrates the fine resin particles, and softens them.

Best moulding results are obtained when minute traces of the vaporized solvent are allowed to remain in the resin until it is moulded. According to the inventor, articles moulded from the new resin possess greater transparency and strength, and due to absence of unreacted ingredients, do not undergo a secondary reaction which changes their color after moulding.

Two New Phenolics

(*Continued from preceding page*)

hard, tough films with maximum "hold-out" and gloss.

In the production of varnishes and enamels, S&W Arochem 338 usually requires special cooking when used with most pre-bodied oils, and is too rapid in its bodying action for use with oils like tung, without modification. Thus Arochem 337 is generally preferred for these products.

U.S.I. will be glad to send samples and further data on both resins to anyone interested.

New Hydroscopic Ink For Recording Meters

One problem presented by recording meters of various kinds has been to find an ink which in the recorder pen will be able to withstand considerable exposure to the atmosphere without thickening or clogging, regardless of outside temperature or humidity, yet be fast drying after application.

A recent patent calls for a combination of a brilliant red dye with a tartrazine yellow for luminosity in a medium composed of water, ethanol, glycol and acetic acid. The hydroscopic effect of the glycol tends to absorb moisture from the air, thereby preventing the ink in the recorder pen from drying out. However, once the line is traced on the paper chart, the glycols are readily absorbed by the paper, thus producing a fast-drying ink. The acetic acid is added as a preservative.

Tonnage Production

(*Continued from preceding page*)

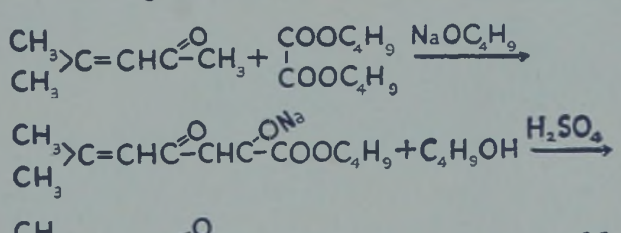
with complete success using a continuous method developed at U.S.I.'s Baltimore plant.

Distillation and Recovery

The neutralized crude obtained from the above step is stripped of volatile solvents — benzene, butanol, and water — by a series of continuous vacuum distillation columns. The benzol and butanol are subsequently refined and returned to succeeding condensations. The stripped crude contains Indalone and a small amount of tars. The Indalone is recovered from the stripped crude by a continuous flash-distillation process, operating at 2 to 4mm. Hg, absolute pressure.

Approximately 90% of the Indalone is recovered in the flash-distillation process. The remaining 10% is present in the tar residue withdrawn continuously from the process. The Indalone present in these tars is recovered by a batch, low-pressure distillation process.

SYNTHESIS OF INDALONE



TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A water-resistant resin adhesive has been developed for use in mounting and over-coating paper and for other industrial applications where moisture resistance is needed. It is claimed that this new, clear adhesive will withstand a 48 hour immersion test, and that its long wet-life prevents paper wrinkling, makes registration easy. (No. 859)

U S I

Flame-proofed felt for vibration damping and insulation in high-temperature areas has been announced. It is claimed that this chemically treated felt can be exposed to the direct flame of a bunsen burner without either combustion or after glow. (No. 860)

U S I

A new rust-removing compound is claimed to facilitate pre-painting preparation of metal surfaces. The crystals of the preparation are said to become part of the metal and to be paint absorbent. (No. 861)

U S I

A tackifier for synthetic rubber, which is said to have added use as an extender, has been announced. The new product is claimed to be soluble in aromatic hydrocarbons, vegetable and mineral oils, and synthetic rubber. Some tack remains after vulcanizing. (No. 862)

U S I

Rubber heel marks and dirt may be removed from wood, cement and linoleum floors by a new cleaner, according to its manufacturer. (No. 863)

U S I

New flux for brazing preparation of cast iron, has been developed. It is said to produce a uniformly successful tinning prior to brazing. (No. 864)

U S I

A non-slip liquid wax, which, according to the manufacturer, requires no buffing and which may be applied with cloth, mop or spray equipment, has just been put on the market. (No. 865)

U S I

Two new protective creams have been designed to protect worker's hands. One is water soluble for dry work; the other is for protection where water and mild chemical solutions are present. (No. 866)

U S I

New dye for vinylite plastics, designed for dip application is available in yellow, orange, rose and green. A dip of 5 seconds is claimed to give a pastel shade, while a 60 second dip gives deep tones. (No. 867)

U S I

A new plastic resin adhesive, said to be colorless, of low viscosity and water-soluble, has been placed on the market. It is intended to be used with a co-agent in laminating and sizing textile fabrics and paper. (No. 868)

The can that thaws out a ski-trooper... will keep your car from freezing!

● Imagine for a moment, please, that you're a ski-trooper. You're caught in a blizzard, cold and hungry. There's no dry wood about. How do you make a fire?

You just reach in your pack and take out a portable stove and a tin can. The can carries precious fuel which you pour into the stove through a special spout. In a few minutes you're cooking a hot meal.

Easy, isn't it? The can makes it so. And, like all cans, it's not only convenient, but strong and safe. It *completely* protects the ski-trooper's personal "anti-freeze."

This can is only one reason why you seldom get anti-freeze in cans for your car today. But after the war you'll again get all the brands and types you want in sealed, tamper-proof cans . . . *completely* protected. We've a hunch you'll get even better anti-freeze, too.

To do our war job, we've developed new ideas and new skills. That's why, as we look ahead, we see *new and better things in Continental cans.*

NOTE TO MANUFACTURERS—We'll be glad to discuss present and future uses or improvements of your product or package. Write Dept. A., 100 East 42nd Street, New York 17, N. Y., or Continental Can Company of Canada, Limited, Sun Life Bldg., Montreal.

CONTINENTAL CAN COMPANY

NEW AND BETTER THINGS IN CONTINENTAL CANS

Awarded to Plant 78, Chicago • Illinois

ARMY E NAVY

SAVE TIN CANS—HELP CAN THE AXIS

WAR REGULATIONS SUMMARY

ACRYLIC RESINS—All grades of acrylic monomer and resin have been brought under control of Order M-300 (Schedule 17).

ARSENIC—Allocation control transferred to Order M-300.

COPPER CHEMICALS—Allocation control transferred to Order M-300.

CELLULOSE ESTERS—WPB Orders M-326 (cellulose ester flakes), M-326-a (cellulose ester sheets, rods, and tubes), and M-326-b (cellulose acetate and cellulose acetate butyrate molding powder), revoked and control of these materials transferred to Order M-300. Due to improved supply conditions, allocation controls were removed from molding powder scrap.

ESTER GUM—Price increased at all sales levels for ester gum containing gum rosin were announced by OPA effective September 21. A maximum price of $0.1125 per lb. delivered has been designated for ester gum with a rosin content consisting wholly of gum rosin.

GUM ROSIN — Permanent maximum prices have been announced by OPA at levels based on average prices prevailing during June and July, 1944, for sales on the Savannah Cotton and Naval Stores Exchange. The new prices were effective September 20, 1944, and replaced the prices established by the temporary 60-day regulation which was made effective June 28, 1944, to halt rapidly rising prices for the commodity. MPR-561.

PYRETHRUM—Allocation control transferred to Order M-300.

REFRIGERANTS—The expected last quarter release of restrictions on use of Freon-12 in air conditioning did not materialize due to an unexpected shortage of anhydrous hydrofluoric acid. Other refrigerants, such as methyl chloride, sulfur dioxide, and ammonia must continue to be used in place of Freon-12 until the Freon situation improves.

ROTENONE—Because of the extremely limited supply, WPB plans for releasing a limited amount for manufacture of preparations used in control of fleas and ticks have been revised. No rotenone will be made available for flea control at this time, but a small amount will be available for tick control preparations for distribution solely in tick infested areas where human life is endangered. Applications should be submitted on Form WPB-2945 to the Insecticides and Fungicides Unit, Chemicals Bureau, Washington.

ROTENONE—Allocation control transferred to Order M-300.

SILICA GEL—Desiccant grade coarser than 80 mesh placed on allocation under M-300. No controls have been placed on the catalyst grade or on desiccant grades finer than 80 mesh.

SODIUM CYANIDE—Order M-366 revoked and allocation control transferred to Order M-300. Small-order exemption reduced from 1000 lbs. to 400 lbs. per person per month.

SOLVENTS — The following nine end uses of Class A solvents are prohibited: (1) Trucks for maintenance, except parts; (2) institutional, except for hospital operating rooms; (3) industrial plants; (4) defense housing; (5) commercial and residential buildings; (6) model airplanes; (7) toys and games; (8) jewelry, novelties, cosmetics, compacts and cigarette cases; (9) artificial flowers, feathers and plumes. The following three uses for Class B solvents are permitted: (1) use of one drum per month for experimental and research work; (2) zinc chromate primers for aluminum or magnesium surfaces for the military services; (3) use in the production of Class B blends.

VINYL POLYMERS—Order M-10 revoked, and allocation control transferred to Order M-300. Small-order exemption raised from 50 to 200 lbs. for experimental use only.

LEGAL ADVENTURES OF A CHEMIST

Wherein Chemist Smith, mythical chemist-manager of a small chemical manufacturing concern, records for any who may be interested an account of his many and varied adventures with the law

21. *Case of the "Sample Sa.e"*

IF CHEMIST SMITH orders a new type of chemical totaling $50 or more, and there is no written memo of the sale, Smith must take a part payment or accept part of the order, to make the sale binding.

But, suppose that Smith orders "by sample," and keeps the sample in his possession, but receives none of the actual order, has there been an "acceptance and receipt" of part of the supplies so sold which will make the sale a binding one:

(1). When there is no agreement in reference to the sample?

(2). When the sample is considered as part of the order?

"No," in the first case.

"Yes," in the second.

"The receipt and acceptance by Smith of samples of the goods is held to be a compliance with the statute when the samples are considered and treated by both parties as a part of the order sold and as diminishing the quantity of it to that extent; otherwise taking of samples has no effect upon the validity of the contract," is a concise summary of the rule by the Maryland Court of Appeals, reported in 60 Atlantic 612.

22. *Case of Twice Paid Note*

"I PAID the Jones Company note today, two months before it was due," Chemist Smith declared.

"Did you get the note?" the bookkeeper demanded.

"No—they couldn't find it, but they're all right, and the manager said he'd mail it to me."

The Jones Company did not mail the note, however. The manager discounted it with the Electron Bank, got the money, left for parts inaccessible, and the bank sued Smith.

"But I paid that note once," the latter contended.

"Well, we know nothing about that; we're holders in due course, and you'll have to pay again," the bank retorted, and the Court ruled in favor of the bank in the case of Manley Carriage Co. vs. Fowler, B L. J. 6/17/419.

"It is undisputed that the bank received the note for value, and the burden was on the maker to show that the bank received notice of the alleged payment before the delivery of the note," said the Court.

23. *Case of Missouri Notice*

"WE WARRANT our bag sealer to be thus and so," the seller's catalog and the salesman's "selling line" agreed.

And Chemist Smith on the strength thereof ordered.

"Any notice of breach of warranty must be given to the seller within sixty days at the city of X," the sales contract provided.

The sealers arrived; some of them did not comply with the warranty. Smith notified the seller within sixty days, as required by the contract, but mailed the notice to the city of Y, where the seller's warehouse was located, and it was admitted that the notice was actually received by him at Y.

Then Smith sued for damages for breach of warranty.

"I was not notified as required by the contract," was the seller's defense.

"There is no merit in this contention. The notice was given, and the seller received it," was the reasoning of the Court in Emerson vs. Simpson, 217 S.W. 559.

War-Time Chemicals Peace-Time Applications

Booth 151

Check List of Glyco Products And the Industries which Use Them

PRODUCTS

Polyhydric Alcohol Esters
Polyhydric Alcohol Ether Esters
Cyclic Alcohol Esters
Emulsifying Agents
Plasticizers and Flexibilizers
Special Emulsions
Flameproofing and Waterproofing
Synthetic Resins, soluble
Synthetic Resins, insoluble
Wetting and Foaming Agents
Defoaming Agents
Synthetic Waxes
Preservatives
Deodorizing Agents

INDUSTRIES

Abrasives
Adhesives
Cements
Ceramics
Coatings
Cork
Leather
Lubrication
Metals
Oils
Paper
Pharmaceuticals
Pigments
Plastics
Polishes
Printing Inks
Rubber, Synthetic
Rubber
Soaps and Cleaners
Textiles
Wood

WHEN you visit the National Chemical Exposition at the Chicago Coliseum, November 15-19, be sure to make a point of calling at our booth No. 151. Many new chemicals on display for the first time may suggest answers to your present war-time problems, and ideas for future development. Chemists from our laboratories will be on hand to discuss these and other materials manufactured by us.

IF you are unable to attend the show, write now for your copy of our new 1945 catalogue. Here many new ideas, formulae, and complete information on a wide selection of synthetic materials will be presented for the first time. You may find the answer to your war-time problems, and at the same time discover new uses of our products with post-war applications. Let us hear from you today; we'll mail your copy of the 1945 edition of "Chemicals by Glyco," as soon as it is off the press.

CHEMICALS BY GLYCO

GLYCO PRODUCTS CO., Inc.

26 Court Street **Brooklyn 2, N. Y.**

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TENNESSEE CORPORATION

COPPER CARBONATE

COPPER SULPHATE

FERRIC SULPHATE

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TENNESSEE CORPORATION

Atlanta, Georgia Lockland, Ohio

A HEAVY DUTY *Mobile* BAGGER-

Handles open mouth cotton, burlap or multiwall paper bags of from 50 to 200 lbs. capacity. Has an adjustable sewing head and a low, fixed-height, slat conveyor.

A fast, dependable, general purpose machine for continuous operation in a production line or intermittent operation at any point in the plant. Write for full information.

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO, N. Y.

CANADIAN NEWS

by W. A. JORDAN

Penicillin Quotas Doubled

Quotas of penicillin made available a few months ago to Canadian hospitals for the treatment of civilians have been doubled recently, while at the same time the price has been reduced by twenty-five percent. According to E. T. Sterne, Chemicals Controller, by whose office allocations of penicillin are made, increased allotments are rendered possible because stocks made available for civilian use have not been taken up as quickly as was expected.

The reduction in price, from $6.00 to $4.50 per 100,000 units, has resulted from a decrease in production costs. The bulk of such penicillin as is allocated for limited civilian use is imported from the U. S. A., with virtually all the Canadian output still channelled to the armed forces.

Unofficially, it is understood that consideration is now being given to the installation of supplementary deep tank culture units in the two Government-owned, flask method, penicillin producers.

Chlorethane Production Cut

As a result of the changing demands of warfare the Department of Munitions and Supply has closed down the Defense Industries, Ltd., hexachlorethane unit in western Ontario. Most of the workers released have been absorbed by D.I.L.'s adjacent carbamite plant.

Thereby, Canada's hexachlorethane production is cut by about one-third, with total output now coming from D.I.L.'s Quebec facilities, which last year operated at over 200 percent of rated capacity.

New Rayon Plant

Courtaulds (Canada) Ltd., sole Canadian viscose rayon producer, plans the erection of a new manufacturing unit which will have a productive capacity of between 8 and 10 million pounds of rayon staple fibre annually. The new unit will be located at Cornwall, Ontario, adjacent to the present viscose plant which was established in 1925.

Construction work will be initiated as soon as building materials are available.

Lea Named C.I.C. Secretary

The Chemical Institute of Canada has appointed H. W. Lea, Director of the Wartime Bureau of Technical Personnel, as secretary-manager of the Institute.

Although it is anticipated that the Institute will eventually require a full-time secretary-manager, Mr. Lea will for the time being look after the business affairs of the Institute in addition to carrying his Bureau responsibilities.

Standard Chemical Changes Hands

Canadian interests, represented by E. P. Taylor and Col. W. E. Phillips, have purchased control of Standard Chemical Co., Ltd., from United Kingdom

E. P. Taylor

shareholders. Mr. Taylor has assumed the presidency of the company and Colonel Phillips has been elected a director.

Standard Chemical operates four of Canada's five hardwood distillation plants, two sawmills, and a Montreal refinery. The company's main products are methyl hydrate—estimated at slightly less than 400,000 gallons per annum—formaldehyde, grey acetate of lime, and charcoal.

A second report, considered reliable, but unconfirmable at press time, states that the Taylor interests have also purchased the Goderich Salt Co. for a reputed million dollars. Goderich, an outgrowth of the first commercial salt operations in the Dominion, is currently Canada's third-ranking producer of common salt.

Ayerst, McKenna Transfers

Transfers involving highly-placed personnel in both the research and sales departments of the company were announced recently by Ayerst, McKenna and Harrison, Ltd.

Under the new arrangement, W. Boyd O'Connor, director of sales, will go to New York as assistant general manager of Ayerst, McKenna and Harrison, Ltd. (United States). His work in Montreal will be taken over by E. C. Gregory, who becomes general sales manager.

Dr. Lyon P. Strean, head of the company's bacteriology department, has been made scientific director of the American company and will be headquartered in New York.

Canada Talc Builds

Canada Talc, Ltd., major Canadian producer of industrial talc, is building a new mill to replace the No. 1 and 2 mills now operating. The machinery is of the Raymond type, complete with dryers and evaporators. Total additional investment will approximate $75,000.

Most of the output of the new mill will be marketed in Canada, primarily to the roofing, rubber, and textile trades. The bulk of the Dominion's fine cosmetic talc, and fibrous material for the paint trade, is still imported from the U. S. A.

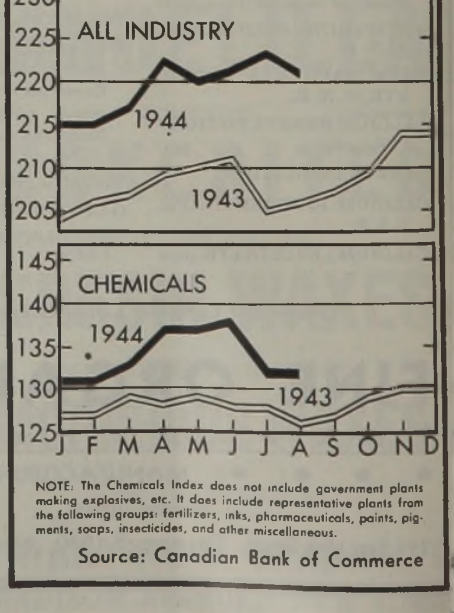
Toronto U. To Extend Chemical Facilities

The University of Toronto is at present appealing to its graduates and friends for support in an effort to raise some $5 million for postwar expansion in equipment and buildings.

Included in the University's plans, should the appeal be successful, is a new building for the Department of Chemical Engineering and an extension to the Department of Chemistry and to the Banting Institute. Such an allocation to chemical facilities alone is understood to be tentatively scheduled at more than a million dollars.

Personnel

W. M. McLEAN, former liaison officer between Canada and the United Kingdom, and the Washington office of the Rubber Administrator, has rejoined Dominion Rubber Co., Ltd., to undertake chemical market research for Naugatuck Chemicals Division of Dominion Rubber.



MARKETS IN REVIEW

Price Outlook for 1945
More Capacity Under Construction
Alcohol and Sugar for Drug Manufacturers
Some Supply Headaches Yielding
Electrolytic Chemicals Doing a Big Job
Gloomy Export Prognostications
Heavy Chemicals
Fine Chemicals
Coal Tar Products
Paint Materials

PRICES FOR CHEMICALS have been attended with more than usual stability, barring some minor changes in quotations for cinnamic alcohol (which advanced in price while the aldehyde declined), quicksilver, gum tragacanth, stearic acid, red oil, citronella and some other essential oils. Quicksilver slipped another $1 to $105.00 per flask; and while producers on the West Coast have no great surplus for sale, it is understood that Mexican metal has been offered here at low prices.

With the contracting period now approaching in heavy chemicals, a good deal of interest is being shown in contract prices for alkalies, acids, ammonia, chlorine, various metal derivatives and fertilizers which are likely to prevail over 1945. Chemicals generally could be expected to show the same price stability on lessened demand as they have during a period of unequalled war activity, and many believe that this will prove to be the case over 1945. On the other hand, it should be pointed out that if European hostilities cease before that time, there will be greater tonnages of many chemicals available for civilian consumption, and the competitive factor might assert itself as it did very recently in formaldehyde, paraformaldehyde and hexamine.

Construction of new facilities is still underway in the chemical industries despite growing indications of an approaching X-Day or VE-Day. The added manufacturing capacity is urgently required in such things as phthalic anhydride, penicillin, Freon 12 (dichlorodifluoromethane) and sulphuric acid. And more recently the carbon dioxide producers have asked the War Production Board for permission to construct facilities which will add 90,000 tons of CO_2 quarterly to current production.

Drug and pharmaceutical manufacturers have now been assured of upward adjustments in their alcohol quotas in order to meet the seasonal demands ahead for cough medicines and cold remedies. WPB evidently desires to avoid the criticism leveled upon it last season for its tardy action in upping alcohol allowances for this purpose. Alcohol for drug products will be increased 25 per cent effective Oct. 1, 1944, while the manufacturers of pharmaceutical and proprietary products will receive 125 per cent of their base period requirements. The makers of oral antiseptics and mouth washes will be granted 75 per cent of requirements instead of 60 per cent, and the producers of cosmetic and hair preparations 62½ per cent as against 50 per cent previously.

Contrary to most opinion, stocks of quinine are not regarded as "critical" by Washington authorities even though these have been drawn upon steadily for use along with quinacrine in the treatment of malaria. We have been bringing in cinchona bark from South America as a result of the Foreign Economic Administration's program to increase the supply of this material, but the quality is below that of the cinchona formerly obtained from Java, now occupied by the Japanese. Totaquine is being allocated for civilian use, but quinine is not being made available for oral administration by non-combatants.

Toward the close of September it was learned officially that penicillin production had attained the new record figure of 200 billion Oxford units per month, and some manufacturers have been able to ship it out in carload quantities. This is an amazing accomplishment—even for the chemical industry—when we consider that the new antibacterial was in the test tube and petri dish stage when we entered the war. Those who plan to take a part in the distribution of penicillin to the civilian market through trade channels, an event which will be realized when currently projected additional facilities are completed, will be interested in shipping practices which have been adopted for the drug.

One large manufacturer packs 15 billion units of penicillin in a refrigerator box car—150,000 vials of 100,000 units each. There are 300 vials to a case, and 500 cases to the car, and during shipment penicillin has to be kept below 50 deg. F. to safeguard its potency.

The synthetic resins manufacturer is probably finding the raw materials situation improved as far as cresols, phenol and formaldehyde are concerned. There are also some war-born bottlenecks in other essentials which remain with us. Phthalic anhydride is required not only for synthetic coating compounds, but for esters, dyes, intermediates, insect repellents, drugs and oil-demulsifying agents. Construction is underway for expanding phthalic capacity materially, and one of the most recent projects, that of the Koppers Co. at Kobuta, Pa., will add 7 million lbs. annually to the supply.

Other phthalic extensions are being constructed for the Pittsburgh Coke & Iron Co., by the National Aniline Division, Allied Chemical & Dye Corp., and by Standard Oil of California. A new phthalic plant completed some time ago by the Monsanto Chemical Co. at Everett, Mass., is understood to be in production but not to full capacity. When all new plants and extensions are finished it is likely that phthalic anhydride will attain an output total of some 165 million lbs. a year. Current production is unofficially estimated at 128 million lbs., although some in the industry believe this to be a bit high.

In contrast, another vital alkyd resin material, glycerin, still appears to be in good supply even though Army and Lend-Lease requirements recently have become larger. Current production is estimated at about 200 million lbs., which is far in excess of normal peacetime totals. Early in September, it was reported that an order had been placed for 1,600,000 lbs. of glycerin for Lend-Lease shipment, September-October delivery. Since then, additional large purchases have been reported by Army authorities on the east and west coasts. And while all essential domestic demands are probably being met, it is said that stocks in the hands of the Commodity Credit Corporation have been reduced materially.

Chemical production generally is believed to have been stepped up during September following the somewhat lessened output pace earlier this year as compared with 1943. The industrial chemical data for July issued jointly by the WPB and the Census Bureau showed smaller outputs during that month for synthetic ammonia, bleaching powder, natural methanol, nitric acid, refined sodium bicarbonate, and certain paint materials, as against last year. Seasonal considerations, manpower, and military cutbacks were probably all factors.

Under increased industrial and war plant demands, however, synthetic ammonia production at private plants has

(*Continued on page 658*)

Salt Production in 1943

Increased war demands in 1943 raised total salt sold or used by producers in the United States to 15,214,152 short tons valued at $43,878,266 compared with 13,693,284 tons valued at $38,144,234 in 1942, according to the Bureau of Mines, United States Department of the Interior, which has just completed its canvass of the salt industry. All three types of salt shared in the gain of 11 per cent in the total salt tonnage. Compared with 1942, increases were: 16 per cent for rock salt, 14 for evaporated salt, and 8 for brine. Comparisons for the three types of salt produced, for 1939-43, are shown in the following graph.

Acute shortage and large turnover of labor hampered operations in many salt fields and plants and reduced output for some of them. Some of the smaller companies closed for the duration of the war or until the labor situation improves. No strikes were reported.

Uses

Material success in the war owes much to our country's natural supply of salt and our well-established salt industry and chemical plants. In 1943, for soda ash alone, 7,157,646 tons of salt were used; 2,656,293 tons for chlorine; 858,405 tons for livestock; 835,408 tons for meat packing; 665,525 tons for table and other household uses; 508,050 tons for other chemicals; and 374,478 tons for water treatment. These large uses consume 13 of the 15 million tons produced.

Other uses, although they consume relatively small quantities of salt, play an important part in many industries. Even before salt is divided into its chemical elements sodium and chlorine, it has wide utility, and after separation each part has a long list of uses. The accompanying table gives only the broad uses. "Other uses" includes several applications that are expanding. More than 66,000 tons of salt, exclusive of chlorine and other salt derivatives, were used in the manufacture of synthetic rubber and rubberlike materials. This is now an established growing industry that is here to stay after the war.

Common salt is the only raw material from which chlorine is produced. To make one short ton of chlorine requires more than 3,000 pounds of salt. As increased quantities of chlorine for direct and indirect military use were needed, more rigid control of civilian supplies was exerted. Pulp and paper manufacture and rayon and other fabrics suffered curtailment.

Salt sold or used by producers in the United States, 1942-43, by classes and uses, in short tons

Use	1942 Evaporated salt	1942 Rock salt	1942 Salt in brine	1943 Evaporated salt	1943 Rock Salt	1943 Salt in brine
Chlorine, bleaches, chlorates, etc.	843,970	704,227	654,686	1,138,691	770,620	1,801,899
Soda ash	218	20	6,670,621	2	110	6,102,617
Dyes and organic chemicals	78,752	44,485	.....	54,772	78,529	.....
Soap (precipitant)	28,118	13,360	.....	37,717	15,974	.....
Other chemicals	60,849	254,198	[1]	131,674	376,376	[1]
Textile processing	41,535	77,189	.....	39,705	81,954	.....
Hides and leather	118,976	182,650	.....	103,728	191,014	.....
Meat packing	426,976	322,938	.....	459,593	375,815	.....
Fish curing	28,908	32,007	.....	32,724	53,463	.....
Butter, cheese, and other dairy products	94,050	6,642	.....	108,740	9,920	.....
Canning and preserving	135,358	19,223	.....	137,532	13,149	.....
Other food processing	194,714	17,857	.....	205,548	16,841	.....
Refrigeration	32,536	153,010	.....	31,841	179,152	.....
Livestock	556,885	246,340	.....	625,675	232,730	.....
Highways, railroads, dust and ice control	13,414	197,751	[1]	12,912	283,131	.....
Table and other household	460,020	224,764	.....	480,682	184,843	.....
Water treatment	171,433	203,757	[1]	174,460	200,018	[1]
Agriculture	81,700	16,968	.....	46,127	16,456	.....
Metallurgy	31,990	33,347	.....	43,794	31,099	.....
Other uses[2]	117,430	51,554	47,858	127,982	147,945	56,599
	3,517,832	2,802,287	7,373,165	3,993,899	3,259,138	7,961,115

[1] Included under "Other uses."
[2] Includes exports where use is not specified.

Methods of Manufacture

The salt was obtained from natural brine wells and ponds, by forcing water into salt beds and withdrawing it as brine, from sea water, and from bedded deposits that are mined. Salt is evaporated by several different methods given in the following table.

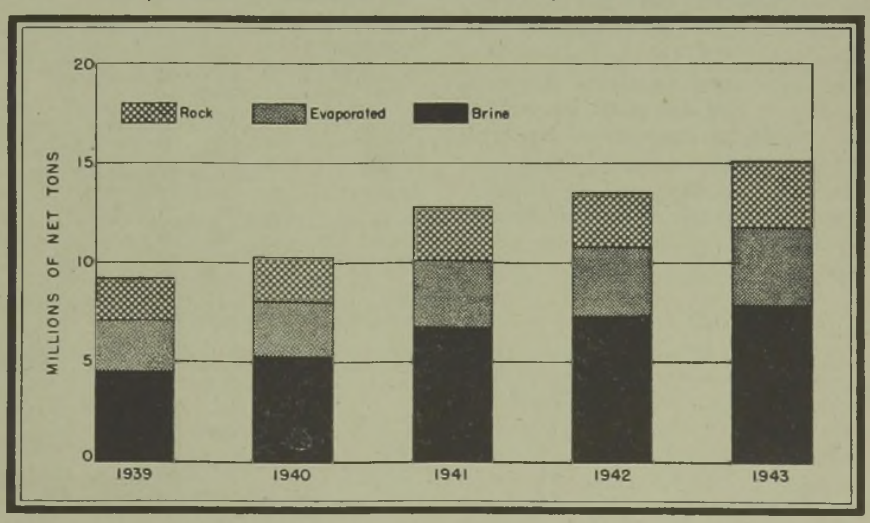
In 1943 salt was produced in 83 plants of 57 companies, operating in 13 States and Puerto Rico, compared with 86 plants of 64 companies in 14 States and Puerto Rico in 1942. The order of magnitude of salt production by the leading States continued as follows: Michigan, New York, Ohio, Louisiana, Texas, Kansas, and California. The Middle West (Kansas, Michigan, and Ohio) supplied 53 per cent in 1943 compared with 55 per cent in 1942.

Salt production in the United States, 1935-39 (average) and 1941-43, in short tons

	1935-39 (average)	1941	1942	1943
Sold or used by producers:				
Manufactured (evaporated)	2,507,374	3,330,106	3,517,823	3,993,899
In brine	4,205,587	6,771,436	7,373,165	7,961,115
Rock salt	1,947,254	2,619,087	2,802,287	3,259,138
Total quantity	8,660,215	12,720,629	13,693,284	15,214,152
Total value[1]	$23,405,612	$33,620,376	$38,144,234	$43,878,266
Average value[1]	$2.70	$2.64	$2.79	$2.88

[1] Values are f.o.b. mine or refinery and do not include cost of cooperage or containers.

Salt production in the United States, 1939-43, by method of manufacture



Salt sold or used by producers in the United States, 1942-43, by methods of manufacture

Method of manufacture	1942 Short tons	1942 Value	1943 Short tons	1943 Value
Evaporated:				
Bulk:				
Open pans or grainers	500,758	$4,607,104	532,747	$5,083,816
Vacuum pans	2,234,633	13,916,501	2,593,316	16,509,975
Solar	542,087	2,238,604	598,772	2,538,341
Pressed blocks	240,354	2,228,062	269,064	2,598,873
Rock:				
Bulk	2,734,797	9,054,447	3,181,226	10,512,857
Pressed blocks	67,490	569,014	77,912	668,027
Salt in brine (sold or used as such)	7,373,165	5,530,502	7,961,115	5,966,377
	13,693,284	38,144,234	15,214,152	43,878,266

Shortage of Barite

Barite production in 1943, though hampered by manpower shortages, reached 429,298 short tons compared with 449,873 in 1942, according to the Bureau of Mines, United States Department of the Interior. Crude barite sold or used by producers amounted to 420,343 tons valued at $2,796,776 at mine shipping point, compared with 429,484 tons valued at $2,673,002 in 1942. Sales of barium chemicals were 73,040 short tons in 1943 valued at $8,092,858, compared with 64,459 tons valued at $6,993,695 in 1942. Lithopone sold or used by producers was 135,723 tons valued at $10,745,305 in 1943, compared with 137,320 tons valued at $10,828,924 in 1942.

Crude Barite

The most severe shortage of barite since World War I developed in the last few months of 1943, owing in part to increased demands for barite in well drilling, lithopone, chemicals, glass, and fillers, and in part to the labor shortage. In turn the labor shortage was caused by the requirements of Selective Service and by low wages, originally the result of low barite prices. Producers and Government agencies collaborated in the latter part of 1943 and the early months of 1944 in working out adjustments in wages and prices that would result in increased production.

Both production and consumption of crude barite were well maintained during the first half of 1943. Demand for barite in well drilling had slowed considerably in 1942 but increased in each quarter of 1943. Consumption of barite in lithopone, barium chemicals, glass, and fillers fluctuated very little during the first three quarters of 1943. On the whole, production met demand during the first three quarters of 1943, but in the fourth quarter a variety of circumstances converged to create a serious shortage. Factors contributing to the deficit were the manpower shortage, low wages, low prices, depletion of deposits, and increased demand in nearly all uses.

1944 Outlook

Growing shortages marked every phase of the barite industry during the first 6 months of 1944 except ground bleached barite for paint, rubber, and other filler purposes, according to the Bureau of Mines, United States Department of the Interior. Production of ground barite for oil well drilling, although about twice as great as in the same period of 1943, was insufficient to meet demands for drilling in high-pressure fields, and grinders reported considerable backlogs, of orders. Decreased production of barite in Tennessee and Georgia for chemicals, lithopone, and glass use slowed production of these essential commodities and cut heavily into consumers' stocks.

Fluorspar Production Down

Production of fluorspar in July declined for the second consecutive month, was 5 percent less than in June, and was the smallest since January 1944, but it was virtually in balance with consumption, according to the Bureau of Mines, United States Department of the Interior. However, shipments from mines in July were 2 percent greater than in June. Consumption in July was 1 percent less than in June. The flotation mill of Kramer Mines, Inc., near Salida, Colo., was destroyed by fire on July 6.

Production of finished fluorspar of all grades was 33,082 short tons in July, a decrease of 5 percent from June. Shipments of fluorspar were 31,068 tons, a gain of 2 percent over June. Shipments from Illinois and Kentucky (22,538 tons) were 0.6 percent more than in June, whereas those from the Western States (9,070 tons) were 6 percent greater. Of the shipments from Illinois and Kentucky in July, 6,926 tons were shipped by barge.

Consumption of fluorspar was 32,957 tons in July, a decrease of 1 percent from June.

Stocks of fluorspar at consumers' plants (99,785 tons) on July 31 were 8 percent less than on June 30 and were the smallest since September 1943. Stocks of finished fluorspar at mines (30,188 tons) on July 31 were 5 percent more than on June 30. Stocks at mines on July 31, however, included 9,717 tons of fluxing-gravel fluorspar in government stockpile at the Gila (N. Mex.) mill of Metals Reserve Co., compared with 8,121 tons on June 30. The Bureau of Mines is not at liberty to reveal the total amount of fluorspar held in

Chemicals: United States Production, Consumption, and Stocks, July 1944

Chemical and Basis	Units	July (Preliminary) Production	July (Preliminary) Consumption in producing plants	July (Preliminary) Stocks at producing plants, end of month	June Production	June Consumption in producing plants	June Stocks at producing plants, end of month
Acetylene:							
For use in chemical synthesis	M cu. ft.	(1)	(1)	(1)	322,750	80,055	10,955
For commercial purposes	M cu. ft.	(1)			129,715		
Synthetic anhydrous ammonia (100% NH_3)	Short tons	42,927	35,492	5,614	40,071	31,983	2,488
Bleaching powder (35%-37% avail. (Cl_2))	M pounds	3,093	117	1,033	[2]1,115	[2]161	[2]790
Calcium Acetate (80% $Ca(AsO_4)_2$)	M pounds	602	(3)	240	888	(3)	265
Calcium arsenate (100% $Ca_3(AsO_4)_2$)	M pounds	8,228	(3)	12,081	7,401	(3)	7,965
Calcium carbide (100% CaC_2)	Short tons	(1)	(4)	(1)	63,043	(4)	29,643
Calcium hypochlorite (true) (70% avail. Cl_2)	M pounds	1,091	(3)	589	1,052	(3)	508
Calcium phosphate — monobasic (100% $aH_4(PO_4)_2$	M pounds	4,472	(3)	5,846	4,165	(3)	5,411
Carbon dioxide:							
Liquid and gas (100% CO_2)	M pounds	(1)	(1)	(1)	31,556	2,662	1,252
Solid (dry ice) (100% CO_2)	M pounds	(1)	(1)	(1)	[3]64,759	2,304	14,697
Chlorine	Short tons	106,657	57,998	6,028	[3]104,041	57,253	6,414
Chrome green (C.P.)	M pounds	413	62	971	565	55	1,097
Hydrochloric acid (100% HCl)	Short tons	31,639	18,108	3,117	30,667	18,511	2,533
Hydrogen	Millions of cubic feet	(1)	(1)	(4)	1,866	1,635	(4)
Lead arsenate (acid and basic)	M pounds	(1)	(1)	(1)	6,573	337	3,934
Lead oxide — red (100% Pb_3O_4)	M pounds	7,490	301	5,763	3,413	338	5,998
Methanol (natural) (80% CH_3OH)	Gallons	314,769	(4)	286,005	341,003	(4)	330,752
Methanol (synthetic) (100% CH_3OH)	M gallons	5,838	(3)	5,496	6,563	(3)	6,834
Molybdate orange (C.P.)	Pounds	122,525	3,760	166,838	95,138	1,027	169,672
Nitric acid (100% HNO_3)	Short tons	38,974	34,112	6,795	39,275	[2]34,898	[2]6,555
Nitrous oxide (100% N_2O)	M gallons						
	S. T. P.	(1)	...	(1)	10,223	...	3,264
Oxygen	M cu.ft.	(1)	(1)	(3)	1,535,241	95,944	(3)
Phosphoric acid (50% H_3PO_4)	Short tons	57,219	51,795	14,383	[2]55,531	[2]50,743	14,764
Potassium bichromate and chromate (100%)	M pounds	506	(3)	274	603	(3)	346
Potassium chloride (100% KCl)	Short tons	(10)	(10)	(10)	(10)	(10)	(10)

Potassium hydroxide (caustic potash) (100% KOH)	Short tons	3,485	625	1,775	3,745	609	1,931
Soda ash (commercial sodium carbonate):							
Ammonia soda process—							
Total wet and dry[5] (98%-100% Na_2CO_3)	Short tons	373,921	...	...	371,754	...	...
Finished light (98%-100% Na_2CO_3)[6]	Short tons	201,828	49,641	32,119	202,806	43,878	26,377
Finished dense (98%-100% Na_2CO_3)	Short tons	121,159	2,354	9,618	115,940	2,763	9,582
Natural[7]	Short tons	15,032	(3)	2,221	14,711	....	3,187
Sodium bicarbonate (refined) (100% $NaHCO_3$)	Short tons	11,803	(3)	5,361	12,162	(3)	5,573
Sodium bichromate and chromate (100%)	Short tons	6,629	(3)	1,216	6,690	(3)	1,040
Sodium hydroxide, liquid:							
Electrolytic process (100% NaOH)	Short tons	103,433	23,097	37,760	100,747	23,451	34,115
Lime-soda process (100% NaOH)	Short tons	58,113	(3)	12,886	54,536	(3)	11,577
Sodium phosphate:							
Monobasic (100% NaH_2PO_4)	M pounds	(1)	(3)	(1)	2,422	(3)	533
Dibasic (100% Na_2HPO_4)	Short tons	(1)	(3)	(1)	4,600	(3)	1,018
Tribasic (100% Na_3PO_4)	Short tons	(1)	(1)	(1)	6,337	187	2,153
Sodium silicate (water glass):							
Liquid (40° Baumé)	Short tons	(1)	(4)	(1)	90,154	(4)	109,101
Solid (all forms combined)	Short tons	(1)	(1)	(1)	9,247	1,656	8,052
Sodium sulfate:							
Glauber's salt and crude salt cake[7]	Short tons	(1)	(1)	(1)	66,625	5,703	79,800
Anhydrous (refined) (100% Na_2SO_4)	Short tons	(1)	(3)	(1)	5,228	(3)	6,653
Sulfur dioxide (100% SO_2)	M pounds	(1)	(1)	(1)	6,448	3,209	3,042
Sulfuric acid:[7]							
Chamber process (100% H_2SO_4)	Short tons	249,775	....	218,811	236,879	....	232,213
Contact process[8] (100% H_2SO_4)	Short tons	499,704			485,121		
Net contact process[9] (100% H_2SO_4)	Short tons	443,008	....	....	437,959	....	....
White lead (C.P.), basic lead carbonate	Short tons	4,983	2,424	5,955	7,019	2,955	7,300
White lead (C.P.), basic lead sulfate	Short tons	918	....	1,139	840	....	1,481
Zinc yellow (C.P.)	M pounds	2,334	259	1,156	2,444	201	1,269

[1] Not yet available.
[2] Revised. Revised figures on bleaching powder prior to June 1944 will be shown in a subsequent issue of this release.
[3] Data cannot be published without disclosing the operations of individual establishments.
[4] Not available; see "Facts for Industry," Series 6-1-1.
[5] Total wet and dry production including quantities diverted for manufacture of caustic soda and sodium bicarbonate and quantities processed to finished light and finished dense soda ash. For detailed discussion of soda ash statistics, see "Facts for Industry," Series 6-1-1.
[6] Not including quantities converted to finished dense soda ash.
[7] Data on this material were collected in cooperation with the Bureau of Mines, U. S. Department of the Interior.
[8] Includes sulfuric acid of oleum grades.
[9] Excludes spent acid. For detailed explanation, see "Facts for Industry," Series 6-1-1.
[10] Data collected and compiled by the Bureau of Mines, U. S. Department of the Interior, beginning May 1944.

the Government stockpile, nor can it make public the quantity of fluorspar imported into the United States.

Because of the reasonably satisfactory supply and demand relationship of metallurgical-grade fluorspar, the War Production Board as of August 12 discontinued the restricted shipping plan which had been in effect since January 1, 1943. Rescinding of this restrictive, which was designed to provide for the equitable distribution of the available supply of metallurgical-grade fluorspar, permits the industry to resume its normal procedure in the sale and purchase of fluorspar.

Zinc Oxide Stocks Increase

Stocks of zinc oxide increased slightly in June to continue the steady trend which has been upward since the first of the year. Inventories of slab zinc held at producers' plants gained 3 percent to continue the upward course that was momentarily halted by a slight decline in May. Consumers' stocks of slab zinc, on the other hand, declined 4 percent. Producers' inventories of zinc dust continued to drop and on June 30 were lower than at any time in 1943 or 1944. Production of zinc dust advanced slightly to a point higher than any month since July 1943, but the output of zinc oxide and slab zinc was less, production of the latter being at the lowest level since June 1941. Shipments of zinc oxide and zinc dust increased, the former to the highest level yet reached in 1944, but total slab zinc shipments showed a marked decline of 19 percent.

Secondary slab zinc production at 8 operating plants in June (secondary smelters only) amounted to 1,879 tons including 555 tons of intermediate grade, 228 tons of brass special, and 1,096 tons of prime western. Production of brass special continued to increase, but output of the other two grades was less.

In addition to stocks held at producers' and consumers' plants, 9,781 tons of slab zinc was in transit to consumers (including zinc in transit for redistillation to a higher grade).

Potash Deliveries Set Record

New high records for deliveries of potash were made by the American potash industry during the fiscal year of June 1943 to May 1944, according to data released by the American Potash Institute. Deliveries of potash in the United States, Canada, Cuba, Puerto Rico, and Hawaii during the year amounted to 741,940 short tons K_2O, an increase of 7.5% over the preceding year. Potash for agricultural purposes totaled 654,869 tons K_2O or an increase of 5.1%. The chemical industry took 87,071 tons K_2O, an increase of

Table 1.—Producers' stocks, production, and shipments of zinc oxide (lead-free and leaded, by grades) in June, 1944, and the total (all oxide) January-June, 1944, in short tons

		Stocks at beginning of month	Production during the month	Shipments during the month	Stocks at end of month
Total all oxide:	January	[1]8,149	17,547	17,396	[1]8,300
	February	[1]8,300	17,134	15,798	[1]9,636
	March	[1]9,636	18,684	[1]16,820	[1]11,500
	April	11,500	18,393	17,381	12,512
	May	12,512	17,928	16,959	13,481
	June	13,481	17,614	17,455	13,640
	Total	.....	107,300	101,809	.....
	Monthly average	.....	17,883	16,968	.....
June:					
Lead-free:					
American process—Ore & scrap residues[2]		[1]9,125	9,618	8,957	[1]9,786
French process—Slab zinc, remelt, & scrap		727	1,921	2,055	593
Other processes—Dust residues & scrap		1,112	1,151	1,274	989
Total		10,964	12,690	12,286	11,368
Leaded:					
5 per cent lead or less		121	161	248	34
5-35 per cent lead		1,782	4,025	4,154	1,653
Over 35 per cent lead		614	738	767	585
Total		2,517	4,924	5,169	2,272
Total—all oxide		13,481	17,614	17,455	13,640

[1] Adjusted.
[2] Includes ore residues.
[3] Includes small tonnage of French process oxide not separable.

Table 2.—Raw materials used in the production of zinc oxide in June, 1944, in short tons[1]

Material used	Stocks May 13 Zn content	Received during June Zn content	Consumed during June Gross weight	Consumed during June Zinc content	Stocks June 30 Zn content
Zinc ore	40,546	7,086	26,117	8,045	39,587
Slab zinc	970	1,848	1,578	1,578	1,240
Ore residues	4,222	3,799	5,182	3,279	4,742
Total	45,738	12,733	.....	12,902	45,569

[1] Excludes zinc dust residues, secondary residues, scrap zinc and remelt zinc.

29.0% over the previous year.

Deliveries in the United States for agricultural purposes in 1943-44 were 593,346 tons K_2O, an increase of 4.7% over last year. Most of the increase occurred in the East North Central, New England, Middle Atlantic, and South Atlantic States with a smaller increase in the Far West. The West North Central States took exactly the same amounts in both years, while there was a small decline in deliveries in the South Central States.

Deliveries in Canada totaled 39,698 tons K_2O, an increase of 8.2% over the past year. Potash delivered to Cuba declined 47.2% to 1,595 tons K_2O while Puerto Rico took 16,030 tons K_2O, an increase of 282.0%. Deliveries to Hawaii declined to 4,200 tons K_2O or 64.1% under last year.

The high-grade muriate of potash containing 60% or more K_2O was by far the most popular material, constituting 76.8% of all potash delivered. The 50% muriate was 7.2%, manure salts 8.6%, and sulphate of potash and sulphate of potash magnesia 7.4% of total K_2O delivered.

Minerals in 1943

The mineral industry again broke all previous records for total production in 1943 as the value of output soared to $8,056,000,000. The new peak was 6 per cent above the previous high of $7,575,700,000 in 1942 and 15 per cent above the prewar record of $6,981,340,000 established in 1920. The rise in value for 1943 resulted from a 2.3 per cent advance in the physical volume of production, as measured by Federal Reserve Board indices, and a 4.5 per cent increase in the unit sales realizations of mineral producers.

As in 1942, the mining industry operated under severe handicaps. Scarcity of manpower was the chief hindrance during 1943, but other factors—such as transportation controls, shortage of equipment, increasing costs, shut-down orders for gold and silver mines, and lack of adequate price incentive—also were contributing factors.

Some mineral commodities, such as gold, silver, and certain building materials, have been adversely affected by war conditions so that their production has not profited from the general economic improvement. Government controls have restrained civilian, and in many instances, military consumption of most of the other minerals, and these restraints have been reflected in mining activity. Shortage of manpower, exhaustion or lack of resources, inadequate production capacity, and scarcity of mining equipment have prevented the domestic industry from meeting all war needs of some minerals, and the deficiencies have been made up by abnormally large importations. Copper, lead and zinc are typical examples of this development.

The production of many mineral commodities established new records in 1943, although the achievement in this regard is less spectacular than that of 1942. The light metals again made outstanding advances. Magnesium output almost quadrupled; bauxite production increased 140 per cent and that of aluminum 77 per cent. Mercury production advanced again, but the 1943 output was much less than the record of 1877. Sulfur and feldspar declined, but salt and potash set records.

Aromatic Hydrocarbons Allotment Cut

Civilian allotments of benzene, toluene and xylene have been drastically cut as a result of increased military requirements for use of these chemicals in aviation gasoline and TNT, the War Production Board has reported. This situation is expected to prevail until April 1, 1945, WPB officials said.

Benzene is used to raise the octane rating of aviation gasoline. Smaller quantities of benzene will be available for use in lacquer thinners and aniline dyes. While applications requesting allocations of benzene for essential medicinals continue to be granted 100 per cent, WPB is denying all applications for benzene to be used in paint and varnish removers and brush cleaners.

Expanded ordnance requirements for toluene in the production of TNT have brought corresponding cuts in civilian allotments. Toluene is used in lacquer thinners, medicinals, dye intermediates and petroleum additives. WPB may reduce the amounts of toluene for the manufacture of aviation gasoline, thus making greater quantities of this chemical available for production of explosives, officials said.

Xylene is also required in increased quantities for the aviation gasoline program. Corresponding cuts have been made in the amounts of xylene allocated to the protective coating industry. WPB is now taking steps to increase the output of xylene produced from petroleum.

Chemicals: U. S. Production, Consumption and Stocks, January-June 1944

Item	*January*	*February*	*March*	*April*	*May*	*June*
Ammonium Sulphate[1] (Short Tons)						
Production	66,544	64,717	69,756	67,591	69,760	66,553
Consumption	218	187	68	4	0	0
Stocks	26,189	25,678	22,461	26,649	45,258	66,352
Borax, refined ($Na_2B_4O_7.10H_2O$ content) (Short Tons)						
Production	17,738	16,773	17,623	16,755	18,501	17,239
Consumption	....	....	....	....	....	....
Stocks	10,088	10,577	10,548	11,652	11,263	12,734
Cobalt, Compounds[2] (Pounds)						
Production	191,866	163,763	216,705	198,042	247,493	243,501
Consumption	1,700	4,008	4,250	3,951	....	264
Stocks	304,334	266,907	303,973	248,984	356,143	361,509
Cobalt driers[3] (Pounds)						
Production	550,439	566,586	517,018	594,611	598,997	517,858
Consumption	20,801	156,407	23,247	19,712	4,638	1,495
Stocks	339,278	366,701	319,636	335,728	330,840	326,894
Copper Sulphate (25% copper content) (Short Tons)						
Production	7,982	7,939	8,773	8,494	9,013	8,221
Consumption	1,058	831	705	771	1,284	979
Stocks	10,765	9,951	12,396	8,468	6,959	6,858
Sulphur (Long Tons)						
Production	179,226	186,568	229,699	271,903	278,751	280,545
Consumption	....	....	....	....	....	....
Stocks[4]	4,360,018	4,302,437	4,251,744	4,244,827	3,541,910	3,511,255
Zinc Oxide (lead free) (Short Tons)						
Production	12,824	12,675	13,675	13,322	12,921	12,690
Consumption	....	....	....	....	....	....
Stocks	5,484	7,510	9,344	10,093	10,964	11,363
Zinc Oxide (leaded) (Short Tons)						
Production	4,723	4,459	5,009	5,071	5,007	4,924
Consumption	....	....	....	....	....	....
Stocks	2,533	2,136	2,138	2,419	2,517	2,272
Zinc Chloride (dry weight) (Short Tons)						
Production	885	935	1,947	1,750	1,958	1,688
Consumption	189	557	1,131	1,095	1,379	1,102
Stocks	1,655	1,306	1,373	1,313	1,285	1,209
Zinc Ammonium Chloride (dry weight) (Short Tons)						
Production	683	755	603	756	887	666
Consumption	....	....	....	....	....	....
Stocks	830	713	526	522	703	691
Zinc sulphate (dry weight) (Short Tons)						
Production	2,939	845	850	752	870	667
Consumption	....	....	....	....	....	....
Stocks	1,690	948	786	640	722	758
Zinc chemicals miscellaneous[5] (Short Tons)						
Production	206	173	192	121	162	257
Consumption	....	....	....	....	....	....
Stocks	146	183	198	238	197	239

[1] Does not include synthetic ammonium sulfate the production of which is reported to the Bureau of the Census. Data for synthetic ammonium sulphate cannot be published.

[2] Includes oxide, hydrate and salts. Cobalt content of production: January 46,111 pounds; February 44,803 pounds; March 41,149 pounds; April 44,315 pounds; May 38,775 pounds; June 57,614 pounds.

[3] Cobalt content of production: January 31,274 pounds; February 33,092 pounds; March 29,705 pounds; April 35,277 pounds; May 39,525 pounds; June 26,584 pounds.

[4] Stocks at mine, in transit, or at warehouse.

[5] Includes zinc carbonate, chromated zinc chloride, zinc cyanide, zinc peroxide, zinc sulfocarbolate, etc.

(Continued from page 650)

shown a good-sized expansion, and it is not improbable that the rate will be increased even further in view of the Government decision to suspend shipments of NH_3 as well as of HNO_3 to fertilizer manufacturing plants. The July data show that anhydrous ammonia was being turned out by the industry at an annual rate of 515,124 short tons, a figure which excludes the production of Ordnance plants. What part of this will be available for nitrogen fertilizer compounds and solutions, and what percentage will find its way into refrigeration and other vital industrial uses cannot be determined.

At any rate, it will be necessary to continue the importation of natural Chilean nitrate to make up the nitrogen deficit for agricultural purposes. The Chilean representatives consequently are arranging for the importation of 850,000 tons (bulk) during 1944-1945 as compared with 650,000 tons during 1943-1944.

Electrolytic processes are playing one of the major roles in this war judging from the unrelieved heavy demand for chlorine, sodium hydroxide and metallic sodium. The situation in the latter has become exceedingly tight, and the expanded output of tetra-ethyl lead and electrolytic chemical producers evidently has yet to satisfy all demands. With the military services requiring larger quantities, the Federal authorities have been forced to curtail use of the metal in sodium cyanide manufacture by 15 per cent; for ethyl acetoacetate 20 per cent; for tetrazine dyes, 50 per cent, and for indigo manufacture, 50 per cent.

The immediate effect of the sodium order may not be felt by the dye manufacturers as this industry is believed to have a fair-sized inventory of finished and intermediate products on hand. Generally, however, it has been found necessary to reduce inventories of metallic sodium in order to supply the demand. Supplies of potassium-sodium ferricyanide are not sufficient for non-military uses. The double salt has been used owing to the critical shortage in potassium ferricyanide. The output of sodium hydroxide and its co-product chlorine in electrolytic processes has been pushed to higher levels, and the July production of 106,657 tons by private plants was the largest for any month with the single exception of October, 1943.

The continued tight position in chlorine has made it necessary for certain lines of industry to lean more heavily on other materials for bleaching purposes. Bleaching powder, for example, has been one of the active market features, and its position has been further strengthened by a declining production trend. July output amounted to 3,093,000 lbs., compared with

[illegible] in July, 1943. Many offerings of bleach have been listed among the recent chemical surpluses published by the Defense Supplies Corporation, and trade interests point out that a good deal of this material is low in chlorine content. Some of the surplus bleach runs as low as 20 per cent in available chlorine, and much of it is also high in moisture content.

The chemical export outlook on the whole is not considered encouraging in the light of recent developments, and hopes which were entertained sometime ago for large-scale resumption of shipments to Europe, the Far East and Latin America after final victory are undergoing modification. Not all of the pessimism, probably, is warranted. The shipment of alkalies and pharmaceuticals to Argentina faces curtailment as the result of new restrictive measures against that nation taken by the Department of State, the War Shipping Administration, and the Foreign Economic Administration; but the break in commercial relations with Argentina should not outlast the war.

Offerings of acetic acid to buyers in Iran had to be turned down, according to an exporter, because the purchase of this acid has to be confined to the Canadian market in accordance with a ruling

(Continued on page 660)

(*Continued from page 658*)

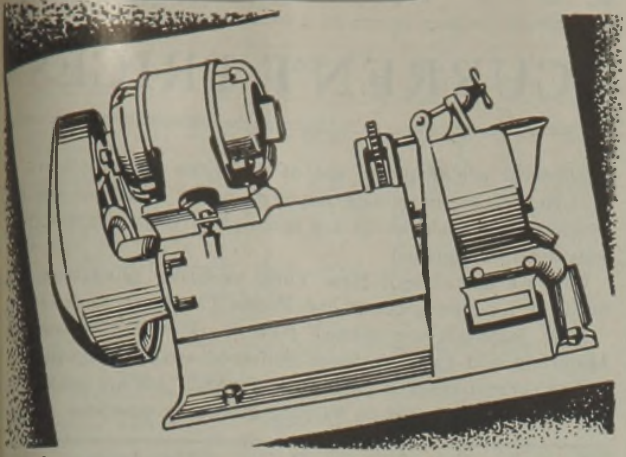
in Iran. In other quarters it is contended that FEA is rejecting license applications for the export of copper sulphate to certain markets owing to the fact that the buyers are being served by British manufacturers. Similar complaints are heard regarding export business in other chemicals.

Heavy Chemicals. Prolongation of the European war into 1945 as forecast by Allied authorities may defer industrial transition programs and resumption of heavy chemical shipments to civilian consumers on a large scale. The movement of caustic soda, soda ash, anhydrous ammonia, sulphuric acid, chlorine and potassium derivatives to war industries continues on a broad wartime basis. It is reported without confirmation that contracts have been offered to alkali consumers covering 1945 shipments at current prices and without curtailment of requirements. Leading producers of oxalic acid have sold their production to the end of the year, and all potash compounds appear strong with the bulk of permanganate supplies going to military uses. A tight situation continues to prevail, as it has for many months, in chromic acid and other chrome chemicals. The needs of the leather, textile and metallurgical industries in these items are still being filled. Calcium chloride, which has been taken in greater quantities for dust control this year, has also had its stock position adversely affected by manpower shortages, although producers expect to be able to fill last quarter orders.

Fine Chemicals. Menthol, synthetic refined camphor, sulfa compounds, alcohol and other essentials for the drug and pharmaceutical lines have led in activity. The lanolin control order was modified recently so that authorization to buy or use the product for drug use is no longer necessary. It is understood that the output of quinacrine or atabrine is now sufficient to meet all demands, and prospects are for an increase in the stocks at the end of the current year. The sulfa compounds are likewise adequate for all demands, and the chemical industry has brought producing capacity in the sulfonamides up to 10 million lbs. annually. Production by the industry in 1943 was about 9 million lbs. Some quinine is being obtained from Latin American bark, but a large percentage of this bark is being processed into totaquine, used in the preparation of liquid antimalarials, and for the manufacture of tablets, pills, capsules.

Coal Tar Products. Drastic curtailment of benzol allocations made sharp reductions necessary in the uses of aniline oil during September, and in some [illegible] derivatives such as benzaldehyde, all civilian requirements have had to be deferred. Phenol supplies on the whole are better than they were earlier in the war although there is no reason to look for increased benzol allotments for synthetic phenol manufacture. The distribution of current pyridine production continues under rigid control, with civilian allocations going chiefly to sulfa drugs, medicinals, vitamins and water repellents.

Paint Materials. The long-awaited permanent ceilings for gum rosin were issued by OPA at levels based upon the average prices prevailing during June and July of this year. A number of paint materials remain in tight supply, and the paint industry committee has warned of an impending more critical supply situation in chrome pigments during the final quarter of 1944. In view of small domestic linseed crops and uncertain imports, the possibility of a greater use of fish oils has been discussed between industry representatives, WPB and WFA. Shellac, talc, and China clay were among commodities removed late in September from import control. Manpower is one of the factors restricting the production of chrome colors. Manufacturers of lead pigments are reported to be three weeks behind on deliveries of these materials to the paint trade. Leaded zinc oxides are in a tight supply position.



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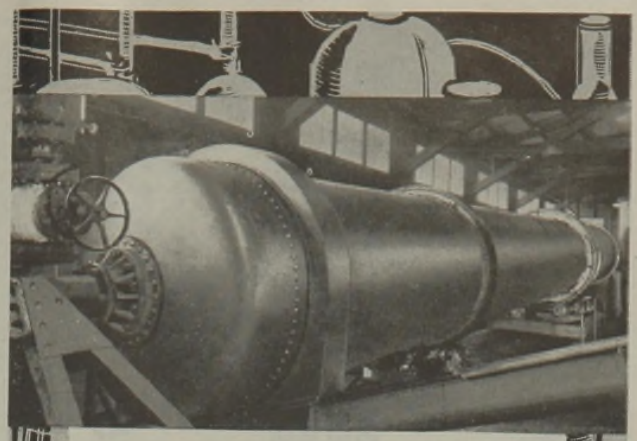

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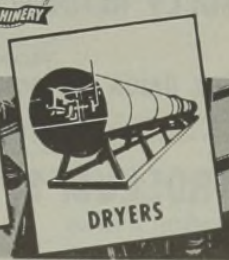

CURRENT PRICES

Chemical prices quoted are of American manufacturers fo spot New York, immediate shipment, unless otherwise specified Products sold f.o.b. works are specified as such. Import chem icals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices fro different sellers, based on varying grades or quantities or both

Purchasing Power of the Dollar: 1926 Average—$1.0
Sept., '42, $0.930 Sept., '43, $0.902 Sept., '44, $0.88

	Current Market		1944 Low	1944 High	1943 Low	1943 Hig
Acetaldehyde, 99%, drs. wks. lb.	.11	.14	.11	.14	.11	.14
Acetic Anhydride, drs, ...lb.	.11½	.13	.11½	.13	.11½	.13
Acetone, tks, delv .....lb.	...	.07	...	.07	...	.07
ACIDS						
Acetic, 28%, bbls ....100 lbs.	3.38	3.63	3.38	3.63	3.38	3.63
glacial, bbls. .....100 lbs.	9.15	9.40	9.15	9.40	9.15	9.40
tks, wks. .....100 lbs.	6.93	7.25	6.93	7.25	...	6.93
Acetylsalicylic, Standard USP .....lb.	.40	.54	.40	.54	.40	.54
Benzoic, tech, bbls. .....lb.	.43	.47	.39	.47	.39	.42
USP, bbls, 4,000 lbs. up lb.	...	.54	...	.54	...	.54
Boric, tech, bbls, c-l,....ton *a*	...	109.00	...	109.00	...	109.00
Chlorosulfonic, drs, wks. ..lb.	.03	.04½	.03	.04½	.03	.04
Citric, crys, gran, bbls, lb. *b*	.20	.24	.20	.24	.20	.24
Cresylic 50%, 210-215° HB, drs, wks, frt equal gal.	.81	.83	.81	.83	.81	.83
Formic, Dom. cbys .....lb.	.10½	.11½	.10½	.11½	.10½	.11
Hydrofluoric, 30% rubber, dms. .....lb.	.08	.09	.08	.09	.08	.09
Lactic, 22%, lgt, bbls wks lb.	.039	.0415	.039	.0415	.039	.04
44%, light, bbls wks ...lb.	.073	.0755	.073	.0755	.073	.07
Maleic, Anhydride, drs....lb.	.25	.26	.25	.26	.25	.2
Muriatic, 18° cbys ...100 lb.	1.50	1.75	1.50	1.75	1.50	2.4
20° cbys, c-l, wks ..100 lb.	...	1.75	...	1.75	...	1.7
22° cbys, c-l, wks ..100 lb.	...	2.25	...	2.25	...	2.2
Nitric, 36°, cbys, wks 100 lbs. *c*	5.00	5.25	5.00	5.25	5.00	5.2
38°, c-l, cbys, wks 100 lbs. *c*	...	5.50	...	5.50	...	5.5
40°, c-l, cbys, wks 100 lbs. *c*	...	6.00	...	6.00	...	6.0
42°, c-l, cbys, wks 100 lbs. *c*	...	6.50	...	6.50	...	6.5
Oxalic, bbls, wks .....lb.	.11¼	.12½	.11¼	.12½	.11¼	.1
Phosphoric, 100 lb. cbys, USP .....lb.	.10½	.13	.10½	.13	.10½	.1
Salicylic, tech, bbls .....lb.	.26	.42	.26	.42	.26	.4
Sulfuric, 60°, tks, wks ..ton	...	13.00	...	13.00	...	13.0
66°, tks, wks .....ton	...	16.50	...	16.50	...	16.5
Fuming (Oleum) 20% tks. wks .....ton	...	19.50	...	19.50	...	19.5
Tartaric, USP, bbls .....lb.	...	.70½	...	.70½	...	.7
Alcohol, Amyl (from Pentane) tks, delv .....lb.	...	.131	...	.131	...	.
Butyl, normal, syn, tks..lb.	...	.10¾	...	.10¾	.10¾	.
Denatured, CD 14, c-l drs, ...gal. *d*	...	.54½	...	.54½	...	.
Denatured, SD, No.1, tks. *d*	...	.50	...	.50	...	.
Ethyl, 190 proof tks...gal.	...	17.60	...	17.60	...	11.
Isobutyl, ref'd, drs ....lb.	...	.086	...	.086	...	
Isopropyl ref'd, 91%, dms .....gal.	.39	.66½	.39	.66½	.39	
Propyl, nor, drs, wks gal.	.67	.76	.67	.76	.67	
Alum, ammonia, lump, bbls, wks .....100 lb.	...	4.25	...	4.25	...	4.
Aluminum, 98-99% ..100 lb.	15.00	16.00	15.00	16.00	15.00	16.
Chloride anhyd dms wks lb.	.08	.12	.08	.12	.08	
Hydrate, light .....lb.	.14½	.15	.14½	.15	.14½	
Sulfate, com'l. bgs, wks, c-l .....100 lb.	1.15	1.25	1.15	1.25	1.15	1.
Sulfate, iron-free, bgs. wks .....100 lb.	1.85	2.10	1.85	2.50	1.75	2
Ammonia anhyd, cyl .....lb.	...	.16	...	.16	...	
Ammonium Carbonate, lumps, dms .....lb.	.08½	.09¼	.08½	.09¼	.08¼	
Chloride, whi, bbls, wks, 100 lb.	4.45	5.15	4.45	5.15	4.45	5
Nitrate, tech. bags, wks..lb.	.0435	.0850	.0435	.0850	.0435	
Oxalate pure, grn. bbls..lb.	.27	.33	.27	.33	.27	
Perchlorate, kgs .....lb.	.55	.65	.55	.65	.55	
Phosphate, dibasic tech, bbls .....lb.	.07¼	.08½	.07¼	.08½	.07¼	
Stearate, anhyd, dms ...lb.	...	.34	...	.34	...	
Sulfate, dms, bulk.....ton	28.20	29.20	28.20	29.20	28.20	30
Amyl Acetate (from pentane) c-l, drs, delv .....lb.	...	.15½	...	.18½	...	
Aniline Oil, drs .....lb.	.11½	.12½	.11½	.12½	.11½	
Anthraquinone, sub, bbls..lb.	...	.70	...	.70	...	
Antimony Oxide, bgs .....lb.	.15	.15½	.15	.15½	.15	
Arsenic, whi, kgs—powd..lb.	.04	.04¾	.04	.04¾	.04	

USP $25 higher; Prices are f.o.b. N. Y., Chicago, St. Louis, deli ½c higher than NYC prices; y Price given is per gal; c Yellow 25c per 100 lbs less in each case; *d* Prices given are Eastern sch *a* Powdered boric acid $5 a ton higher; *b* Powdered citric acid higher;

	Current Market	1944 Low	1944 High	1943 Low	1943 High
Barium Carbonate precip, wks ton	60.00	75.00	55.00	75.00	55.00	65.00
Chloride, tech, cyst, bgs, zone 1 ton	73.00	78.00	73.00	90.00	77.00	90.00
Barytes, floated, bbls. ton	...	36.00	...	36.00	...	36.00
Cerussite, bulk mines ton	7.00	10.00	7.00	10.00	7.00	10.00
Benzaldehyde,tech,cbys,dms lb.	.45	.55	.45	.55	.45	.55
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd gal.	...	.15	...	.15	...	.15
Benzyl Chloride, cbys lb.	.22	.24	.22	.28	.22	.25
Beta-Naphthol, tech, bbls, wks ton	.23	.24	.23	.24	.23	.24
Bismuth metal, ton lots lb.	...	1.25	...	1.25	...	1.25
Blanc Fixe, 66⅔% Pulp, bbls, wks ton	40.00	46.50	40.00	46.50	40.00	46.50
Bleaching Powder, wks, 100 lb.	2.50	3.60	2.50	3.60	2.50	3.60
Borax, tech, c-l, bgs ton	...	45.00	...	45.00	...	45.00
Bordeaux Mixture, drs lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases lb.	.25	.30	.25	.30	.25	.30
Butyl, acetate, norm drs. lb.	.1895	.1945	.1755	.1945	.1575	.1840
Cadmium Metal lb.	.90	.95	.90	.95	.90	.95
Calcium, Acetate, bgs. 100 lb.	3.00	4.00	3.00	4.00	3.00	4.00
Carbide, drs ton	50.00	95.00	50.00	95.00	50.00	95.00
Carbonate, c-l bgs, ton	21.00	25.00	21.00	25.00	18.00	22.00
Chloride, flake, bgs c-l ton	18.50	35.00	18.50	35.00	18.50	35.00
Solid, 73-75% drs, c-l, ton	18.00	31.50	18.00	31.50	18.00	31.50
Gluconate, U.S.P., drs. lb.	.57	.58	.57	.58	.57	.58
Phosphate, tri, bbls, cl lb.	...	.0635	.0635	.0785	.0635	.0785
Camphor, U.S.P., gran, powd, bbls lb.	.69	.71	.68½	.71	.68½	.70½
Carbon Bisulfide, 55-gal drs lb.	.05	.05¾	.05	.05¾	.05	.05¾
Dioxide, cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, Zone 1, 52½ gal. drms lb.	.73	.80	.73	.80	.73	.80
Casein, Acid Precip, bgs, 100 or more lb.	...	.24	...	.24	...	.24
Chlorine, cyls, lcl, wks, contract lb.	...	.07¼	...	.07¼	...	.07¼
cyls, c-l, contract lb.	...	.05¼	...	.05¼	...	.05¼
Liq, tk, wks, contract 100 lb.	...	1.75	...	1.75	...	1.75
Chloroform, tech, drs lb.	.20	.23	.20	.23	.20	.23
Coal tar, bbls, crude bbl.	8.25	8.75	8.25	8.75	8.25	8.75
Cobalt Acetate, bbl lb.	...	.83¾	...	.83¾	...	.83¾
Oxide, black kgs lb.	...	1.84	...	1.84	...	1.84
Copper, metal 100 lb.	12.00	12.50	12.00	12.50	12.00	12.50
Carbonate, 52-54%, bbls. lb.	.19½	.20	.19½	.20	.19½	.20½
Sulfate, bgs, wks crvst. 100 lb.	5.00	5.50	5.00	5.50	5.00	5.50
Copperas, bulk, c-l, wks ton	...	14.00	...	14.00	...	14.00
Cresol, USP, drs lb.	.10¾	.11¾	.10¾	.11¾	.10¾	.11¾
Cyanamid, bgs ton	1.52½	1.62½	1.52½	1.62½	1.52½	1.62½
Dibutylamine, c-l, drs, wks lb.	...	.61	...	.61	...	.61
Dibutylphthalate, drs lb.	.1940	.2380	.1780	.2500	.2060	.2300
Diethylaniline, lb drs lb.	...	.40	...	.40	...	.40
Diethyleneglycol,drs,lcl.wks lb.	.14½	.15½	.14	.15½	.14	.15½
Dimethylaniline, dms.cl.,lcl lb.	.23	.24	.23	.24	.23	.24
Dimethyl phthalate, drs lb.	.1875	.1925	.1875	.1925	.1875	.2050
Dinitrobenzene, bbls lb.	...	.18	...	.18	...	.18
Dinitrochlorobenzene, dms lb.	...	.14	...	.14	...	.14
Dinitrophenol, bbls lb.	...	.22	...	.22	...	.22
Dinitrotoluene, dms lb.	...	.18	...	.18	...	.18
Diphenyl, bbls lcl. wks lb.	.16	.20	.16	.20	.15	.20
Diphenylamine bbls lb.	...	.25	...	.25	...	.25
Diphenylguanidine, drs lb.	...	.35	...	.35	.35	.37
Ethyl Acetate, tks, frt all'd lb.	.1070	.1175	.1070	.1175	.107	.110
Chloride, drs lb.	.18	.20	.18	.20	.18	.20
Ethylene Dichloride, lcl. wks, E. Rockies, dms lb.	...	.0891	...	.0891	...	.0842
Glycol, dms, cl. lb.	...	.10	...	.10	...	.10
Feldspar, No. 1, grd. 95-98% bulk, cl-mines ton	...	37.00	...	37.00	...	37.00
Formaldehyde, c-l, bbls, bgs, wks lb.	...	.0520	.0550	.06	.0550	.0575
Furfural tech, dms, c-l,wks lb.	...	.13	...	.13	...	.12½
Fuel Oil, refd, dms, dlvd lb.	.18½	.19½	.18½	.19½	.18½	.19½
Glauber's Salt, Cryst,c.l.,bgs, wks 100 lb.	1.05	1.25	1.05	1.25	1.05	1.25
Glycerin dynamite, dms, c-l, lb.	...	.14½	...	.14½	...	.18¾
Crude Saponification, 80% to refiners tks lb.	...	.11¼	...	.11¼	...	.12¾

GUMS

Gum Arabic, amber sorts bgs lb.	.11½	.13	.11½	.14	.13½	.17½
Benzoin Sumatra, CS lb.	.52	1.00	.52	1.00	.52	1.00
Copal, Congo lb.	...	.55¾	...	.55¾	...	.55¾
Copal, East India, chips lb.	...	.12	...	.12	...	.12
Macassar dust lb.	...	.05½	...	.07⅜	.07⅜	.11¾
Copal Manila,	.13½	.15½	.13½	.15½	.13½	.15½
Copal Pontianak, bold c-l lb.	...	.23⅜	...	.23⅜	...	.23⅜
Damar lb.	.09½	.12	.09½	.12	.09½	.12
Karaya, bbls, bxs, dms, lb.	.18	.40	.18	.40	.14	.40

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; boxes, bxs; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; ordered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks. Price given is per gal.

Current Prices

	Current Market	1944 Low	1944 High	1943 Low	1943 Hig
Kauri, N Y					
Superior Pale XXX ...lb.	...	.65¾	...	.65¾	...	.65
No. 3 .....lb.	...	.22	...	.22	...	.2
Sandarac, cs .....lb.	...	.99½	...	.99½	1.40	nom
Tragacanth, No. 1, cases lb.	4.50	5.00	4.00	5.25	4.00	5.25
No. 3 .....lb.	2.75	3.00	1.10	3.50	1.10	1.2
Yacca, bgs .....lb.	.06	.07¼	.06	.07¼	.06	.0
Hydrogen Peroxide, cbys ..lb.	.15½	.18½	.15½	.18½	.15½	.1
Iodine, Resublimed, jars..lb.	2.00	2.10	2.00	2.10	2.00	2.1
Lead Acetate, cryst, bbls...lb.	...	.12½	...	.12½	...	.1
Arsenate, St. bg, lcl ....lb.	.11½	.12	.11½	.12	.11½	.1
Nitrate, bbls .....lb.	...	.12½	...	.12½	...	.1
Red, dry, 95%Pb_3O_4, lcl lb.	.09	.10¾	.09	.11	.09	.1
97% Pb_3O_4 bbls delv..lb.	.09¼	.11	.09¼	.11	.09¼	.1
98% Pb_3O_4, bbls delv..lb.	.09½	.11¼	.09½	.11¼	.09½	.1
White, bbls .....lb.	.08¼	.08¾	.08¼	.08¾	.08¼	.0
Basic sulfate, bbls, lcl lb.	.07½	.08	.07¼	.08	.07¼	.0
Lime, Chem., wks, bulk..ton	6.25	13.00	6.25	13.00	6.25	13.0
Hydrated, f.o.b. wks ..ton	8.50	16.00	8.50	16.00	8.50	16.0
Litharge, coml, delv, bbls lb.	.08	.09¾	.08	.09¾	.08	.0
Lithopone, ordi., bgs.....lb.	.04¼	.04¾	.04¼	.04¾	.04¼	.0
Magnesium Carb, tech, wks lb.	.06¼	.09¾	.06¼	.09¾	.06¼	.0
Chloride flake, bbls, wks c-l .....ton	...	32.00	...	32.00	...	32.0
Manganese, Chloride, Anhyd. bbls .....lb.	.15	.18	.15	.18	.14	nor
Dioxide, Caucasian bgs, lcl .....ton	...	74.75	...	74.75	...	74.7
Methanol, pure, nat, drs gal *l*	.63	.76	.63	.76	.63	
Synth, drs cl.....gal. *m*	.31	.38	.31	.40½	.34½	
Methyl Acetate, tech tks..lb.	.06	.07	.06	.07	.06	
C.P. 97-99%, tks, delv lb.	.09½	.10½	.09½	.10½	.09½	
Chloride, cyl .....lb.	.32	.40	.32	.40	.31	
Ethyl Ketone,tks,frt all'd lb.	...	.08	...	.08	...	
Naphtha, Solvent, tks ...gal.	...	.27	...	.27	...	
Naphthalene, crude, 74°, wks tks .....lb.	...	.0275	...	.0275	...	
Nickel Salt, bbls, NY.....lb.	.13	.13½	.13	.13½	.13	
Nitre Cake, blk .....ton	..	16.00	...	16.00	...	16.
Nitrobenzene, drs, wks ...lb.	.08	.09	.08	.09	.08	
Orthonisidine, bbls .....lb.	...	.70	...	.70	...	
Orthochlorophenol, drs ...lb.	...	.32	...	.32	...	
Orthodichlorobenzene, drms lb.	.07	.08	.07	.08	.07	
Orthonitrochlorobenzene, wks .....lb.	.15	.18	.15	.18	.15	
Orthonitrotoluene, wks,dms lb.	...	.09	...	.09	...	
Para aldehyde, 98%, wks lcl. .....lb.	...	.12	...	.12	...	
Chlorophenol, drs .....lb.	...	.32	...	.32	...	
Dichlorobenzene, wks ..lb.	.11	.15	.11	.15	.11	
Formaldehyde, drs, wks.lb.	.21	.22	.23	.24	.23	
Nitroaniline, wks, kgs..lb.	.43	.45	.43	.45	.43	
Nitrochlorobenzene, wks lb.	...	.15	...	.15	...	
Toluenesulfonamide, bbls lb.	...	.70	...	.70	...	
Toluidine, bls, wks ....lb.	...	.48	...	.48	...	
Penicillin, hospitals, institutions, ampules per 100,000 units	3.20	4.50	3.20	4.50	...	
For gov. purchases, ampules per 100,000 units	...	1.90	...	1.90	...	
Pentaerythritol, tech. cl. lb.	.29	.33	.29	.33	.29	
PETROLEUM SOLVENTS AND DILUENTS						
Lacquer diluents, tks, East Coast .....gal.	...	11½	...	.11½	...	
Naphtha, V.M.P., East tks, wks .....gal.	...	.11	...	.11	...	
Rubber Solvents, standard, East, tks, wks ..gal.	...	.11	...	.11	...	
Stoddard Solvents, East, tks, wks .....gal.	...	.10	...	.10	...	
Phenol, U.S.P., drs .....lb.	.10½	.11¼	.10½	.11¼	.10½	
Phthalic Anhydride, cl and lcl, wks .....lb.	.13	.14	.13	.14	.13	
Potash, Caustic, wks, sol lb.	.06¼	.06¾	.06¼	.06¾	.06¼	
flake, 88-92% .....lb.	.07	.07½	.07	.07½	.07	
liquid, tks .....lb.	...	.02¾	...	.02¾	...	
dms, wks .....lb.	.03	.03½	.03	.03½	.03	
Potassium Bichromate csks .....lb.	.09½	.10	.09½	.10	.09½	
Carbonate, hydrated 83-85% calc .....lb.	.05½	.05¾	.05½	.05¾	.05½	
Chlorate crys, bgs, wks lb.	.11	.13	.11	.13	.11	
Chloride, crys, tech, bgs, kgs .....lb.	.08	nom.	.08	nom.	.08	
Cyanide, drs, wks .....lb.	...	.55	...	.55	...	
Iodide, bots., or cans...lb.	1.44	1.48	1.44	1.48	1.44	
Muriate, dom, 60-62-63% K_2O bulk unit-ton...ton	...	.53½	...	.53½	.53½	
Permanganate, USP, wks dms .....lb.	.20½	.21	.20½	.21	.20½	
Sulfate, 90%, basis, bgs ton	...	36.25	...	36.25	...	
Propane, group 3, tks....gal.	...	.03¾	...	.03¾	...	
Pyridine, ref., drms .....lb.	.45½	.46	.45½	.46	.45½	
R Salt, 250 lb bbls, wks lb.	...	.65	...	.65	...	
Resorcinol, tech.,drms, wks lb	.68	.75	.68	.75	.68	
Rochelle Salt, cryst .....lb.	.43½	.47	.43½	.47	.43½	
Salt Cake, dom. blk wks .ton	...	15.00	...	15.00	...	

l Producers of natural methanol divided into two groups and vary for these two divisions; *m* Country is divided in 4 zones, varying by zone.
* Spot price is ½c higher.

	Current Market		1944 Low	1944 High	1943 Low	1943 High
Saltpetre, grn, bbls ...100 lb.	8.20	8.60	8.20	8.60	8.20	8.60
Shellac, Bone dry, bbls ..lb. r	.42½	.46	.42½	.46	.42½	.46
Silver Nitrate, 100 oz, bots ....oz.	...	.32⅜	...	.32⅜	...	.32⅜
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.15	..	1.15	...	1.15
58% light, bgs cl....100 lb.	...	1.13	1.05	1.13	...	1.13
Caustic, 76% flake drms, cl .....100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drms,cl 100 lb.	...	2.30	...	2.30	...	2.30
Liquid, 47-49%, sellers, tks .....100 lb.	...	1.95	...	1.95	...	1.95
Sodium Acetate, anhyd. dms .....lb.	.08½	.10	.05	.10	.05	.06
Benzoate, USP dms ....lb.	.46	.52	.46	.52	.46	.52
Bicarb, bbl, wks ...100 lb.	1.70	2.05	1.70	2.05	1.70	2.05
Bichromate,cks,wks l.c.l. lb.	.07½	.07¾	.07½	.07¾	...	.07¾
Bisulfite powd, bbls, wks .....100 lb.	3.00	3.60	3.00	3.60	3.00	3.60
35° bbls. wks .....100 lb.	1.40	1.65	1.40	1.65	1.40	1.65
Chlorate, bgs, wks c.l. lb.	...	.06¼	...	.06¼	...	.06¼
Cyanide, 96-98%, wks ..lb.	.14½	.15	.14½	.15	.14½	.15
Fluoride, 95%, bbls, wks lb.	.07¼	.08¼	.07¼	.08¼	.07¼	.08¼
Hyposulfite, cryst, bgs, cl, wks .....100 lb.	...	2.25	...	2.25	...	2.25
Metasilicate, gran, bbl, wks c-l .....lb.	...	2.50	...	2.50	...	2.50
Nitrate, imp, bgs.....ton	...	33.00	...	33.00	...	33.00
Nitrite, 96-98% dom, cl. lb.	...	.06¾	...	.06¾	...	.06¾
Phosphate, di wks ..100 lb.	6.00	7.25	6.00	7.25	6.00	7.25
Tri-bgs, cryst, wks 100 lb.	2.70	3.40	2.70	3.40	2.70	3.45
Prussiate, yel, bbls, wks lb.	.10	.10¼	.10	.10¼	.10	.11
Pyrophosphate,bgswks c-l lb.	.0528	.0610	.0528	.0610	.0528	.0610
Silicate, 52°,drs. wks 100 lb.	1.40	1.80	1.40	1.80	1.40	1.80
40°, drs, wks, c-l 100 lb.	...	.80	...	.80	...	.80
Silicofluoride, bbls NY ..lb.	.06½	.12	.06½	.12	.05	.12
Sulfate tech. Anhyd, bgs 100 lb.	1.70	1.90	1.70	1.90	1.70	1.90
Sulfide, cryst c-l, bbls, wks .....100 lb.	...	2.40	...	2.40	...	2.40
Solid, bbls, wks .....lb.	3.15	3.90	3.15	3.90	3.15	3.90
Starch, Corn, Pearl, bgs .....100 lb	...	4.08	...	4.08	...	3.47
Potato, bgs, cl .....lb.	...	.0637	...	.0637	...	.0637
Rice, bgs .....lb.	no stocks		no stocks		.09½	.10¼
Sweet Potato, bgs ..100 lb.	no stocks		...	.07½	...	.07½
Sulfur, crude, mines ....ton	...	16.00	...	16.00	...	16.00
Flour, USP, precp, bbls, kgs .....lb.	.18	.30	.18	.30	.18	.30
Roll, bbls.....100 lb.	2.40	2.90	2.40	2.90	2.40	2.90
Sulfur Dioxide, liquid, cyl lb.	.07	.08	.07	.08	.07	.08
tks, wks .....lb.	...	.04	.04	.06	.04	.06
Talc, crude, c-l, NY .....ton	...	13.00	...	13.00	...	13.00
Ref'd, c-l, NY .....ton	13.00	21.00	13.00	21.00	13.00	21.00
Tin, crystals, bbls, wks ..lb.	no stocks		no stocks		no stocks	
Metal .....lb.	...	.52	...	.52	...	.52
Toluol, drs, wks .....gal.	...	.33	...	.33	...	.33
tks, frt all'd .....gal.	...	.28	...	.28	...	.28
Tributyl Phosphate, dms lcl, frt all'd .....lb.	..	.47	...	.47	...	.47
Trichlorethylene, dms, wks lb.	.08	.09	.08	.09	.08	.09
Tricresyl phosphate .....lb.	.24	.54½	.24	.54½	.24	.54½
Triethylene glycol, dms lcl lb.	...	.19½	...	.26	...	.26
Triphenyl Phos, bbls .....lb.	.31	.32	.31	.32	.31	.32
Urea, pure, cases .....lb.	...	.12	...	.12	...	.12
Wax, Bayberry, bgs .....lb.	no stocks		.25	nom.	.25	.26
Bees, bleached, cakes....lb.	...	.60	...	.60	...	.60
Candelilla, bgs crude...ton	.34½	.44½	.34½	.48	.38	.48
Carnauba, No. 1, yellow, bgs, ton .....lb.	.83¼	.93¼	.83¼	.93¼	.83¼	.93¼
Xylol, Indus. frt all'd, tks, wks .....gal.	...	.27	...	.27	...	.27
Zinc Chloride tech fused, wks .....lb.	.05	.0535	.05	.0535	.05	.0535
Oxide, Amer, bgs, wks..lb.	.07¼	.07½	.07	.07½	.07	.07½
Sulfate, crys, bgs, ..100 lb.	3.40	4.15	3.40	4.35	3.60	4.35

Oils and Fats

Babassu, tks, futures ....lb.	...	.111	...	.111	...	.111
Castor, No. 3, bbls .....lb.	.13¾	.14¼	.13¾	.14¼	.13¾	.14¼
China Wood, drs, spot NY lb.	...	.39	...	.39	...	.39
Coconut, edible, drs NY ..lb.	...	.0985	...	.0985	...	.0985
Cod Newfoundland, dms..gal.	...	.88	...	.90	...	.90
Corn, crude, tks, wks ....lb.	...	.12¾	...	.12¾	...	.12¾
Linseed, Raw, dms, c-l ...lb.	...	.1510	...	.1510	...	.1530
Menhaden, tks .....gal.	...	.1180	...	.1225	...	.1225
Light pressed, drs .....lb.	...	.1260	.1208	.1307	.1305	.1307
Oiticica, liquid, tks .....lb.	... no stocks		.21	.25	...	.25
Oleo, No. 1 bbls, NY ....lb.	.13¾	nom.	.13¾	nom.	.13¾	nom.
Palm, Niger, dms .....lb.	...	.0865	...	.0865	...	.0865
Peanut, crude, tks, f.o.b. wks .....lb.	...	.13	...	.13	...	.18
Perilla, crude dms, NY...lb.	no stocks		...	.245	...	.245
Rapeseed, denat, bulk ....lb.	..	.1150	...	.1150	...	.1150
Refined, dms .....lb.	.12¾	.13¾	.12¾	.14¾	.13¼	.14¼
Soy Bean, crude, tks, wks lb.	...	.1175	...	.1175	...	.1175
Tallow, acidless, bbls ....lb.	...	.14¼	...	.14¼	...	.14¼
Turkey Red, single, drs ..lb.	.10	.14½	.10	.14½	.10	.14½

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y., refined 6c higher in each case.

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FOR SALE
1—Hardinge Conical Ball Mill
Box 1885
CHEMICAL INDUSTRIES

The following equipment offered for

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Every Machine Rebuilt and Guaranteed! Offered Subject Prior Sale!

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1—No. 2. MIKRO PULVERIZER WITH 15 HP. MOTOR.
2—MIKRO PULVERIZERS LARGE SIZES WITH 50 HP. MOTORS.
1—U. S. Colloid Mill
1—Werner & Pfleiderer 300 gallon, double arm Mixer
1—Rockwell 150 gallon steam jacketed Mixer
1—Paragon 250 gallon steam jacketed Mixer
1—New Era 200 gallon, double arm Mixer
1—Paul O. Abbe 4' x 3½' Pebble Mill, 180 gallon capacity, Buhr stone lining
1—Schutz O'Neil Limited Pulverizer, 18 to 20
1—National Equipment Co. 6' Chaser with rolls measuring 28" in diameter x 16" wide
1—Schutz O'Neil No. 3 Sifter
1—Rotex 20 x 4 Sifter
1—Seitze Giant Filter, "Hercules 30"
1—Tolhurst Suspended Centrifugal
1—Hersey 15' Rotary Steam Dryer

UNION STANDARD EQUIPMENT COMPANY
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FOR SALE

1—Gayco 8' High Production Air Separator and Sifter.

BOX 1957

SPECIALS!

1—W. & P. Mixer, 150 gal. stainless steel lined
1—W. & P. Mixer, 20 gal.
5—Shriver Filter Presses, 24" to 42"
10—Centrifugals, 32", 40", 48" belt and motor driven.
10—Pebble Mills, 30 to 250 gal.
3—650 gal. Steel Jacketed, Agitated Kettles
2—Solvent Stills, 300 and 500 gal. with columns and condensers.
1—Buflovak 24" x 20" Vacuum Drum Dryer
7—Rotary Dryers, 4' x 30', 6' x 17', 6' x 28', 6' x 42,' 7' x 120'
2—1750 gal. Lead Lined Pressure Tanks
3—Jeffrey Type "A" Hadmer Mills, 36" x 24", 24" x 18"
3—6' x 5' Jacketed Steel Stills
2—Oliver Rotary Filters, 5' x 8'
6—Rotary Tablet Machines, Stokes, Colton

Send for complete lists.

BRILL Equipment Co.
333 WEST 34th STREET, NEW YORK 1, N. Y.

2—2000 to 4000-gal. Emulsion Colloid Mills
6-100 -150 & 200 H.P. Diesel Units
Premier 100 H. P. Colloid Mill
Raymond No. 0 Automatic Pulverizer
5' x 33' Steam Jacketed Vacuum Dryer
8—3 x 4 and 4 x 7 Hummer Screens
3 x 30, 3½ x 24, 5½ x 60, 6 x 40 an Direct Heat Dryers
1—36-Ton Fairbanks Tank Scale
10-Ton Browning Loco Crane
24" Blast Furnace with movable curb for Lead, Tin and similar metals.
20 H. P. Charlotte 1½ in. Colloid Mill.

STORAGE TANKS

14—10,000, 15,000, 20,000 and 26,000-gal. Cap. Horizontal and Vertical
100,000-gal. Cap. Tank on 80-ft. Tower
50,000-gal. Cap. Tank on 100-ft. Tower
35,000-gal. Tank on 75-ft. Tower
3—Underwriter's Fire Pumps. 750 and 1,000 G.P.M., and 1,500 G.P.M.

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48" DIA. C. I. RECTIFYING COLUMNS containing 24 Bubble Cap Type Plates—6 Caps Per Plate.
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48" DIA. EVERDUR COLUMN—Bubble Cap Type Plates. An exceptional value.

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1—6'0" dia. x 7'4" long, Flanged Heads, 1,000-gal. cap. Compl. with coils.
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AMMONIA COOLERS.
BUCKET ELEVATOR, 105'0" high. Buckets 6" x 11". Compl. with Drive, Pulley, and Belt.
HAMMER MILL: Williams, Cap. 1,000 to 1,200 lbs. corn per hour through 1/16" screen.
PUMPS—CENTRIFUGAL AND STEAM, all sizes.
4—TANK SAND FILTER SYSTEMS, each 8'0" dia. x 5'0" high, with fittings and "I" Beams.
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2—BADGER SINGLE EFFECT EVAPORATORS.
9—COIL-TYPE VACUUM PANS: (Complete with Condensers, Catch-alls, etc.)
2—ANDERSON NO. 3 MOISTURE EXPELLERS.
ROTARY STEAM DRYERS, with Trunnions.

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Bronze Tube Sheets, Copper Tubes, Copper or Steel Shells Ranging in Size from 100 to 1,000 Sq. Ft. of Surface.

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625 KVA—Genl. Elect. A. C. Generator—3/60/480 Volts—Direct connected to:
24 x 42—L. H. Simple Corliss Engine—100 RPM
400 KW—Crocker Wheeler D.C. Generator—250 Volts—C. W.
Direct connected to:
26 x 32—L. H. Skinner Uniflow Engine—150 RPM

ARTHUR S. PARTRIDGE
415 Pine St. Louis 2, Mo.

FOR SALE

Four Manton Gaulin 8-inch Colloid Mills, in good condition, complete with 220 volt motors. Box 1951.

AVAILABLE

1—60 gal. Copper Vacuum Still.
1—6 x 15' Allis-Chalmers Tube Mill.
1—40" Tolhurst copper basket Centrifugal.
2—No. 2 and No. 3 Austin Gyratory Crushers.
8—Elmes 4" ram Hydraulic Presses.
1—#30 Day Imperial Mixer.
2—4 x 6' Atmospheric Drum Dryers.
4—Lead-lined Tanks, 400 and 1000-gal.
2—Triangle Fillers, Gluers, Sealers.
1—No. 150 Kelly Filter.
9—Variable speed Drives—1½-5 hp.
7—Watson-Stillman 6 ton hyd. Arbor Presses.
1—6" Centrifugal Pump and 75 hp. motor.
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EAST 9th STREET & EAST RIVER DRIVE, NEW YORK

PROFESSIONAL DIRECTORY

FOR SALE

2—Wolf-Linde Ammonia Compressors—65 Ton Refrig.—Belted 70,000 Gal. Steel Water Storage Tank—Riveted—77' to Catwalk 25/50 HP Fairb. —M. Two Speed Motor 3/60/440 Volts—450/900 RPM. 2—8" Vertical Centfgl. Pumps—3/60/220 Volts—660/720 RPM—2000 GPM against 21' Head. 50 HP—G. E. Vertical Motor 3/60/2300 Volts—490/514 RPM. 15 Ton McMyler—4 Wheel —Locomotive Crane—Standard Gauge—125 KW Ridgway — 3 Wire — D. C. Generator — 125/250 Volts—2—360 HP Fairb.—M. Full Diesel Engines with Generators.

Arthur S. Partridge, 415 Pine, St., Louis 2, Mo.

FOR SALE

1—Kent 3-Roll, 12 x 30 Horizontal Roller Mill, with water-cooled rollers.

1—J. H. Day 3-roll 16 x 40 Roller Mill, water-cooled steel rollers, equipped with roller bearings and silent chain motor drive.

1—Baker Perkins 60 gallon, Double Arm Mixer with fish tail blades.

BOX 1960

SPECIALS

Buffalo Vac. Drum Dryer, 48" x 40"
Buffalo Vac. Drum Dryer, 24" x 20"
Oliver Rotary Filter, 8' x 8'
Vallez Rotary Filter, 957 sq. ft.
Stainless Steel Spiral Mixer, 800 lb.
Pfaudler G.L., 1000 Gals. Closed Tank
Pfaudler G.L., 600 Gals. Open Tank
Stainless Clad Tank, 100 Gals.
A. O. Smith, 500 Gal. Jack. Autoclave
Shriver 24" Wood Filter Press C.D.
Sperry 42" Wood Filter Press C.D.
W & P Jack. Ag. Vert. Closed Kettle, 525 Gallons.
Kux-Lohner Rotary Tablet Machine, 1" dia.

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1—Dorr Filter, Type BM—8' dia. x 12' long—Rotating Continuous Operation
1—Cast Iron bubbler Plate Column 20" dia.—20 sections. 8½" high each—8 caps per plate
10—New Stainless Steel Storage Tanks. 22½" dia. x 35½" deep—with stands and covers.
12—Steel Storage Welded and Sectional Tanks, 1550 gals. to 11,460 gals.
2—Patterson Jacketed Mixers 4' x 4'6" x 20' long
2—Steel Jacketed Tanks, 4' x 8'
2—I-R Turbine Blowers—4000 CFM
1—Richardson Automatic Batch Scale.
Also:—Cast Iron Filter Presses—Pumps—Air and Ammonia Compressors — Dough Mixers.

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HELP WANTED

Chemical Sales — Well known industrial chemicals producer with New York executive offices and national distribution to the major fields of application for organic and inorganic chemicals, solicits applications from young chemists or chemical engineers interested in a technical sales career. In applying please include summary of training and experience (if any), indicate preferred geographical location and salary expectations. Give the customary personal details and enclose an inexpensive recent photograph. Box 1953.

HELP WANTED MALE

Wanted: Experienced man for plant management with established chemical manufacturer. Preferably chemical engineer. Location, Middle West. Non-war materials. State experience. Address inquiries to Box No. 1954.

WANTED: Chemist experienced in commercial production of polyvinyl plastics, by large company desiring to enter plastics field. Liberal salary for full time or as consultant. Give record of experience. Correspondence held confidental, and references furnished remain uninvestigated until your permission given. Box 1949, Chemical Industries.

PATENTS

WANTED TO BUY

BUSINESS OPPORTUNITIES

New Uses for Treated Wood Predicted

Ordinary wood will be given a new competitive position as a structural and decorative material by the development of a process which involves treatment with a solution of "Arboneeld" dimethylolurea and urea, chemically transmuting wood into a much harder, stiffer, more durable substance, it was predicted by Dr. J. F. T. Berliner, of the Du Pont Company, in an address at the 47th annual conference on September 29, of the National Hardwood Lumber Association in Chicago.

"This development means that it seems possible now for wood to be engineered to specifications of service and appearance," he said. "The limitations to certain species can now be cast aside. This new substance—in reality transmuted wood—that is made from wood and looks like wood, can compete with plastics and metals that for several years have been gradually pushing wood into the discard for many purposes.

"Arboneeld" is the Du Pont trademark for dimethylolurea. In the transmutation of wood by Du Pont's recently announced process, "Arboneeld" alone is not used, but rather a solution of it plus varying amounts of urea, depending on the effect desired. This process for the treatment of wood grew out of long range studies by the Forest Products Laboratory of the U. S. Forest Service, Du Pont and others.

Kelite Products Expands

Expanding its laboratory research, Kelite Products, Inc., Los Angeles, leading manufacturer of scientific cleaning and processing chemicals for the aviation industry, has advanced Joseph H. Hart, formerly chief chemist, to laboratory director and has increased the laboratory personnel.

Meredith H. Fairchild has been promoted to chief chemist, his former position as analytical chemist being filled by Donald W. Vance who recently joined the Kelite organization.

Kelite Products, Inc., maintains chemists in Chicago, Perth Amboy, N. J., and Houston, Texas, for purposes of production control and field service, but centralizes its research in Los Angeles.

Hercules Powder Dividend Declared

The Board of Directors of Hercules Powder Company today declared a regular quarterly dividend of 1½ per cent equal to $1.50 a share on its preferred stock, payable November 15 to stockholders of record November 3.

Niagara Sprayer Acquires Coastal Chemicals

The Niagara Sprayer and Chemical Co., of Middleport, N. Y., and subsidiary of Ford Machinery Corporation, San Jose, Calif., has taken over Coastal Chemical Company, manufacturer and distributor of agricultural insecticides and fungicides, Harlingen, Tex.

Sterling Drug Acquires Ballard, Inc.

Sterling Drug, Inc., has acquired the stock of James F. Ballard, Inc., of St. Louis, manufacturers of Campho-Phenique and other drug products.

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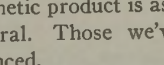
INDEX of ADVERTISERS

"WE"-EDITORIALLY SPEAKING

INDUSTRY MEN like to talk about tax plans. Fortune's Forum of Executive Opinion gauged sentiment on the Ruml vs. the Twin Cities plan. Executives agreed with Ruml that corporate taxes are a greater deterrent to business activity than personal income taxes; but they voted 2 to 1 in favor of the Twin Cities proposal to substitute a federal sales tax for a part of the personal income levy.

They also revealed that if corporate taxes were abolished, they would do all sorts of wonderful things: expand operations; hire more labor; start new ventures; or pay higher wages. Whatever their motives—possibly a wish to appear decorous—increase of dividends was their last choice.

A STEADY FLOW of communications streams from Akron and vicinity. The synthetic rubber people report brave new processes and products—and we are led to believe that natural rubber will soon be relegated to the history books. This is a specious belief, however, unless improvements in the wearing qualities of automobile tires eventually persuade motorists that the synthetic product is as good as the prewar natural. Those we've talked to aren't convinced.



MANUFACTURERS AND USERS of chemicals and chemical equipment will convene at the Chicago Coliseum November 15-19 to display and to observe at the National Chemical Exposition the progress that has been made in the biennial interim. The Exposition will be a nucleus for the crystallization of many ideas for expansion and ramification in the industrially active postwar years. CHEMICAL INDUSTRIES will again present "New Chemicals for Industry," and on page 558 we offer a preview of the other exhibits.

A NEW MARKET for soybeans, the American farmer's fourth most valuable crop, is promised by a new laboratory development. The oil has been "fractionated" into two constituent oils, one of which is an unusually high-quality edible oil, the other excellent for paints and varnishes, and each commands a better price than the original. We are warned that the prime market for the $400 million annual crop will be food and feed, however.

Fifteen Years Ago

From Our Files of October, 1929

Hercules Powder Co. plans construction of experimental plant and research laboratory near Wilmington, to be used in connection with development of company's naval store business.

Lime nitrogen sales agreement is made by the following Japanese producers: The Electric Industry, The Japan Nitrogen, The Daido Fertilizer, the Mitsubishi Imports Department and the Showa Fertilizer, which will commence manufacturing nitrogen next year, the annual output being between 20,000 and 25,000 tons.

Commercial Solvents Corp. acquires Commercial Pigments Corp. through an exchange of shares. Commercial Pigments Corp. is occupied chiefly with the manufacture of titanium oxide under the Blumenfeld process.

National Ammonia Co., subsidiary of E. I. du Pont de Nemours & Co., Inc., acquires Pacific Ammonia & Chemical Co., largest manufacturer of anhydrous ammonia on the West coast.

Dr. Herbert H. Dow, president, Dow Chemical Co., is announced as recipient of the Perkin medal for 1930.

Texas Gulf Sulphur Co. acquires sulfur rights to mines at Long Point, Tex., from Gulf Production Co. This is the company's third mine as production is now going on at Gulf and Boling.

United Chemicals, Inc., acquires Barium Products, Ltd., Modesto, Cal., sodium sulfide producer, and Peroxide Manufacturing Co., San Francisco, hydrogen peroxide manufacturer.

James A. Rafferty, vice-president, Carbide & Carbon Chemicals Corp., since 1924, is elected president of the company.

The American chemical industry is now third in capitalization among American industries, third in number of employees, first in consumption of coal, and second in consumption of electrical energy. The total value of the output of chemicals has increased from $1,046,994,000 in 1914, to roughly $3,000,000,000 in 1928, the latter figure representing more than half the total value of the world output.

Formation of Ansbacher-Siegle Corp. is approved by stockholders of G. Siegle Corp. and Ansbacher Corp.

Ampthill plant, Du Pont Rayon Co., plans to reach full operating capacity about October 20 at which time production will be at the rate of 4,000,000 pounds annually.

WILL BRAZIL continue its pharmaceutical expansion after the war? It was forced to develop a sizable drug production before World War I and also called on the U. S. for help. Then, between the two wars, it turned to Germany—or rather, Germany turned to Brazil and aggressively sold its pharmaceuticals there. Since 1939 Brazil has had to appeal again to the U. S. and vastly expand its own production. Her imports of drugs have dropped sharply in the past few years while her exports have increased.

Straws in the wind, like this, are important to all of us in the chemical industry. Our foreign markets are a significant postwar factor, and portents for the future demand serious attention and planning.

THE MONSANTO MAGAZINE quizzes its readers whether plastics were known to the cave man. It answers yes, mud was one of the first known plastics. We bet, though, that the cave men didn't make golf balls or tires out of his "plastics"—developments we have gleaned from this month's news.

HARDLY A MONTH goes by but what someone again raises the question of using alcohol or an alcohol blend as a motor fuel. Senator Gillette (Dem., Ia.), chairman of a Senate agriculture subcommittee, suggests that use as one of the arguments for Government retention of grain alcohol plants after the war. His group recommended continued operation of the plants to assure a market for surplus grains, and appointment of a Presidential committee to survey the advisability of turning surplus grains in ever increasing quantities into the industrial market.

THE AUTOMOTIVE and typewriter industries have announced that postwar prices of their products will be 25 to 40% above prewar levels. We haven't heard any similar announcement from the chemical industry.

SCIENTISTS are accused of every legerdemain under the sun—or rather the dark of the moon. We noticed the following quip in *Parade*: "After years of research a scientist has discovered a chemical that, when mixed with gasoline, produces perfectly palatable bourbon whiskey. The poor fellow only has an A card and doesn't know what to do next."

Abstracts of U. S. Chemical Patents

A Complete Checklist Covering Chemical Products and Processes

Printed copies of patents are available from the Patent Office at 10 cents each. Address the Commissioner of Patents, Washington, D. C., for copies and for general information concerning patents or trade-marks.

From Official Gazette—Vol. 565, Nos. 2, 3, 4, (Aug. 8-29)—p. 521

*Equipment

Window screen comprising an open mesh fabric of heavy denier regenerated cellulose having a basis of an organic ester of cellulose, and saponifying said stretched materials. No. 2,353,224. Camille Dreyfus.

Window screen of an open mesh fabric of stretched filaments having basis of organic ester of cellulose bound together along length with a compatible compound. No. 2,353,225. Camille Dreyfus.

Electric space heater. No. 2,353,247. John Kuettel, one-half to John Lawler.

Testing vessels for permanent deformation under pressure.. No. 2,353,275. Theodore St. Clair to Phillips Petroleum Co.

Float valve for filling machine reservoirs. No. 2,353,277. Robert Stewart and Henry Franz to Crown Cork & Seal Co., Inc.

Detecting and measuring leakage in gas lines. No. 2,353,287. Matthew Benesh to Chicago By-Products Corp.

Liquid treatment by formation and removal of sludge in a liquid body maintained in a tank. No. 2,353,358. Frank Prager to Graver Tank & Mfg. Co., Inc.

Restraining fluid against escape from a well hole through wall thereof, which comprises introducing into well hole a relatively thin, highly flexible, infrangible, water-insoluble, fragmented organic grainless foil. No. 2,353,372. John Stone to The Dow Chemical Co.

Method of and apparatus for spray-drying liquids which have a non-liquid ingredient. No. 2,353,459. Max Friedrich to Inredeco, Inc.

Gas generating apparatus, a generating chamber, a tank mounted on chamber having a carbide compartment and a water compartment. No. 2,353,481. Clarence McCormick.

Automatic control for heat transfer systems. No. 2,353,486. Samuel Miller.

Dialyzing equipment. No. 2,353,489. Raymond Newcomb.

Clean-out device for a liquid containing tank having a bottom side outlet. No. 2,353,530. William Walker, one-half to John Rackley.

Control apparatus for causing a gas to be fed into a chamber containing a second gas having physical properties different from those of first gas. No. 2,353,538. Hervey Barber.

Apparatus for classifying and separating particles of materials of different specific gravities. No. 2,353,543. Jean Brusset.

Device for separating a solvent from oil dissolved or partially dissolved therein. No. 2,353,551. Fred Dexter to Dorward & Sons Co.

Seal for pressure vessels and the like. No. 2,353,589. Ray Sandberg to Houdaille-Hershey Corp.

High-temperature electric furnace for continuous treatment of solid substances or mixtures, as for extraction by distillation of metals from ores, compounds or mixtures. No. 2,353,614. Daniel Gardner to Gardner Thermal Corp.

Apparatus for treating a freshly cast body of metal. No. 2,353,657. William Edwards and Edward McCandless to The Linde Air Products Co.

Colorimetric apparatus. No. 2,353,716. Roger Estey and William Peck and Kennard Harper to Spencer Lens Co.

Liquid level responsive means. No. 2,353,641. Glenn Brockett to Fisher Governor Co.

Pressure-membrane extraction apparatus. No. 2,353,760. Lorenzo Richards, dedicated to the free use of the People in the territory of the United States.

Gas generating apparatus. No. 2,353,926. Stanley Peters.

Filter material for filtering dust particles out of gas comprising a porous base of fibrous glass, and a coating thereon of a deliquescent substance selected from zinc chloride and lithium chloride. No. 2,353,936. Irving Newton Smith to Owens-Corning Fiberglas Corp.

Filter material comprising a porous base of fibrous glass and a coating thereon of zinc chloride in solution, cellulose, and a wetting agent. No. 2,353,937. Irving Newton Smith to Owens-Corning Fiberglas Corp.

Method of sewing to prevent fluid transmission through sewed area which comprises sewing a waterproof-thermoplastic resin member with thermoplastic thread, applying a solvent of said thermoplastic member and thread over resulting needle-hole. No. 2,353,960. Ernest King.

Surface type heat exchanger, a condenser boiler comprising a cylindrical shell having a top portion forming an inlet for mercury vapor and a bottom portion forming an outlet for mercury liquid. No. 2,354,071. Arthur Smith to General Electric Co.

Apparatus for recovery of heat and chemicals from waste liquor. No. 2,354,175. Leslie Wilcoxson to The Babcock & Wilcox Co.

Fluid heat exchange installation. No. 2,354,222. Rolfe Shellenberger to The Babcock & Wilcox Co.

Apparatus and method for orienting surface molecules of plastic materials. No. 2,354,243. Robert Blake to Polaroid Corp.

Apparatus for using normally gaseous solvents to separate oil and wax, a wax-disintegrating device wherein wax is precipitated and disintegrated. No. 2,354,246. Eddie Dons and Oswald Mauro to Mid-Continent Petroleum Corp.

Electron image device and an electron scanning microscope. No. 2,354,263. James Hillier to Radio Corp. of America.

Viscosimeter. No. 2,354,299. George Bays to Stanolind Oil and Gas Co.

Apparatus for grading powdered material. No. 2,354,311. Walter Harlow to International Combustion Limited.

Apparatus for grading powdered material. No. 2,354,312. Walter Harlow to International Combustion Limited.

Regenerative glass melting furnace and method of burning liquid fuel therein. No. 2,354,324. Levi Longenecker.

Oil purifying system. No. 2,354,352. Laurence Sharples to The Sharples Corp.

Bessemer converter blow control method. No. 2,354,400. James Percy to United States Steel Corp. of Delaware.

Electrical precipitation apparatus for removing suspended particles from a gas. No. 2,354,457. James Hamilton to Western Precipitation Corp.

Measuring dispenser. No. 2,354,477. Walter Radbruch.

Filter shell for use in a lubricating system. No. 2,354,481. John Russell to Luber-Finer, Inc.

Magnetic drive. No. 2,354,563. Frank Weisse to Badger Meter Mfg. Co.

Apparatus for diffusing a first fluid into a second fluid under pressure. No. 2,354,609. Charles Albert Phipps.

Fire extinguishing unit comprising a liquid carbon dioxide supply pipe. No. 2,354,611. Harry Quarfoot to Reconstruction Finance Corp.

Solution feeding or decanting apparatus. No. 2,354,623. Chester Tietig.

Apparatus for controlling feed rate and proportions of cement and water delivered to a cement mixer. No. 2,354,634. Nelson Griswold to The Dow Chemical Co.

Heater for fluids. No. 2,354,643. Charles Angell to Universal Oil Products Co.

Method of geophysical exploration for location of subterranean porous formations permeated by fluid. No. 2,354,659. Willis Bazhaw and Josephus Parr, Jr., to Olive Petty.

Air and gas washer. No. 2,354,674. Ernest Fisher.

Dust collection and reduction apparatus. No. 2,354,675. Ernest Fisher.

Cleaning apparatus for air or gas. No. 2,354,676. Ernest Fisher.

Gas cleaner. No. 2,354,677. Ernest Fisher.

Gas cleaner and washer. No. 2,354,678. Ernest Fisher.

Liquid control system. No. 2,354,693. William Martin to American Can Co.

Automatic water treating apparatus. No. 2,354,694. Chester McGill and Omar Dubruiel to Elgin Softener Corp.

Apparatus for dissolving water in carbon dioxide. No. 2,354,732. Elinor Baird.

Liquid strainer. No. 2,354,752. Haakon Hellan.

Electric furnace for use with a chloride, or a chloride-fluoride salt bath. No. 2,354,753. Artemas Holden.

Fire extinguishing apparatus. No. 2,354,762. Alfred McFerron to The Globe Machine & Stamping Co.

Receptacle for caustic alkali whose interior is covered with a composition comprising a benzene soluble ethyl cellulose and polystyrene. No. 2,354,824. Irving Muskat to Pittsburgh Plate Glass Co.

Remote-reading specific-gravity indicator. No. 2,354,847. Joseph Woodbridge to The Electric Storage Battery Co.

Container closure including a sealing element comprising base of compressible material and facing film of vinylidene chloride resin adhered to base by adhesive comprising polyisobutylene, hydrogenated rosin, and a terpene polymer. No. 2,354,855. Edward Emanuel to Armstrong Cork Co.

Apparatus for extraction of oils from whole citrus fruit. No. 2,354,878. William Platt to California Fruit Growers Exchange.

Self-service system for storage and utilization of fuel gases. No. 2,354,894. Rosswell Thomas to Phillips Petroleum Co.

Apparatus for distilling gin under substantially constant vacuum and low temperature conditions. No. 2,354,897. Theodore Wentworth to The Vulcan Copper & Supply Co.

Heating apparatus for tanks. No. 2,354,932. Jay Walker and Clarence Glasgow to National Tank Co.

Liquid level sensitive apparatus. No. 2,354,945. Theodore Cohen and Hans Ostermann to Wheelco Instruments Co.

Liquid level sensitive apparatus. No. 2,354,964. Hans Ostermann and Theodore Cohen to Wheelco Instruments Co.

Continuous absorption machine comprising an absorber and an evaporator containing an inert auxiliary gas and a refrigerant. No. 2,354,982. Alexander Bikkers.

*Food Chemicals

Producing a non-reverting comestible soybean oil by selective hydrogenation. No. 2,353,229. Maurice Durkee to A. E. Staley Manufacturing Co.

Fruit-containing sirup comprising pieces of fruit in an aqueous medium containing sugar and containing algin as a thickening agent. No. 2,353,251. Victor Le Gloahec to Algin Corp. of America.

Icing consisting of sugar, water, and soy bean proteins. No. 2,353,307. Julian Joffe.

Hard chocolate surface having adhering thereto icing containing soy bean protein cooled in situ. No. 2,353,308. Sarah Joffe and Julian Joffe.

Making a banana product which consists in treating outer surface of a ripened banana fruit substance with an acidulated solution. No. 2,353,333. Samuel Harris.

Recovering phosphatide material from a vegetable oil which consists in bringing vegetable oil and a phosphatide-material adsorbing solid into intimate contact. No. 2,353,571. Henry Kraybill, Pearl Brewer and Max Horsley Thornton to Purdue Research Foundation.

Producing citric acid by submerged fermentation, comprising adding a mycelium of Aspergillus niger separated from its growth solution to an aqueous fermentation solution. No. 2,353,771. Joseph Szücs.

Preserving fruit juices for human consumption which consists in mixing with fresh juice propylene oxide, immediately sealing mixture in an air-tight container for a time at least sufficient for the oxide to hydrolyze to propylene glycol. No. 2,354,014. Edward Haines.

* *Continued from last month, (Vol. 564, Nos. 2, 3, 4—Vol. 565; No. 1)*

Nutrient medium for production of a Saccharomyces cerevisiae yeast containing a yeast assimilable molasses carbohydrate, a yeast nourishing inorganic salt and a methyl thiazole. No. 2,354,281. Alfred Schultz and Lawrence Atkin and Charles Frey to Standard Brands, Inc.

In process for dehydrating a solid foodstuff, heating of same in a bath comprising partially saturated ester of an alipathic polyhydric alcohol and an alipathic monocarboxylic acid. No. 2,354,495. Paul Bodenstein to Joseph Haimowitz and Joseph Shifrin.

Conversion of dextrose to levulose. No. 2,354,664. Sidney Cantor and Kenneth Hobbs to Corn Products Refining Co.

Stabilizing an edible oleaginous substance capable of becoming rancid which comprises admixing with a tannin. No. 2,354,719. Bruno Verbeck to Wilson & Co., Inc.

Food composition comprising a finely divided, dry milled oat product. No. 2,355,030. Sidney Musher to Musher Foundation, Inc.

Ice cream composition comprising as an ingredient a finely divided, dry milled oat product. No. 2,355,032. Sidney Musher to Musher Foundation, Inc.

*Industrial Chemicals, Inorganic

Concentrating minerals containing substantial quantities of particles of all size ranges up to maximum size of mineral being treated. No. 2,353,152. Louis Erck to Minerals Beneficiation, Inc.

Conditioning a drilling mud comprising an aqueous dispersion of clay to control viscosity and other properties thereof. No. 2,353,230. Allen Garrison and Karl ten Brink to The Texas Co.

Treating impure phenothiazine with a basic inorganic compound of a metal. No. 2,353,292. Edgar Britton and Joseph Eisenman to The Dow Chemical Co.

Removing occluded water from mineral concentrates which comprises subjecting a body of such concentrates to vibration. No. 2,353,602. Frank Trotter to Cuban-American Manganese Corp.

Electrolytic preparation of alkali metal ferricyanides. No. 2,353,781. Hans Neumark to General Chemical Co.

Electrolytic preparation of sodium ferricyanide. No. 2,353,782. Hans Neumark to General Chemical Co.

Stripping oxide film from aluminum and its alloys which comprises immersing in solution of sulphuric acid, phosphoric acid, chromic acid, and water. No. 2,353,786. Earl Ross, one-third to Russell Horsefield.

Producing titanium dioxide by hydrolysis of a titanium salt solution. No. 2,353,918. Reginald Monk to American Zinc, Lead & Smelting Co.

Treating ramie and allied fibers with caustic soda, ammonium chloride, ammonium carbonate and soap. No. 2,353,947. Frank Svoboda and Allen Skolnik.

Quaternary phosphonium compounds. No. 2,353,964. Wilhelm Lommel and Heinrich Munzel to General Aniline & Film Corp.

Treating a synthetic hydrated magnesium silicate decolorizing material to form a decolorizing product having improved decolorizing and filtration characteristics. No. 2,353,970. Max Seaton to Lyle Caldwell.

Making thiourea by reacting calcium cyanamide with hydrogen sulfide. No. 2,353,997. Robert Cooper to Monsanto Chemical Co.

Forming sodium silico fluoride. No. 2,354,177. Henry Kawecki to Reconstruction Finance Corp.

Preparing products having surface active properties. No. 2,354,359. Leland Beckham to The Solvay Process Co.

Producing lead arsenate which comprises adding arsenic acid to lead silicate and decomposing lead silicate to form lead arsenate in presence of precipitated silica. No. 2,354,475. John Nordyke to The Eagle-Picher Lead Co.

Wetting agent produced by reacting aluminum chloride-hydrocarbon complex with sulfuric acid. No. 2,354,577. John Cone and Albert Shmidl to Standard Oil Development Co.

Manufacture of reactive magnesium oxide. No. 2,354,584. Frank Elkington and Heinz Chesny.

Producing alkali metal compounds of monosulphides, monoselenides and monotellurides. No. 2,354,742. George Cunningham to The Mathieson Alkali Works, Inc.

Refractory mixture containing magnesia, alumina, and sufficient silica to permit vitrification. No. 2,354,757. Robert Kleinschmidt and Edward Washken to Bethlehem Steel Co.

Producing calcium carbonate. No. 2,354,788. Edward Allen to Pittsburgh Plate Glass Co.

Purifying aqueous alkali metal hydroxide containing silica as an impurity. No. 2,354,823. Irving Muskat and Fred Ayres to Pittsburgh Plate Glass Co.

*Industrial Chemicals, Organic

Preparing relatively high density explosive compositions which comprises heating two solid chemical compounds, at least one of which is a nitrated organic compound, maintaining in contacting relationship therewith a dispersing agent. No. 2,353,147. Melvin Cook and Clyde Davis to E. I. du Pont de Nemours & Co.

Direct oxidation of a lower aliphatic alcohol to obtain corresponding aliphatic acid, which comprises treating a solution of a metal ion of a metal of aluminum group in an aliphatic acid. No. 2,353,158. David Hull to Eastman Kodak Co.

Direct oxidation of a lower aliphatic alcohol to obtain the corresponding aliphatic acid, which comprises treating a solution of a metal ion of a metal of the platinum group in an aliphatic acid. No. 2,353,159. David Hull to Eastman Kodak Co.

Direct oxidation of a lower aliphatic alcohol to obtain the corresponding aliphatic acid, which comprises treating a solution of a metal ion of a metal of the chromium group in an aliphatic acid. No. 2,353,160. David Hull to Eastman Kodak Co.

Aqueous well drilling fluid containing a small percentage of a water-dispersible phytic acid compound. No. 2,353,166. Henry Lanz, Jr., and Delmar Larsen to National Lead Co.

Composition of diacetone and a pH buffering agent. No. 2,353,209. Sophia Williams.

Composition of diacetone and a pH buffering agent containing an organic corrosion inhibitor. No. 2,353,210. Sophia Williams.

Purifying "styrene still bottoms" resulting from distillation of styrene synthetically produced by dehydrogenation of ethyl-benzene, by bringing said "still bottoms" into contact with an alkali sulphide. No. 2,353,223. Frank Corkery and Samuel Burroughs to Pennsylvania Industrial Chemical Corp.

Continuously carrying out a fusion reaction between an aromatic sulfonate and an alkali metal hydroxide. No. 2,353,237. John Harris, Jr., to Allied Chemical & Dye Corp.

Making a highly absorptive antiseptic powder comprising step of steeping fibrous cellulose material in a solution of orthoboric acid. No. 2,353,243. Julius Kent to Kent Chemical Corp.

Preparing cellulose acetate in which cellulose is acetylated with acetic anhydride and sulfuric acid catalyst, the step which comprises adding phosphoric acid to mass. No. 2,353,255. Carl Malm and Loring Blanchard, Jr., to Eastman Kodak Co.

Preparation of substituted phenols. No. 2,353,282. Victor Turkington, Leo Whiting, and Lanning Rankin to Bakelite Corporation.

Monomercurating aromatic compounds. No. 2,353,312. Kenneth Kobe and Thomas Doumani.

Separating cineoles from hydrocarbons of similar boiling range. No. 2,353,319. Donald Sheffield to Hercules Powder Co.

Manufacture of 1-aminobenzene-4-sulpho-2-carboxylic acid, comprising heating the sulphate of anthranilic acid to 200° C. No. 2,353,351. Eduard Moser to Chemical Industry in Basle.

Preparing a cellulose mixed ester of acetic acid and an acid of 3-6 carbon atoms. No. 2,353,423. John Tinsley to Hercules Powder Co.

Production of 4:4'-dicyano-stilbene and 2,4-dicyano-stilbene. No. 2,353,434. Harry Barber to May & Baker Limited.

Removing toluene from p-toluene sulphonic acid which comprises subjecting molten p-toluene sulphonic acid containing toluene to steam distillation. No. 2,353,441. William Brown to Allied Chemical & Dye Corporation.

Producing an addition agent for hydrocarbon oils, which comprises reacting an ester of phosphorous acid with a high boiling aliphatic alcohol to introduce into said ester at least one high boiling aliphatic alcohol group. No. 2,353,558. Felix Gzemski to The Atlantic Refining Co.

New composition of matter, selected from 2-(arylsulfonylamide-methylen-thio)-thiazoles and the 2-(arylsulfonylamide-methylene-thio)-thiazolines. No. 2,353,593. Winfield Scott to Wingfoot Corp.

Hydrogenation of carbon oxides. No. 2,353,600. Sumner Sweetser to Standard Catalytic Co.

Treating hydrocarbons to produce lower boiling hydrocarbons. No. 2,353,624. Robert Ruthruff.

A cyanoethylated dialkyl acetaldehyde. No. 2,353,687. Herman Bruson and Thomas Riener to The Resinous Products & Chemical Co.

Stabilization of organic substances by metal deactivator in a small proportion sufficient to deactivate metal catalyst. No. 2,353,690. Richard Clarkson and Charles Pedersen to E. I. du Pont de Nemours & Co.

Dihydroxy halogenated diphenyl methanes and process for making same. No. 2,353,725. William Gump to Burton T. Bush, Inc.

Reacting an isoparaffinic hydrocarbon with a halo-olefin in presence of a metal halide catalyst. No. 2,353,766. Louis Schmerling to Universal Oil Products Co.

Generating hydrocarbon gas. No. 2,353,770. Chauncey Suits to General Electric Co.

Compounds of cyclopentanopolyhydrophenanthrene series and process for manufacture of same. No. 2,353,808. Adolf Butenandt and Josef Schmidt-Thome and Erwin Schwenk to Schering Corp.

Dihydroxy halogenated diphenyl methanes and process for making same. No. 2,354,012. William Gump to Burton T. Bush, Inc.

Dihydroxy halogenated diphenyl methanes and process for making same. No. 2,354,013. William Gump to Burton T. Bush, Inc.

Impregnating articles having interstices by boiling articles in benzol, and then boiling solution of polystyrol dissolved in toluol-xylol. No. 2,354,074. Johan Gudbrand Tandberg to Electrolux Corp.

Increasing stability of a diazotype light-sensitive layer containing a diazo compound which comprises adding to coating solution an alpha-beta-unsaturated acrylic acid. No. 2,354,088. Maximilian Reichel to General Aniline & Film Corp.

Apparatus for addition of exhaust gas to gaseous fuel mixture of a high compression or internal combustion engine to eliminate knocking of engine and to reduce its fuel consumption. No. 2,354,179. William Blanc to W. Blanc et L. Paiche.

Polymerization of acrylic compound, which comprises carrying out polymerization in presence of an N-chlorinated hydantoin. No. 2,354,210. Ralph Jacobson to E. I. du Pont de Nemours & Co.

Allylchloromethyl sulphide having formula: $CH_2{=}CH\text{-}CH^2SCH^3CL$. No. 2,354,229. Lewis Walter to The Maltbie Chemical Co.

A chloromethyl sulphide having formula: $RSCH_2CL$. No. 2,354,230. Lewis Walter to The Maltbie Chemical Co.

Disubstituted malonic ester. No. 2,354,231. Lewis Walter to The Maltbie Chemical Co.

Disubstituted malonic ester and process of preparing same. No. 2,354,234. Lewis Walter and Louis Goodson to The Maltbie Chemical Co.

2,5,7,8-tetramethyl-2-alkyl-6-formylaminochromane. No. 2,354,317. Otto Hromatka to Merck & Co., Inc.

Preparing chemical substances having emulsifying and other interface modifying properties which are the esters of a monocarboxylic acid and alkanolamine hydrochloride. No. 2,354,320. Joseph Johnson to United Shoe Machinery Corp.

Extracting prolamines in a form that will resist gelation on prolonged standing comprising mixing together grain gluten, a prolamine dispersing agent, and an aldehyde. No. 2,354,393. Ralph Manley and Cyril Evans to Claude R. Wickard, as Secretary of Agriculture of the United States of America.

Acidulated ensilage comprising ensilage and composition of phosphoric acid and an aliphatic amine. No. 2,354,417. Edwin Cox to Virginia-Carolina Chemical Corp.

Manufacture of chlorsulphonic acid. No. 2,354,464. Napoleon Laury to American Cyanamid Co.

Forming a molding composition comprising a synthetic resin and a leather filler. No. 2,354,479. Fritz Rosenthal to The University of Tennessee Research Corp.

Aminoplast modified with a nitrogenous compound selected from (1) aryl compounds having attached to aryl nucleus at least one sulfonamide radical and at least one ureido radical and (2) aldehyde-reaction products of aryl compounds of (1). No. 2,354,504. Gaetano D'Alelio to General Electric Co.

Diazine derivatives. No. 2,354,505. Gaetano D'Alelio and James Underwood to General Electric Co.

Manufacturing acylated polyaminoethers having at least one ricinoleyl radical and at least two basic amino nitrogen atoms. No. 2,354,578.

* *Continued from last month, (Vol. 564, Nos. 2, 3, 4—Vol. 565; No. 1)*

Melvin De Groote and Bernhard Keiser to Petrolite Corp., Ltd.

Manufacturing acylated polyaminoethers having at least two ricinoleyl radicals and at least two amino nitrogen atoms, including at least one basic amino nitrogen atom. No. 2,354,579. Melvin De Groote and Bernhard Keiser to Petrolite Corp., Ltd.

Manufacturing acyl polyaminoethers having at least one ricinoleyl radical and at least two amino nitrogen atoms, including at least one basic amino nitrogen atom. No. 2,354,580. Melvin De Groote and Bernhard Keiser to Petrolite Corp., Ltd.

Aromatic ethers of 1,3-butadiene-ol-2. No. 2,354,632. Arthur Wolfram and Hellmuth Jahn.

Direct oxidation of a lower aliphatic secondary alcohol to obtain corresponding ketone. No. 2,354,683. David Hull to Eastman Kodak Co.

Making improved activated carbon from finely divided char. No. 2,354,-713. Alan Stoneman.

Parenteral solution comprising a water insoluble anti-hemorrhagic substance and an ester included in ethyl succinate, n-butyl succinate, ethyl pimelate and n-butyl pimelate. No. 2,354,738. Gustaf Carlson and Dilworth Rogers to Lederle Laboratories, Inc.

Ester of an inorganic acid and a substituted benzyl alcohol having formula R-CH_2OH in which R is a substituted phenyl radical selected from a trimethyl-butenyltetrahydrophenyl and a trimethyl-butylhexahydrophenyl. No. 2,354,774. Alfred Rummelsburg to Hercules Powder Co.

(Tetra ethoxy methylene) p,p'-diamino diphenyl sulphone of M. P. 148-150° C. with slight decomposition. No. 2,354,784. Rudolf Tschesche and Kurt Bohle to Schering Corp.

Separating tall oil into useful fractions, one being enriched in resin acids and impoverished in fatty acids and the other being enriched in fatty acids and impoverished in resin acids. No. 2,354,812. John Jenkins to Pittsburgh Plate Glass Co.

Producing chlorinated diphenyl compounds free of nitro groups from a chlorinated mononitrodiphenyl of lower chlorine content. No. 2,354,-813. Russell Jenkins to Monsanto Chemical Co.

An N-phenyl-isopentosamine and process for preparing N-phenyl-isoglycosamines, which comprises effecting a molecular rearrangement of N-phenylaminoglycosides. No. 2,354,846. Friedrich Weygand to Winthrop Chemical Co., Inc.

Recovering hydroxy-3-etiocholenic acid and its esters from mixtures with homologous acids. No. 2,354,875. Rupert Oppenauer and Carel Bolt to Roche-Organon, Inc.

Recovering highly purified dicyclopentadiene from a crude liquid mixture of similarly boiling materials. No. 2,354,895. Alger Ward to The United Gas Improvement Co.

Preparation of B-alanine amide by reduction of cyanoacetamide. No. 2,354,909. Gustaf Carlson to Lederle Laboratories, Inc.

*Leather

Making leather which comprises impregnating chrome tanned leather with solution of a water-dilutable, acid-sensitive condensation product of ammeline and formaldehyde partially neutralized with sodium and potassium hydroxides. No. 2,353,556. John Grim and Joseph Niedercorn to American Cyanamid Co.

*Medicinals

Producing 2-(p-amino-benzene-sulphonamido)-quinoline therapeutically useful heterocyclic compound. No. 2,353,449. Arthur Ewins and Montague Phillips to May & Baker, Limited.

An a,a'-diethyl-4,4'-dihydroxy-stilbene di-fatty acid ester, the acid groups of which are identical and contain from 3 to 8 carbon atoms. No. 2,353,684. Karl Miescher and Jules Heer to Ciba Pharmaceutical Products, Inc.

Therapeutic product and process for manufacture of same. No. 2,354,-132. John Nutley and Ulrich Solmssen to Hoffman-La Roche, Inc.

Preparing an insulin preparation having a prolonged effect which comprises condensing under acid conditions a formaldehyde substance with a substance selected from alkoxyphenethylamines and their salts and alkoxyphenethylamines quaternary ammonium derivatives, to produce reaction product which is capable of forming a precipitate with insulin. No. 2,354,211. Everett Lang and Johannes Buck to Burroughs Wellcome & Co.

A 5,5 disubstituted barbituric acid derivative. No. 2,354,232. Lewis Walter to The Maltbie Chemical Co.

A 5,5 disubstituted 1-methylbarbituric acid derivative. No. 2,354,233. Lewis Walter to The Maltbie Chemcial Co.

Increasing germicidal property of chlorophenol, sulfophenol, that comprises adding a soluble, metallic, non-precipitant reducing agent. No. 2,-354,334. Anthony Salle and Howard Guest, one-half to Leo Gunther.

Marihuana active compound. No. 2,354,492. Roger Adams.

*Metals, Alloys

Condensing magnesium metal from a mixture of magnesium vapor and oxides of carbon produced at high temperatures. No. 2,353,193. Royd Sayers to the United States of America, as represented by the Secretary of the Interior.

Combining or alloying of a set of selected metals having substantially same boiling points, comprising distilling metals by vaporization and condensation; characterized in that metals are brought into combination before their vaporization and their vapors are conducted away in admixture. No. 2,353,612. Daniel Gardner to Virginia Metal Industries, Inc.

Beneficiating iron ores comprising mixing crushed ore with solid carbonaceous reducing agent and a basic hydroxide. No. 2,353,613. Daniel Gardner to Virginia Metal Industries, Inc.

Improving resistance to abrasion of iron-base alloys containing chromium and carbon, principally iron, which consists in heating said alloys at a temperature above temperature range at which alloys of such composition are customarily heated to develop maximum hardness. No. 2,353,-

* *Continued from last month, (Vol. 564, Nos. 2, 3, 4—Vol. 565; No. 1)*

688. Charles Burgess to Electro-Metallurgical Co.

Aluminum base alloy, comprising a foundation member that has a propensity to undergo cracking intercrystalline corrosion, containing zinc magnesium and copper and nickel, an adherent coating thereon comprising an aluminum base alloy containing zinc. No. 2,354,006. Gaston Gauthier.

Making a composite rubber-metal structure comprising rubber and metal in adhering relation which comprises interposing a salt between a vulcanizable rubber composition and metal and vulcanizing assembly under pressure. No. 2,354,011. Malcolm Gross to The B. F. Goodrich Co.

Casting containing carbon, silicon, manganese, molybdenum, copper with remainder all iron, said casting having a case .04 inch thick and a hardness of 62 to 71 or more on Rockwell C scale. No. 2,354,055. James Powers to General Electric Co.

Treating sheets of silicon iron to produce an electrically insulating film on surfaces of sheets during an annealing process to develop grain orientation. No. 2,354,123. Clifford Horstman and Weldon Brandt to Westinghouse Electric & Manufacturing Co.

Producing alumina from clay. No. 2,354,133. Sanford Lyons to Georgia Kaolin Co.

Steel comprising carbon, manganese, chromium, metal selected from aluminum and vanadium, molybdenum, silicon and iron. No. 2,354,147. Howard Scott to Westinghouse Electric & Manufacturing Co.

Copper lining for hydrocarbon treating apparatus to eliminate carbon deposition. No. 2,354,163. Charles Weizmann and Herbert Steiner.

Reduction of magnesium. No. 2,354,253. Henri Gentil to Alloy Processes Limited.

Laminated solder-filled sheet metal for jewelry. No. 2,354,409. Edward Strasser to I. Stern & Co., Inc.

Producing stainless steel powder from contaminated residues containing stainless steel. No. 2,354,727. John Wulff.

*Paint Pigments

Filler or pigment product containing finely divided amorphous carbon and calcium carbonate. No. 2,354,858. Gunter Gloss and Robert Clarke to Marine Magnesium Products Corp.

*Paper and Pulp

Treating blow pit liquor from sulphite wood pulping to recover basic constituents and sulphur constituents in concentrated form for direct reuse in preparing fresh sulphite cooking liquor. No. 2,354,553. Daniel Sherk.

Moistureproofed glassine paper coated with copolymer formed of vinyl chloride and diethyl chloromaleate, polymerized terpene, hydrogenated methyl abietate, paraffin, and dibutyl sebacate. No. 2,354,574. Clarence Carson to Wingfoot Corp.

Sizing paper which comprises treating it with gelatin and a dihydroxymethyl urea. No. 2,354,662. Robert Bryce to Eastman Kodak Co.

*Petroleum Chemicals

Improved distillate fuel oil composition. No. 2,353,192. Edmund Sargent and Edward Oberright to Socony-Vacuum Oil Co., Inc.

Recovering butane and dibutyl sulfate from an acid mixture comprising butane, dibutyl sulfate, butyl acid sulfate and butene polymers. No. 2,353,500. Frederic Pyzel to Shell Development Co.

Controlling amount of catalyst in a reaction zone in a reaction of fixed overall dimensions without disturbing superficial vertical gas or vapor velocities at base of said zone which comprises varying effective height of said reaction zone by varying level at which catalyst is removed from said zone without changing overall dimensions of reactor. No. 2,353,505. Fred Scheineman to Standard Oil Co.

Reactivating solid adsorbent contact catalysts of reduced activity due to combustible carbonaceous deposits accumulated during catalytic conversion of hydrocarbons. No. 2,353,508. Walter Schulze to Phillips Petroleum Co.

Endothermic conversion of hydrocarbons over contact catalyst masses which comprises heating a hydrocarbon charge to conversion temperature, passing hydrocarbons in vapor form through a plurality of successive increments of catalyst. No. 2,353,509. Walter Schulze and Carl Helmers to Phillips Petroleum Co.

Simultaneous production of ethyl chloride and ethylene dichloride. No. 2,353,563. Charles Hemminger to Standard Oil Development Co.

Continuous method for polymerizing normally gaseous olefins. No. 2,353,832. Lebbeus Kemp to The Texas Co.

Isomerization of normal pentane into iso-pentane. No. 2,353,899. Vladimir Ipatieff and Herman Pines to Universal Products Co.

Treating a water-wet oil-producing sand, which comprises depositing upon sand grains an oil insoluble film coating of a polyvalent metal salt of a low molecular weight fatty acid and wetting said film coating with petroleum oil. No. 2,354,203. Allen Garrison to The Texas Co.

Production of methyl ethyl ketone which comprises reacting 2-chlorobutene-2 with aqueous sulfuric acid. No. 2,354,512. Harry Finch and Kenneth Marple to Shell Development Co.

Production of physiologically inert oils, highly paraffinic hydrocarbon oils of high boiling point. No. 2,354,540. Edward Peck to Standard Catalytic Co.

Converting a heavy hydrocarbon oil containing vaporizable constituents and constituents unvaporizable without substantial decomposition under normal pressure conditions to form lower boiling hydrocarbons. No. 2,354,546. Edward Reeves to Standard Oil Development Co.

Isomerization of normal paraffins. No. 2,354,565. John Wood and Charles Lynch to Standard Oil Development Co.

Resolving a water-in-oil emulsion which comprises treating it with a composition containing a Diels-Alder condensation product, derived from a terpene and an open chain, polycarboxylic unsaturated acid body and a bodied fatty oil re-esterified with a polyalkylene glycol. No. 2,354,993. John Harlan to Standard Oil Development Co.

*Petroleum Refining

Production of motor fuel. No. 2,353,234. Karl Hachmuth to Phillips Petroleum Co.

Manufacture of gasoline of high anti-knock value, improvement which comprises mixing a finely-divided argillaceous material with a petroleum stock produced by thermal cracking without catalysis. No. 2,353,399. Eugene Herthel to Sinclair Refining Co.

Cracking hydrocarbon distillates, the improvement consisting commingling said distillates with a light feed to produce a mixture. No. 2,353,490. Jan Nooruyn to Shell Development Co.

Maintaining a critical vapor velocity in an up-flow reactor of fixed external dimensions for maintaining powdered solid catalyst in dense phase condition in upflowing gas or vapor, which comprises varying effective cross-sectional area of said reactor without changing external dimensions thereof. No. 2,353,495. Donald Payne to Standard Oil Co.

Isomerization of olefin hydrocarbons by shifting the double bond. No. 2,353,552. Harry Drennan to Phillips Petroleum Co.

Inhibiting foaming of viscous petroleum oil by incorporating therein a thiophosphate selected from tricapryl monothiophosphate, and tri-2-ethylhexyl-monothiophosphate. No. 2,353,587. Carroll Rill to Socony-Vacuum Oil Co., Inc.

Manufacturing high antiknock motor fuel hydrocarbons from a mixture of low boiling hydrocarbons containing normal paraffins having more than two and less than six carbon atoms per molecule. No. 2,353,596. William Shiffler and Laverne Elliott to Standard Oil Co. of California.

Breaking petroleum emulsions of water-in-oil type, characterized by subjecting emulsion to action of a demulsifying agent. No. 2,353,694. Melvin De Groote and Bernhard Keiser to Petrolite Corporation, Ltd.

Conversion process which comprises subjecting a hydrocarbon oil containing suspended powdered cracking catalyst to a cracking temperature to form olefinic gasoline. No. 2,353,731. Elmer Kanhofer to Universal Oil Products Co.

Separating wax from wax-bearing oil wherein wax-bearing oil is diluted with a solvent liquid comprising a mixture of a wax antisolvent and an oil solvent and resulting diluted mixture brought to a temperature at which wax hydrocarbons are solidified. No. 2,353,810. Edward Cole and Howard Gross to The Texas Co.

Hydrocarbon conversion. No. 2,353,923. Edwin Nelson to Universal Oil Products Co.

Hydrocarbon conversion process. No. 2,353,950. Herman Wenzke to Universal Oil Products Co.

Obtaining sulphur free from impurities from impure sulphur containing about .05 percent organic impurities. No. 2,353,959. Robert Hills to Freeport Sulphur Co.

Polymerizing olefins which comprises feeding an olefin in gasiform state with powdered catalyst suspended therein into a reaction zone. No. 2,354,261. Charles Hemminger to Standard Catalytic Co.

Conversion of hydrocarbons in presence of a contact mass. No. 2,354,353. Armand Abrams to Socony-Vacuum Oil Co., Inc.

Thermally converting hydrocarbons. No. 2,354,354. Armand Abrams to Socony-Vacuum Oil Co., Inc.

Catalytically reforming aliphatic hydrocarbons of approximately gasoline boiling range to provide aromatic hydrocarbons of gasoline boiling range. No. 2,354,355. Armand Abrams and Irving Welinsky to Socony-Vacuum Oil Co., Inc.

Recovering by adsorption gases and vapors from a mixture of gases and vapors. No. 2,354,383. Siegfried Kiesskalt.

Preparing derivatives of acid sludges. No. 2,354,554. Jere Showalter and Mehemet Wiggen to Standard Oil Development Co.

Increasing permeability of a gas or oil bearing stratum by attrition. No. 2,354,570. Charles Benckenstein.

Two-stage alkylation process. No. 2,354,595. Basil Hopper to Union Oil Co. of California.

Alkylation process. No. 2,354,641. Clarence Gerhold to Universal Oil Products Co.

Simultaneously converting "doctor" sour to "doctor" sweet sulfur compounds in hydrocarbon motor fuel and increasing octane rating thereof. No. 2,354,646. Richmond Bell to The Pure Oil Co.

Drilling mud containing colloidally dispersed particles to which has been added material which is positively charged when dissolved in water and selected from acid proteins, basic dyes and salts of metals. No. 2,354,648. Donald Bond to The Pure Oil Co.

Production of high antiknock motor fuels. No. 2,354,652. Don Carmody and Bernard Evering and Edmond d'Ouville to Standard Oil Co.

Motor fuel comprising gasoline containing gum-forming constituents and 4-nitroso-4'-alkoxy diphenylamine as a gum formation inhibitor. No. 2,354,798. Elmer Cook and William Thomas, Jr., to American Cyanamid Co.

Process for effecting hydrocarbon conversion reactions. No. 2,354,851. Joseph Danforth to Universal Oil Products Co.

Treating crude oil containing a mixture of oil, water and water-oil emulsion. No. 2,354,856. Ransome Erwin to Salt Water Control, Inc.

Preparing gasoline from crude petroleum oil. No. 2,354,866. Edward Lang to The Pure Oil Co.

Preparing a plastic composition from extract containing gum-forming, sludge-producing and other unstable constituents undesirable in lubricating oil. No. 2,354,868. Paul McKinney and Milo Mayberry to The Pure Oil Co.

Motor fuel comprising cracked gasoline which contains non-volatile gums and containing, as a gum flux, alkylated naphthalene hydrocarbon. No. 2,354,873. Jacque Morrell to Universal Oil Products Co.

Selectively dehydrogenating dehydrogenatable low boiling hydrocarbons. No. 2,354,892. Carlisle Thacker to The Pure Oil Co.

Regenerating by steam stripping spent aqueous treating reagent. No. 2,354,974. Audley Harnsberger to The Pure Oil Co.

Regenerating fouled catalyst used in treating hydrocarbon fluids. No. 2,355,016. Gustav Stein, Jr. to Standard Oil Development Co.

*Photographic Chemicals

Color-forming photographic compound containing sulphonamide groups. No. 2,353,205. Paul Vittum, Willard Peterson and Henry Porter to Eastman Kodak Co.

Preventing crystallization of couplers incorporated in photographic silver halide emulsions. No. 2,353,262. Willard Peterson and Arnold Weissberger to Eastman Kodak Co.

Photographic gelatin layer containing a condensation product of an ethylol cyanamide with a fatty acid. No. 2,353,279. Donald Swan and Carl Lindquist to Eastman Kodak Co.

Making a photographic color print to be viewed by reflected light. No. 2,353,506. Charles Schettler and Erich Schenk.

Restrainer composition for development of photographs comprising methylaminparaphenolsulphonate. No. 2,353,544. Pio Caccia.

Producing a reversal dye image in a light-sensitive silver bromide emul-

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* *Continued from last month (Vol. 564, Nos. 2, 3, 4, 5—Vol. 565, No. 1)*

sion containing a developed silver image and an easily destroyable coloring substance distributed therein. No. 2,353,661. Bela Gaspar to Chromogen, Inc.

Producing a color-forming photographic emulsion which comprises forming a sensitive silver salt in a colloidal material and then incorporating in said material a coupler compound containing a heterocyclic nucleus. No. 2,353,754. Willard Peterson to Eastman Kodak Co.

Matrix film for production of colored copies. No. 2,354,121. Gerd Heymer to General Aniline & Film Corp.

Silver halide emulsion for color forming development containing as dyestuff former for red a soluble salt of 1-phenyl-5-pyrazolone. No. 2,354,552. Wilhelm Schneider and Alfred Frohlich and Walter Zeh to General Aniline & Film Corp.

*Resins, Plastics

Resinous molding composition comprising polystyrene containing a lubricant consisting of polyalkylene oxide. No. 2,353,228. Frederick Ducca to Bakelite Corporation.

Synthetic pearl resin consisting of a molded heterogeneous mixture of at least two clear incompatible thermoplastic resins in form of a multiplicity of separate, but firmly bonded layers. No. 2,353,457. Gerald Goessling.

Incorporating solid filler material in plastics which comprises forming a solution of plastic in a volatile solvent, forcibly circulating solution in a confined restricted path, introducing solid filler material and grinding it into solution. No. 2,353,991. Clarence Boutwell.

Producing fine-meshed sieve material which comprises stretching wires of a synthetic organic polymer during manufacture, weaving wires and heat shrinking meshed material to form fine-meshed sieve material. No. 2,354,022. Emil Hubert and Herbert Rein.

Composite material comprising a heat treated, thermosetting phen-aldehyde resin, glass fibers distributed in phenol-aldehyde type resin, and adherent coating of a thermoplastic reaction product of polyvinyl acetate and an aldehyde on glass fibers. No. 2,354,110. James Ford and Roger Spencer to Westinghouse Electric & Manufacturing Co.

Producing surface coverings containing oxygen-convertible synthetic resins. No. 2,354,572. Theodore Bradley to American Cyanamid Co.

Plastic composition. No. 2,354,593. Harold Greider and George Fasold to The Philip Carey Manufacturing Co.

Insoluble nitrogenous resinous composition for absorption of acidic constituents from fluids and for ion exchange. No. 2,354,671. John Eastes to The Resinous Products & Chemical Co.

Nitrogenous resin from catechol type tannins. No. 2,354,672. John Eastes and Charles Averill to The Resinous Products & Chemical Co.

Production of artificial shaped articles comprising shaping a composition of a fusible fibre or film forming polyvinyl ester resin. No. 2,354,744. Camille Dreyfus.

Terpene resin. No. 2,354,775. Alfred Rummelsburg to Hercules Powder Co.

Copolymerizing a terpene and a material selected from rosin, rosin acids, rosin esters and rosin acid esters. No. 2,354,776. Alfred Rummelsburg to Hercules Powder Co.

Anti-offset composition which comprises an aqueous solution of a combination of a soluble organic compound selected from glycerol, erythritol, pentitols, pentoses, hexitols, and hexoses; a boric acid-producing material; and an alkali, said composition forming resinous material on drying. No. 2,354,979. Ernest Almy to Atlas Powder Co.

Plastic composition comprising heat plasticized finely ground coarse fraction of dehulled oats in aqueous dispersion. No. 2,355,033. Sidney Musher to Musher Foundation, Inc.

*Rubber

Obtaining rubber from cryptostegia. No. 2,353,460. John Haefele to United States Rubber Co.

Covering material for textile drawing and feeding rolls made of a compound including a rubber-like co-polymer of butadiene and acrylonitrile containing acetylene black. No. 2,353,462. Henry Harkins to United States Rubber Co.

Obtaining rubber from cryptostegia. No. 2,353,482. John McGavack to United States Rubber Co.

Treating rubber which comprises vulcanizing same in presence of condensation product of an aldehyde and a terpenyl arylamine. No. 2,353,591. Winfield Scott to Wingfoot Corp.

Age resistor for rubber which consists of condensation product of a ketone and a terpenyl arylamine. No. 2,353,592. Winfield Scott to Wingfoot Corp.

Making micro-porous rubber having pores interconnecting and of uniform size. No. 2,353,877. Robert Chollar to The National Cash Register Co.

Making a rubber-fabric composite article having improved adhesion between rubber and fabric thereof, which includes impregnating cellulosic fabric with a mixture of an aqueous dispersion of a rubber and a water soluble resin formed by alkaline condensation of a water soluble aldehyde and a monohydric phenol. No. 2,354,426. Raymond Briant to The Firestone Tire & Rubber Co.

Treating mercaptothiazoles with ammonia derivatives and product produced thereby. No. 2,354,427. Edward Carr to The Firestone Tire & Rubber Co.

Treating porous cellular rubber articles, comprising immersing article in a fluid latex composition to impregnate surface portions of article without appreciably impregnating interior portions thereof. No. 2,354,430. Harold Greenup and Leonard Wohler to The Firestone Tire & Rubber Co.

Forming cellular rubber articles having high tensile strength. No. 2,354,433. Mitchell Carter to The Firestone Tire & Rubber Co.

Concentrating latex and like materials, which comprises treating latex with creaming agent selected from alkali soluble acid cellulose acetate dicarboxylates and their water soluble salts. No. 2,354,531. Gerry Mack to Advance Solvents and Chemical Corp.

* Textiles

Forming textile fibers of uniform softness, strength, flexibility, and extensibility from vinyl resins. No. 2,353,270. Edward Rugeley, Theophilus Feild, Jr. and John Conlon to Carbide and Carbon Chemicals Corp.

Elastic fabric comprising a lamina of textile fabric and a lamina of rubber. No. 2,353,525. Merwyn Teague to United States Rubber Co.

Production of filaments, threads, fibers, bands, films having a high resistance to boiling which comprises extruding a solution of a protein in alkali into a coagulating bath, and hardening resultant product by treatment with an aldehyde and with a solution containing formate ions and polyvalent metal ions. No. 2,354,077. Lambertus van Bergen.

Fabric woven from mono-filament strands or strips, each having one concave surface and one convex surface transversely thereof, consisting of a vinylidene chloride copolymer and a plasticizer. No. 2,354,435. Theodore Stedman to The Firestone Tire & Rubber Co.

*Water, Sewage and Sanitation

Softening of water and flocculation of solids suspended therein which comprises adding reagent produced by reacting aluminum sulphate ($Al_2(SO_4)$ a $12H_2O$) and an alkali metal hydroxide and adding starch to reaction mixture. No. 2,354,146. John Samuel to Unifloc Reagents Limited.

Removing dissolved salts from water by passage of salt-containing water through a cation exchange material in its hydrogen form, subsequent passage through an anion exchange resin in its basic form until said exchange material and resin fail to remove salt components and effluent from anion exchange resin becomes acidic. No. 2,354,172. Robert Myers and Donald Herr to The Resinous Products & Chemical Co.

*Agricultural Chemicals

Allyl and methallyl esters of alpha-hydroxy-isobutyric and alpha-acetoxy-isobutyric acids. No. 2,355,330. Chessie Rehberg and Charles Fisher to Claude R. Wickard, Secretary of Agriculture of the United States of America.

Making an oxidized starch conversion product. No. 2,355,463. Walter Nivling; Lyman Nivling and Owen Nivling, administrators of said Walter Nivling, deceased.

Insecticidal composition comprising a toxic compound selected from monohydric phenols and polyhydric phenols, and a petroleum distillate solution of an insecticidal material selected from pyrethrum and rotenone-bearing plants. No. 2,355,974. Edward Harvill to Boyce Thompson Institute for Plant Research, Inc.

Compounds of nicotine. No. 2,356,185. Claude Smith to Claude R. Wickard, Secretary of Agriculture of the United States of America.

Fermentation process for production of ethanol. No. 2,356,218. Leo Christensen, one-third to Frank Robinson and one-third to John Ledbetter, Jr.

Treating plants to overcome cryptogamic diseases comprising a solution of cellulose in cupra ammonia, and a colloidal clay. No. 2,356,299. Henri Bernat.

Inalcoholic fermentation of starchy materials, a process for increasing percentage of recovery of carbohydrates remaining at completion of process without decreasing percentage of alcoholic yield. No. 2,356,381. Leo Christensen to National Agrol Co., Inc.

Insect repellent composition containing dimethyl phthalate, and equal parts of 2-ethyl-1,3-hexanediol and n-butyl mesityl oxide oxalate. No. 2,356,801. Bernard Travis and Howard Jones to the United States of America, as represented by Claude R. Wickard, Secretary of Agriculture.

Insecticide containing as an active ingredient a partial capric acid ester of a low molecular weight neutral aliphatic polyhydroxylic organic compound. No. 2,357,077. Kenneth Brown to Atlas Powder Co.

Insecticide containing as an active ingredient a water-dispersible composition comprising a partial lauric acid ester of a low molecular weight aliphatic polyhydroxylic compound selected from polyhydric alcohols, di- and poly-condensation products of polyhydric alcohols, and carbohydrates. No. 2,357,078. Kenneth Brown to Atlas Powder Co.

Stabilizing soil which comprises admixing therewith an aqueous suspension of a mixture of tall oil and a petroleum-hydrocarbon insoluble pine wood resin, said suspension containing dispersing agent. No. 2,357,124. Abraham Miller, deceased, by Hazel Miller, administratrix, to Hercules Powder Co.

Insecticide comprising a carrier and an unsaturated ketone having at least 12 carbon atoms. No. 2,357,260. Percy Joyce to Shell Development Co.

*Cellulose

In producing cellulose xanthate, the step of reacting a water-containing alkali cellulose with carbon disulfide in presence of ammonia. No. 2,355,650. John Hollihan, Jr. to American Viscose Corp.

Production of lower fatty acid esters of cellulose. No. 2,355,712. Henry Dreyfus to Celanese Corp. of America.

Cellulose fibers having increased affinity to acid wool dyestuffs and having deposited therein a synthetic polymer obtained by reacting an aromatic diisocyanate and N.N'.N" — trimethyldiethydetnetramine and N.N'.N".N"' — tetramethyltriethylenetetramine. No. 2,356,079. Johannes Nelles, Otto Bayer and Wilhelm Tischbein and Fritz Baehren to General Aniline & Film Corp.

Production of lower aliphatic acid esters of cellulose. No. 2,356,228. Henry Dreyfus to Celanese Corp. of America.

Treatment of cellulose acetate in particle size formed by precipitation from an acetic acid solution thereof. No. 2,356,277. George Schneider to Celanese Corp. of America.

Saccharifying cellulose materials by means of diluted mineral acids. No. 2,356,500. Firmin Charles Boinot.

Improving dyeing affinity of cellulosic material by treating with a solution containing formaldehyde and a guanidine salt of a long chain aliphatic dicarboxylic acid. No. 2,356,677. James MacGregor to Courtaulds Limited.

Flexible, transparent, moisture proof sheet comprising a base formed of a sheet of non-fibrous, transparent, cellulosic material coated with a moisture proofing composition containing a wax and a thermoplastic, resin-like rubber derivative of "Plioform" type. No. 2,357,100. Erich Gebauer-Fuelnegg and Louis Eilers and Eugene Moffett to Marbon Corp.

Additional patents on all other classifications from the above volumes will be given next month.

* *Continued from last month (Vol. 564, Nos. 2, 3, 4, 5—Vol. 565, No. 1)*

Abstracts of Foreign Patents

Collected from Original Sources and Edited

Those interested in obtaining further information concerning the patents reported below should communicate with the Patent Department, CHEMICAL INDUSTRIES. Photostated copies of Canadian patents are available from the Commissioner of Patents, Ottawa, Canada.

CANADIAN PATENTS

Granted and published June 13, 1944 (Continued)

Light sensitive multi-contrast printing material having a layer comprising a mixture of two silver halide emulsions which gives a gradation of at least 3.0 on relatively short development and on continuing the development the gradation falls to no less than 1.8. No. 420,788. Canadian Kodak Co. Ltd. (Harry Baines, Edward Philip Davey)

Nitrocellulose film base stabilized by a dihydrazide of an aliphatic dicarboxylic acid, so that the deleterious effect of the nitrocellulose base on the photographic emulsion is materially reduced. No. 420,790. Canadian Kodak Co. Ltd. (Donald R. Swan, John M. Calhoun)

Process of producing an absorbent paper sheet having high wet and dry strength, which is resistant to linting, by treatment of paper base with water soluble cellulose ether, polyhydric alcohol, and aldehyde. No. 420,794. Carbide and Carbon Chemicals Ltd. (A. E. Broderick)

Drafting mechanism for textile fibres. No. 420,796. Casablancas High Draft Co. Ltd. (Joseph Noguera)

Apparatus for positioning blowpipe heads for hardening the oppositely disposed wearing surfaces of a gear tooth. No. 420,803. Dominion Oxygen Co. Ltd. (Frank McGuire, Jr.)

High frequency signalling system. No. 420,805. Electric and Musical Industries Ltd. (Edward Cecil Cook, Joseph Lade Pawsey)

Method of controlling continuous mixing processes which consists in adding the constituents together to form an effluent mixture and controlling the quantity of one of the constituents by balancing the electrical conductivity of the effluent mixture against a determined resistance. No. 420,813. Hudson Bay Mining and Smelting Co. Ltd. (Sherwin Pope Lowe, Benjamin Morrison)

Batt of insulating material comprising a mixture of animal hair, rock wool fibres, asphalt and rubber. No. 420,817. Johns-Manville Corporation. (Louis J. Papineau, James W. Coleman)

Method of removing ammonium compounds from galvanizer's sal ammoniac skimmings to recover ammonia-free zinc chloride, employing heat treatment at 300° and 450° Centigrade, HCl acidification, and filtration. No. 420,819. Morris P. Kirk & Son Inc. (Samuel F. Dubs)

Rotary pump shaft bearing and seal. No. 420,833. Geo. D. Roper Corporation (Winthrop F. Collier)

Process of esterification of a higher fatty acid and a polyhydric alcohol to form an ether-free drying oil by passing super-heated steam through the esterification mixture. No. 420,838. Sherwin-Williams Co. (Wesley A. Jordan)

Electrolyte resistant insulation tape for electroplating equipment consisting essentially of a plasticized copolymer of a vinyl ester of an aliphatic carboxylic acid with a member of the group consisting of vinyl halides and vinyl benzene. No. 420,847. Union Carbide and Carbon Corporation. (Halowax Corp., assignee of Albert E. Maibauer).

Method of manufacturing a shrinkable article by injection of a solution of a cellulosic resin into a cold mold, wherein the resin is dissolved in a solvent in which it is soluble only at elevated temperatures. No. 420,855. United Shoe Machinery Co. of Canada Ltd. (Alexis Eugene Ushakoff)

Rochelle salt piezoelectric crystal apparatus. No. 420,861. Western Electric Co. Inc. (Bell Telephone Laboratories, assignee of Warren Perry Mason)

Method of producing elastic-knitted fabric on a circular knitting machine. No. 420,867. Henry Dreyfus (Albert Fairholme Guyler, William Henry Boaler)

Device for counting and registering the number of picks in a predetermined length of fabric as the same is being woven on a loom. No. 420,868. Michael S. Striker (Arnold Eddy)

Apparatus for separating particles of a mass having different electrical susceptibilities by electrostatic means. No. 420,869. (Bess Ryan Steele, Henry Moore Sutton)

Press roll assembly in a paper making machine comprising three rolls with their axes in common vertical plane with means for independent pressure application at the nips. No. 420,871. Samuel Hird Milne, John Innes Melvin.

Process for conversion of carbon monoxide with hydrogen into hydrocarbons containing more than one carbon atom in the presence of iron-nickel catalyst, wherein the catalyst is prepared by slowly precipitating iron and nickel compounds from solution of salts below 40° Cent., with solution pH maintained above 8. No. 420,875. I. G. Farbenindustrie Aktiengesellschaft. (Arno Scheuermann, Eugen Marecek)

Granted and Published June 20, 1944

Extractor ventilator design. No. 420,878. Benjamin Donald Hughes, Ernest Leonard Ford.

Apparatus for removing residue yarn from a bobbin discharged from automatic weft-replenishing bobbin changing loom. No. 420,879. David Clough, Oswald Bowness Blackburn.

Apparatus for the preparation of chlorine dioxide and oxides of nitrogen from chlorate and acid inter-reaction, comprising a generator having a channel along which liquid reactants may flow, means of feeding the reactants as an admixture, discharge apparatus, and gaseous products recovery installation. No. 420,885. Cyril Harry Evans.

Mill comprising straight, uniform cross section, trapezoidal bars. No. 420,886. Jane Barclay Evans.

Combined self-tapping screw and rivet. No. 420,888. Emmet M. Green.

Method of producing solutions of urea-formaldehyde condensate which form stable mixtures with oil acid-modified alkyd resins by reaction of urea and aqueous formaldehyde in presence of butyl alcohol under super atmospheric pressure, distilling, and dehydrating. No. 420,905. Libbey-Owens-Ford Glass Co. (Israel Rosenblum)

Aerial bomb and projector therefor. No. 420,907. Charles Cedric Ryan.

Recovery of relatively pure sodium chromate from crude sodium chromate bearing material by leaching with sodium hydroxide solution of controlled composition, precipitating sodium chromate, and recycling the mother liquor. No. 420,913. Marvin J. Udy.

Multi-compartment soft gelatine capsule adapted to holding liquids of differing types. No. 420,915. Abbott Laboratories (Edward A. Ravenscroft, Robt. E. Jordan)

Apparatus for the vacuum distillation and condensation of metals. No. 420,922. Alloy Processes Ltd. (Henri Louis Gentil)

Method of finishing textiles which comprises applying thereto an aqueous emulsion of a propylene glycol phthalate alkyd resin. No. 420,929. American Cyanamid Co. (Donald W. Light, Theodore F. Bradley, Alden D. Nute)

Electrical contact element formed of an alloy of silver, palladium, and ruthenium. No. 420,939. Baker & Co., Inc. (Christian William Keitel)

Method for preparing core-solder which comprises charging a hollow capsule of solder metal with a uniform mixture of comminuted solder metal and fluxing material, closing the capsule, and extruding closed capsule through a die. No. 420,945. Canada Metal Co. Ltd. (Ernesto Francisco Martin Cox)

Circuit Interrupter Design. No. 420,946. Canadian Westinghouse Co. Ltd. (Robert H. Nau, Jerome Sandin)

Test device for electrical sockets. No. 420,947. Canadian Westinghouse Co. Ltd. (Douglass A. Young, Carl Oman)

Electrical precipitator for cleaning dust particles from a gaseous stream and adaptable especially to use in ventilating conduits. No. 420,953. Canadian Westinghouse Co. Ltd. (Edward H. R. Pegg)

Process of producing a non-warping, non-bowing, slab of low density and low moisture absorption of cemented pulp fibre composition. No. 420,968. Carbide and Carbon Chemicals Corporation. (Chas. H. Schuh)

Completely unitized, portable, automatic fire detecting, carbon dioxide fire extinguisher. No. 420,969. Cardox Corporation (Eric Geertz, Chas A. Getz)

Process of desurfacing a metal body such as a steel billet by application of stream of oxidizing gas. No. 420,979. Dominion Oxygen Co. Ltd. (James H. Bucknam, Alfred J. Miller)

Blow pipe machine and roll table design to direct sheet like stream of gas against bottom of steel slab to surface condition same. No. 420,980. Dominion Oxygen Co. Ltd. (Arthur M. Keller, James H. Bucknam, Alfred J. Miller)

Blowpipe head for producing plurality of high temperature heating flames. No. 420,981. Dominion Oxygen Co. Ltd. (Wilgot J. Jacobsson)

Apparatus for thermochemically removing metal at oxygen ignition temperature from surface of metal body such as steel slab. No. 420,982. Dominion Oxygen Co. Ltd. (James H. Bucknam, Alfred J. Miller)

Treating fabrics by immersion in aqueous bath of agglomerated aqueous dispersion of water-insoluble synthetic resin, in which the resin agglomerates are macroscopic, with deposition of the flocculated resin particles on the fabric. No. 420,983. Dominion Rubber Co. Ltd. (Howard Arthur Young)

Manufacture of bipartite rubber article, in which each part differs in deformation resistance, by selection of accelerators differing as to temperature effectiveness. No. 420,984. Dunlop Tire and Rubber Goods Co. Ltd. (Reginald Claude Davies)

Quench hardened steel comprising 0.1 to 1.0 silicon, 0.2 to 1.0 carbon, up to 2.0 manganese, 0.03 to 1.0 vanadium, and 0.03 to 0.25 of each of aluminum, zirconium, and titanium, with aggregate percentage of silicon and grain refining elements being at least 0.65 per cent. No. 420,986. Electro Metallurgical Company of Canada Ltd. (Walter Crafts)

Water repellent treatment of textiles by use of an alpha thiocyanate methyl ether and the quarternary ammonium salt thereof, possessed of aliphatic radical of at least ten carbon atoms. No. 420,989. Heberlein Patent Corporation (Ernst Waltmann)

Lightning arrester valve element composed essentially of silicon carbide and boron carbide grains, with the latter forming not less than one per cent of the total. No. 421,005. Norton Company (Raymond R. Ridgway)

Internal remedy for poultry, as a taeniacide, composed of methyl strychnine hydrochloride and areca nut. No. 421,017. Dr. Salsbury's Laboratories. (Orley J. Mayfield, Jack P. Henry)

Rendering textile hose impervious to water under pressure by impregnation with latex. No. 421,021. Sillick Holding Co. Ltd. (D. E. F. Canney)

Process for producing a composite fabric comprising applying to a backing sheet formed of a hydrophilic colloid a solution of a thermoplastic film-forming resin in organic solvent, evaporating solvent, and laminating to a fabric. No. 421,024. Sylvania Industrial Corporation (Roger Wallach)

Defluorinating hydrocarbons by treating with porous calcium fluoride under pressure and at temperature of 100° to 400° Cent. No. 421,029. Universal Oil Products Co. (Aristid V. Grosse, Carl B. Linn)

Motor driven photographic camera with electro-magnetically operated shutters. No. 421,031. W. Watson and Sons Ltd. (Stephen Perkins, Cyril Harold Fry)

Soldering iron containing solder reservoir and duct feed device. No. 421,043. Mike Wawryk.

Granted and Published June 27, 1944

A varnish or enamel composition containing a soluble wax in complete solution in the volatile thinner. No. 421,044. S. C. Johnson and Son Inc. (William P. Lawler, George G. Hable, John Vernon Steinle)

Plastic surgical cast or splint. No. 421,046. Roger Anderson.

Method of treating freshly grown field produce of high natural moisture content to preserve vitamin content by dehydration and immediate chilling. No. 421,047. Gerald D. Arnold.

Machine for recovering flour gold from pulp containing same by settling method. No. 421,053. Maurice Constant.

Shoe sole interlayer of perforated rubber. No. 421,062. Charles Rapelje Hill.

Method of producing articles from fibrous laminae by providing such laminae with a thermoplastic adhesive and subjecting to heat and pressure. No. 421,065. Bruno Jablonsky.

Manufacture of a light polarizer by forming a glass containing a metal and deforming the glass while it is heated to a temperature at which it is stretchable, but below its melting point, to render the glass light polarizing and dichroic. No. 421,067. Edwin Herbert Land.

Draft activating device with backflow control incorporated therein. No. 421,068. Aquila Lauzon.

Process of concentrating ores to produce a plurality of fractions of different specific gravities, by mixing in finely divided state with artificial middling of intermediate specific gravity, and separating on a transversely inclined, longitudinally reciprocated plane surface. No. 421,071. Sibley Byron McCluskey.

Lubricating oil reclaiming unit design. No. 421,075. Bruce Morris.

Lubricating oil reclaimer of vaporizing, filtration design. No. 421,076. Bruce Morris.

Lubricating oil reclaimer. No. 421,077. Bruce Morris.

Liquid fuel burner with means to feed fuel at measured rate to combustion plate. No. 421,080. Eric Sheldon Rowlandson.

Dispensing container internally threaded with follower to extrude contents. No. 421,083. Morris Weisenberg.

Preparation of acid chlorides of higher aliphatic acids by reacting fatty acids with phosphorous trichloride, and removing excess by treatment with water to yield phosphorous acid, and separating same from the purified fatty acid chloride. No. 421,093. Armour and Co. (Anderson W. Ralston, Ciles R. McCorkle, Robert J. Vander Wal).

Adhesive coating composition comprising an admixture of plasticized resin having an affinity for cellulosic materials, plasticized crepe rubber, and paraffin wax in percentages of 60; 12; and 28, respectively. No. 421,103. Canada Foils Ltd. (Carlaw P. Olstad).

Method of coating fluorescent discharge tubes with phosphor comprising employment of carbonaceous binder, drying, and dissolving out the binder material to leave undisturbed phosphor coating. No. 421,105. Canadian General Electric Co. Ltd. (Eugene Lemmers).

Thermal overload electrical relay. No. 421,107. Canadian General Electric Co. Ltd. (Allen G. Stimson).

Absorber keying circuit arrangement for radio transmitter. No. 421,109. Canadian Marconi Co. Ltd. (Newsome Henry Clough).

Hydraulic brake fluid comprising as its essential ingredients a mixture of at least two alkyl ethers of alkylene and polyalkylene glycols and a fatty acid—containing lubricating oil of low modifying point. No. 421,111. Carbide and Carbon Chemicals Ltd. (Harvey R. Fife).

Fluid pressure transmission medium essentially composed of polyalkylene glycol dialkyl ether and non-mineral lubricating oil of low solidifying point. No. 421,112. Carbide and Carbon Chemicals Ltd. (Harvey R. Fife).

Welding jig for structural members. No. 421,125. Dominion Oxygen Co. Ltd. (Alex E. Dittrich).

Preparation of water-soluble casein by admixture with dried casein of neutral sodium salts of phthallic acid, substituted derivatives of phthallic acid, phthalimide, maleic acid, succinic acid, and succinimide. No. 421,131. Industrial Patents Corp. (Edward G. Christopher).

Process of producing thiocyanoaniline by treating solution of aniline in an aqueous thiocyanate solution with a cupric salt and not more than two molecular equivalents of acid. No. 421,139. The Manchester Oxide Co. Ltd. (James Holden Clayton, Bernard Bann).

Conversion of olefinic hydrocarbons to hydrocarbons of higher boiling point by pressure, temperature, catalytic conversion in which the catalyst is copper pyrophosphate with a reduction promoter incorporated therein. No. 421,149. The Polymerization Process Corp. (Robert Freeborn Ruthruff).

Filtration system for gas and air in which the denser particles are first removed by centrifugal action, relatively large but light and smaller particles are next removed by liquid spray mist, and lighter particles are scrubbed out in an oil-wetted scrubber. No. 421,174. Vokes Ltd. (Cecil Gordon Vokes).

Plasticization of chlorinated rubber by incorporation of an ester of tricarballylic acid therein. No. 421,179. Edward Higgins, Maximilian C. Meyer.

Recovery of magnesium from magnesium containing rock by preparation of aqueous slurry of the crushed rock, treating with carbon dioxide to water solubilize, and recovering magnesia therefrom. No. 421,181. Thain W. MacDowell assignee of Canadian Magnesium Syndicate, assignee of Harry George Wildman.

Treatment of cellulose derivative textiles, foils, or films by acidylating them with retention of their structure by heating in a non-solvent liquid, a mixed di-anhydride of a polycarboxylic acid and of a fatty acid with less than 6 carbon atoms, and a mixed anhydride of an aliphatic monocarboxylic acid containing at least 6 carbon atoms and a fatty acid containing less than 6 carbon atoms. No. 421,183. Henry Dreyfus (Robert Wighton Moncrieff, Harold Bate).

Granted and Published July 4, 1944

Manufacture of cyclohexane type compounds from wood or lignified plant tissue by suspending the lignin-bearing material in an organic solvent, and catalytically hydrogenating under pressure of 2500 to 4000 pounds at 240°-280° Cent. No. 421,185. Harold Hibbert, Joseph L. McCarthy, Hubh P. Godard.

Recovery of magnesium from finely powdered magnesium scrap by induction heating and vacuum distillation. No. 421,186. John Hugo Rutherford, Harry Rowland Leech, Stanley Edward Matthews.

Instrument for geophysical prospecting. No. 421,189. Gotthard Viktor Arnold Gustafsson, John David Malmqvist.

Improving wet strength of cellulosic fibres containing free hydroxy groups by treatment with mixture of ester of organic acid of at least 12 carbon atoms and acetic anhydride and heating between 100° and 120° Cent. No. 421,190. Robert Wighton Moncrieff, Harold Bates.

Apparatus for forging metal balls. No. 421,194. George E. Brenholtz.

Design for envelopes of self-sealing dry gum rubber type. No. 421,216. Abraham Teicher.

Removing hydrogen sulphide from hydrocarbon gases by scrubbing with alkali metal phenolate solution and method of regenerating the phenolic scrubbing solution. No. 421,223. The Atlantic Refining Co. (William E. Challant, Henry F. McConomy).

Flexible abrasive coated sheet having two layers of adhesive and fibrous filler incorporated therein between abrasive grains. No. 421,227. Behr-Manning Corp. (Nicholas E. Ogglesby).

Electric cable comprising a plurality of rectangular untwisted wire strands. No. 421,229. Canadian General Electric Co. Ltd. (Alanson U. Welch Jr., Curtiss M. Cederstrom).

Electric valve circuit. No. 421,231. Canadian General Electric Co. Ltd. (Elmo E. Meyer).

Circuit breaker design. No. 421,232. Canadian General Electric Co. Ltd. (John D. Gayer).

Treating textiles by application of aqueous dispersion of reaction product of interpolymerizing 2-ethyl hexyl methacrylate and methyl methacrylate, and method of preparing such dispersions. No. 421,234. Canadian Industries Ltd. (Archibald Renfrew, Wm. Elliott Frew Gates).

Apparatus for the production of sheets and films from film-forming compositions coagulable in a liquid coagulating bath. No. 421,235. Canadian Industries Ltd. (William Bender).

Flexible, transparent, non-tacky plasticized polyvinyl butyral sheet wrapping material containing not less than 5.2 and not more than 30 per cent castor oil. No. 421,236. Canadian Industries Ltd. (Albert Hershberger).

Horticultural and agricultural composition substantially free from ammonium chloride and containing sulphur nitride and anhydrite and method or manufacture of such. No. 421,237. Canadian Industries Ltd. (Michael Henry Miller Arnold, William Eric Perry).

Copolymer of vinyl isocyanate and methyl methacrylate,, and copolymer of propenyl isocyanate with styrene. No. 421,238. Canadian Industries Ltd. (Donald Drake Coffman).

Mixtures suitable for seed dressing comprising sulphur nitride and gypsum with at least one of the compounds from class of ammonium salts of phosphoric, sulphuric, and sulphamic acids. No. 421,239. Canadian Industries Ltd. (Malcolm Percival Appleby, John Wilfred, Richard Rayner, Michael Henry Richard Arnold, William Eric Perry).

Optical apparatus and polarizing device. No. 421,240. Canadian Industries Ltd. (Emerson Dudley Bailey, Merlin Martin Brubaker, John Hazen Teeple).

High frequency electrical energy transforming network suitable for coupling balanced source of energy to unbalanced load. No. 421,241. Canadian Marconi Company (Ernest Green).

Continuous method and apparatus for uniting films of heat-sensitive thermoplastic vinyl resin material to form strong, durable, water-impervious seams, by application of organic solvent and heat and pressure. No. 421,242. Canadian National Carbon Co. Ltd. (Lee C. Hosfield).

Method of depositing rubber of uniform thickness upon formers and stripping rubber therefrom employing an aqueous dispersion of rubber. No. 421,260. Dewey and Almy Chemical Co. of Canada Ltd. (Stephen Barton Neiley, Emil Edward Habib).

Method of eliminating higher boiling point impurities in the separation of air by rectification at low temperatures. No. 421,262.

Apparatus for storing a mixture of liquefied gases at low temperature. No. 421,264. Dominion Oxygen Co. Ltd. (Leo. I. Dana, George H. Zenner).

Moistureproofing composition for application to regenerated cellulose sheet comprising 3 parts nitrocellulose, 5 parts modified rosin, 1.5 parts dibutyl phthalate, 0.5 parts paraffin wax, 0.5 parts benzoyl peroxide and 52 parts cyclohexyl methacrylate. No. 421,266. E. I. du Pont de Nemours & Co. (James Albert Mitchell).

Colourless, water soluble, mothproofing powder prepared by reaction of one molecular proportion of cyanuric chloride at first with 2 molecular proportions of 4'-chloro-4-aminodiphenylether-2-sulphonic acid and finally with one molecular proportion of methylate. No. 421,269. J. R. Geigy A. G. (Henry Martin, Hans Heinrich Zaeslin).

Process for the manufacture of water-soluble, high molecular alpha substituted arakyl ammonium salts. No. 421,270. J. R. Geigy A. G. (Carl Mettler, Henry Martin, Otto Neracher, Alfred Staub).

Extraction of magnesium and beryllium from element-bearing materials by inclusion of primers of high melting point in the matrix and heating in electric induction furnace under reduced pressure. No. 421,280. Lancashire Metal Subliming Corp. Ltd. (Donald Fraser Campbell).

Preparation of bauxite for sugar refining by treating with ammonia and calcining the treated bauxite between 500° and 1600° Fahr. No. 421,295. Porocel Corp. (William A. La Lande Jr.).

Process for the manufacture of cyclic condensation products by condensing compounds of multiple carbon linkages with member of group of 1:2-diacyl-ethylene and 1:2-diacyl-acetylene derivatives. No. 421,297. Society of Chemical Industry in Basle (Moses Wolf Goldberg).

Electrical contact comprised of cathode of silver-platinum and anode of silver-gold. No. 421,306. H. A. Wilson Co. (Chester Peterson).

Acetylene generator design. No. 421,309. Roy G. Sage (Eber H. Van Valkinburgh).

Fluid pressure regulating valve for lubricating systems. No. 421,312. John William Danielson, Douglas Henri Seiffert, Alan Geo. Butt, Leslie Frank Hall.

Process of producing metallic-like, uniform, homogeneous, elemental carbon by heat-treating a carbon disulphide and a hydrocarbon in a sealed chamber by means of an electrical immersion resistor heater. No. 421,314. Conway Robinson assignee of Westinghouse Electric & Manufacturing Co. assignee of Conway Robinson.

Granted and Published July 11, 1944

Electrical switch gear for mines. No. 421,317. Peter Burns.

Improved mercury switch design. No. 421,318. Peter Burns.

Method of manufacturing closed type rotary centrifugal blower impellers. No. 421,325. Johann Fullemann.

Bulk storage tank, of double walled construction, for liquid fuels. No. 421,328. Christain L. Hansen.

Permanent magnet electric motor design. No. 421,330. Stanley Isaih Hitchcock.

(*To be continued*)

Trademarks of the Month

A Checklist of Chemical and Chemical Specialties Trademarks

408,449. Wood Treating Chemicals Co., St. Louis, Mo.; filed Apr. 15, 1944; serial No. 469,372; for wood preservatives; since Jan. 5, 1943.

457,030. Corning Glass Works, Corning, N. Y.; filed Nov. 25, 1942; for lab. glassware; since May 14, 1940.

458,825. United States Gypsum Co., Chicago, Ill.; filed Feb. 27, 1943; for paste paint; since May 2, 1940.

462,018. International Salt Co., Scranton, Pa.; filed July 12, 1943; for rock salt; since July, 1936.

465,262. Irving Mandell, as Universal Utilities Products, Detroit, Mich.; filed Nov. 24, 1943; for cleaner; since October 1941.

465,428. Hart Products Corp., N. Y.; filed Dec. 1, 1943; for textile finishes; since Jan. 1, 1923.

465,649. P. Joseph Collins, as Atlas Color & Chemical Co., Boston, Mass.; filed Dec. 9, 1943; for chrome reducing agents; since Nov. 23, 1939.

466,112. Union Oil Co. of Calif., Los Angeles, Calif.; filed Dec. 27, 1943; for wax; since Nov. 6, 1941.

466,173. Metroloy Co., Newark, N. J.; filed Dec. 29, 1943; for tungsten rods; since Sept. 21, 1939.

468,270. Sundure Paint Corp., Syracuse, N. Y.; filed Mar. 13, 1944; for paint; since Mar. 2, 1939.

468,565. Goodman-Kleiner Co., Inc., N. Y.; filed Mar. 23, 1944; for laboratory glassware; since 1930.

468,645. Union-Baystate Co., Inc., Cambridge, Mass.; filed Mar. 24, 1944; for polystyrene dispersion; since Mar. 16, 1944.

468,749. Geigy Co., Inc., N. Y.; filed Mar. 28, 1944; for preservatives; since Mar. 9, 1944.

469,761. The Goodyear Tire & Rubber Co., Akron, Ohio; filed Apr. 28, 1944; for accelerators; since Apr. 11, 1944.

468,819. Socony-Vacuum Oil Co., Inc., N. Y.; filed Mar. 29, 1944; for slushing oils; since Mar. 15, 1944.

468,993. Wah Chang Trading Corp., N. Y.; filed Apr. 3, 1944; for ores; since June 1, 1920.

469,020. Quaker Chemical Products Corp., Conshohocken, Pa.; filed Apr. 4, 1944; for emulsifying agent; since June 1920.

469,022. Roxalin Flexiole Finishes, Inc., Elizabeth, N. J.; filed Apr. 4, 1944; for wrinkle finish compositions; since 1925.

469,071. Agicide Labs. Inc., Racine, Wis.; filed Apr. 6, 1944; for charcoal; since Sept. 9, 1940.

469,293. Israel Barkan, as Paint-Nu Products Co., Los Angeles, Calif.; filed Apr. 13, 1944; for cleaners; since Apr. 7, 1944.

469,737. Spencer-Adams Paint Co., Inc., Atlanta, Ga.; filed Apr. 27, 1944; for paint; since Apr. 6, 1944.

469,799. The Wilbur & Williams Co., Boston, Mass.; filed Apr. 28, 1944; for paints; since June 1, 1931.

469,848. Sinclair Refining Co., N. Y.; filed May 1, 1944; for cutting oils; since Mar. 9, 1944.

469,922. American Tag Co., Chicago, Ill.; filed May 4, 1944; for solvents; since Nov. 5, 1943.

469,942-3. The Pennsylvania Salt Mfg. Co., Philadelphia, Pa.; filed May 4, 1944; for pickling inhibitors; since Jan. 24, 1944; since Jan. 10, 1944.

470,021. Firefly Extinguishers, Kansas City, Mo.; filed May 8, 1944; for extinguishers; since Apr. 25, 1944.

470,140. Dugas Eng. Corp., Marinette, Wis.; filed May 11, 1944; for extinguishing compositions; since Sept. 23, 1943.

470,318. Sylvan Plastics, Inc., N. Y.; filed May 16, 1944; for resins; since May 26, 1942.

470,377. Spencer Kellogg & Sons, Inc., Buffalo, N. Y.; filed May 18, 1944; for drying oil; since April 1944.

470,412. Fitzpatrick Bros. Inc., Chicago, Ill.; filed May 19, 1944; for soaps; since January 1944.

470,466. Reichhold Chemicals, Inc., Detroit, Mich.; filed May 20, 1944; for resins; since May 13, 1944.

470,576. Michael Krieger, as Krieger Color & Chemical Co., Hollywood, Calif.; filed May 24, 1944; for dye; since Apr. 1, 1944.

470,838. The Pepsodent Co., Chicago, Ill.; filed June 1, 1944; for detergent; since Mar. 30, 1944.

470,842. Warick Chemical Co., West Warwick, R. I.; filed June 1, 1944; for water repellent finish; since Sept. 21, 1943.

470,965. The Cordo Chemical Corp., Norwalk, Conn.; filed June 7, 1944; for adhesives; since May 17, 1944.

470,-982-3. The Martin-Dennis Co., Newark, N. J.; filed June 7, 1944; for water softeners; since October 1937; since July 1939.

470,989-90. The New Jersey Zinc Co., N. Y.; filed June 7, 1944; for zinc pigments; since 1855; since 1855.

471,098. Quaker State Oil Refining Corp., Oil City, Pa.; filed June 9, 1944; for lubricating oils; since Feb. 12, 1924.

471,103. Sapolin Co. Inc., N. Y.; filed June 9, 1944; for paint; since May 15, 1944.

471,135. Reynolds Metals Co., Richmond, Va.; filed June 10, 1944; for aluminum clad steel; since May 12, 1944.

471,210. Fink-Roselieve Co., Inc., N. Y.; filed June 14, 1944; for detergent; since June 12, 1944.

471,436. Henning L. Warnecke, Cleveland, Ohio, and Hasbrouck Heights, N. J.; filed June 19, 1944; for paint; since Mar. 18, 1944.

471,682. Precision Scientific Co., Chicago, Ill.; filed June 26, 1944; for titrometers; since June 8, 1944.

Trademarks reproduced and described include those appearing in Official Gazette of U. S. Patent Office, August 8 to August 29.

WOOD FIX
408,449

METROLOY
466,173

SUNDURÉ
468,270

VYCOR
457,030

GOODMAN-KLEINER CO. PARAMOUNT SUPERWARE NEW YORK, N.Y.
468,565

LIXATE
462,018

UBATOL
468,645

UNIVERSAL
465,262

GESAPON
468,749

HARTEX
465,428

SOVA-KOTE
468,819

REDUCTALAC
465,649

W C T C
468,993

ARISTOWAX
466,112

SOLVENOL
469,020

ROXALIN
469,022

AGICHAR
469,071

PAINT-NU
469,293

469,737

CUPRAX
469,761

TOTALUME
469,799

TRUKUT
469,848

VACUUM-WELD
469,922

PENNSALT PM 40
469,942

PHOSPHOSIL
469,943

FIRE FLY
470,021

PLUS-FIFTY
470,140

SYLPLAST
470,318

KEL-X-L
470,377

470,412

PLYAMINE
470,466

"LUCIDIP"
470,576

IRIUM
470,838

470,842

CORDO-BOND C
470,965

VERSENE
470,982

470,989

PENN SEAL
471,098

SAPOLIN
471,103

MIRACLE METAL
471,135

SCOOP
471,210

»INNOX«
471,436

CHEM-O-TRONICS
471,682

DURABOND
485,825