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CHEMICAL WEEK

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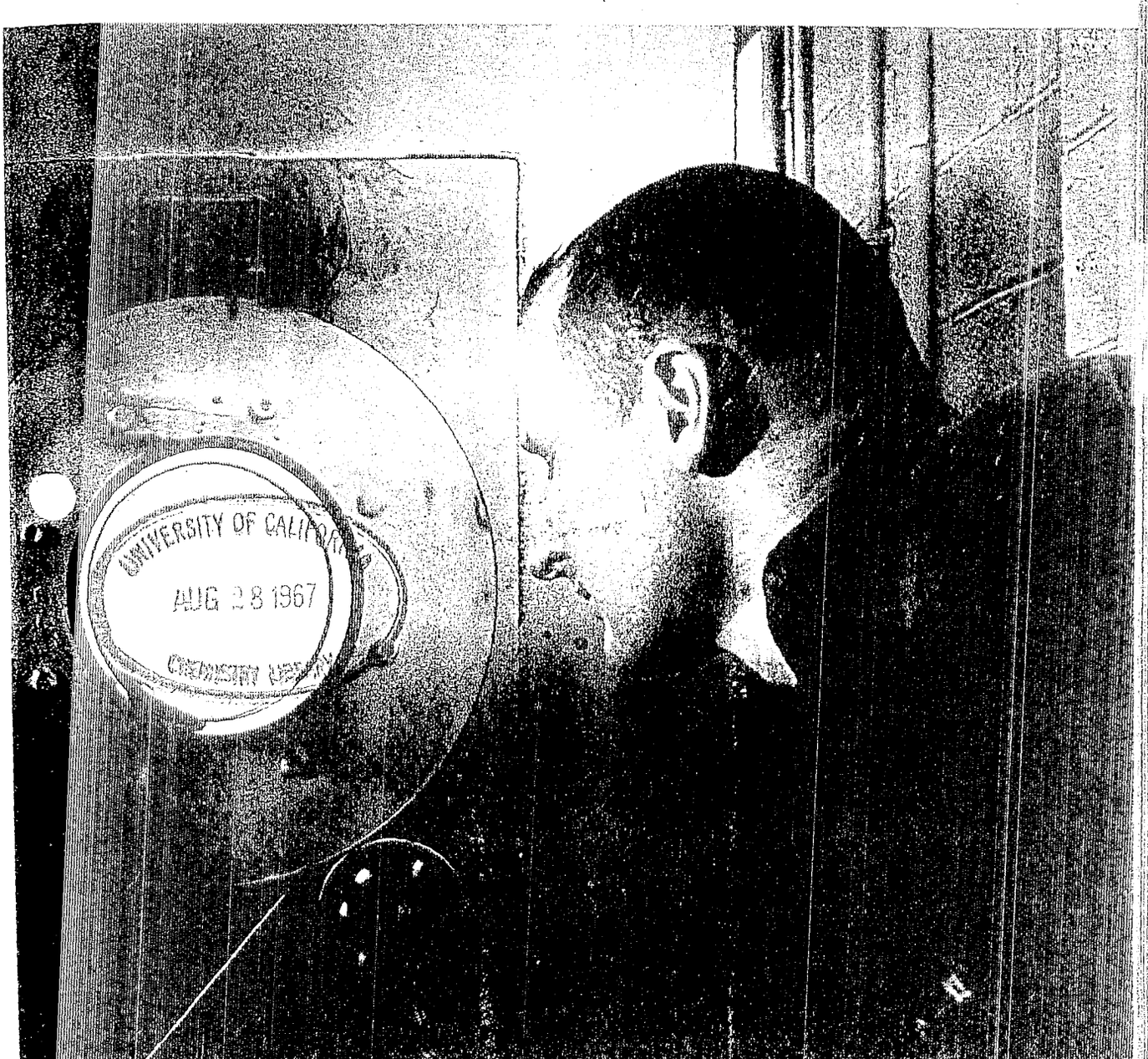
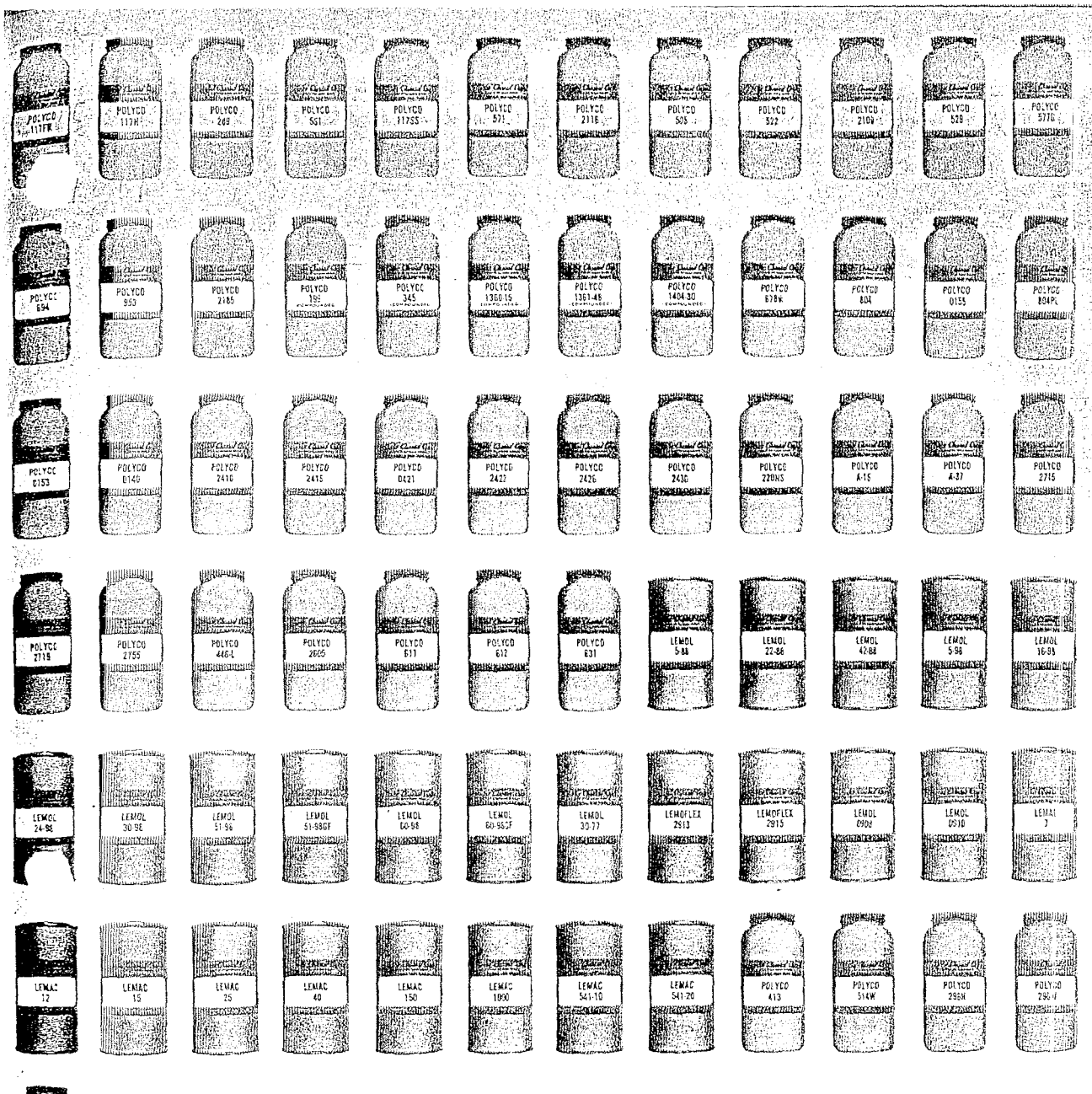




73 Resins

for doing business with Borden Chemical's Polyco Department!

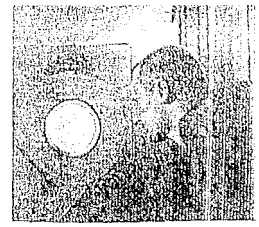
These 73 thermoplastic products and intermediates are the best recommendations we can offer for dealing with us. Being basic back to the monomer, Borden Chemical supplies the broadest range of polymers and chemicals available from a single source. They are designed for use in paints, paper, adhesives, textiles, inks, specialty coatings, water soluble films and in polymerization. Many are useful as binders, thickeners and opacifiers.

With 20 years polymer experience, we have developed the best quality control system possible and can provide unusual shipping flexibility and immediate delivery from over 12 stockpoints.

If you have a problem involving an emulsion or resin, we think we could help. Is it resinable? Then contact The Borden Chemical Company, Polyco Dept., CW-96, 511 Lancaster St., Leominster, Massachusetts.

BORDEN CHEMICAL

ON THE COVER: Operator peers into reactor as trickle of magnetic material drops from the opening. New markets are opening up for ceramic permanent magnets as designers perfect smaller and lighter magnets with higher coercive force (p. 101).



CHEMICAL WEEK

Vol. 99, No. 11 SEPTEMBER 10, 1966

THIS WEEK IN BUSINESS

THIS WEEK IN TECHNOLOGY

THIS WEEK IN SPECIALTIES

DEPARTMENTS

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Is Ad Spending Too High?

Britain's Monopolies Commission rattled advertising agencies in London and New York last week when it found that Unilever and Procter & Gamble are "wasting" money on detergent advertising at the public's expense. The commission recommended a 40% cut in advertising and promotion expenses and proposed at 20% reduction in wholesale selling prices *(CW, Sept. 3, p. 68)*.

While this move by the commission goes appreciably further than any U.S. government attack on advertising to date, it is bound to bolster the case of the trustbusters who have argued that excessive advertising could restrain competition.

And the government itself has given strong hints that it is aware of advertising's power and intends to do something about it. In '63, for example, the Federal Trade Commission struck down the P&G purchase of Clorox, arguing that P&G's massive advertising would stretch Clorox's already commanding lead over its rivals.

And last June, Assistant Attorney General Donald Turner, head of the Antitrust Division suggested imposing (for a period of time) an absolute or percentage limitation on promotional expenditures by companies that have violated the Sherman Antitrust Act.

Now, an authoritative new book injects some facts into this emotional issue. It does much to dispel a popular illusion that advertising outlays have outrun other business costs.

The book, out this week, is "Measuring Advertising Readership & Results" (McGraw-Hill), by Daniel Starch, a 40-year veteran of evaluating advertising effectiveness.

We hope that officialdom will read, in particular, the chapter headed "Advertising and Other Business Costs." Starch has measured advertising expenditures as a percentage of gross national product and finds no appreciable yearly change between '50 and '63. Through all these years advertising expenditures have been about 2.25% of the GNP. This means that while dollar advertising expenditures have climbed (from $5.710 billion in '50 to $13.050 billion in '63), this increase has been proportional to the GNP growth.

Says Starch: "There is an impression that advertising, although necessary, costs more, attracts fewer readers and observers and is less effective than formerly. Because of competition for the public's attention, it is thought that it is harder to reach people and to get them to pay attention to the ad message."

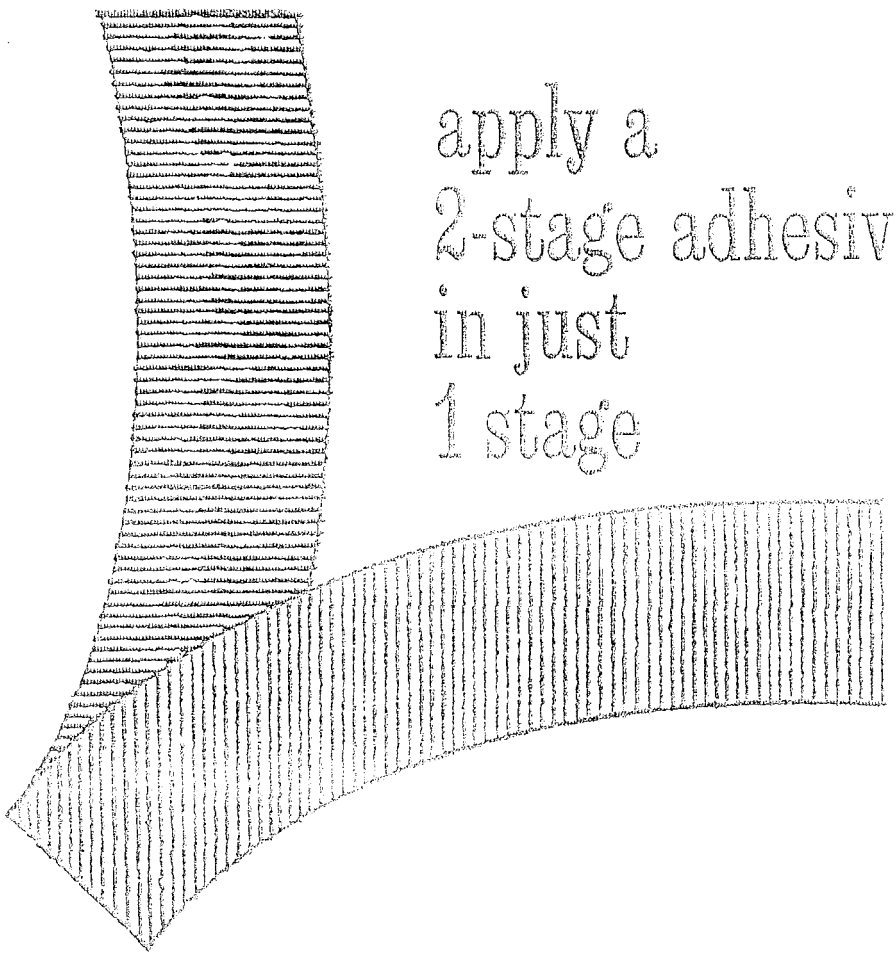
Not so, he demonstrates, using readership studies. It appears that "advertisements themselves have not become less effective, but, if anything, have become more effective in attracting readers."

Before attacking the policies of one or two companies, trustbusters on both sides of the Atlantic should consider the philosophy behind advertising, best expressed by Starch:

"The economic and social justification of advertising ultimately rests (a) upon its service in increasing legitimate human wants and (b) upon its being an effective and fair agency of competition.

"So long as we believe that human beings should continue to want more and better things, which will in the long run contribute to their happiness and well-being—so long will we have individual effort and competition. If we believe in a philosophy of competition then we must permit all means of fair and effective competition."

With AMSCO You Can...



apply a 2-stage adhesive in just 1 stage

The machinery manufacturer had a good idea. He wanted to eliminate one costly step in applying labels to food packages. But he needed research experience in solvents. Could AMSCO help?

Yes.

Previously, adhesive had been applied to the labels in two stages: resin went on in solution . . . with the plasticizer applied to the label back as a separate step.

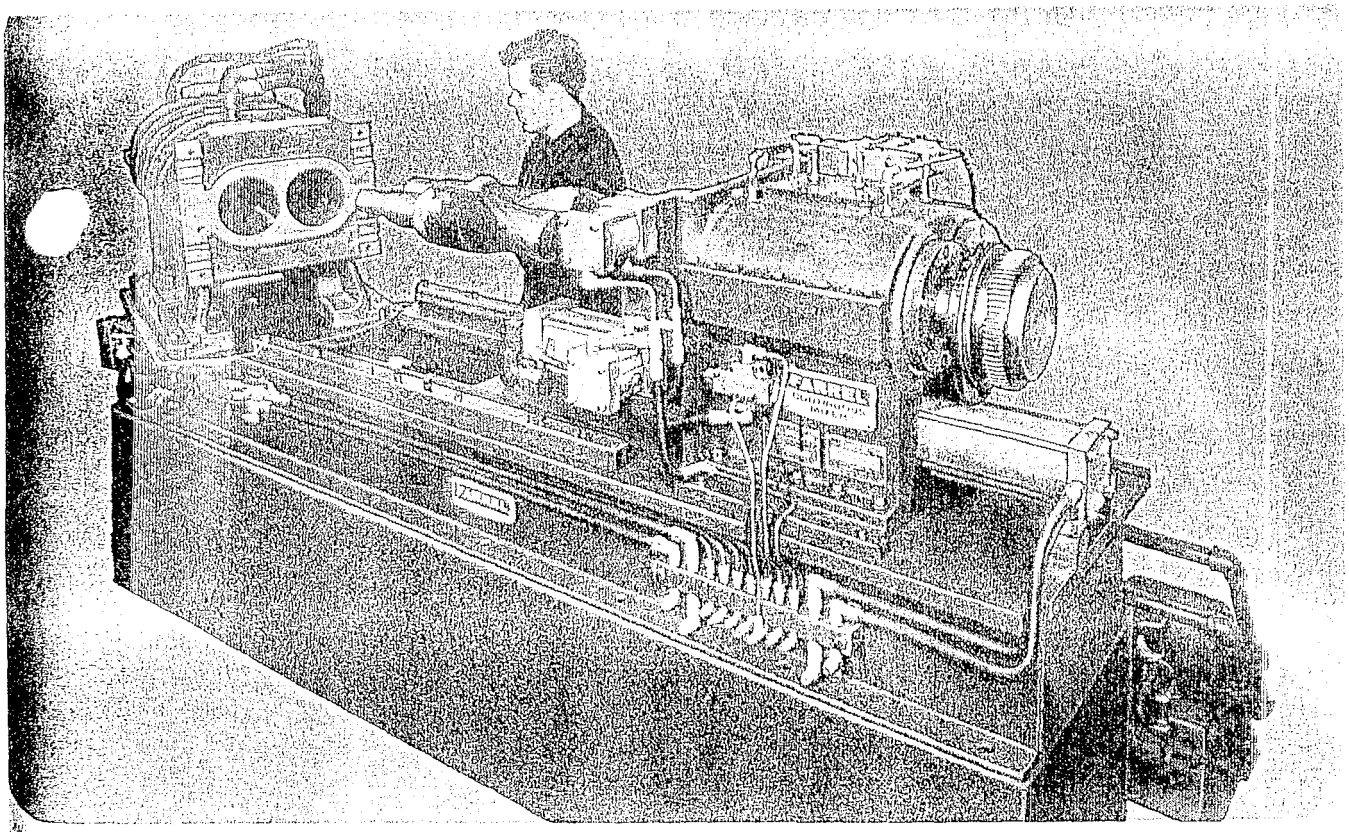
The plasticizer was emulsified in water. AMSCO Technical Service researched solvents which were immiscible in water and would do the job of cutting the resin. One solvent proved ideal. Now resin and plasticizer are applied in a single emulsified system with no premature reaction.

Can you benefit from experience in chemical and solvent research? With AMSCO you can. Just call.

ASK AMSCO

American Mineral Spirits COmpany

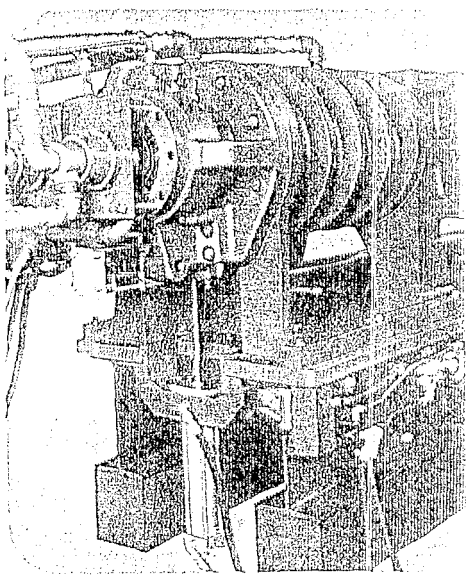
Chemicals • Petrochemicals • Solvents
New York—Sales Offices in principal cities
Service world-wide through AMSCO International



FCM:

Change from one stock to another without danger of contamination

Above: Size 6FCM with mixing chamber retracted for cleaning. *Right:* Orifice jack shown in position for orifice removal.



Although the Farrel Continuous Mixer* is not completely self-purging, one stock can be followed by another, without cleaning, with contamination of only a small amount of material. When required, however, the operator can clean both the chamber and the rotors thoroughly and easily in a very few minutes.

To clean, the mixing chamber is made readily accessible by push-button control. It is first moved forward and then rotated on a turntable, as shown in the upper illustration. This leaves the rotors overhung, supported by the drive end of the machine. The orifice can be easily removed, as a unit, for cleaning.

This is only one of the many advantages of the FCM. A true mixer, it has rotors and a mixing action similar to the Banbury® mixer. Discharge temperature is independent of production rate, and can be kept constant throughout a wide range of rates or can be varied by as much as 100° F at any given rate.

For further details of this unique machine, send for a copy of bulletin 227.

FARREL CORPORATION
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Rochester, N.Y.

Sales Offices: Ansonia, Akron, Chicago, Los Angeles, Houston, Atlanta

In Europe: Farrel Italiana s. r. l., Via Borgogna 8, Milano, Italy

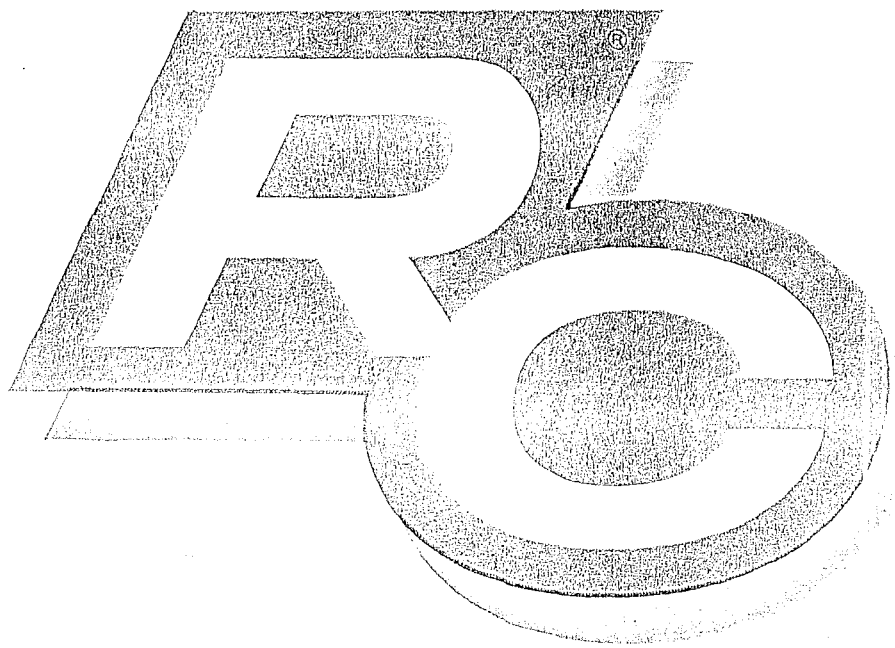
In Canada: Farrel Canada Limited, 44 Victoria Street, Toronto 1, Ontario

*Patent No. 3,154,608 and patents pending in principal countries.

FARREL®

A-1360

Look what's happened since we became a division of Hooker Chemical Corporation.



New $20,000,000 PVC and Calendering Plant.

Now under construction in Burlington, New Jersey, this new RC facility will be devoted to the production of PVC homopolymers utilizing an advanced mass polymerization process. Versatile multi-calender lines are also being established here for the increased manufacture of flexible and rigid film and sheeting.

Esterification Capability Doubled.

Substantially increased versatility is now possible in the production of specialty plasticizers, lubricant bases, polyesters for polyurethanes and comonomers.

New Applied Chemo-Plastics Processing Laboratory.

This advanced laboratory contains sophisticated processing equipment for the development of plastic products. Techniques include blown film, blow molding, special compounding processes and polyurethane fabrications.

100% PVC Copolymer Increase Now in Engineering.

Greater production output and faster delivery of copolymer resins for use in vinyl records, floorings, extrusions for packaging and solution coatings.

Continued High Quality — Increased Production.

Call RC First for polyurethane coatings, adhesives, potting compounds, laminates, elastomers and caulking.

Call RC First for PVC film and sheeting, press polishing and Rucorail™ extruded profiles for handrail applications in exclusive woodgrain patterns.

Call RC First for vinyl resins, Rucotex™ butadiene-styrene latexes and latex concentrates, esters and polyesters, liquid compounds, dry blend and pellet compounds.

RC DIVISION/HOOKER CHEMICAL CORPORATION
New South Road / Hicksville, New York 11802 / Telephone: (516) 931-8100

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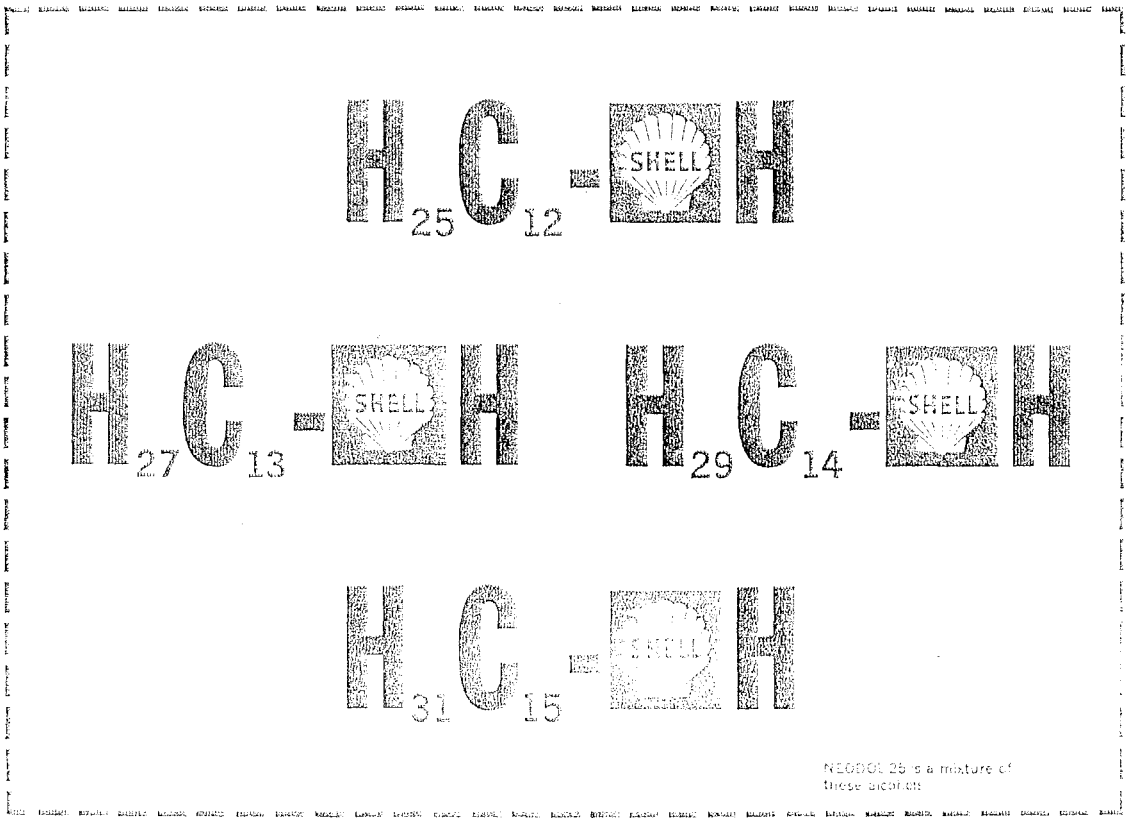

Unique new NEODOL* 25 linear primary alcohol contains both odd and even numbered carbon chains in the C_{12} to C_{15} range— plus traditional built-in Shell quality

This crystal-clear 100 percent primary alcohol has an exceptionally mild, neutral odor—reacts like all alcohols but without unwanted side reactions.

Result: you can count on high yields of exceptional purity in reactions involving Shell NEODOL 25.

The odd-numbered chains in NEODOL 25 have already demonstrated superior performance characteristics in surfactants. Perhaps they can help in your applications for long chain alcohols and derivatives.

Mail coupon for evaluation sample. We'll also be glad to send you technical bulletins on NEODOL 25. Shell Chemical Company, Industrial Chemicals Division, 110 West 51st Street, New York, N.Y. 10020.

*Shell Trademark

Shell Chemical Company CW-9
Industrial Chemicals Division
110 West 51st St., N.Y., N.Y. 10020

Please send me ☐ sample of NEODOL 25 for evaluation. ☐ technical bulletins about NEODOL 25.

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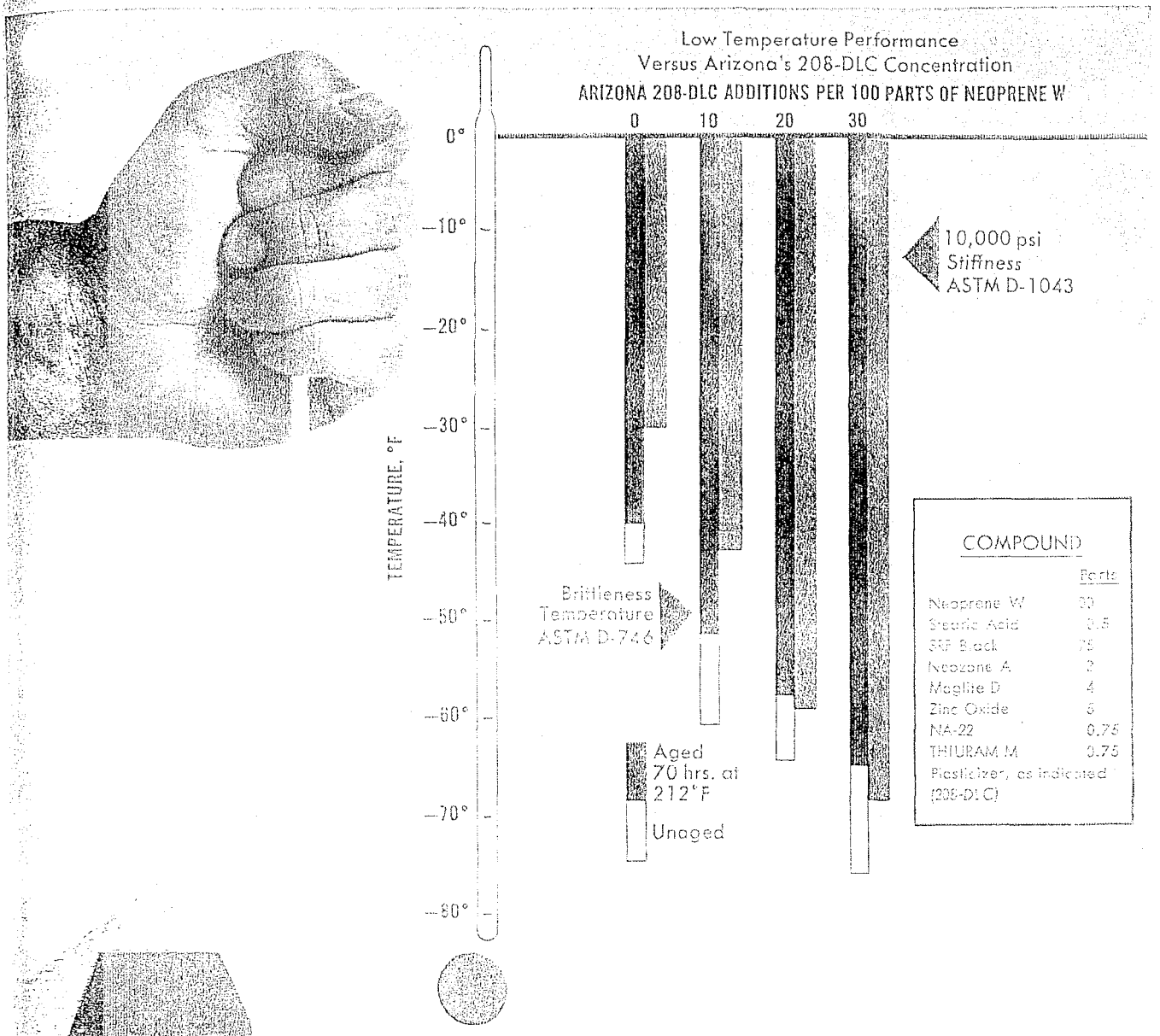
ARIZONA'S 208-DLC
Low-Temperature Plasticizer in New, Free-Flowing Powder Form



Arizona

FIRST IN FATTY ACID, ROSIN & TERPENE CHEMISTRY

Arizona's 208-DLC offers the important low-temperature flexibility properties of Arizona's 208 Plasticizer, but in a new easy-to-handle powder form. In addition to increased ease of handling, Arizona's 208-DLC reduces mill time and speeds the incorporation of carbon black in chloroprene, nitrile and Hypalon* Elastomer systems.

Arizona's 208-DLC is packed in 50-lb., multiwall bags for easier handling and storage. In its new form 208-DLC permits more accurate weighing as well as facilitating equipment cleanout, without any change in low-temperature plasticizing characteristics.

Arizona also offers Tackifiers 27 and 27-DLC, specially designed for tackifying and improving overall processing in ethylene propylene terpolymer (EPT) elastomers and butyl rubber systems.

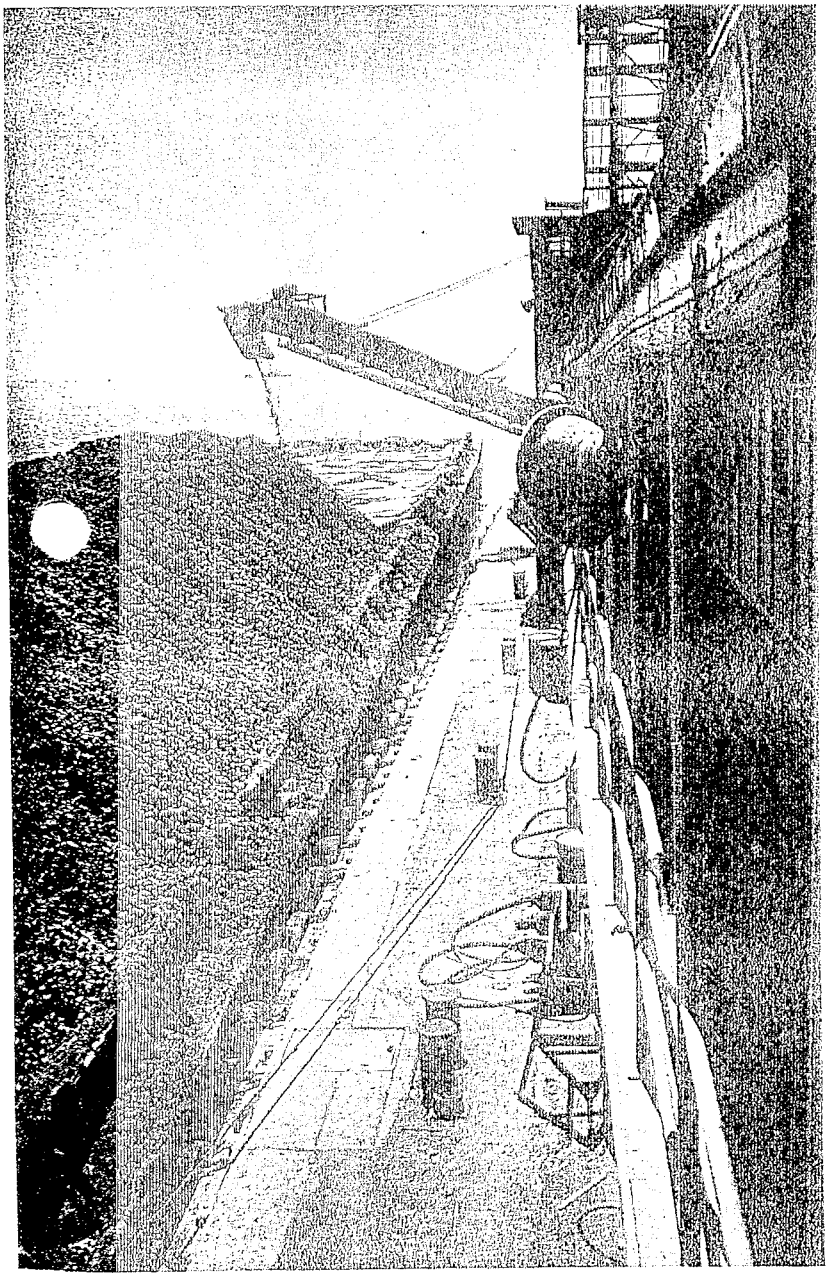
For more detailed information about Arizona's products, write or call today. Isn't it time you moved to Arizona?

*DuPont T.M.

ARIZONA CHEMICAL COMPANY, 111 West 50th Street, New York, New York 10020

Need raw materials in your business?

Put your plant in the Houston-Gulf Coast!)



ıster shell dredged from Galveston Bay and other coastal waters make large supplies of this ıportant raw material available for the manufacture of cement and other industrial products.

Salt . . . oil . . . gas . . . sulfur . . . water . . . shell . . . you'll find them in abundance in the Houston-Gulf Coast. You'll also find a vast petrochemical complex, in which the finished product of one plant becomes feedstock for another.

Raw material supply is just one reason why more than 400 chemical products are being produced in the Houston-Gulf Coast region, and why more than 185 chemical plants have been built here.

Other good reasons for this area's sustained growth—and why it is a good site for your business—are its diversified transportation facilities, including deep-water seaports . . . skilled employees . . . fine living conditions, with year-round outdoor recreation . . . outstanding educational institutions . . . and the biggest market for your products in the South-Southwest. You'll find the Houston-Gulf Coast combines these advantages to a degree unmatched by any other area.

Let us give you more facts, in complete confidence. Write Fred Staacke, Vice President, Houston Lighting & Power Company, 1016 Walker, Houston, Texas 77001.

SERVICE FIRST

HOUSTON LIGHTING & POWER COMPANY

a taxpaying, investor-owned electric service company

HOUSTON-GULF COAST

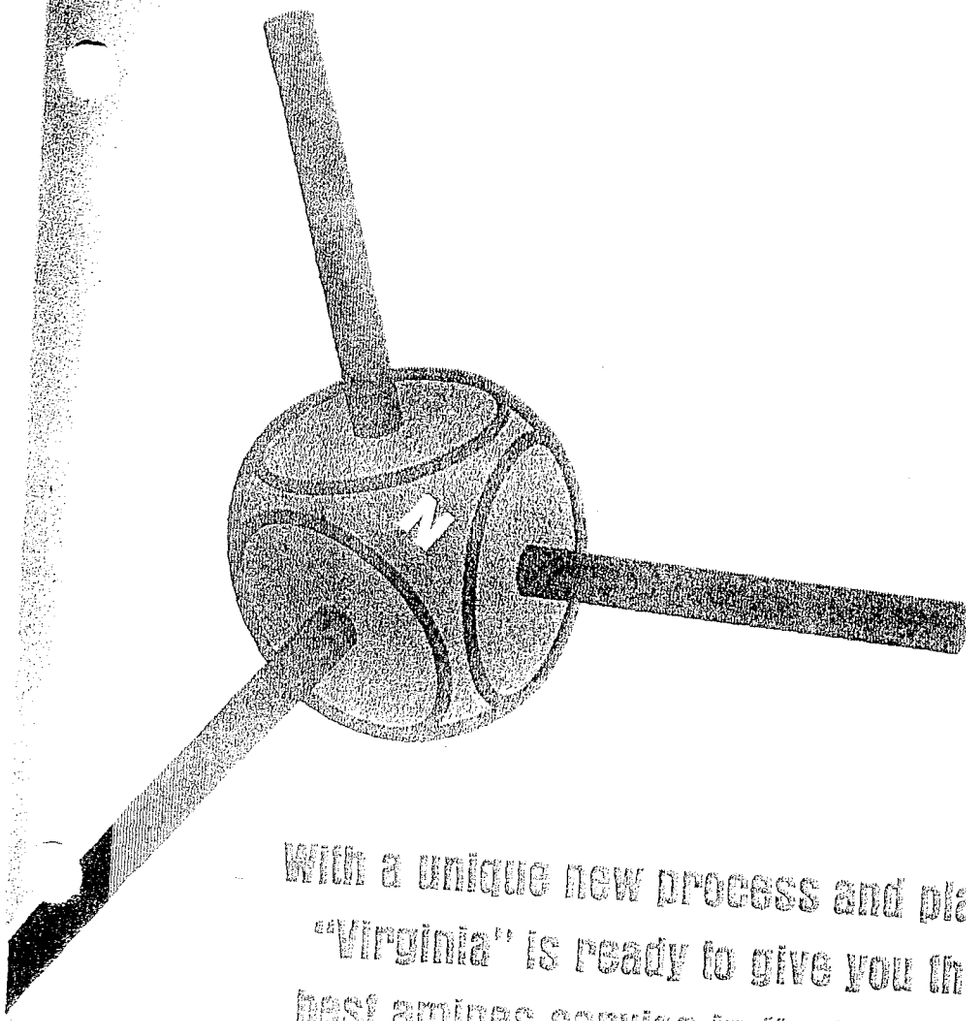
For a complimentary copy of the Houston-Gulf Coast Index, guide to a wealth of information about the area, just write us on your letterhead.

o by-product here. Our salt cake is its own oduct, made from a *natural* domestic urce that is practically inexhaustible.

ire (99.5% Na_2SO_4) Stauffer salt cake is a ee-flowing, non-caking product. Because s loaded dry and delivered dry . . . dry as the desert from which it comes. Contains no free acid. For more information, call your Stauffer representative. Or write to Stauffer Chemical Company, Industrial Chemical Division, 380 Madison Avenue, New York, New York 10017.

STAUFFER CHEMICALS . . . *at work everywhere.*

Stauffer



With a unique new process and plant, "Virginia" is ready to give you the best amines service in the industry

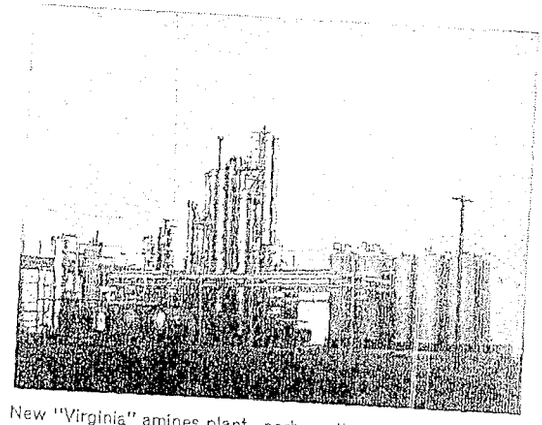
A new, improved production process and plant—unusually flexible, fully automated—now make it possible for "Virginia" to meet your heaviest demand for specific higher amines. In the alkyl group—ethylamine, diethylamine, triethylamine, isopropylamine, diisopropylamine, n-butylamine, di-n-butylamine, tri-n-butylamine. In the cyclic group—cyclohexylamine. Availability—tank cars, tank trucks, 55- and 5-gal. drums.

To this, add the things you normally expect from "Virginia." Highest purity product. Fast delivery. First-class technical service—in the field or, when needed, in the laboratory. With amines, this also includes a semi-commercial facility for smaller quantities of standard or special products. Write for booklet on this new "Virginia" capability. Or write or phone for immediate amines delivery.

VIRGINIA Chemicals®

Virginia Chemicals Inc.

Industrial Chemical Department, No. 499, West Norfolk, Chesapeake, Va. 23703, Tel. 703 397-5441



New "Virginia" amines plant—perhaps the most advanced in the industry—provides for 24-hr., fully automated multimillion lb. per year operation. Flexibility of new production process meets heaviest demand for specific amines.

Another new U.S. aluminum producer. W. J. Reed & Associates, San Francisco engineering consulting firm, disclosed plans late last week on behalf of a newly incorporated Georgia company, United Aluminum Corp. The new firm will build a $38-million plant "somewhere in the Southeast."

United Aluminum, which will be based in San Francisco, reportedly has been organized by a group of San Francisco and Southern industrialists and is now in the final stages of financing. Names of the principals and precise site of the proposed installation will not be made public for perhaps four or five weeks, *CW* learns. Construction of the plant is expected to get under way next spring, be completed in early '69. Plans call for expansion of capacity to 132,000 tons/year in 10 years.

Word of the United Aluminum project comes just a few weeks after disclosure that another new producer, Northwest Aluminum, was ready to launch a $100-million project in the Puget Sound area of the Northwest (*CW Business Newsletter, Aug. 6*).

•

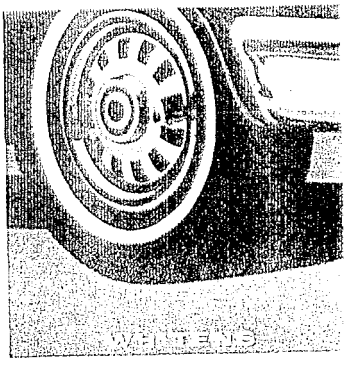
Union Carbide is pushing its big expansion program. It will build a 300-million-lbs./year synthetic phenol plant (location not disclosed) that will have double the capacity of another UCC phenol unit slated to go into production at Bound Brook, N.J., early next year. The new unit will be completed in '69. UCC Chairman Birny Mason, Jr., says the new installation, based on the cumene process, is expected to be the "largest and most economical phenol plant in the world." While most of the output of both units will be used captively, sizable amounts of phenol and by-product acetone, says Mason, "will be available to meet growing demands of the merchant market."

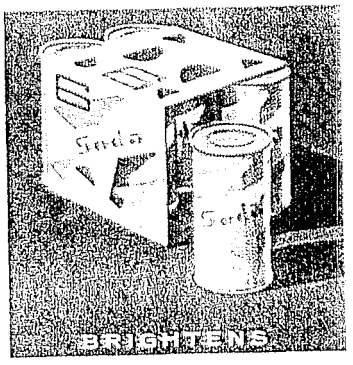
Carbide also unveiled plans for polyethylene film production at its Wayne, N.J., plant, which has been turning out polypropylene film for packaging. The new polyethylene unit will adjoin the present plant building, will be an extension of the company's polyethylene film production coming out of Cartersville, Ga., and Ottawa, Ill. Construction of the plant will begin next month, be completed late in '67.

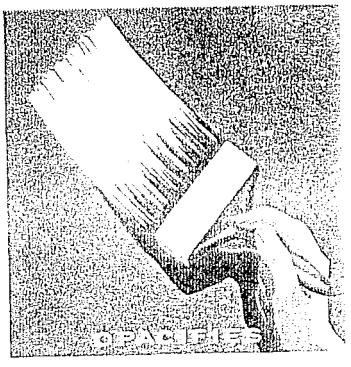
•

Humble Oil has the green light on construction plans for its proposed $100-million refinery at Benicia, Calif. The company's application to build needed water-terminal facilities was approved by the San Francisco Bay Conservation & Development Commission. Construction of the project, which was originally planned to be built at Moss Landing, Calif., near Monterey (*CW Business Newsletter, May 28*), will begin immediately; completion is expected by '69. The general construction contract goes to C.F. Braun (Alhambra, Calif.), while the engineering design will be done by

If no TiO_2 is better than TITANOX®...







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the best
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help, too?

We not only make many grades of titanium pigments, but we help you use the right one more efficiently... and economically. If your products need the whiteness, brightness and opacity that TITANOX helps give, call or write to us. Our TITANOX Technicians continually help customers improve process and products... in our labs... at their plants... in the field. It's like having an expert on your team but not on your payroll. Remember... only Titanium Pigment Corporation makes TITANOX... and helps you use it too. Our headquarters are at 111 Broadway, New York, N.Y. 10006, with offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments Limited, Montreal. Try us.

T-6

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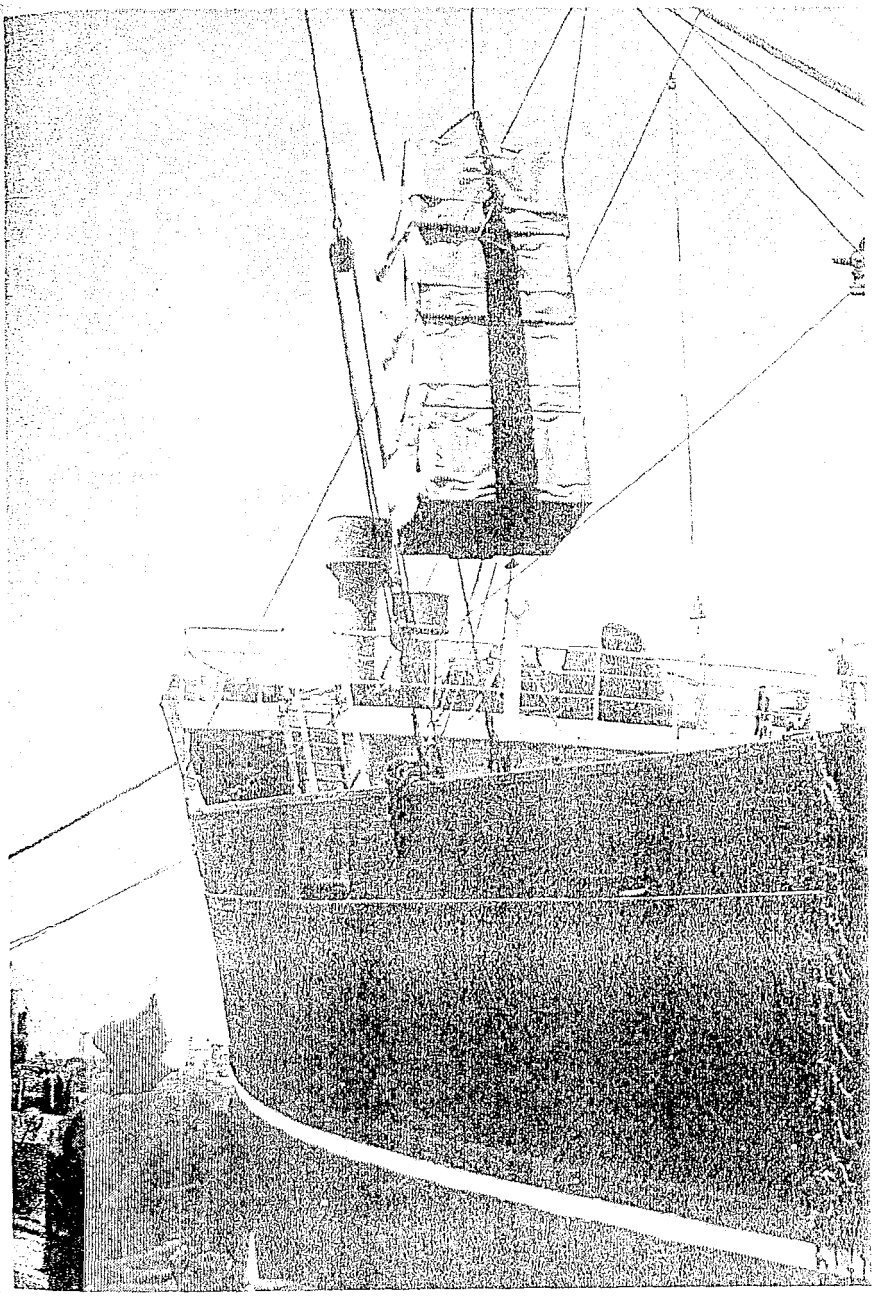
CHEMICAL WEEK
SEPTEMBER 10, 1966



The Global Spending Spree

Rapid rise in '66 imports could alter U.S. economy

Sky-high demand for products—including foreign cars and foreign chemicals (*photo, left*)—has the U. S. this year heading toward its smallest trade surplus — the excess of exports over imports — since '59. This dwindling balance of trade is likely to influence the Administration's economic policy for the coming year — and perhaps its trade policy as well.

Total U. S. exports in January through July were up about 15% from shipments in the corresponding seven months in '65; but imports were up more than 20%. In chemical products this trend was even sharper: seven-month exports up 15%, to nearly $1.6 billion; but imports up 32%, to $555 million. These figures, however, add up to a chemical trade surplus of $1 billion — slightly higher than for last year's first seven months, and about one-third of the nation's total trade surplus for '66 to date.

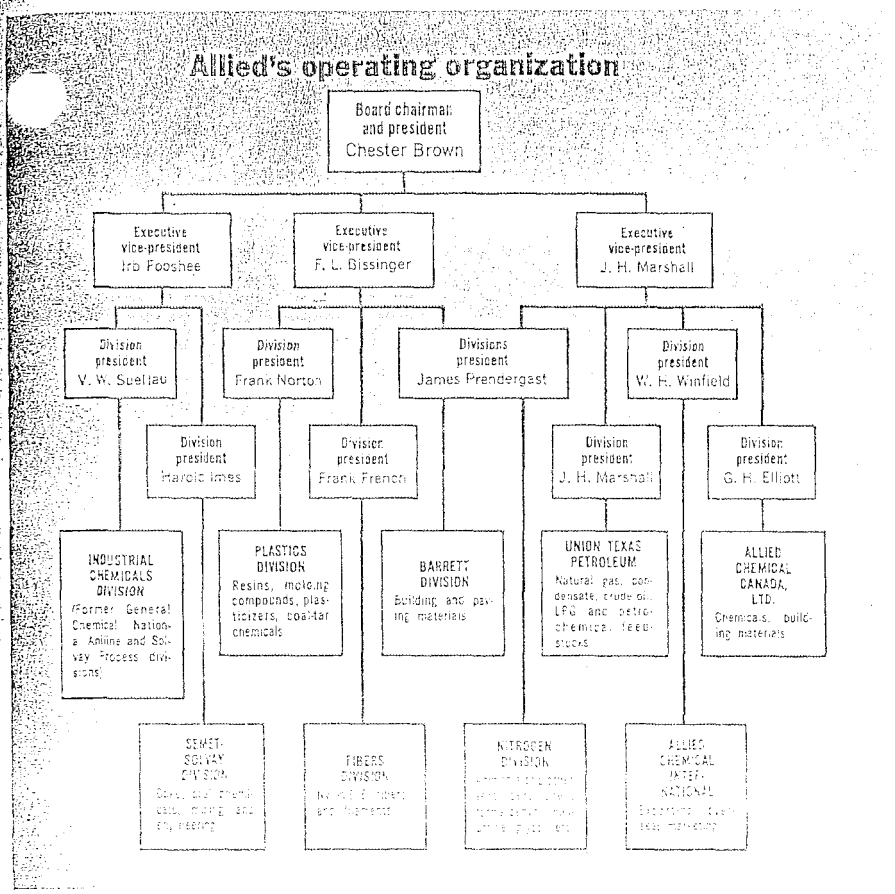
While the U.S. had a $7-billion trade surplus in '64 and a $5.2-billion excess last year, the present outlook for '66 is a surplus of only about $4 billion. This would be less than 1% of the $739-billion gross national product now predicted for this year.

Demand Called Excessive: But the declining trade surplus could have a significant impact on the Johnson Administration's economic decision-making. The surge in imports tends to confirm what a good many critics of the Administration have been saying all year — namely, that demand in the domestic economy is much too high.

It now seems clear that demand in

Why U.S. trade surplus is shrinking

First-half '66 exports are up		But imports are rising faster	
Soybeans	+31%	Autos	+89%
Motor vehicles	+17%	Gems	+34%
Chemicals	+15%	Chemicals	+32%
Wood pulp	+10%	Whiskey	+28%
Rubber goods	+ 9%	Nonferrous metals	+24%
Nonferrous metals	+ 8%	Textiles	+16%
Textiles	+ 7%	Newsprint	+16%
Ores	+ 3%	Sugar	+ 7%



Three-in-One Division

Last week Allied Chemical Corp. set up an Industrial Chemicals Division by consolidating three former divisions that for many years had been better known among buyers of industrial chemicals than Allied itself.

Merged into the big new division, whose '66 sales will probably exceed $500 million: General Chemical, Solvay Process and National Aniline divisions. They were descended from three of the five companies that merged in 1920 to form Allied Chemical & Dye Corp., as it was known until '58.

The new division will be headed by 63-year-old Vincent Suellau, who has been with Allied since the company was formed and who had been president of the General Chemical Division for the past three years. Its headquarters will be at Allied's corporate r ch and development facility in N. is Township, N.J.; and initially it will employ about 14,000.

Allied's Biggest: Industrial Chemicals, Allied's largest division, will be one of the two operating divisions under Executive Vice-President Irb Fooshee (*chart, above*).

Fooshee promised customers that the new division "will offer all of the research, production and commercial functions previously provided by the three separate divisions." It will take over major plants at Syracuse and Buffalo, N.Y.; Elizabeth, N.J.; East St. Louis, Ill.; Moundsville, W. Va.; Baton Rouge, La.; El Segundo and Nichols, Calif.; and the new chlorine-caustic facility at Acme, N.C.

In another organizational move last week, James Prendergast was named president of Allied's Nitrogen Division, largest U.S. producer of anhydrous ammonia and derivatives. Prendergast — who was born in Victoria, B.C., in '20, and served in the Royal Canadian Air Force during World War II—will continue as president of the Barrett Division, a post he has held the past three years. As Nitrogen Division president, he succeeds George Meredith, who will retire at the end of December after nearly 40 years as an Allied executive.

An End to 7% Credit?

Congress may write a swift end to the 7% tax credit for new business investments, a law that has notably reduced U.S. business taxes—possibly $2 billion on '66 federal income tax returns. About half of that amount will go to manufacturing industries, among which the chemical industry and the primary metals producers — at about $140 million and $115 million, respectively — are expected to get the largest shares.

Such an abrupt tax law change this late in the Congressional session was deemed most unlikely only a few weeks ago; but now important Administration officials consider suspension of the investment credit "a live possibility." Gardner Ackley, chairman of the Council of Economic Advisors, is believed to be pushing the measure; and even Treasury Secretary Henry Fowler — up to now the Cabinet's strongest advocate of keeping the credit — is said to be reconsidering.

The President Ponders: President Johnson himself has been trying to size up the pros and cons. A White House call for tax credit repeal — as an anti-inflation move — would assure its quick passage. If Johnson takes a hands-off attitude, Congress may end the tax credit on its own.

Late last week Senator Russell Long (D., La.) — chairman of the Senate Finance Committee and majority whip — tacked onto the House-passed foreign investors tax bill a rider to repeal the tax credit. His amendment would deny the 7% tax deductions for all capital equipment ordered after Aug. 30 and for all items not delivered by next Jan. 1. The senator plans to speed the measure through his committee and onto the Senate floor, where it's likely to pass easily.

Discouraging Spending: The fate of the proposal in the House of Representatives is less certain; it is almost entirely in the hand of Ways & Means Committee Chairman Wilbur Mills (D., Ark.), who so far has not aired his views on the matter.

But even if the repeal rider is rejected by the House, Long seems to feel that the action he will generate in the Senate will be enough to cool business spending decisions.

One political angle: congressmen up for re-election could point to repeal as a blow at price rises.

Riding Herd on Mergers?

Members of the 21-nation Organization for Economic Cooperation and Development's restrictive practices committee may be asked this fall to endorse a proposal that would create an international agency designed "to ride herd" on mergers, cartels, joint ventures and other combinations that might lessen world competition.

The proposal was made by Senator Philip Hart (D., Mich.), chairman of the Senate Antitrust Subcommittee, who feels that the number of links between U.S. and foreign firms may be excessive. He sees the trend as a menace, worries because no government agency is keeping track of the combinations, let alone protecting the public interest.

He has urged the State and Justice Depts. and Federal Trade Commission to support his plan at OECD's meeting. The officials of these agencies say they will consider the proposals, are otherwise noncommittal. Meanwhile, some members of Hart's staff think the OECD group may be too [illegible] to effectively deal with the issue, a smaller unit—possibly including the six-nation European Economic Community (EEC), Britain, Canada and the U.S.—may be more suitable.

Rough Idea: Hart's agency would be the first step toward such protection. He doesn't have all the specific ironed out, but he does offer some rough ideas:

The agency would establish an office staffed by antitrust experts from several countries, who would act as a clearinghouse for information not now collected. It might have investigatory powers, but not powers to prosecute; it could, however, recommend actions to the respective governments involved.

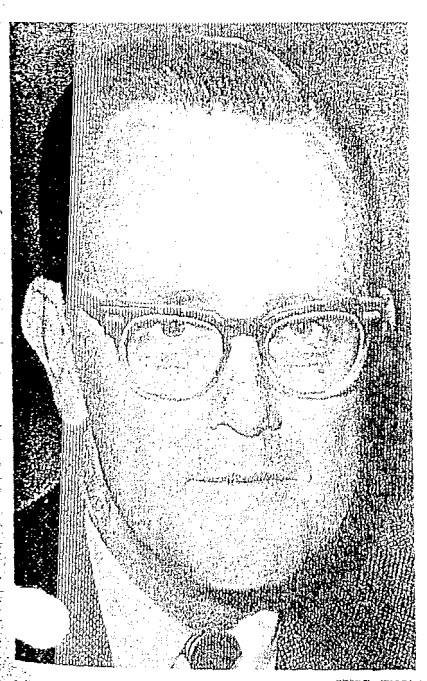
Adding impetus to Hart's proposals was new evidence submitted by FTC showing that the 50 largest U.S. industrial concerns have acquired at least 177 foreign companies since '60. In Western Europe alone these companies since '58 have established 92 joint ventures and bought 78 foreign companies.

FTC Chairman Paul Rand Dixon says U.S. investment abroad in recent years has outstripped private investment here. He refers to these statistics to rebut long-standing company charges that harsh enforcement of U.S. antitrust laws cut off investment opportunities abroad.

"Rather than being hampered by our antitrust laws," Dixon adds, "U.S. firms have been expanding abroad at a faster rate than they have been expanding here. These expansions have reportedly been so great that several foreign governments are fostering mergers among their companies to offset the size of American operations within their country."

Challenging International Unions: Hart has pressed the Justice Dept. on why it hasn't challenged more international combinations. (Latest government suits in the international sphere were filed two years ago. One, still pending, challenges the joint venture of Monsanto and West Germany's Farbenfabriken Bayer, establishing Mobay, the largest U.S. producer of isocyanates.)

Justice Dept. spokesman Edwin Zimmerman refuses to concede that the government is being soft on international combines. He notes that Justice has closely studied several big deals—e.g., GE-Bull-Olivetti, RCA-Siemens, Chrysler-Simca-Rootes—but these didn't have the anticompetitive consequences that would add up to a violation of U.S. laws.



WIDE WORLD

Senator Hart: Seeks Administration support for global antitrust agency.

Fisher Scientific's Fisher: Ready to serve fast-growing research market.

Growing with R&D

Chemical and pharmaceutical research will be growing at a much faster rate than the gross national product during the next few years, Chairman Aiken Fisher of Fisher Scientific Co. (Pittsburgh) predicted in an appearance before the New York Society of Security Analysts.

Annual research and development expenditures by all U.S. industry will rise by more than 20% by '69, according to Fisher's projections, and medical research outlays will climb at about the same rate.

Number of trained young men and women available to carry on the chemical research work will probably increase still faster. Fisher presented a chart showing a 40% gain between '66 and '69 in number of four-year degrees to be awarded in chemistry by U. S. colleges and universities.

This would mean rapid growth in all the major markets served by Fisher's company, which produces and distributes laboratory equipment and reagent chemicals for industry, hospitals, schools, etc. Another major product line: process control instruments.

At present, industrial customers account for about 50% of the company's sales volume. Fisher expects this part of the business to grow, but predicts that the rate of growth will be greater in other areas — e.g., university laboratories, hospital diagnostic and research laboratories. He estimates his company's '66 sales at more than $63 million — up about 10% from '65.

WASHINGTON Newsletter

President Johnson's "Great Society" legislation is at stake in November's elections. As is normal in an off-year election, the Democrats, as the party in power, expect to suffer some losses in the House. The question is how many. They hold a two-to-one majority in the 89th Congress and can suffer some losses without losing effective control of the legislative machinery.

Democrats now hold 63 marginal House seats, some won by less than a 5% margin in '64. Republicans must win back 38 seats just to come up to the minority balance they held in the 88th Congress. And most analysts don't expect them to pick up more than 30 seats, despite unrest over Vietnam, inflation and civil rights troubles. This still would leave the President a good legislative margin.

The outlook for Republican gains in the Senate is even dimmer. Many house Democrats are vulnerable because they now will be running without the coattail advantage of Johnson's landslide victory two years ago. But the senators up for re-election won their seats in '60 when the late President John F. Kennedy and Richard M. Nixon split the vote.

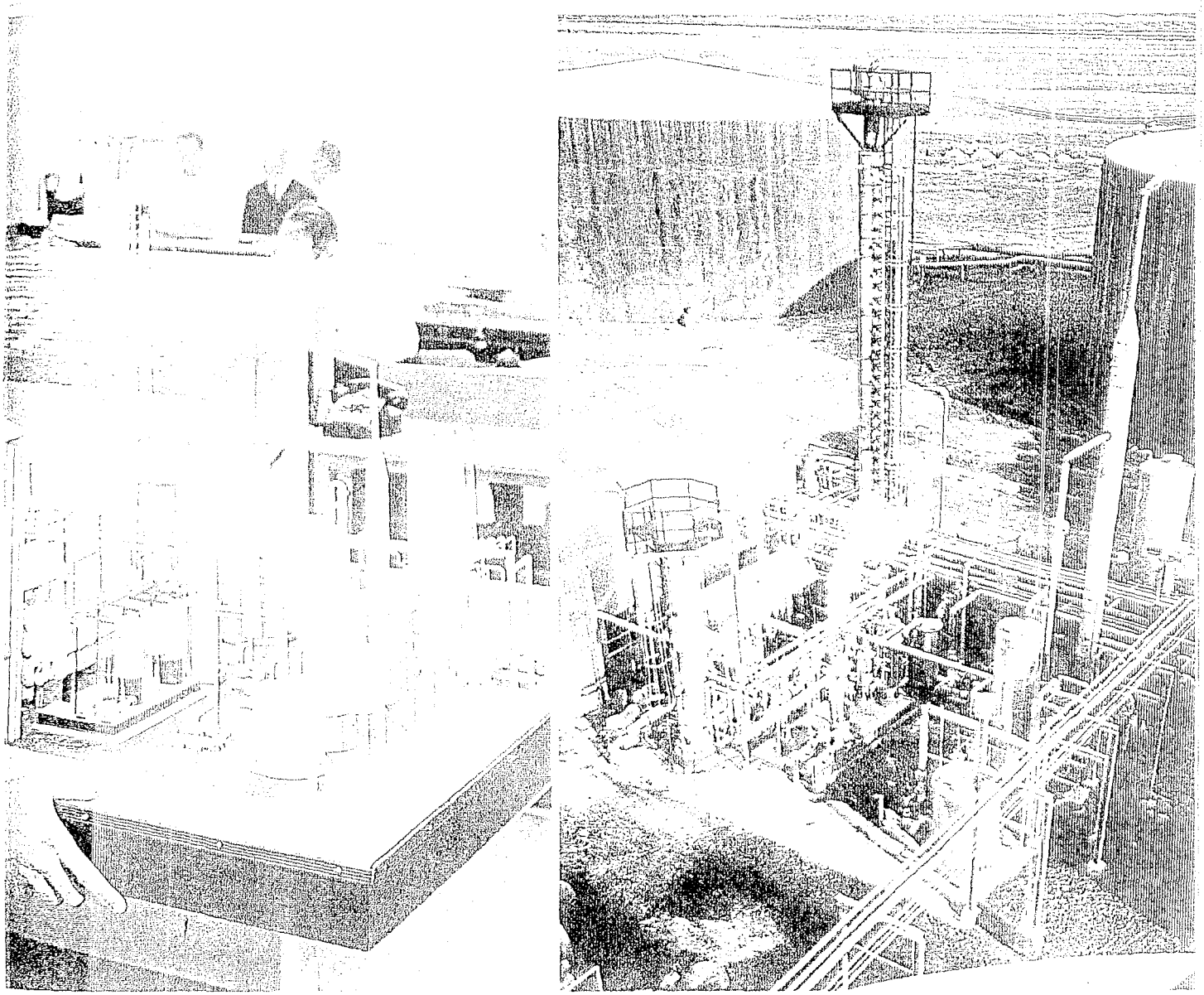
Private patents will be almost impossible to get under provisions of the new auto safety law and its $55-million research contract section. The House and Senate have agreed to language providing for public ownership of inventions if the government's contribution is "substantial." Senator Russell Long (D., La.) is trying to tack such a provision to all research and development legislation so long as there is no government-wide policy in this field.

The proposed Dept. of Transportation may be headed up a dead-end street in Congress. The House last week approved creation of the 12th Cabinet-level department—but only after considerable gutting. And its fate in the Senate is uncertain, tied to how long the bitter civil rights battle will run.

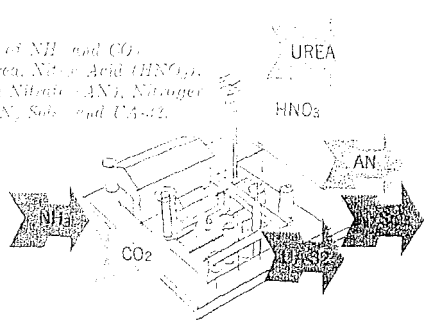
Even if created, the department would have no role in approving rates, mergers of competitive practices. These still would be left to the Interstate Commerce Commision, Civil Aeronautics Board and Federal Maritime Administration. The Maritime Administration is out of the proposed department completely. And the House eliminated a proposal that would have authorized the Secretary of Transportation to lay down standards for evaluating federal-aid programs.

There is little doubt that the department will come into being one of these years. While it will start with little actual authority, it can be expected to lead a fight in Congress for changes in regulatory laws to give it more power.

UREA



From plant model to model plant



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G · Chemical acquires U.S. Paint; Petrolite enters Humble's complex

Grow Chemical Corp. (New York) has bought U.S. Paint & Lacquer (St. Louis) for 84,000 shares of Grow common and about $600,000 worth of preferred stock. The purchase of the protective coatings maker is the second of three planned acquisitions. Cello Chemical (Baltimore) was acquired in July and negotiations are under way to buy Farboil Co. (Baltimore). (Recent price of Grow shares: $12.50.)

Petrolite Corp. (New York) has purchased an 85-acre site in Humble Oil & Refining Co.'s Bayport, Tex., industrial development. Petrolite is the sixth landowner on the 7,250-acre property on Galveston Bay, 25 miles southeast of Houston. Other site owners are Lockheed, Retzloff Chemical Corp., Shaffer Tool Works, Haldor Topsoe, and American Cryogenics.

Dow adds to Ohio site; Stromberg-Carlson to market microfilm

Dow Chemical Co. (New York) has acquired an additional 279 acres in Belmont County, Ohio, which br its holdings in the area to more than 500 acres. O land holdings—which lie over what experts believe to be major salt deposits—were acquired in two previous purchases.

Stromberg-Carlson (Rochester, N.Y.)—a General Dynamics subsidiary—will market microfilm produced by Kelvar Corp. (New Orleans, La.). Stromberg-Carlson Data Products Division (San Diego) will manage the distribution of Kelvar's microfilm aperture cards and duplicating equipment.

Abbott acquires Faultless Rubber; Fulton and Producers Cotton Oil merge

The boards of Abbott Laboratories (North Chicago) and Faultless Rubber Co. (Ashland, O.) have ratified an agreement providing for the acquisition of all Faultless assets for 110,554 Abbott common shares.

And Abbott has reached an agreement in principle with Air Control (Norristown, Pa.), a subsidiary of National Aeronautical Corp. (Fort Washington, Pa.) for the exclusive distribution of Air Control's laminar airflow filtration hoods.

The merger of Fulton Industries (Atlanta, Ga.) and Producers Cotton Oil Co. (Fresno, Calif.) has been ap d by the directors of both companies (*CW, Aug. 20 32*). Terms of the agreement, subject to stockholders' approval: exchange of three-quarters share of Fulton common and 0.14 shares of new Fulton preferred for each share of Producers common stock. In all, Fulton will exchange 834,447 shares of common and 155,763 shares of new preferred for 1,112,596 shares of Producers common stock. (Recent price of Fulton common: $12.75.)

Purex increases quarterly dividend; Pioneer omits dividend

Purex Corp. (Lakewood, Calif.) has increased its quarterly dividend from 16¢ to 17¢/share, and has declared a 2% common stock dividend.

Pioneer Plastics Corp. (Auburn, Me.) is omitting its regular quarterly 5¢/share dividend to conserve capital for completion of Pioneer's recent move to a larger plant in Auburn, Me., and to install new equipment.

Glidden plans $4-million R&D center; Shell dedicates $75-million light oil complex

The Glidden Co. (Cleveland) will construct a $4-million research center in Strongsville, O., which will house all the research and development activities of its Coatings and Resins and Durkee Foods groups. The company has an option on a 30-acre site, subject to rezoning of the property. If rezoning is approved, Glidden says it will begin construction by June '67, with completion scheduled for Aug. '68.

The Coatings and Resins and Durkee Foods groups account for about 80% of the company's annual sales. Sales for fiscal '66 (which ends Aug. 31) are expected to total about $345 million. The company's R&D and technical service expenditures for fiscal '66: about $8 million.

Shell Oil Co. (New York) has dedicated its $75-million light oil processing complex at Martinez, Calif. The addition increases the capacity of the Martinez refinery by 55%, brings its capacity to 85,000 bbls./day.

Atlantic Richfield builds coke facility Fluor Corp. awarded refinery contract

Atlantic Richfield (Philadelphia) is building a $1.2-million petroleum coke storage and handling facility at Long Beach, Calif., for overseas shipments. The unit —to be completed about April '67—is designed to accumulate coke in quantities sufficient to load 10,000-15,000-ton cargoes for Japan and Europe. Product will come from a new, 1,200-tons/day coking unit nearing completion at the company's Watson refinery.

Powerine Oil Co. has awarded a $10-million modernization and expansion contract at its Santa Fe Springs, Calif., refinery to Fluor Corp. (Los Angeles). Construction will begin later this year and is scheduled for completion in the summer of '67.

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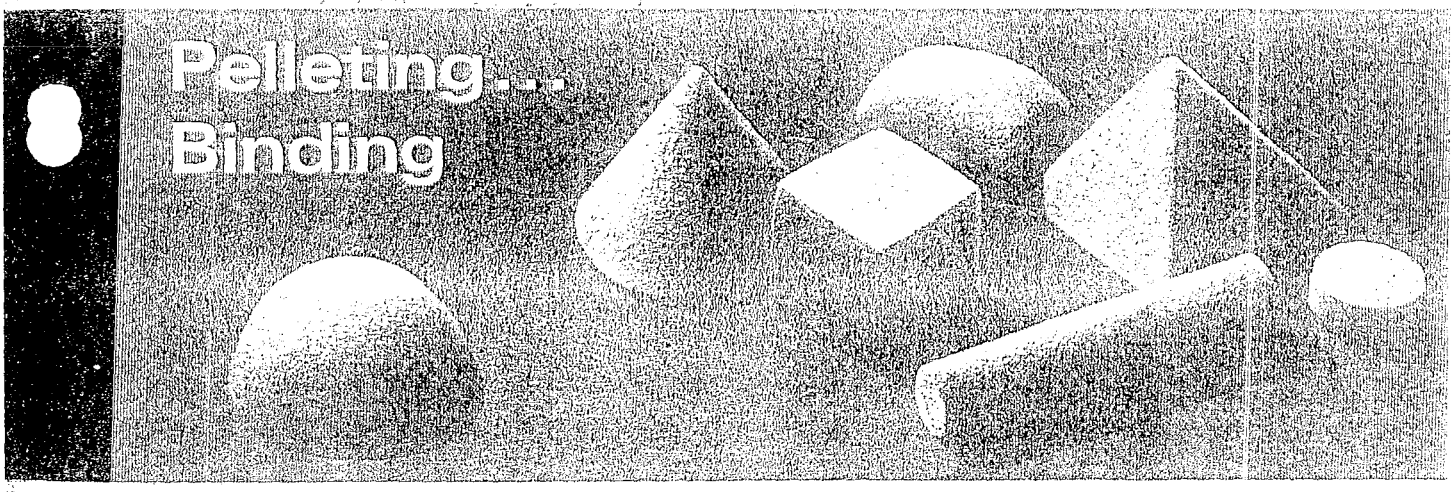

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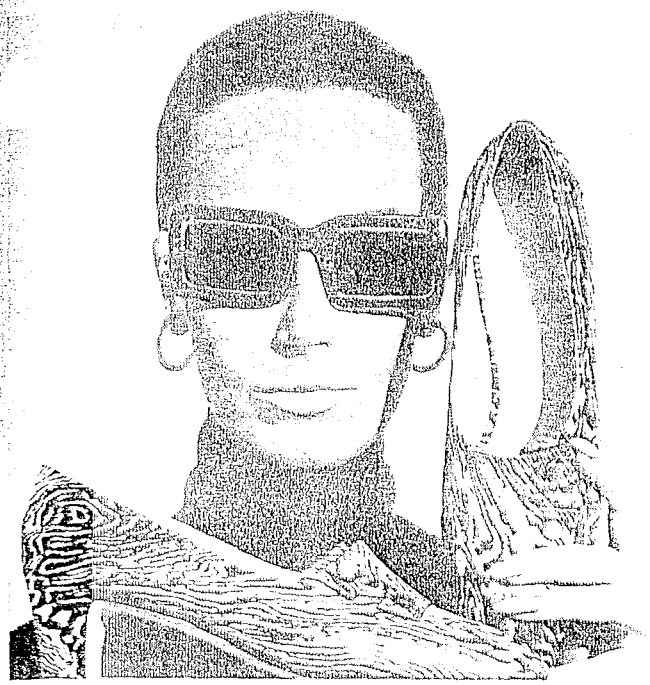
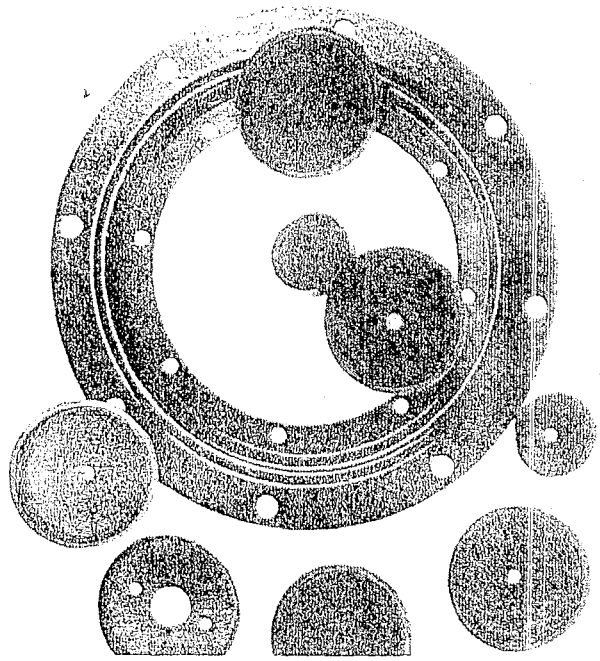


IN HIGH FASHION: Du Pont's Corfam has been moving into consumer shoe market as durable leather substitute.



IN PROCESS PLANT: Corfam packing and seals are out for equipment market held by leather and rubber goods.

Corfam Steps into the Plant

New material's durability adds to life of seals and packings in pumps, other equipment

Corfam, Du Pont's leather-like urethane-polyester composite, which has been winning a market as a shoe upper (*CW, May 1, '65, p. 45*), now has its foot in the door of the chemical plant. Its promise: improved durability, toughness and flexibility in packing and sealing applications for process equipment.

It has already won a job in an East Coast detergent plant as a packing in ceramic plunger pumps, which are used for highly abrasive detergent slurries. Where ordinary vee rings made of neoprene and duck had to be replaced every two or three days because of excessive wear, Corfam vee rings are replaced after one or two months of service. Moreover, Corfam rings do not show excessive wear, are replaced as part of a regular preventive-maintenance program.

Corfam is being tested with excellent results as a packing and seal material in a paint plant for water-, ketone- or acetate-based paints. It is used in plunger pumps for fire-resistant hydraulic fluids (water- or oil-based) in metal processing plants—in one case, increasing packing life from about a week (with neoprene) to five months.

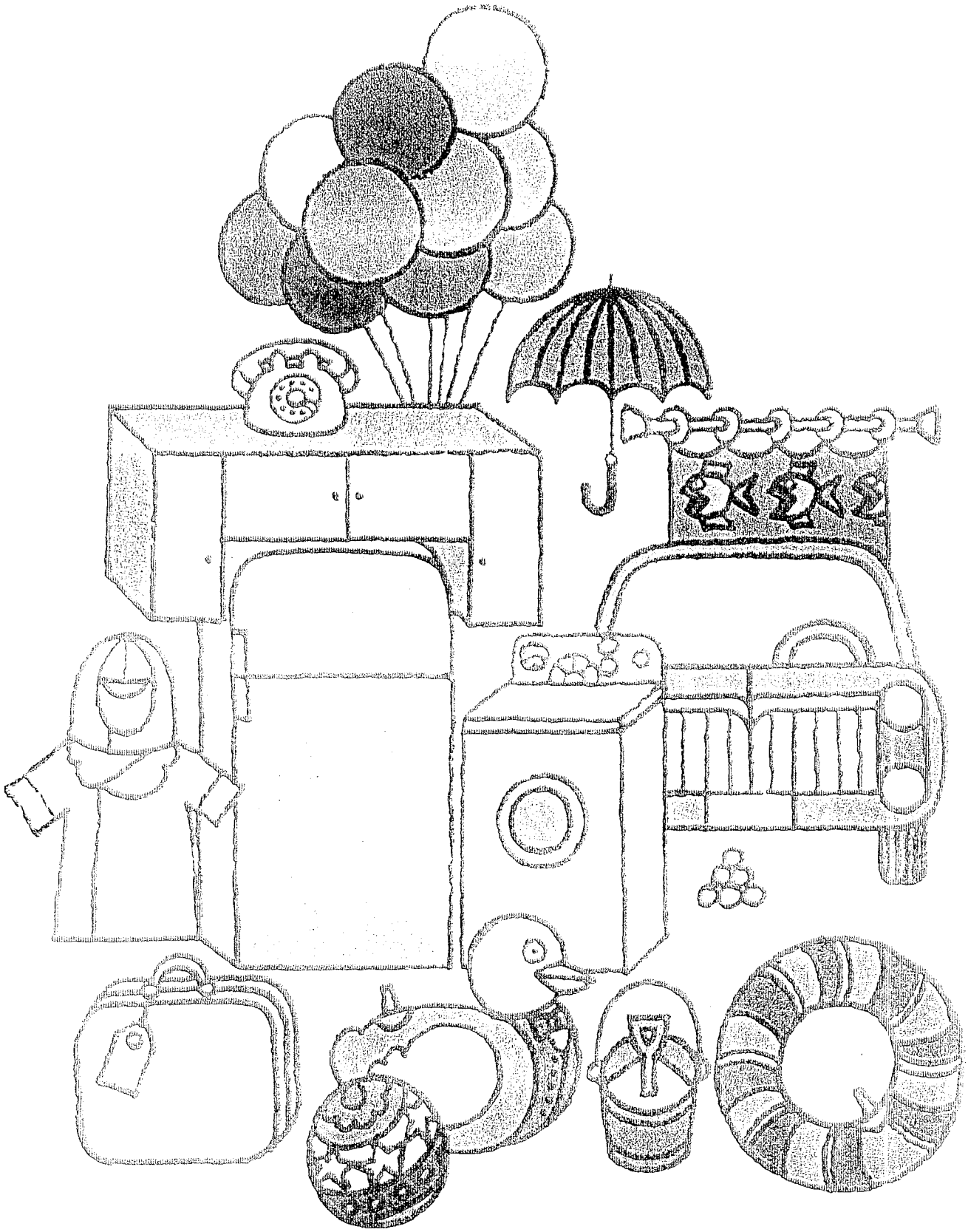
And tests now under way at Du Pont's engineering laboratories show that Corfam will make an excellent sealing material for rotary shafts (for example, centrifugal pump shafts).

Stepping In: Du Pont's Kenneth Johnson, product manager of industrial fabrics sales, does not see Corfam's industrial sales rivaling its market in shoes and consumer products. And in the industrial sales area, automotive seals could well turn out to be a larger market than plant process equipment. But there is no question that plant process equipment will begin to take a portion of Corfam's production if more potential users have the good results from it that the pioneer users have had.

The same properties that make it attractive shoe material — durability, toughness and flexibility—are main reasons for its success in industrial trials so far. And Du Pont has added to these properties by impregnating the Corfam with other materials. In fact, "straight" Corfam hasn't been used industrially, and probably won't be because the impregnated material has improved properties, according to Johnson.

Du Pont describes Corfam as a coriaceous (tough, leathe like) peromeric material. It is a non woven sheet of urethane polymer base reinforced with polyester. The sheet contains fibers deposited in a random manner and held together with a binder to obtain uniform strength in all directions. Each cubic inch of sheet contains millions of pores that can be saturated with elastomers, resins and waxes. The sheet may also be coated.

The first material Du Pont has used for impregnating Corfam is Adiprene, its urethane-based elastomer, which has good resistance to abrasion, oil, fuel, weather and ozone. In addition Adiprene has good tensile strength, high load-bearing and elongation capacities. When vulcanized, it remains flexible at temperatures below –80 F and retains hardness and strength at temperatures to 250 F. It also has good



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NJZ

Armour's McCorkle and Gardner check plans for new amines plant.

Betting on Beta's

A green light for construction of a commercial plant to make a new series of amines has been flashed by James Gardner, president of Armour Industrial Chemical Co., and Miles McCorkle, vice-president and technical director. The new semiworks unit will turn out several million pounds/year of the new beta-amines after it goes onstream at McCook, Ill., in March '67.

The products making the lab-to-plant transition differ in several respects from conventional fatty amines sold by Armour and a number of other producers. They are derived from petroleum-based materials rather than from naturally occurring raw materials, and are made by a new catalytic process (patents have been applied for in the U.S. and abroad).

The new route gives a saturated long-chain hydrocarbon containing an amine or diamine group on an interior carbon atom — predominantly at the *beta* position. Conventional products are alpha-amines.

The beta-amines have greater liquid-solvency and stability than do alpha-amines. Like alpha-amines they are strongly cationic surface-active agents. They are expected to show cost advantages when used in competitive applications.

Large-scale uses are anticipated in the paper, petroleum, plastics, rubber, textile, metalworking, paint, steel and pesticides industries. McCorkle declares that fatty nitrogen chemicals are now a $100-million year industry, and concludes, "The beta-amine breakthrough, we feel, opens up an equally big new business field."

Among the other producers of fatty amines: ADM Chemicals, Dow, Cargill, General Mills and Humko Products. Fatty amide condensates and fatty nitriles are also part of the fatty nitrogen chemicals family.

Amines and Diamines: Four beta-amines and a pair of diamines have been tested since '64, and a series of derivatives joined them in '65. The amines are dubbed Armeens L-7, L-9, L-11 and L-15, the number indicating the number of carbon atoms in the chain. The diamines are Duomeens L-11 and L-15.

Exceptionally low melting and cloud points are said to make these amines easy to handle and store, especially when used outdoors at temperatures

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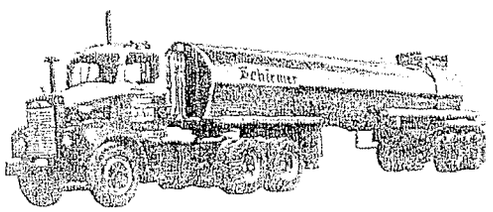

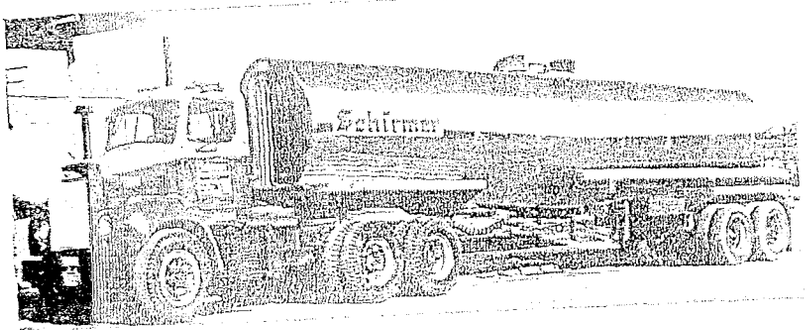

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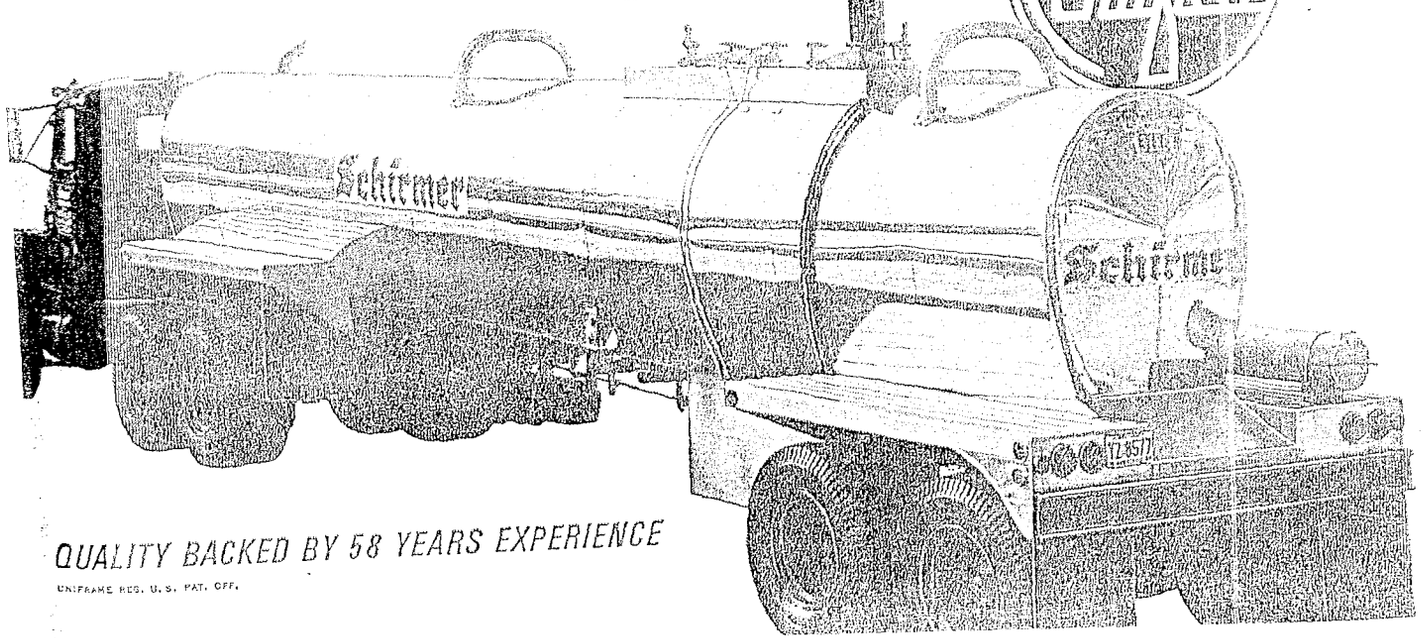

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Tallowate from steers like these Herefords is used in new syndet manufacturing process.

Brighter Sucrose Ester Prospects

A new 'transparent emulsion' process opens way to sugar esters in surfactants

What do cattle have to do with the choice of a synthetic detergent process? If the State of Nebraska gets its way, the relationship will be plain. Nebraska, big producer of both cattle and sugar beets, is seeking patents on a new process for making surface-active agents from sucrose and beef tallow. And it's willing to offer the process royalty-free to processors who'll build in the state.

The process has been worked out for Nebraska by Lloyd Osipow and William Rosenblatt of the consulting firm Foster D. Snell, Inc. (New York). And while the process is yet to be piloted, Osipow is convinced that it not only overcomes the major drawbacks of previously offered sugar surfactants processes but also will be economically competitive with processes based on petroleum derivatives.

The technique is so new that industry evaluations have not been made. But studies on a forerunner of the new process, made for the Sugar Research Foundation, bear out estimates that sugar-based syndets can compete on a cost basis with present commercially available synthetic detergents.

Big on Biodegradability: One big selling point is that the surfactants are both edible and biodegradable. They are nonionics, compatible with other anionics. They could be used for food additives (e.g., as emulsifiers) and in cosmetics, as well as for conventional surfactant jobs—in paint drying oils, printing inks, and for a range of household and industrial detergents. Nebraska officials feel the "biodegradability question" regarding household detergents is far from answered, even though industry has switched from alkylbenzene-based sulfates and sulfonate to linear alkyl sulfonates.

Several Switches: Osipows and Rosenblatt's method incorporates several changes from earlier sugar-using processes. The big switch is in avoidance of a solvent in order to bring together the sugar and "tallowate" reactants.

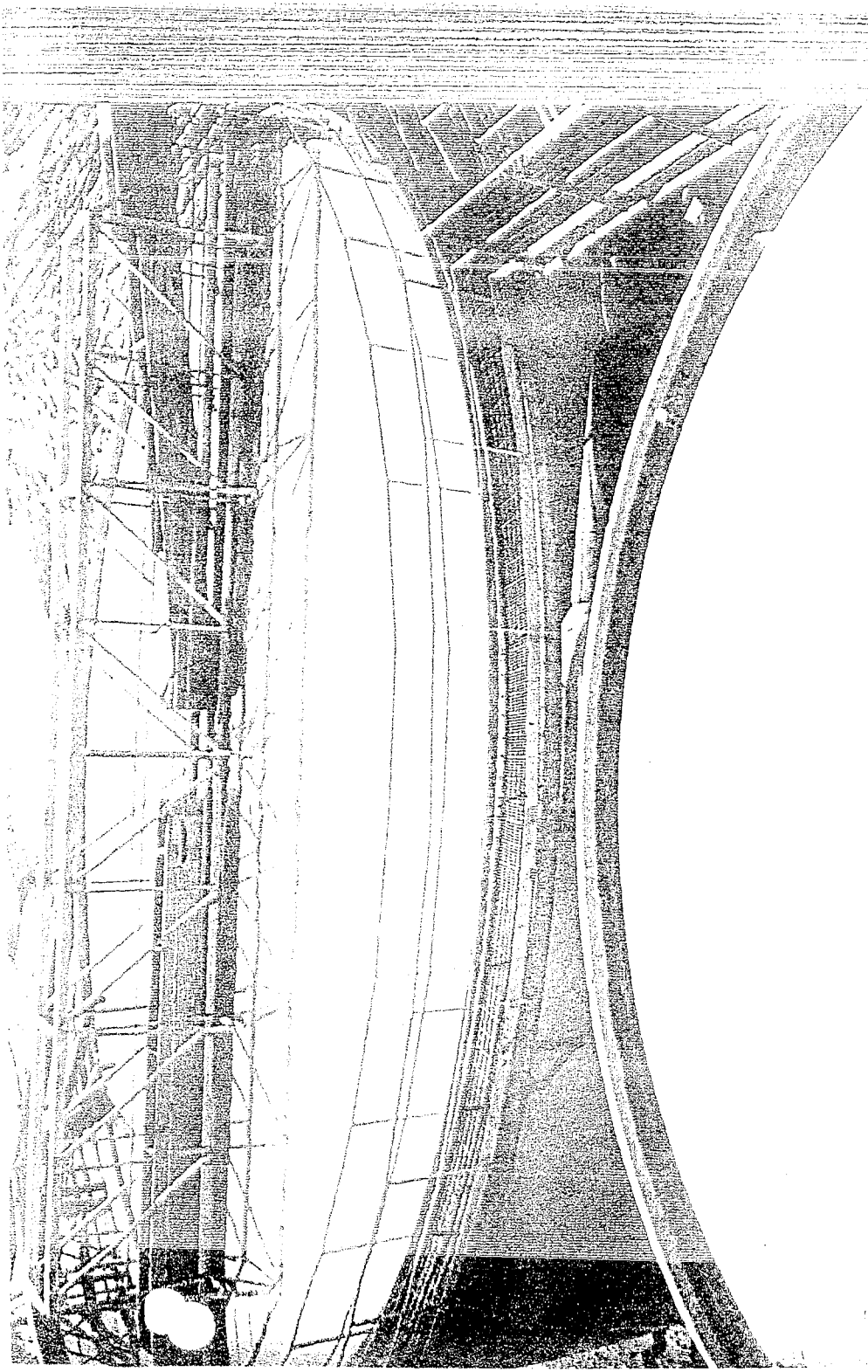
The new process employs a solvent for the sugar, but its twist is to form a transparent emulsion of the tallowate—making the tallow product into droplets smaller in diameter than one-quarter the wave lengths of lights. These can be dispersed in propylene glycol solution of sugar. And, according to Osipow, the tallowates in this form react with sucrose much as they would if the two products were dissolved in a mutual solvent (dimethyl formamide has been used commercially as a mutual solvent).

Although the glycol must be recovered by distillation, this is a fairly simple step. This dispenses with possible trouble with the U.S. Food & Drug Administration, which apparently feels dimethyl formamide can't be fully removed, and that solvent residue is a hazard to users.*

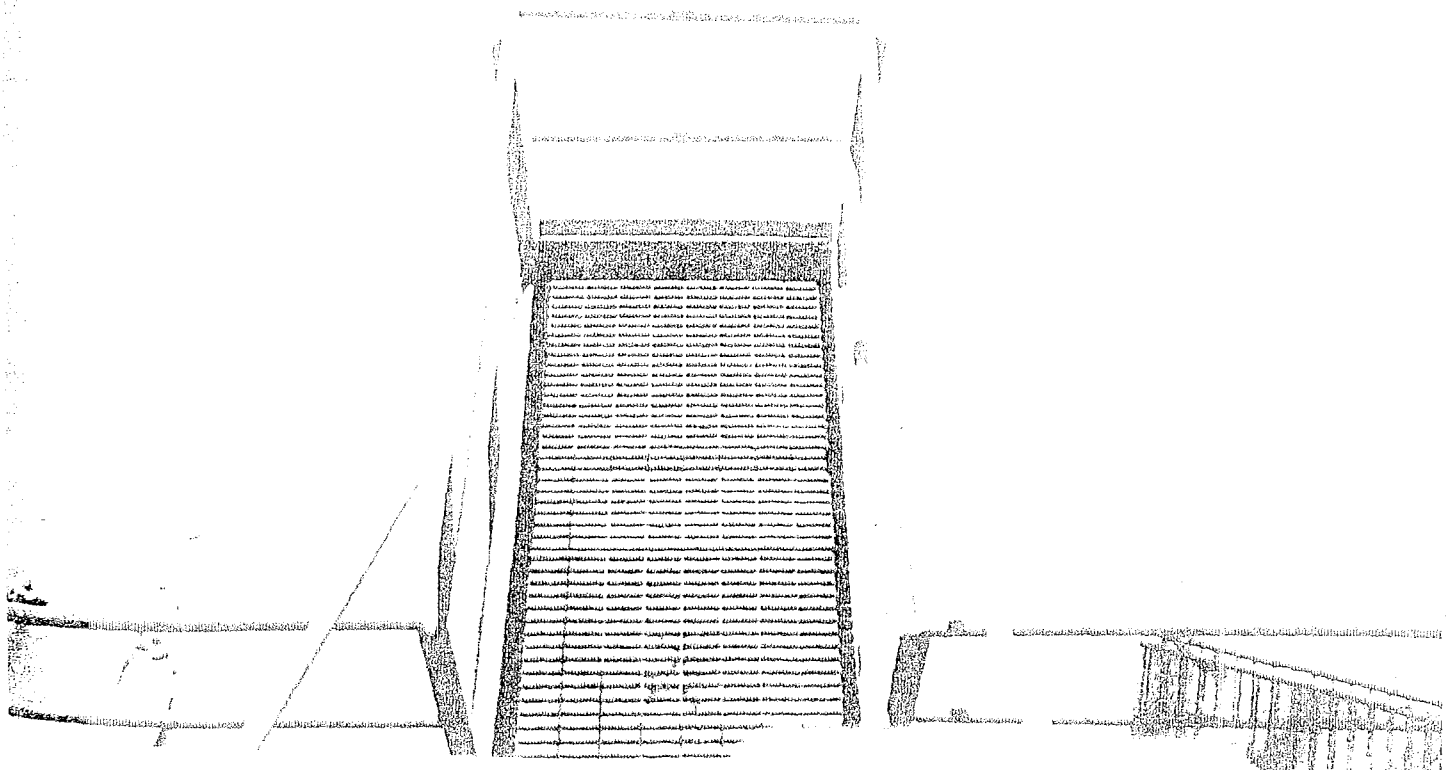
Tallowates (the mixture of methyl stearates, plus some palmitates and oleates derived from tallow) are put into the highly dispersed form by mixing with a soap or detergent and stirring with the glycol. The micelles of soap carry the tallowates into the ultrafine suspension. Among suitable suspending agents: alkyl sulfates and other organic syndets—e.g., sodium oleate. The oleate can be recovered as oleic acid if needed; in other cases—such as in making household syndets—the agent need not be removed.

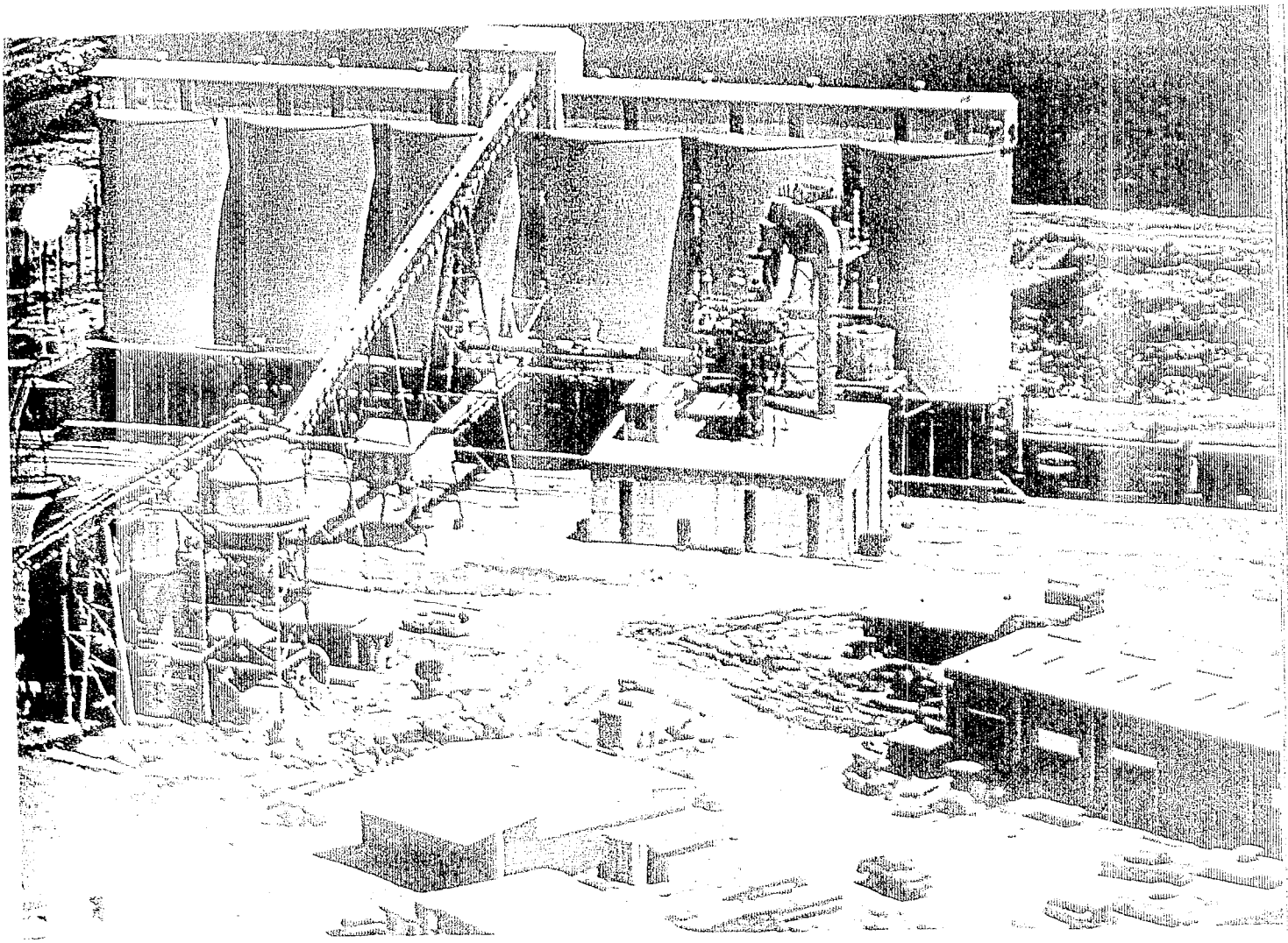
While transparent emulsions have

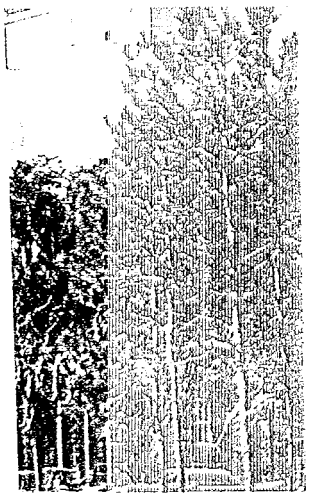
*In Japan, Dia Nippon Sugar Co. sells sugar esters for food use with no government complaint.

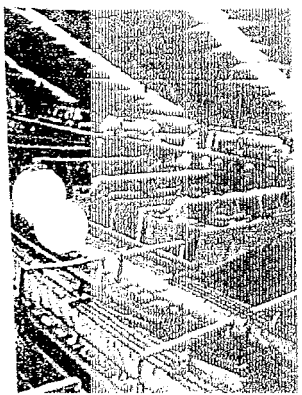


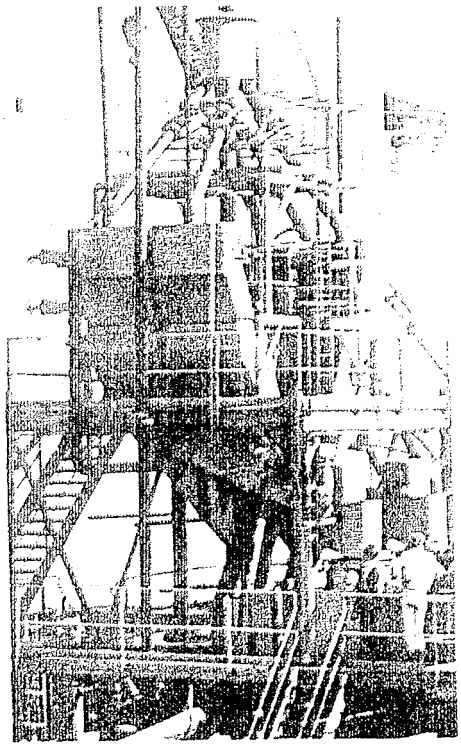
On stream in less than 10 months!











In October of 1964, there was nothing but an empty stretch of Hamilton County, Florida on the site above.

But less than 10 months later, Occidental's rock beneficiation plant was on stream—the first plant in the newly opened phosphate rock fields of northern Florida.

Working closely with Occidental engineers, Dorr-Oliver's Murphy Division designed, constructed and completely equipped all battery limits and off-sites of the plant. It will feed phosphate rock to Occidental's new multi-million dollar fertilizer plant located one mile away. (Dorr-Oliver turnkeyed that plant, too.)

Dorr-Oliver's experience and know-how made it possible.

under reflux, as the pressure is gradually reduced to one millimeter of mercury and the temperature brought to ...al 350 F.

There remain many processing hurdles before such bench-scale processes can be brought to the most economic commercial design, and Snell is now working on this.

Bids on Biodegradability: Nebraska's big hope is for a commercial plant to use sucrose esters in production of household detergents. One measure of the potential comes from a manufacturing cost estimate prepared by The Lummus Co. (New York) and a '64 market study prepared by Com-Dev., Inc. (Philadelphia), for the Sugar Research Foundation (New York), which sought to commercialize a previous Osipow process.

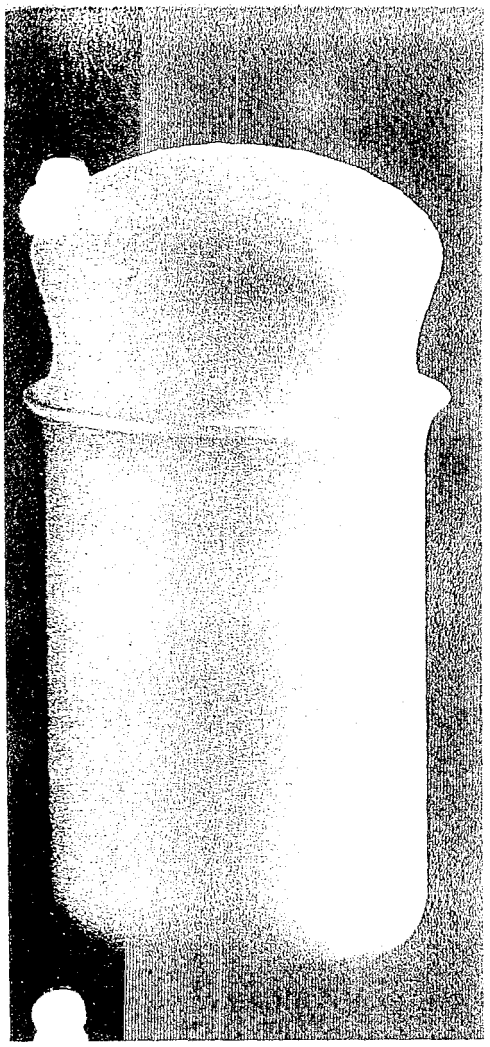
Lummus calculations assume sugar supplied at 10¢/lb. and methyl tallowate at 12¢/lb. A detergent mix containing 10% of the sugar tallowate (sucrose ester)—and said to equal commercial packaged syndets in effectiveness—could be manufactured at 13.5¢/lb. in a plant having capacity ... 10 million lbs. year. Cost would ... to 7.74¢/lb. in a plant having a ...apacity for 100 million lbs. year. Snell says it expects its new process to be even less expensive than the process evaluated by Lummus.

According to the Com-Dev. report, the nonionic sucrose ester detergents are compatible with anionic surfactants, which make up as much as 30% of over 2 billion tons/year of detergents produced in the U.S. And the sucrose ester detergents are far more easily broken down in sewage treatment processes than are the alkylbenzene sulfonate detergents.

Since Com-Dev. made its report, however, the soap and detergent industry switched from alkylbenzene-sulfonate, adopted linear alkane sulfonate (LAS) as the basic component of the detergent mix.* Now there are reports that LAS is not completely broken down in the oxygen-starved conditions prevalent in most household cesspools. Sugar and tallow detergent proponents hope that this will ... the way to widespread commer... ...tion of sucrose syndets.

... g Island Test: One study of

*In addition to the LAS material the compounded detergent contains such other chemicals as sodium polyphosphates, sodium silicate, sodium sulfate, etc.



Chemistry turned "end-for-end" as Dow Corning develops new aids for plastics processing

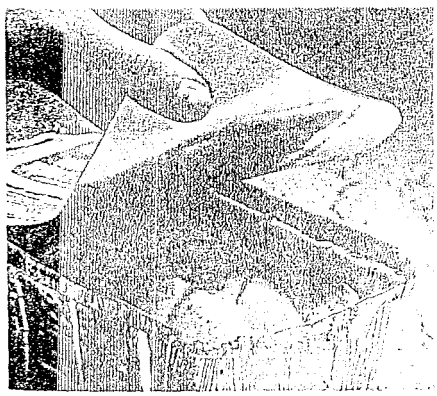
Going to "extremes" to find answers to plastics processing questions is commonplace at Dow Corning. For example, whether you want to make a foam, or make another foam disappear, we can help you do it better. Or if you need to make something slick, or make it stick, our researchers have developed efficient ways to do both. Details?

For foam or no foam, we have the answer as shown in the illustrations. If *unwanted* foam is the problem, one of our foam control agents stops it quickly, speeds production, cuts costs, reduces waste.

By using one of our Dow Corning silicone-glycol surfactants, urethane foams (rigid or flexible) gain uniform, controlled cell size, stable dimensions, processing advantages.

Is "slick" or "stick" your goal? Dow Corning materials aid both. One of our silicone release agents, applied to molds, extrusion presses or other plastic processing equipment assures quick, clean release cycle after cycle. Still another group of our products—our reactive organosilicon chemicals—provides an excellent means of coupling organic resins to inorganic surfaces such as glass, paper, fabrics. Tighter, stronger, longer-lasting bonds are assured.

At Dow Corning we specialize in many such "end-for-end" developments . . . finding new uses for our products, new answers for your problems. We'll do it even if we have to develop a *new* material! Why not let us try for you? Just write us on your letterhead.



Release coating talks turkey!

The lid is off sticky packaging problems with this new cover coated with a Syl-off® food-grade silicone coated release coating. Developed by Dow Corning and applied by a converter, this coating prevents the frozen, boneless, ready-to-cook turkey roast from sticking to the lid, even after cooking at 425 F. The lid won't delaminate or pull meat away from roast. Such coatings, applied to a wide range of board and paper stocks, won't migrate, transfer, or contaminate. Write for a brochure with coated samples.

We welcome the opportunity to keep you abreast of latest news on the development and applications of materials . . . to help you use them most effectively in your products, processes, production. Please make all inquiries on your letterhead, and address them to Dept. 2109, Chemical Products Division, Dow Corning Corporation, Midland, Michigan 48640.

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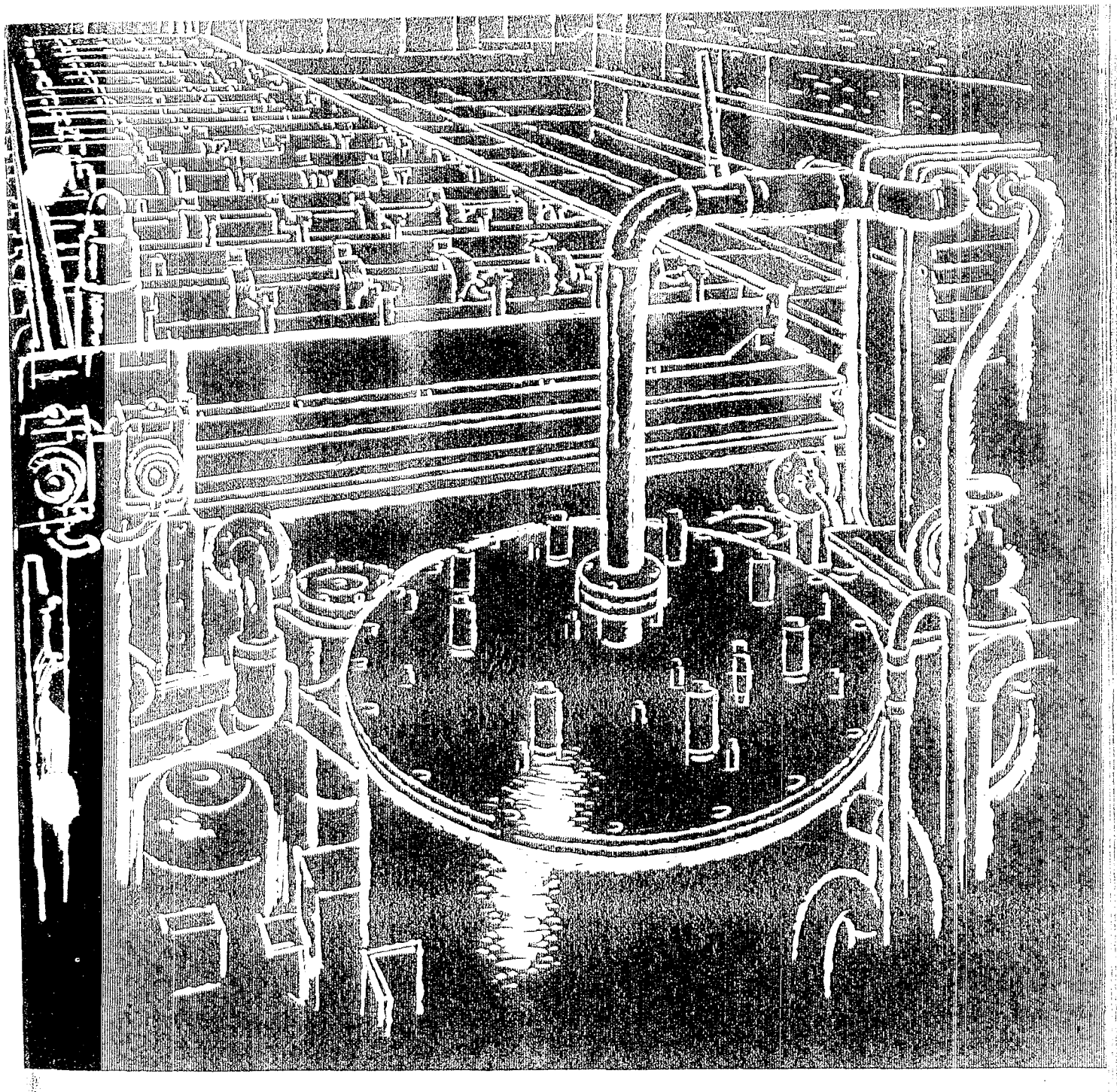

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Soviet gas industry shows rapid growth

According to information monitored from Soviet sources by Radio Liberty, output of natural gas in the U.S.S.R. has risen from 2.3% of the world's total in '55 to 15.6% in '65, making it the world's second largest producer.

Use of this gas, the Soviets claim, has saved the country 8 billion rubles ($8.88 billion at the official exchange rate) or double the amount now invested in the industry.

Japanese plan two big styrene centers

Two Japanese chemical groups plan giant styrene monomer production centers. One of 68,000-100,000-metric-tons capacity will be built by four members of the Mitsui group: Toyo Koatsu Industries, Mitsui Petrochemical Industries, Toyo Rayon and Electro-Chemical Industrial. The four firms had originally planned to build separately, as they generally do, but opted for the economy of scale.

At the same time, **Mitsubishi Petrochemical** is planning to build a styrene monomer plant of 80,000-tons/year capacity. Details haven't been ironed out yet.

Arabia moves on sulfur; Kuwait exports fertilizer

Three companies now conducting feasibility studies for a possible sulfur extraction plant in Saudi Arabia estimate that 250,000 tons/year could be extracted. Value, at present world prices, would be $12.5 million. Two U.S. companies, **Occidental Petroleum** and **Allied Chemical** would market the sulfur, while the third member of the consortium, Saudi Arabia's **Petromin**, would supply sour gas at no cost.

Occidental would receive a management fee as operator of the project. It expects the sulfur to be used mostly for the manufacture of phosphate fertilizers in the Mediterranean area, Europe, Australia and the Far East. Long-term supply contracts to be negotiated would serve as the basis for financing the $19-million project.

The first export shipment has been made from Kuwait's new $33-million fertilizer complex at Shuaiba. It went to Iraq under an agreement made earlier this year by the plant's operator, **Kuwait Chemical Fertilizer Co.** The company is 60% owned by the Kuwait government and private interests and 20% each by **Gulf Oil** and **British Petroleum**. Its entire output for the present year is already committed, with deals concluded with Cyprus, Pakistan, and Sudan and other African countries. Present capacity, already due for expansion, is 400 tons/day of ammonia, 550 tons/day of urea, 500 tons/day of ammonium sulfate and 400 tons/day of sulfuric acid. KCFC handles its own sales to neighboring areas, with sales further afield handled under a three-year agreement by a group consisting of **Olin Mathieson (UK), R. G. Shaw** (London) and **Woodward & Dickerson** (Philadelphia).

Chemicals pace Italian recovery

Italy's economy continues its slow, steady recovery. Official statistics for the first six months of '66 show that industrial production as a whole registered a strong 11.2% growth rate over the similar period a year earlier. But chemical output rose 15.2%. This compares with a chemical rise (all are first-half figures) of 5.5% in '65 and 9.6% in '64, and a rise for industry as a whole of 0.4% in '65 and 3.7% in '64.

Production of artificial and synthetic fibers was up 19.7% the first half of this year, compared with a 3.1% drop in '65 and a 25.2% gain in '64.

Reason for the surge is increased domestic buying. But exports (including heavy sales of fertilizer to Red China) also played a big part.

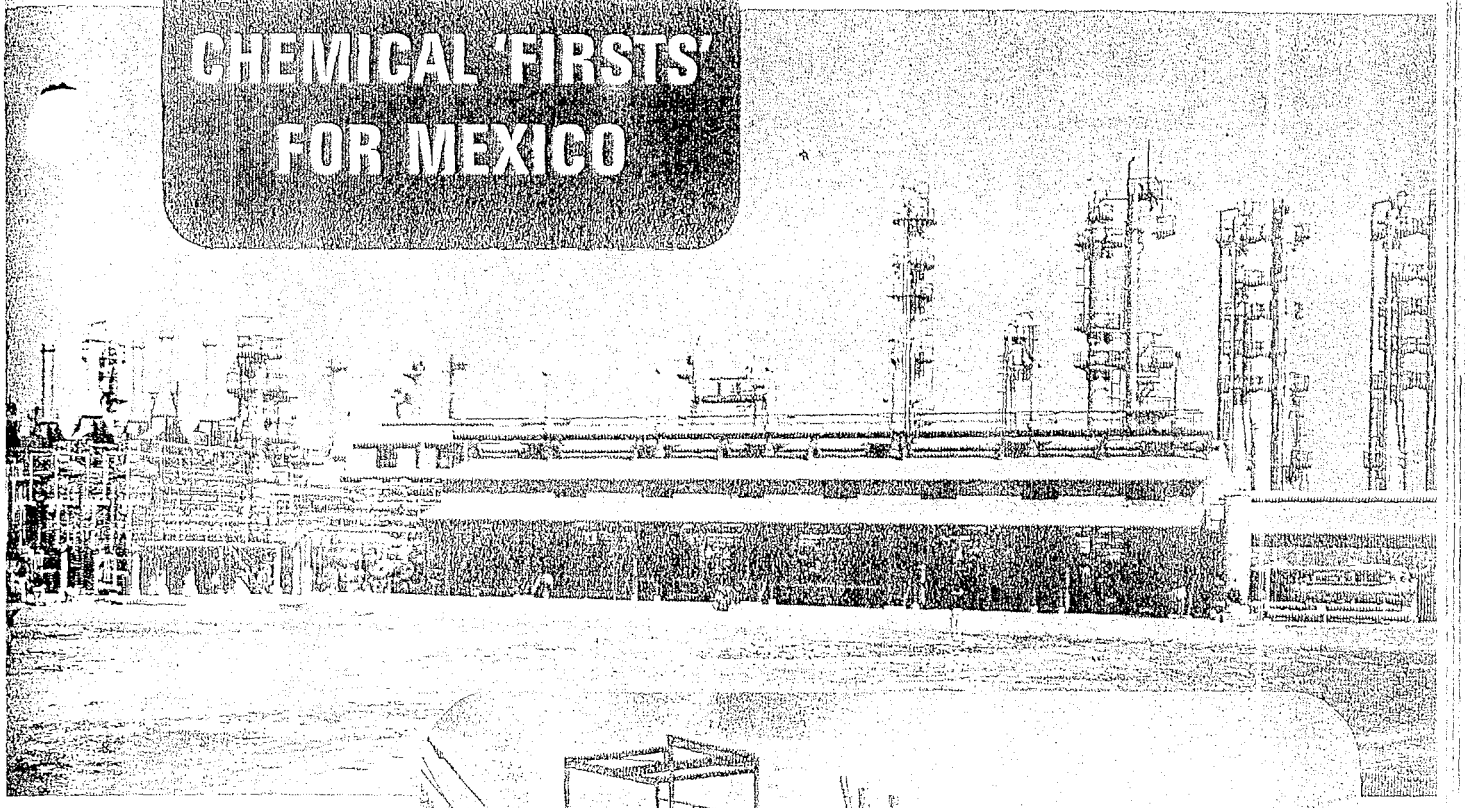
BP will double capacity of Australian ammonia plant

Kwinana Nitrogen Co. Pty. Ltd. (80% owned by **BP Australia, Ltd.**) is blueprinting a 100,000-tons/year ammonia plant at Kwinana, Western Australia, instead of the 50,000-tons/year unit originally planned. The $11-million refinery associated with the project should be onstream within 18 months. A 90,000-tons/year nitric acid plant and a 110,000-tons/year ammonium nitrate unit will complement the ammonia plant. Planned ammonia capacity was doubled as a result of market surveys indicating a greater-than-anticipated demand for nitrogenous fertilizers in the region.

Four Japanese PVC plants scheduled for South Korea

Four Japanese polyvinyl chloride plants having total capacity of 37,600 metric tons/year and costing more than $14 million will be built in the Republic of Korea. Construction of each plant will be undertaken by the Korean firm that buys it, with technical guidance and equipment to be supplied by the Japanese. Japan's **Chisso Corp.** will help **Korea Plastics Co.** build a $3.6-million, 6,600-tons/year plant. **Shin-etsu Chemical Industry Co., Ltd.**, has a deal with **Kongyung Vinyl Co.**

TWO NEW CHEMICAL 'FIRSTS' FOR MEXICO



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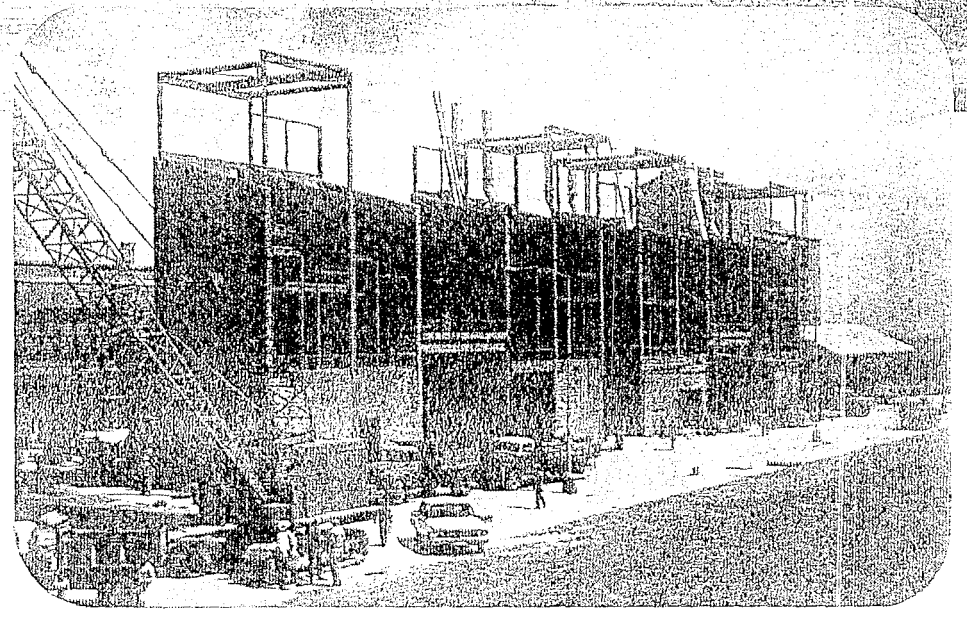

McKee continues to serve Mexico's Process Industries

The two new plants at Reynosa, connected by a seven-mile, storage-type pipeline, were placed in operation early in 1966. These are the latest in a long list of projects for Mexico's petroleum, chemical, iron and steel, and mining industries for which McKee engineers have supplied a diversity of services since 1944.

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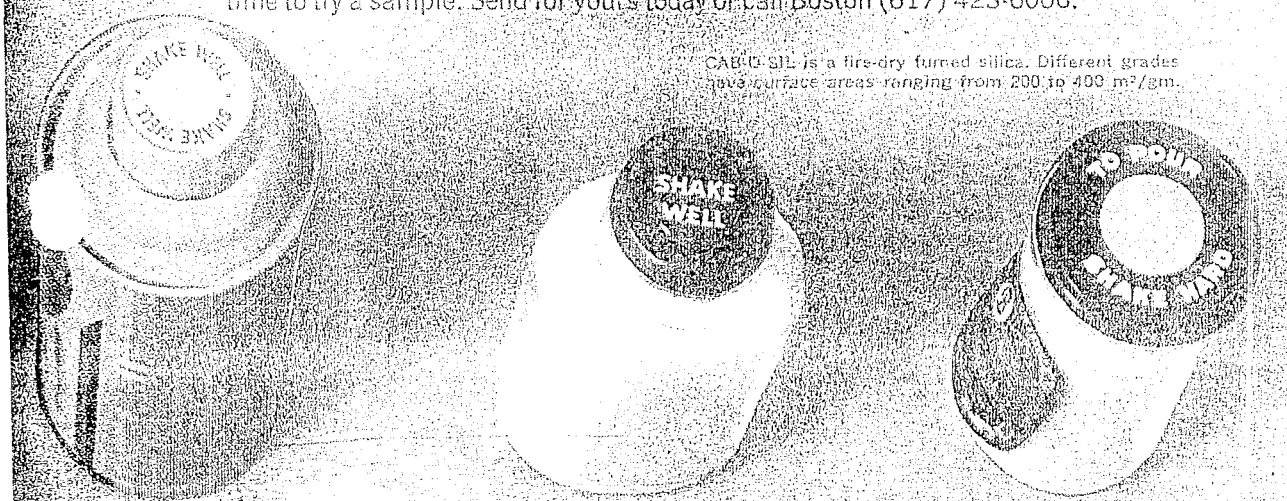

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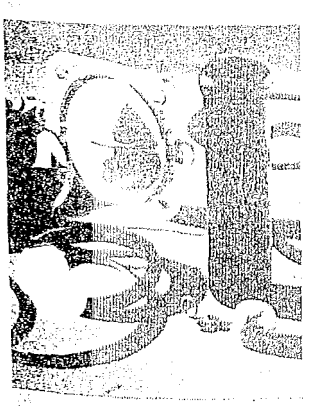

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ventory was negligible. Price cutting by s of our competitors resulted in al reduction in the price of ammonium phosphate fertilizers and in our opinion did not result in any increase in the total quantity sold in western Canada."

One source says most of the price cutting was started by one of Comnco's major customers, Imperial Oil Ltd. The Standard Oil Co. (New Jersey) affiliate is a major entry in the prairie market (as is Shell Canada Ltd.), working with some 300 distributors. There are persistent reports that either Imperial or Shell will be the next fertilizer maker on the prairies.

Price discounting varied, but cuts exceeded the usual $5/ton discount for bulk fertilizer. Whether '67 will see a repetition of this price cutting is a moot question. The only new producer will be Simplot Chemical, whose Cornwallis, Man., plant should be operating by year-end. Most of the production—220,000 tons of ammonium phosphate, 35,000 tons of urea, 90,000 tons of nitrogen—will be marketed in the U.S. But some will be sold in Manitoba and Saskatchewan.

The only other fertilizer plant on the horizon is a much-discussed unit that would be built in the Regina area in conjunction with a pyrites-to-sponge-iron installation by Hudson Bay Mining & Smelting Co.

How Big a Future? Best estimates are that wheat acreage will expand 1%/year, while fertilizer demand should continue to climb 20%.

D. A. Sim, chief executive officer of Western Co-operative Fertilizers Ltd., said in a talk last year that fertilizer use on the prairies could reach 3 million tons by '75. He predicts 550,000 tons in '66, 700,000 tons in '67, 850,000 tons in '68 and over 1 million tons in '69. "Should this trend continue," says Sim, "projections for '75 are in excess of 2 million tons." If the trend follows the pattern that developed in the U.S., use in '75 could reach 3 million tons, he adds.

Sim points out that farmers in the U.S. border states that have similar climatic and soil conditions are averaging 5-10 times more fertilizer per acre than are the Canadian farmers.

Dean C. F. Bentley of the University of Alberta told the Canadian Fertilizer Assn. last August that he could "see

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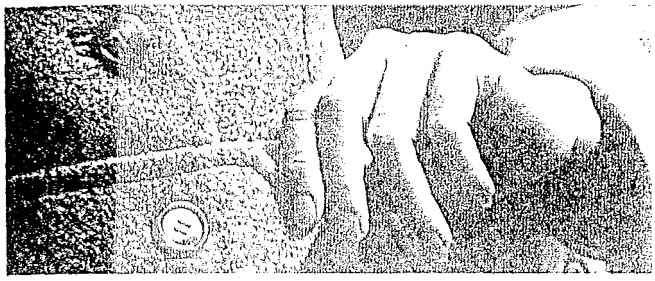

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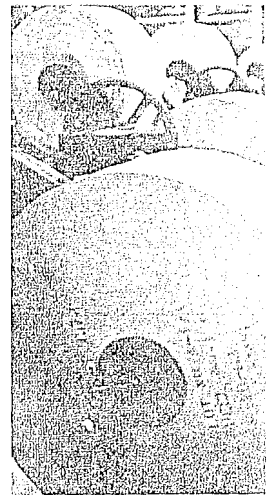

How much of a lead in terms of time and market do you have on your competition? Remember, your time/market relationship can change almost overnight. Where you stand tomorrow depends on the move you make today. Call our Designed Chemicals Group, The Dow Chemical Company, Midland, Michigan.

For a month. Or two months. Or maybe a bit longer.

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Alpha-olefin prices have been slashed sharply by Gulf Oil. Products having chain lengths varying from C_6 to C_{20} will sell for 14¢/lb. under Gulf's new schedule. The same tag will apply to any combination of C_6-C_{20} fractions as well as to the C_{22}-C_{30} fraction. Previous prices of individual olefins and fractions ranged as high as 25¢/lb. No change, however, was made in the 6.25¢/lb. price for C_4 product.

Commercial application of alpha-olefins in detergents, polymers and specialty chemicals is expected to be stimulated by the new price cut. Intensive developmental work is already under way on alkenyl sulfonate detergents derived from alpha-olefins. Alkenyl sulfonates may ultimately compete on a price-performance basis with linear alkylate sulfonate, now the major household surfactant (*CW Market Newsletter, April 30*).

Phenolic resin price increases continue to spread. Reichhold Chemicals will boost phenol formaldehyde resin tags 1¢/lb., effective Oct. 1. The increase, to be prorated on a resin solids basis and will apply to most of Reichhold's line, follows similar hikes recently posted for *p*-tertiary-butylphenol, *p*-phenol and phenolic molding resins.

Lithium carbonate prices are holding at 38.5¢/lb. for most contracts despite confusion in recent weeks concerning packaging differentials (*CW, Sept. 3, p. 83*). Some months ago Foote Mineral established a price of 37¢/lb., but only for packaged-carbonate shipped on yearly contracts of 200,000 lbs. or more. In addition, a 35.5¢/lb. bulk price (hopper cars, delivered) was established for the large orders. By now, both prices are standard in the industry for big orders.

Efforts to block sale of stockpiled nickel on a bid basis are being made by the National Assn. of Metal Finishers. The House of Representatives is now considering legislation that would release 24.5 million lbs. of nickel through the General Services Administration. Metal finishers are fearful that the bid disposal would duplicate the difficulties that arose when cadmium was sold two years ago. The association charges that relatively little cadmium reached the metal-plating business, although large lots were acquired by speculators.

The metal finishers are urging Congress to restrict the nickel disposal to users in the U.S., prohibit resale and to restrict distribution to domestic nickel producers and established distributors. In addition, sale at the prevailing market price (rather than bid selling) is suggested. Nickel scarcity has forced some shops to purchase nickel from black-market sources at twice the normal 80¢-$1/lb. price.

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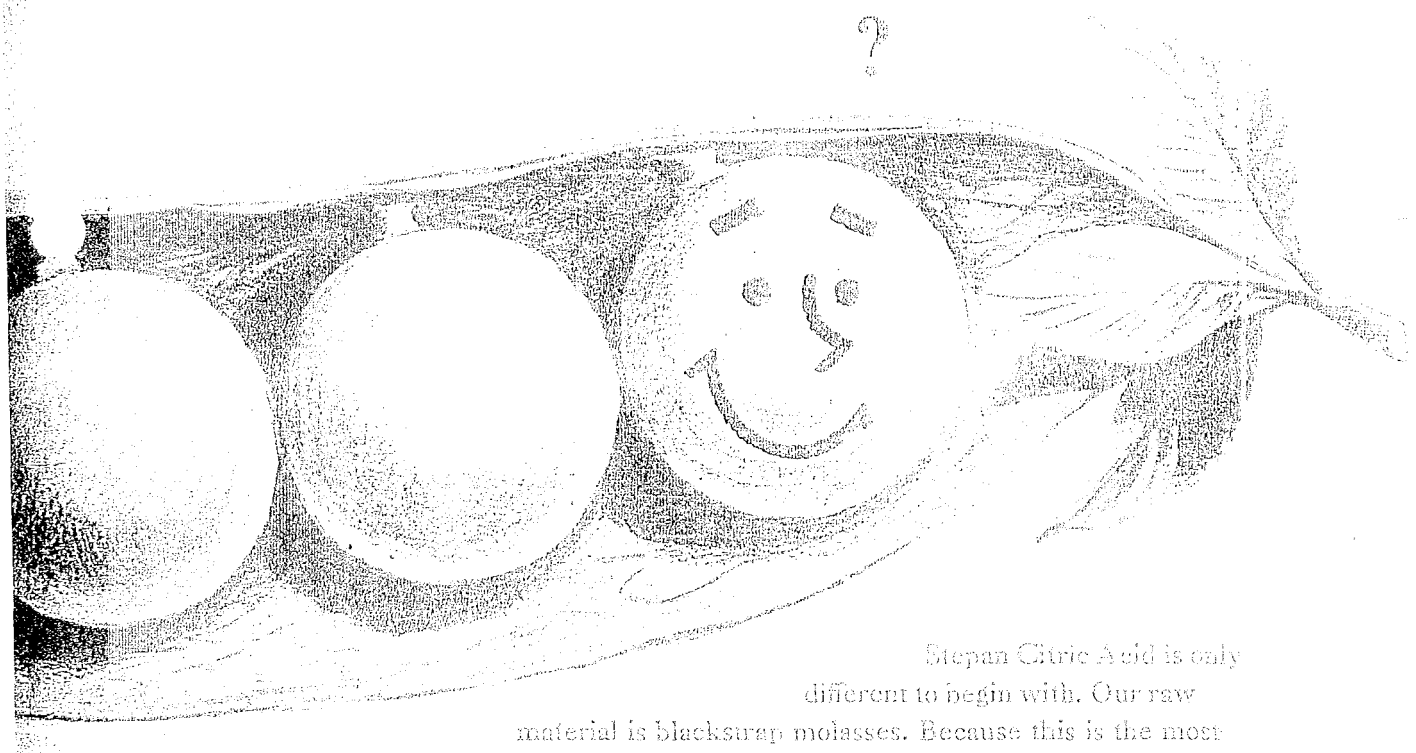

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Park Row

rule out Park Avenue as a location.

Carbide ($2 billion sales) has acquired large neighbors — e.g., Hooker Chemical ($244 million sales) and Witco ($146 million) — and small ones: Grow Chemical ($13.3 million). And the neighborhood seems far from crowded.

Only Carbide owns the building it occupies. But Grow, Hooker, B. F. Goodrich Chemical, Monsanto, Mitsubishi and Witco have offices in the similarly styled and relatively new Chemical Bank New York Trust Co. building across the street.

When Stauffer moves into 209 Park it will have as a neighbor Westvaco, which is switching over from 230 Park.

This spring, Great Lakes Chemical moved its sales offices from Fifth Ave. into 250 Park. Travel is critical at Great Lakes: its president is stationed in Los Angeles, research is located in [illegible]na, and plants are in Arkansas a[illegible]ichigan.

Equalizer Ruling

The International Chemical Workers Union is calling a new Equal Employment Opportunity Commission ruling "a veritable Magna Carta for Southern workers."

EEOC has sustained the first complaint ever filed by a union under the equal-employment provisions of the Civil Rights Act of '64. Earlier, EEOC stirred nationwide interest when it agreed to consider ICWU's complaint (*CW, May 28, p. 49*), after first declining to do so.

EEOC says Planters Manufacturing Co. (Clarksdale, Miss.) violated the law in a number of ways, most notably by paying Negro workers lower wages than paid to white workers.

The next step is to conciliate the differences between Planters and the union. ICWU President Walter Mitchell says he is "willing to meet with the company any time to work out [illegible]eement."

[illegible]re the commission had handed down its ruling, the union filed a suit in federal court accusing Planters of discrimination. The suit is still pending.

Edward V. Hagopian to general manager, Hoover Chemical Products Division, Hoover Ball and Bearing Co. (Whitmore Lake, Mich.).

...is S. M. Armandias to director of business development in European countries, ACF Industries Inc. (New York).

Joseph A. Paciello to assistant to the president, Berkshire Color Division (Reading, Pa.), Tenneco Chemicals, Inc.

Irvin R. Liuard, Frank Markoe, Jr., and **Thorwald H. Smith** to senior vice - presidents, Warner - Lambert Pharmaceutical Co. (Morris Plains, N.J.).

Ralph E. Davies to vice-president of administration, Applied Radiation Corp. (Walnut Creek, Calif.).

Donald H. Hartmann to vice-president of Dresser Industries (Dallas) and president of Magnet Cove Barium Corp. (Houston).

John A. Kennedy to president, American Mineral Spirits Co., Western (Los Angeles).

Dwight N. Wait to executive vice-p[illegible]nt, Consumer Products Division, Union Carbide Corp.

James B. Prendergast to president and **Edward J. Korbel** to executive vice-president, Nitrogen Division, **Wesley E. Gatewood** to executive vice-president, Barrett Division, Allied Chemical Corp. (New York).

William A. Smithers to vice-president and general manager, Pittsburgh branch, Fisher Scientific Co.

Charles E. Peck, Franklin R. Winnert and **Richard E. Trumbull** to vice-presidents, Owens-Corning Fiberglas Corp. (Toledo, O.).

Fred Dwyer and **Martin Solomon** to vice-presidents, Thermoformed Plastics (Flushing, N.Y.), division of Loral Corp.

Edward J. Bolka to vice-president and treasurer of Vancouver Plywood Co. (Portland, Ore.), subsidiary of Skelly Oil Co.

Charles G. Goebel to corporate b[illegible]al director, **H. Fred Oehlschlaeger** to director of research, Organic Chemicals Division, Emery Industries, Inc. (Cincinnati).

...until I said: "Make it out of stainless steel and get it from a Steel Service Center that stocks USS Stainless Steel."

The design engineers at the plant were in a quandary trying to decide on a material for some new liquid fertilizer storage tanks.
"It's elementary. Make them out of stainless," I said. "Stainless can handle all the liquid fertilizer combinations and still resist corrosion." "But," said one, "the fabricator doesn't think he can get stainless in time, and the job could be held up for weeks."
"Rubbish," I said. "Tell him to call a Steel Service Center, and they'll deliver the right stainless overnight. And furthermore, have the fabricator call a Steel Service Center that carries USS Stainless Steel; and if we need extra help, we can [illegible] from U. S. Steel's technical assistance staff, the biggest and most helpful in the industry."
"Great thinking," said the superintendent.
"Simple deduction," I said.

USS Stainless Steel

TRADEMARK

This mark tells you a product is made of steel.

TECHNOLOGY Newsletter

A new process for making aromatic derivatives of fatty compounds, developed by Archer Daniels Midland (Minneapolis), will sharply cut the price of phenylstearic acid and will bring a number of new chemicals onto the market—e.g., phenol, thiophene and naphthyl acids; aryl alcohols, amines, quaternaries and some esters. ADM plans to sell phenylstearic acid made by the process for less than $1/lb. Present price: $4-5/lb. The material is used in semifluid all-weather lubricants, to which it imparts stability to temperature and moisture extremes. ADM has applied for patents on its new process, which yield both crude and refined products.

A 300-kilogauss magnet, the world's biggest, is being designed at the National Magnet Laboratory at Massachusetts Institute of Technology. Coil material for the huge electromagnet will be Amzirc zirconium copper, a high-strength, high-conductivity copper alloy made by American Metal Climax. Power needed will be 41 megawatts. Superconductive magnets would eliminate this power requirement, but the largest magnetic fields obtained from them are about 100 kG. The National Magnet Laboratory has 14 magnets that can produce fields ranging from 100-225 kG. Five others, including the 300-kG. unit, are in design.

Penicillamine may find use in treatment of arthritis, rheumatism and other collagen diseases, according to University of Southern California researchers, Lucien Baveta and Marcel Nimni. In their animal studies, the two physicians used the chemical to render collagen in the skin less fibrous and more soluble. This reverses the trend taken by the material (found in tissue, bones and teeth) during aging or disease. No adverse effects have been noted. The USC team is investigating how the penicillamine causes the change in the collagen molecule. The work is supported by the National Institutes of Health.

Pressures of centrifugal compressors keep moving up. Nuovo Pignone (Florence, Italy) has successfully completed a three-week continuous test run under industrial conditions with its new Model 2 BCL 306/b operating at 290 kg./sq.cm. (4,125 psi.). Ordered by Norsk-Hydro (Oslo, Norway), the compressor was operated on synthesis gas (hydrogen and nitrogen) at the ANIC ammonia plant at Ravenna, Italy. While compressor manufacturers have had the ability to design special centrifugal units for pressures up to 5,000 psi. *(CW, May 9, '59, p. 106)*, most units operating at pressures this high have been reciprocating type. One reason: tremendous volume of gas moved by centrifugals were not needed. Decisions to build giant ammonia plants provided the break for centrifugals, although most of the big plants required synthesis gas compressed to only 2,000-2,500 psi. Under these conditions centrifugal compressors became the economic choice *(CW, Oct. 9, '65, p. 79)*.

THE PRACTICE OF MULLING

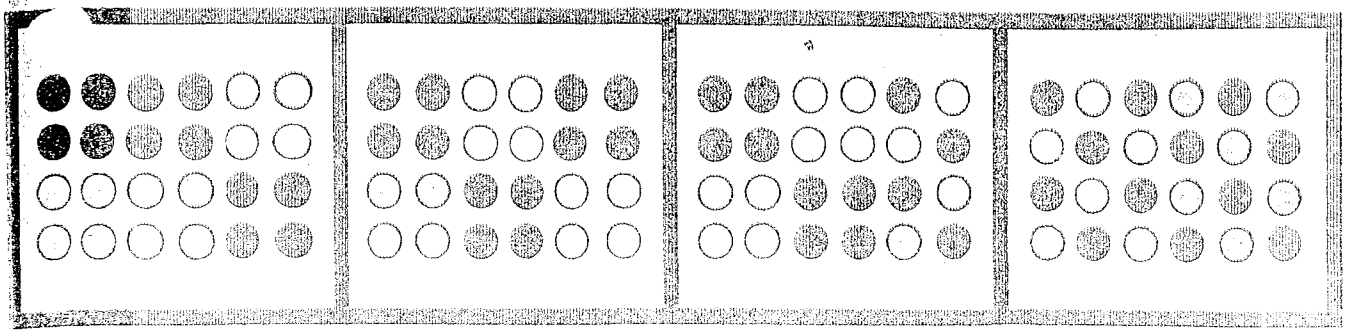


Fig. 1. Jumbled mass of aggregates.

Fig. 2. Mixture of aggregates.

Fig. 3. Mixture of aggregates and ultimate particles.

Fig. 4. Controlled dispersion of ultimate particles.

Does your mixing problem look like this?

Mixing Has Been Defined—

as "the manipulation of a heterogeneous mass of two or more materials so that a homogeneous product is obtained which is uniform both as to analysis and structure."

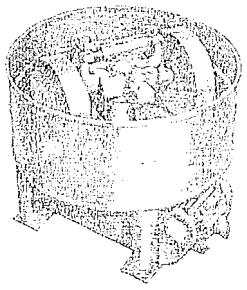
Put another way, an ideal mix of solid/solids or liquid/solids is one which has intimate, uniform *controlled* ' ersion of properties. Aggregates clusters are broken up and one material is actually combined, or *coated*, with another.

Aggregates, Ultimate Particles.

Fig. 1 shows a random mass of aggregates as introduced into a mixer. Fig. 2 shows this same mass of aggregates mixed. But, the aggregates have not been released or combined into the ultimate particles necessary. In Fig. 3 some of the aggregates have been combined with the ultimate particles. Fig. 4 illustrates the ideal, controlled dispersion of ultimate particles.

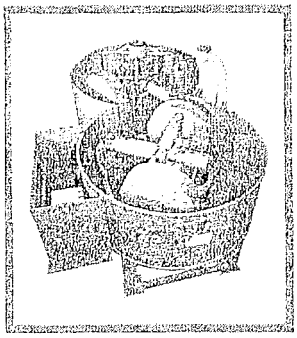
Intensive Mixing—

as produced by friction and pressure forces, sufficient to break down the aggregates, is necessary to achieve the controlled dispersion indicated by Fig. 4. Of all mixing methods now in use for solid/solids blending, *mulling*, alone, combines the mechanical principles needed to *combine* aggregates or agglomerates . . . rather than placing them *next* to each other.



Simpson MIX-MULLER® (Batch)

Simpson Mix-Mullers are available for either batch or continuous processing in 12 sizes, ranging from 24 inch to 10 ft. pan diameters and in productive capacities up to 300 tons per hour.



Simpson MULTI-MULL® (Continuous)

In A Simpson—

mulling is accomplished on the pan. Muller wheels roll over and through the material to produce an intensive kneading, smearing, *spatulate* action. Plows turn and fold the batch into the path of the mullers. Discharge is by action of the plows alone, through a bottom door. No power is wasted in "hefting" heavy material burdens.

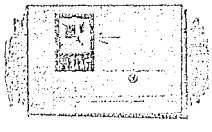
The result? A strictly uniform mix—homogeneous and thorough. A mix without "hot spots," balling, uneven and wasteful dispersion. Power requirements are low, wear life of parts is exceptional.

Controlled Dispersion.

If your present mixing methods are giving you less than uniform, controlled dispersion, you're wasting valuable raw material. Why not ask for a test at the *National Performance Laboratory?* Without investing a cent in new equipment you can find out, in advance, exactly what a Simpson Mix-Muller® or (continuous) Multi-Mull® can do. A new booklet fully describes this new service. Write for it today.

NATIONAL ENGINEERING COMPANY 642 MACHINERY HALL • CHICAGO, ILLINOIS 60606

SIMPSON MIX-MULLER DIVISION



Send for Lab. Test Brochure

Significant developments from Emery oleochemical research

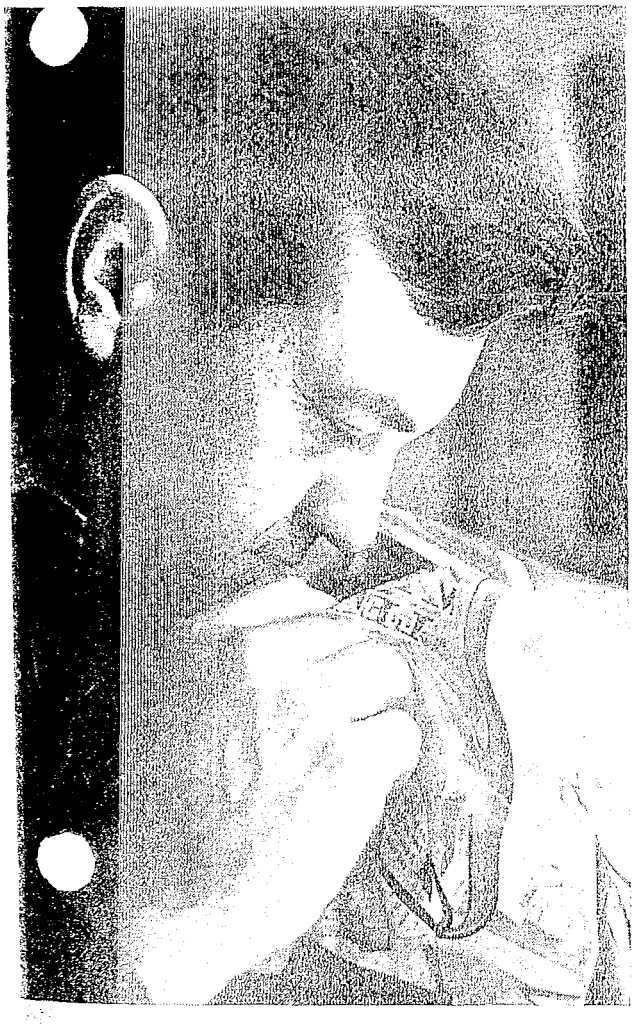
Emery offers low odor polyamide resins for printing inks

There's no longer any need to "special order" low odor polyamide resins for flexographic or rotogravure inks. Low odor is a uniformly dependable characteristic of all Emerez® Polyamide Resins.

Film and foil printed with inks based on Emerez 1538, 1535, 1530, and 1540 show superiority in the resin odor test, shown below, prescribed by the Flexographic Technical Assn., Inc.

In addition to low printed film odor, Emerez Polyamides offer excellent color; improved wet-pack resistance and adhesion to polyolefin films; rub, blocking, and smearing resistance; high gloss; and good compatibility with other film-forming resins.

For detailed information, write for Technical Bulletin 446, "Emerez Polyamide Resins in Flexographic and Rotogravure Inks".



Quality Esters for textile lubricants

Emery oleate esters, widely used in specialty lubricants, reflect the outstanding color, odor, and oxidation stability of the Emersol® Oleic Acid from which they are derived.

Emery's methyl, propyl, and glyceride esters, because of their oily, non-corrosive nature and low pour points, are used in textile oils, as bases for sulfurized lubricants, and in the compounding of specialty lubricants. When sulfated, they exhibit interesting surface active properties which have led to their use as wetting agents.

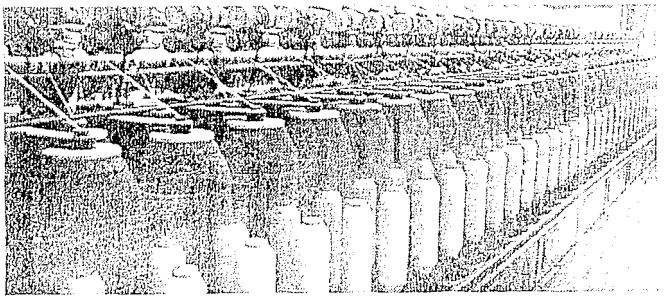
Another Emery ester, glyceryl mono-oleate, is a long chain mono-ester. With its unique oil solubility, small amounts of glyceryl mono-oleate add rust preventative properties to mineral lubricating oils. Technical Bulletin 434A contains specifications and properties of Emery Oleate Esters.

Three additional Emery quality esters are well worth investigating for use as textile lubricants and as components of textile softeners and finishing compositions:

Emerest 2322 Butyl Stearate. Very low odor and water white color. Request Data Sheet No. 104.

Emerest 2320 Butyl Stearate. Priced below 2322 for applications having less stringent odor and stability requirements. Request Data Sheet No. 104.

Emery 3989-D Ethylene Glycol Distearate, a white, moderately high-melting wax, exhibits good light, heat, and odor stability. Request Data Sheet No. 105.



Emery INDUSTRIES, INC.

Organic Chemicals Division
Dept. 137, Carew Tower
Cincinnati, Ohio 45202

Western Operations,
Santa Fe Springs, California
Emery Industries (Canada) Ltd.,
London, Ontario
Unilever-Emery N.V., Gouda, The Netherlands
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- ☐ "Plastolein Plasticizers" brochure
- ☐ Technical Bulletin 446, "Emerez Polyamide Resins in Flexographic and Rotogravure Inks"
- ☐ Technical Bulletin 434A, "Emery Oleate Esters"
- ☐ Data Sheet 104, Emerest 2322 and 2320 Butyl Stearate
- ☐ Data Sheet 105, Emery 3989-D Ethylene Glycol Distearate

Name _____ Title _____
Company _____
Street _____
City _____ State _____ Zip _____

Second Try for DMSO?

A meeting to be held early next m in Washington may help decide the pharmacological fate of dimethyl sulfoxide (DMSO). The chemical has been widely praised as a miracle among miracle drugs; but clinical testing of DMSO was virtually halted late last year by the Food & Drug Administration after researchers here and abroad reported some adverse side effects in animals treated with the material.

On Oct. 5, officers of the Dept. of Health, Education & Welfare will meet with several medical researchers who have had laboratory and clinical experience with DMSO. The conference was arranged at the request of Representative Robert Duncan (D., Ore.), many of whose timber-country constituents are keenly interested in the fate of DMSO. Reason: in the U.S., DMSO is a wood chemical. It's derived commercially from the lignin waste produced in pulping wood chips.

FDA won't say what sort of discussion it expects at the coming meeting. A spokesman for FDA Commissioner James Goddard comments only that "We'll listen to what they have to say."

But one of the physicians who plans to attend, Dr. Artaur Scherbel of the Cleveland Clinic, tells CW he expects "a thorough review of DMSO—its history, the problems that led to the discontinuation of testing, and what we can do to get it back into clinical testing."

A thorough review of DMSO is a big order. During the three years since the first reports of its extraordinary behavior in living organisms, DMSO has been the subject of considerable controversy and considerable ballyhoo. It has also been credited with an almost unbelievable spectrum of medicinal actions—from relieving headaches and alleviating schizophrenia symptoms in humans, to enhancing the efficacy of antibiotic and nutrient materials applied to fruit trees.

The singular property of DMSO is its ability to pass through biological membranes: it can be applied externally, then penetrate deep into the body of an organism. For example, doctors have reported successful treatment of the pain of bursitis or rheumatism simply by swabbing DMSO onto the skin near the affected joint.

Moreover, DMSO seems able to carry other substances with it as it courses through living tissues. Finally, the permeating action of DMSO seems to be completely reversible—i.e., there is no permanent effect on membranes once the DMSO has passed through them.

All of this was noted by the men who did the initial research on DMSO: Stanley Jacob, a surgeon on the faculty of the University of Oregon Medical School; and Robert Herschler of Crown Zellerbach Corp.'s (San Francisco) Research Center at Camas, Wash.*

First reports of these extraordinary properties of DMSO appeared in '63, in news releases from the University of Oregon. Early in '64, the first reports in medical journals came out.

Six drug houses help CZ produce medicinal-grade DMSO: American Home Products, Geigy, Merck, Schering, Squibb and Syntex. (CZ has an agreement with the university whereby the company and the school will share equally all royalties from sales of medicinal DMSO by licensees.)

By Jan. '65 the popular press had discovered DMSO and doctors curious about the "miracle" began trying it on a great variety of afflictions.

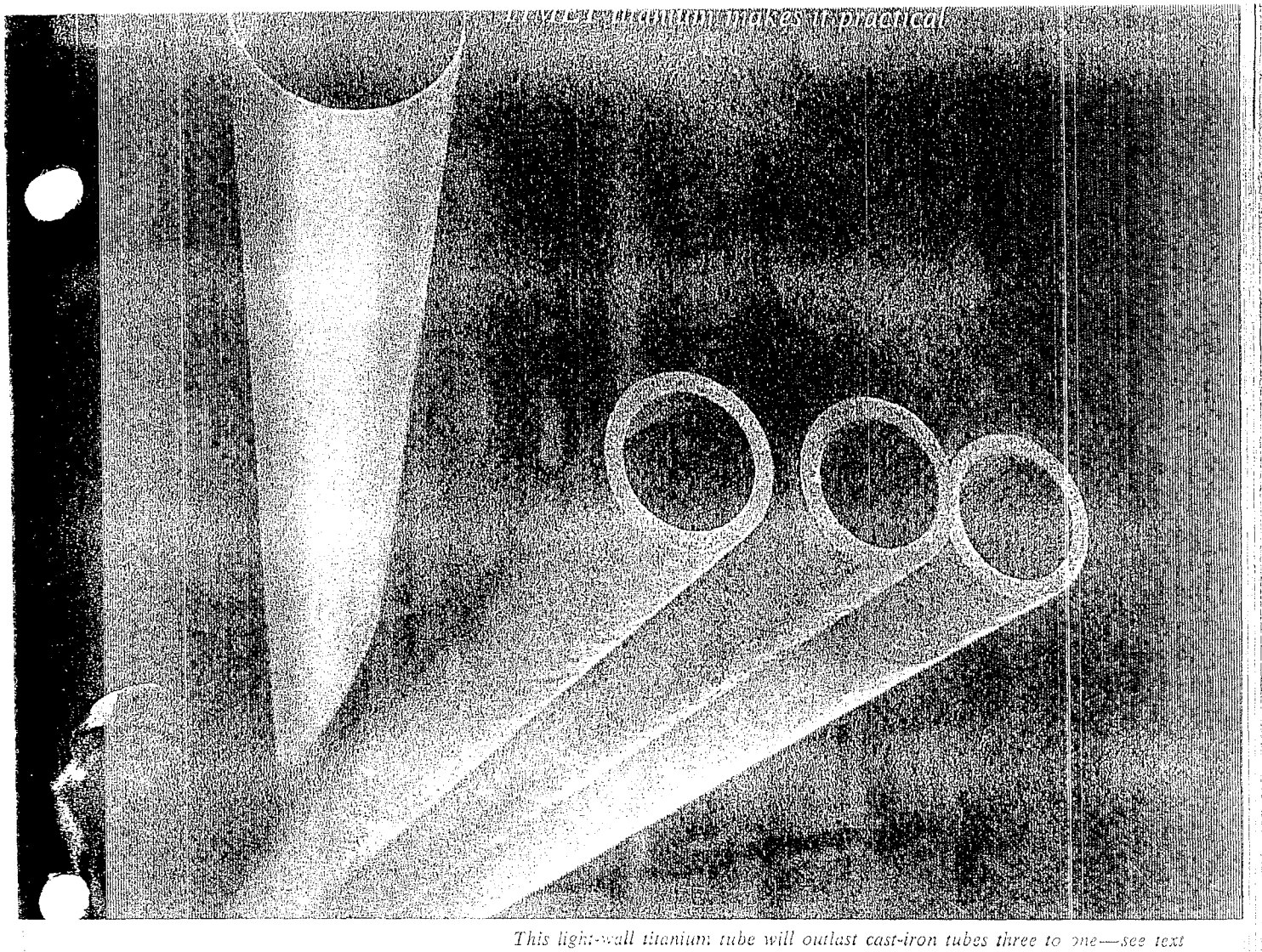
Physicians not affiliated with any formal testing program were experimenting with the drug, with neither the knowledge nor the supervision of FDA or the drug companies.

And laymen who had read of the "miracle" and had become convinced that it could help them were treating themselves with industrial-grade DMSO.

By '65, more than 1,000 doctors in the U.S. were trying DMSO; and —as even the staunchest supporters of the drug concede—the situation had gotten out of hand.

Then several reports of adverse reactions to DMSO caused alarm in Washington. Most important of these: researchers here and in England had found that heavy doses of DMSO caused changes in the lenses of the eyes of experimental animals. The doses used were much larger than

*CZ holds a number of DMSO patents, covering production and use. The chemical is used industrially as a solvent for a wide variety of materials, including polymers; synthetic fiber producers use it in quantity.



This light-wall titanium tube will outlast cast-iron tubes three to one—see text

Titanium replaces cast iron in Solvay ammonia stills for lower costs, longer service, reduced maintenance

Titanium replaced 4-inch diameter x 5/16-inch wall cast iron tubes in ammonia stills and enabled Allied Chemical to significantly reduce costs in four soda ash plants. Titanium readily withstands the severe corrosive attack of ammonia, ammonium chloride and hot brine.

Allied selected titanium to replace cast iron because of titanium's projected three-times-longer service life.

This is expected to reduce retubing labor costs, extend header sheet life and minimize downtime.

Maximum economic performance is vital in soda ash manufacture, with its fixed investment and tight profit gins. After an intensive metals evaluation program Allied specified titanium tubes in ammonia recovery on a company-wide basis. Where header sheets are in good condition cast iron pipe is replaced with 0.030" wall titanium. Where header sheets need replacement, the heat exchangers are redesigned around the properties of 1½" OD x .030" wall CodeWeld titanium tubing. Redesigned titanium heat exchangers have higher heat transfer efficiency, are more compact, cost less to install and maintain.

Bonus Savings in Steam. Tests at Allied's Syracuse, N.Y. plant suggest that titanium tubes will offer a 2% savings in process steam—worth $1500 per month—because of its superior heat-transfer.

One half million lineal feet of titanium tubing . . . this is the use of titanium in the soda ash industry to date.

You too can engineer your way around tough corrosion problems with titanium. Titanium Metals Corporation of America's Application Development Center can assist you with chemical, metallurgical, or engineering data, a testing program, prototype fabrication, and technical assistance to your commercial fabricator. All you have to do is ask. Ask too for TMCA's Design Data Book for the Chemical Processor.

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Countdown

10. Notify Production of impending order
9. Inform Shipping of need for tank truck
8. Start order processing
7. Inspect truck for correct hosing and cleanliness
6. Load truck
5. Run analysis on shipment
4. Check applicable freight rates
3. Get proper approvals
2. Determine best routes, bridge limitations
1. Roll out

Three hours from notification to roll out. That's all the time it took for Eastman people to process the urgently needed order of NIPA (n-isopropylaniline), a new product recently marketed. While the truck's motor was being warmed up for the cross country run, orders were signed, approvals obtained and the material loaded.
Next day, as promised, the shipment was at the customer's plant, almost 750 miles away. Only twenty-nine hours after the order was received.

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ith more than 400 industrial and specialty chemicals, Eastman rves these industries:

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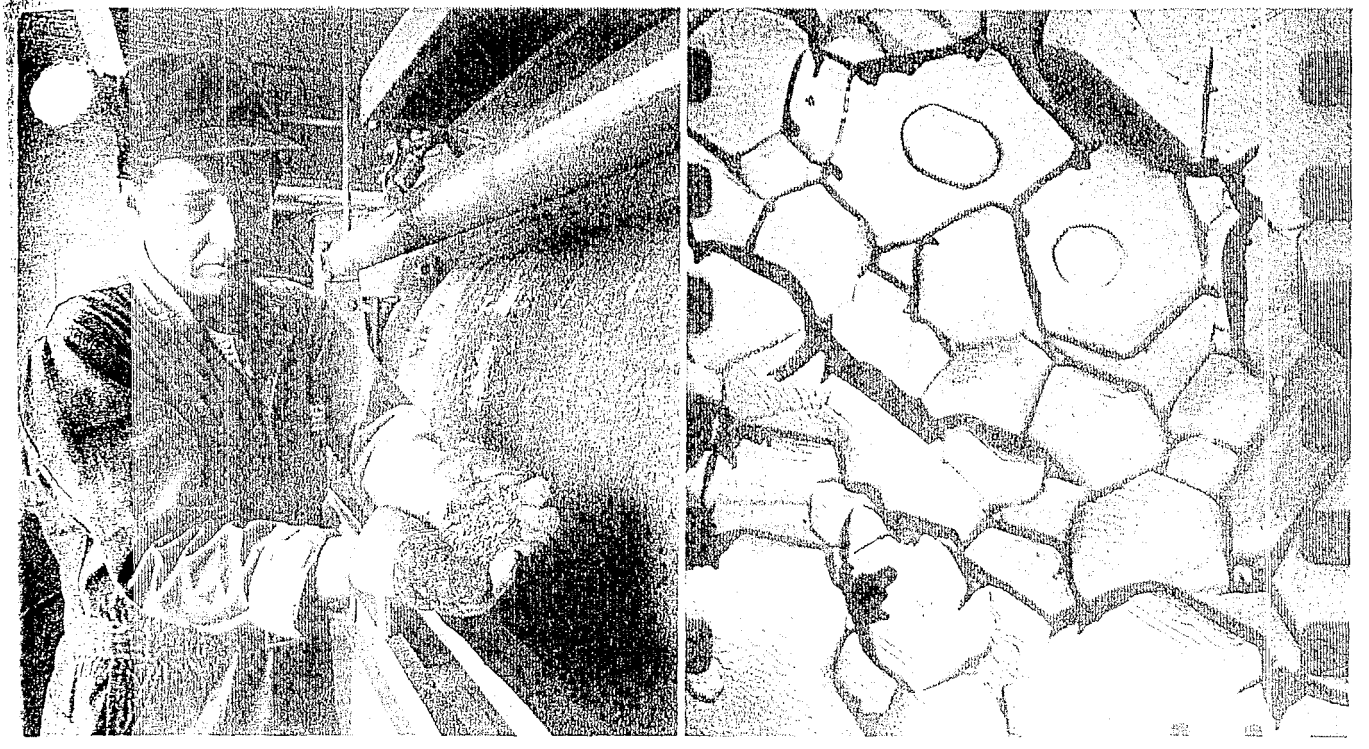
p. rties and shipping information on Eastman industrial and specialty micals, see *Chemical Materials Catalog*, page E-1, or *Chemical Week Buyers' ide*, page 101.



Flaky, dry ferrite from revolving drum appears as 'clinkers' enlarged 13,000 times.

Magnet Makers Turn Up the Heat

Auto industry sets the pace in growing market for permanent magnets, particularly ceramics

Thanks mainly to zooming sales of lectronic equipment and electric mo-ors for auto use, producers of the ermanent magnets used in such de-ices are in an expansion phase that hows few signs of ending. Sales of ne magnets, made of special alloys nd ceramic ferrite compounds,* are xpected to double within the next 0 years from the present $50-mil-on/year level.

Getting ready for this sales spurt re:

• Crucible Steel Corp. (Pittsburgh). produces both the relative new ce-amic magnets and the well estab-shed alnico metal types, and has just edicated a new multimillion-dollar ermanent magnet plant at Elizabeth-lle, Ky. Management has already pproved plans to expand the ceramic facilities of this plant in the fall, and again next spring.

• Westinghouse Electric Corp. (Pittsburgh), sole producer of sulfate-modified strontium ferrite ceramic permanent magnets. It is completing an expansion at its Blairsville, Pa., plant. This will hike its magnet capacity from approximately 1.5 million to 4 million lbs. year (*CW Market Newsletter, Oct. 23, '65*).

• Stackpole Carbon Co. (St. Marys, Pa.). This company has roughly doubled its magnetic powder plant capacity at Kane, Pa. Stackpole sells both ferrite powders and sintered barium ferrite magnets.

• Indiana General Corp. (Valparaiso, Ind.). IGC, which claims to be the largest manufacturer of magnetic materials, and first to produce ceramic magnets commercially in the U.S., is doubling permanent magnet capacity.

These expansions are all to boost output of ceramic magnet materials; not for enlargement of alnico plants. Alnico, a castable metallic alloy, has been around for over 30 years, has perhaps 60% of the market. Ceramic magnets, made by pressing and sintering powdered ferrites, hit commercial stride about five years ago. By opening new markets in a range of products—power tools and kitchen appliances to office equipment and automobiles—they have shared 40% of PM sales already. Sales of ceramic magnets are now estimated at $15-18 million/year.

The boom is gaining strength largely because of the automotive industry. When Detroit's industrialists began using small electric magnet motors in autos a few years ago, most magnet people foresaw no big market potential. But the auto makers have recently committed themselves to more motors in autos—there were 19 different magnet motors in some '65 Chryslers—to operate car windows, fans, seats, washer pump motors, etc.

Also, ceramic magnet motors are replacing many "electrofield" motors —those that depend on electromagnets. The new motors have greater

*Ferrites are a class of material usually consisting of iron and oxygen atoms along with barium (hard ferrites), manganese, zinc (soft ferrites) or other divalent ion. Ferrites are the pea-size particles (clinkers) that result from calcining these materials. Hard ferrites are used for ceramic permanent magnets; soft ferrites are used for memory cores in computers, antenna rods, and in color TV sets.

$1.10/lb.; a comparable alnico magnet, about $2.80/lb.

Keyed to Chemical Process: Ceramic magnets involve a true CPI pr

processes for permanent ceramic magnets originated with a Dutch company, Philips of Eindhoven in '56, but North American Philips Co. (New York) owns the U.S. patents (2,762,777—nonoriented and 2,762,778—oriented), which it licenses to magnet producers in the U.S. NAP purchased all the Dutch firm's patents, including futures, which were put into trust in the U.S. by the Dutch company in '39. Westinghouse has a U.S. patent on the sulfate-modified ferrites.

The ceramic types are made from alkaline carbonates (e.g., barium, strontium, lead), mixed with iron oxide and calcined for about three hours. The resulting ferrite is then ground to a fine powder, pressed into shape and fired in a kiln at 2000-2300 F.

So-called oriented grades are ground into powder with water and wet-pressed; partlyoriented and nonoriented grades are dry-pressed, then fired. Oriented means controlled position of the molecules (all point the same way) in the magnet; nonoriented is random. When the ferrite powder is wet- or dry-pressed into the designated shape in a die, the grains of the magnetic compound are aligned in a magnetic field.

The ability of a permanent magnet to support an external magnetic field results from locked-in positions of small magnetic "domains." These locked-in positions, once established by initial magnetization, are held until acted upon by forces exceeding these locked-in forces. "Coercive force" of a magnet reflects its resistance to demagnetization.

A magnet's coercive force is measured in oersteds. In alnico magnets, coercive force values are 400-1,800 oersteads; in ceramics, 2,000-4,000.

Gauss is the unit term for residual induction, on a square inch basis. "BH max" denotes peak energy product. B stands for flux density; H, for coercive force (gauss and oersteds). Nonoriented ceramic magnets produce about a 1 million energy product (BH max), oriented consistently produces 3.5 million BH max.

Power Package: These high levels

His blade will prove the effectiveness of adding silicones to shaving lather. Silicones bring better performance values to many cosmetics and household specialties . . . better performance in use, better performance on the shelf. To improve the selling power and working power of your products, see the SILICOLOGY opposite.

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elp you win the marketing battle...in the product...on the label?

functional fluids from UNION CARBIDE SILICONES

COUNTDOWN

...te summary of this week's new products

NEW EQUIPMENT

SUPERVISORY CONTROL: Motorola Instrumentation and Control Inc. (P.O. Box 5409, Phoenix, Ariz. 85010) has developed a 10-command supervisory control system for plant, pipeline, electric and water utility applications. The packaged system enables installation by the user, eliminates custom engineering. The solid-state system, called TM—10, controls and monitors circuit-breaker and relay positions, reclosure actuators, alarms for pressure, level, temperature current, etc., positions for valves, operations of compressors and pumps.

FILTER HOLDER: Millipore Filter Corp. (Bedford, Mass. 01730) has come up with an improved-design Millipore filter holder for withstanding 10,000-psi. inlet pressure. Typical applications are filtration of ultra-clean liquids and gases in high-pressure lines. The unit holds a 47-mm.-diameter filter. Dimensions: 3⅝ in. diameter, $1\frac{13}{16}$ in. high.

CONDENSATE RECOVERY: Graver Water Conditioning Co. (Union, N.J. 07083) now has a new process for economical refining of condensate for reuse as boiler feedwater in installations where complete condensate demineralizers are not necessary. The system, called GRF, combines sodium cycle ion exchange and filtration to remove soluble and suspended impurities. The process removes water hardness, copper and iron at temperatures to 300 F. Cation resins have been developed to withstand these temperatures without breakdown.

COLD PIPE JOINT: Tube Turns Division of Chemetron Corp. (Louisville, Ky.) is offering a new pipe joint that permits aluminum and stainless steel piping to be used in the same installation. The joint is especially suited for cryogenic uses, is made of aluminum and stainless steel, which are metals that cannot be joined satisfactorily by conventional welding.

EPIDIASCOPE: Jarrell-Ash Co. (590 Lincoln St., Waltham, Mass. 02154) is the agent for Metals Research Ltd.'s (England) new epidiascope, which can be used with an image analyzing computer for examination of large, solid objects. Typical applications: the examination of brickwork, concrete and metals for flaws, porosity, granular size, the study of crack density in ceramics and analysis of fibers. It can also be used to analyze electron micrographs, photographs, negatives and transparencies. A large area can be covered and 25-lb. samples can be analyzed.

NEW SPECIALTIES

ENCAPSULANT: Emerson & Cuming Inc. (Canton, Mass.) is marketing a new two-part epoxy casting resin. Stycast 2050 is said to have low viscosity and long pot-life, can be cured at 140-150 F in three hours, or at room temperature in two or three days. The product is supplied in two-container kits, in 2-, 10- and 50-lb. sizes at approximately $1/lb.

BUTYL-BASE BEDDING ADHESIVE: A butyl elastomeric polymer compound is offered by Steelcote Mfg. Co. (3418 Gratiot, St. Louis,

LUCIDOL leads again . . .

this time with THE LOWEST TEMPERATURE ORGANIC PEROXIDE COMMERCIALLY AVAILABLE

LUPERSOL® 227

$$(CH_3)_2CH-\overset{O}{\overset{\|}{C}}-O-O-\overset{O}{\overset{\|}{C}}-CH(CH_3)_2$$

Lupersol 227 is a clear, colorless, 50% solution of diisobutyryl peroxide in mineral spirits. It is more active at lower temperatures than any other unpromoted free radical source for sale today.

Lupersol 227 has great potential in high-pressure ethylene polymerizations where it will initiate lower temperature reactions than were previously obtainable to give polyethylene of higher density and greater linearity.

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THERMAL DECOMPOSITION

0.2 molar solution in mineral spirits

TEMPERATURE (°C)	HALF LIFE (hrs.)
30	17.1
34	10.0
40	3.9
50	1.28

0.2 molar solution in benzene

30	2.8

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• POSITIONS VACANT

Chemical Engineer or Chemist experienced in organic chemical manufacturing to manage new plant. Production of organic intermediates for pharmaceuticals, agricultural chemicals, plastics, and other allied industries. Excellent opportunity for a qualified and ambitious person. Please send complete resumé. P-1068, Chemical Week.

Chemical Engineers for Analytical Instrumentation Systems—Minimum 3 years experience in process industry. BS degree required. Experienced in instrumentation application and use—including chromatographic applications. Must assume overall project responsibility for customer's orders including application engineering, system specification, design and checkout. A career growth opportunity at a technically oriented company in a suburban location. Join the leader in the business of control systems. Send resume to Lee Sellon, Central Recruiting, The Foxboro Company, Foxboro, Massachusetts.

Chemical Marketing—Technical marketing of organic intermediate chemicals. Degree in chemistry or chemical engineering required. Strong organic background 0-5 years' experience. After orientation at West Haverstraw, representative will work out of Sales Office at 360 Lexington Avenue, New York City. About 50% travel. Send resume to: H. N. Winfield Kay-Fries Chemicals, Inc. West Haverstraw, New York 10933. An equal opportunity employer.

[illegible]ing or Retired Chemical Engineer, experienced in process economics or market surveys of petrochemical industries. To accept part-time assignments from consulting firm, Metropolitan New York. Send background and desired perdiem to P-1156, Chemical Week.

Man Friday—typing. Sales office—opportunity. Shamrock Chemicals Corp. NYC 679-2550.

• POSITIONS WANTED

Former President of Medium size chemical company sold to NYSE firm interested in executive position in New York area with growth potential. Strong marketing, product development, and production background. Responsible for administrative decisions and projections. Well known in aerosol, cosmetic, coatings, ink, and chemical specialty industries. Can invest six figures in proven company. Age 38. PW-1200, Chemical Week.

Sales Engineer. Broad experience in several industries including process instrumentation. Can sell chemicals. Owns proven, developed recovery process. PW-1187, Chemical Week.

• SELLING OPPORTUNITIES WANTED

If your company has an interest in high polymers, special chemicals, adhesives, pigments, and coatings and wishes to expand into the paper industry, I have the sales contacts, product knowledge, etc. Markets have already been surveyed; points of sale located. Can carry on all the work of the technical service and sales efforts. Full or part time connection considered. RA-1092, Chemical Week.

A[illegible]e Sales Organization now able to ad[illegible]ive representation in the southeast to additional principles. Interested in products for the coatings, plastics and rubber industries. RA-1189, Chemical Week.

• CONTRACT WORK WANTED

Custom Blending—Sales Agencies, Mfg. Rep's, chemical and lubricant specialty firms—will compound under private label—hi-temp, EP, dry film and solid lubricants & coatings, small and large volume. CWW-1031, Chemical Week.

Spray Tower Available for contract drying detergent solutions of slurries. Midwest location. CWW-1163, Chemical Week.

• SPECIAL SERVICES

Vice President Marketing—Nearly 20 years experience in the marketing of specialty chemicals and surfactants to the textile, paper, cosmetic and industrial cleaner industries. Available, under contract from management consulting firm, to a chemical manufacturer desiring entry into these industries. Services include information regarding product opportunities, market research, formulation and direction of marketing plans, acquisition and training of sales and support personnel, preparation of collateral materials—sales aids etc. Principals of interested companies are invited to contact SS-9982, Chemical Week.

• PUBLIC AUCTION

Public Auction Sale—Chemical Process Plant on premises of Polymet Chemical Co., 138 Grand St., Paterson, N.J., sale date: Tues., Sept. 27, 1966 at 11:00 A.M. Everything sold piece by piece—no confirmation necessary, incl. 8-hearth furnace, 40" centrifuge, gyrocentric screen, auto. bag packing scale, 80 hp boiler, nickel & copper sludge, lift trucks, conveyors, machy, motors, pumps, and many other items too numerous to mention. Write or call for Free brochure—Auction Corp. of America, 207 E. 43 St., NYC. (212) 986-0850.

• BUSINESS OPPORTUNITIES

Acquisitions Wanted—A medium size, multi-plant chemical manufacturer currently producing thermoplastic resins, plasticizers, solvents is seeking acquisition, preferably for cash, small to medium sized companies now producing stabilizers, anti-oxidants, other rubber and plastic additives; specialty resins and resin compounds based on ureas, phenolics, epoxies, urethanes; plastic film, sheeting and other plastic consuming products; industrial cleaners, lubricants, cutting oils. The strong technical and marketing capabilities of company seeking these acquisitions indicates rapid and profitable growth of the acquired company. Retaining of owners in future operations very much desired. Reply in strict confidence to BO-9721, Chemical Week.

Wanted, Small to medium size organic or bio-chemical manufacturing company. Can provide a strong technical backing. Wanted processes for organic or biochemicals having a continuing out limited volume market. Purchase or profit sharing arrangement. BO-1106, Chemical Week.

• PLANTS AND PROPERTIES

Tank Storage Plant for sale or lease. Coiled metal tanks. 75000 barrel capacity. Piping, pumps, drainage facilities, various buildings including offices, laboratory, drum storage and cleaning facilities and 2—500 HP firetube boilers. Riparian grant on river, bulkhead, piling, tee-shaped dock with deepwater. 900 foot rail spur. Adjacent to Newark, N.J. Phone L. Wimmer 201-991-6500 or write P.O. Box 72, Harrison, N.J.

• CHEMICALS FOR SALE

Montmorillonite — Approximately 1,000,000 tons. Highest quality Nevada clay property. FS-8949, Chemical Week.

Potassium, Zn, Cu Cyanides—NaOCN. Regular supplies at very attractive prices. A. & S. Corp., P.O. Box 66, Verona, N.J. Phones: NY: BA 7-9063; NJ: 239-6800.

• EQUIPMENT FOR SALE

Ammonia & Urea Plants for Sale at Hamilton, Ontario, Canada. Late model units (1959) with design capacity 165 TPD ammonia & 200 TPD urea (max. 187 TPD ammonia & 285 as feedstock (coke oven & blast furnace gases). For sale in entirety, as indiv. operating TPD urea. Plant uses steel-mill by-product units or piecemeal . . . equipment includes compressors, up to 4600 HP [illegible], T316 SS tanks, vessels, columns, evaporators, pumps, pipe & valve, etc. . . . high pressure steel autoclaves, towers, vessels, spheres . . . 180' high rect. prilling tower . . . process instrumentation, etc. Send for brochure. Perry Equipment Corp., 1415 N. 6th St., Phila., Pa. 19122—phone (215) 763-3505.

For Lease or Sale—Erected your plant or FOB carrier plant site (4) 55 ton per day (.) 160 ton per day nitric acid lines, plus thousands of dollars of spare parts & equipment. Write for details. H & P Equipment Co., Inc., Box 629, Weekhawken, N.J. 07087. Phone: 201-864-2288.

Liquidating Sifters, Screens, Separators: Rotex ro-ball, ajax, robins patterson; 20"x48"; 20"x 84", 40"x60", 40"x84", 5'x11' others. First Machinery Corp., 209-10th St., Brooklyn, N.Y. 11215.

Excellent Equipment from liquidations consisting of: 23,000, 3600, 1400 gal. SS LOX Tanks: SS and Glass lined reactors; 316 SS Heat exchangers; Centrifuges, dryers columns, etc. Send for complete listings. Brill Equipment Company, 37-53 Jabez Street, Newark, N.J. 07105.

3.—Kemp Inert Gas Generators, Mod. 170-S 17000 SCFH @ 84" W/125 HP motor, 2300/60/3, W/Valves and controls, S/Nos. I-541, I-540, and I-539. 5—Henry Vogt Waste Heat Boilers, 2200 lbs/hr, 300 PSIG, shell 54" W/ Attached Valves S/Nos. H701A, H701B, and H701C. 11—Exchangers & 5 Re-boilers, various sizes. All above equipment is from Callery Chemical Plant in Muskogee and is in like new condition. Write for details. Yaffe Corporation, P.O. Box 916. Muskogee, Oklahoma.

Barge, 350,000-gals, 3 compartments, 173'x 39'x9', two =671 GM diesels, two 8" Viking pumps, welded steel construction, reply to FS-1164, Chemical Week.

800—Used 13 Gallon Glass Carboys with box $2.00 each F.O.B. Omaha, Nebraska. Kennedy & Parsons Company, 1002 North 31 Street, Omaha, Nebraska.

• EQUIPMENT FOR LEASE

Jumbo Tank cars and covered hopper cars available on short and long term leases. Write or call Transgo, Inc., 210 California St., San Francisco, California (415) 421-1974

• CHEMICALS WANTED

Surplus Wanted—Chemicals, Pharmaceuticals, Oils, Acids, Plasticizers, Resins, Dyes, Solvents, Pigments, etc. Chemical Service Corporation, 96-02 Beaver Street, New York 5, N.Y. Hanover 2-6970.

We Buy Surplus or Discontinued Chemicals, Pigments, Dyes, resins, plasticizers, solvents, etc. Eastern Color & Chemical Co., Inc., 117-19 Liberty Street, New York 6, New York.

Buying Spent Catalyst, Metal Residues and sludges. Submit details to New Jersey Metals Company, 11 Commerce St., Newark, N.J. 01102.

Spent catalyst wanted: chromium, molybdenum, copper, tungsten and others. Consistent consumer. Southern California Chemical Co., Inc., 8851 Dice Rd., Santa Fe Springs, Calif. Call 213-698-8036. California and Ohio location.

Submit Offers—Metal Residues Spent Cata-lysts Flue Dusts. Lloyd M. Parkans Co., 4189 Bellaire Blvd., Houston, Texas 77021.