

### Program Complete, Registrations Being Taken

Erie Jungermann, Program Chairman, announced the completion of the program for the AOCS Short Course on "Advances in Soaps and Detergents" to be held at the Princeton Inn, Princeton, New Jersey, on June 23 to June 26. By this time, members will have received their application forms in the mail, and it is hoped that registration can be completed before arrival in Princeton. The fee of \$95 is payable in advance to the American Oil Chemists' Society offices at 35 E. Wacker Drive, Chicago 1, Illinois. This fee covers room, buffet dinner on Sunday evening, and all meals through lunch on Wednesday, June 26, and includes registration fees. Membership in the Society is not a prerequisite for attending the Course. Student registration covering the above has been set at \$75.

### Three Major Sessions Highlight Program

The technical part of the program has been divided into three major sessions. The Monday session will deal with New Products and Processes. J. H. Brant of Colgate-Palmolive Co. will be chairman of the Monday morning session, covering new processes. New Products will be emphasized in the Monday afternoon session, chairmanned by F. H. Healey of Lever Brothers.

The Tuesday morning session will be devoted entirely to a symposium on the very topical subject of biodegradability of detergents. It will be chaired by E. S. Pattison of the Soap and Detergent Association, and promises to be one of the highlights of the Short Course.

### Trips to Colgate Palmolive, IFF Scheduled

Tuesday afternoon will be left free for informal discussions, plant trips, and rest. Two tours of outstanding interest have been arranged. One will visit the New Research Facilities of the Colgate-Palmolive Co. at New Brunswick. The second will be to the Plant and Research Facilities of the International Flavors & Fragrances, Inc. Both are due to start at 1:45 p.m. at the Princeton Inn. Members of the Short Course will view the Union Beach, New Jersey installation of International Flavors & Fragrances, creators and manufacturers of Flavors, Fragrances, and Aromatic Chemicals. The Union Beach Plant is primarily engaged in the production of Aromatic Chemicals and is also the company's major Research and Development Center. The tour will inspect the Process Development and Pilot Plant Facilities, the Quality and Analytical Control Laboratories, and the Research Laboratories with special emphasis on the Instrumentation Labo-

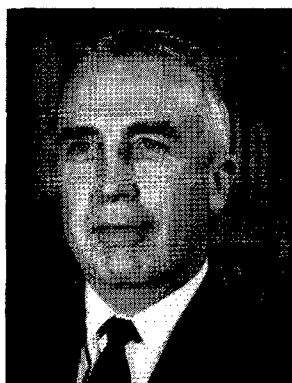
ratory where work is conducted involving gas chromatography, mass spectroscopy, and ultraviolet and infrared spectrophotometry.

International Flavors and Fragrances' production facilities are housed in multi-building units, and will also be available for inspection. Processes employed include Friedel-Crafts and Grignard reactions, condensations, hydrogenations, halogenations and oxidations, plus many types of distillation equipment, filters, reactors and evaporators.

The trip to the Colgate-Palmolive Co. Research Center



The plant tour of the Union Beach Plant of International Flavors and Fragrances, Inc. will include a review of the Distillation Room, pictured above. AOCS Short Course registrants will also have an opportunity to see the new Research Facilities of Colgate-Palmolive Company at New Brunswick.



**A. L. Schulerud**



**T. H. Liddicoet**

will be discussed in detail in the May issue of this Journal.

The Wednesday closing session will emphasize analyses and properties of detergents. J. C. Harris of Monsanto Chemical Co. will be chairman of the morning session. New Physical testing methods, and the physical chemistry of surfactants will be discussed. The afternoon session will be introduced by A. J. Stirton of the Eastern Regional Laboratories and talks on instrumental and noninstrumental analyses of detergents will be presented. A comprehensive survey of new developments in the field of optical brighteners will be given by H. W. Zussman of Geigy Industrial Chemical Company.

The program is arranged as follows:

#### **A.O.C.S. Short Course Program 1963**

##### **"ADVANCES IN SOAPS AND DETERGENTS"**

**Princeton Inn, Princeton, N. J.**

**Sunday, June 23**

Registration

Buffet Supper, Social Evening

**Monday, June 24**

**New Products and Processes**

Morning Session: Chairman—J. H. Brant, Colgate-Palmolive Co.

Welcome to Short Course, E. Jungermann, Program Chairman

Continuous Saponification Processes, A. L. Schulerud, Colgate-Palmolive Co.

Continuous Sulfonation Techniques, M. Ballestra, Italy

Tableting of Detergents, J. P. Mallee, F. J. Stokes Corp.

Phosphate Builders for Detergents, L. E. Netherton, Victor Chemical Co.

Afternoon Session: Chairman—F. H. Healey, Lever Bros. Co.

Alpha-Olefins in the Surfactant Industry, T. H. Liddicoet, California Research Corp.

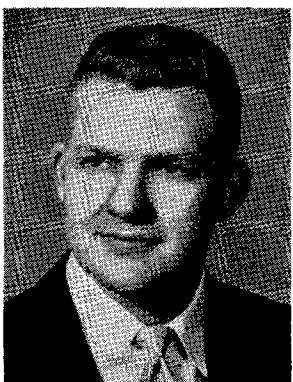
Alcohol Derivatives in Detergent Formulations, T. P. Matson, Continental Oil Co.

Recent Advances in Fatty Amine Oxides


(Continued on page 19)



**D. B. Lake**



**T. P. Matson**



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## Recent Utilization . . .

(Continued from page 7)

the time. Another study in Mississippi, where cottonseed meal is cheaper than in many sections of the country, showed that beef cows may be wintered on stacked hay and cottonseed meal, as well as by other methods of wintering which cost twice as much. The meal was also used in studies on wintering a breeding herd and on spring, fall, and year-round systems of calving. Research is underway in Mississippi on mixing feeds at the lowest possible cost for broilers, layers, swine, beef cattle, and dairy cattle. Tentative results indicate that extensive use of several ingredients not commonly used in mixing feeds in that state could be used and feed costs reduced. The most important of these are barley and hominy feeds. It is believed possible to reduce feed costs for the state by \$2-\$4 million annually by adoption of least-cost rations (7).

Feeding of livestock is the big use for cottonseed meal in Tennessee. It is being used extensively there in livestock feeding research studies of finishing rations for beef steers and of wintering and fattening performance of beef steers fed enzymes.

*In the Southwest.* In Texas, Oklahoma, and New Mexico, average annual production of cottonseed during the period 1959-1961 amounted to 2.2 million T, of which 1.9 million T were crushed yielding 873,000 T of meal. It is estimated that 25% of this meal went into manufactured feeds during the 1960-61 season.

Texas alone has accounted for more than one-third of U. S. crushings and production of cottonseed products (1). A trend to packaging of cottonseed meal and hull products in paper bags has prompted purchase by home gardeners of these smaller packages of cottonseed hulls and mixtures containing cottonseed hulls and cottonseed meal. Last year, the tendency of ranchers to feed cottonseed was practiced more extensively than usual. It is believed that this was a temporary situation caused by the low price of cottonseed relative to the price of meal and hulls.

In Oklahoma, there seems to be expectation of greater use of cottonseed meal in swine and poultry rations whenever the gossypol and related protein quality problems are solved. The meal (cake) still finds favor in beef cattle rations. Initial research by the Departments of Animal Husbandry and Biochemistry of Oklahoma State University showing a relationship between solubility of nitrogen and its nutritive value in the meal has been completed. This work was done with sheep fed high- and low-concentrate rations, but the results should be applicable to cattle as well. Briefly, the results indicate that nitrogen of low solubility (high heat treatment) is more efficiently used than that of high solubility in low-concentrate rations lacking readily available carbohydrates for protein synthesis. The opposite was true in high-concentrate rations. Low solubility was associated with an increased proportion of bound gossypol.

*In the Far West.* In California and Arizona, average annual production of cottonseed during the period 1959-1961 amounted to 1.1 million T, of which 1 million T were crushed yielding 486,000 T of meal. It is estimated that 75% of this meal went into manufactured feeds during the 1960-61 season.

According to reports from California and Arizona, regardless of the oil extraction technique employed, all cottonseed meal there qualifies to be sold as "degossypolized meal," having a free gossypol content of 0.04% or lower. This meal is not a truly degossypolized meal because the low-gossypol level is not achieved by deactivation of gossypol but rather as a result of manufacture from cottonseed having low-gossypol content. Nevertheless, because it qualifies on analysis to be sold as "degossypolized meal" (having a free-gossypol content of 0.04% or lower as prescribed by NCPA Trading Rule 263), in this paper it will be referred to as "degossypolized meal."

Nitrogen solubility of the screw press meal is low, however, and processors there, in general, are converting to

some form of solvent extraction. It is estimated that more than 200,000 T of solvent cottonseed meal will be produced in California and Arizona next season. "Degossypolized meal" continues to enjoy an increasing market, and premiums as much as \$4 per T are received for solvent meals. There is an ever increasing trend to produce "degossypolized meal" in the W that will have a protein analysis of 44% or higher.

There is considerable acceptance of "egg tested meal" but still some resistance to "degossypolized meal." "Egg tested cottonseed meal" having 44% protein is suitable to be fed to laying hens in amounts up to 10% of the total diet. However, egg testing is expensive since the meal must be packaged and held while the test is going on. The test requires 12 days feeding and then a couple of days of chemical analysis. The cost of sacks, tags, twine, and stacking labor runs \$4-\$5 extra per T, which processors have difficulty obtaining.

A strain of cotton with seed free of gossypol has been developed in California, and it may be available commercially in California by 1967-1970. The gossypol-free cotton, a strain of Acala, compares very favorably in fiber characteristics with cotton now in production in the San Joaquin Valley. Oil and meal of higher quality from the glandless seed are expected to have increased utilization and value.

In Arizona, although "degossypolized cottonseed meal" is used in the rations of growing chickens, it is still not used to any appreciable extent in the diet of laying hens. Between 120,000 and 130,000 T are used annually in manufactured feeds in Arizona, of which 45,000 T are consumed by cattle in feedlots in that state and the remainder shipped to California and Utah. Approximately 50,000 T of the meal shipped from Arizona to California and Utah are probably used in swine or poultry rations.

*In United States.* If feed manufacturers in the Western states used 10% of cottonseed meal in laying and broiler rations and 5% in turkey rations, more than 400,000 T would have been used in that area alone during 1961. Also, during the spring months of 1961, many feed manufacturers in the Midwest and E began using cottonseed meal rather heavily, some of which went into poultry rations. An estimate of 300,000 T of cottonseed meal used in poultry rations during the year is considered conservative.

There was a decided increase in the use of cottonseed meal in swine and poultry rations because economies were in its favor during 1960-61 in many areas due to high prices of soybean meal. During the spring and summer of 1961, cottonseed meal was selling as much as \$25 per T below the cost of soybean meal. Significant price differentials favorable to cottonseed meal existed in the Memphis, Texas, and in the Northwest areas. In fact, it was even an advantage to use cottonseed meal for several months in the corn belt. For that reason a considerable amt of cottonseed meal with a gossypol content below 0.04% was used in swine supplements throughout the Midwest. This was an abnormal market because the price of soybeans was entirely unpredictable, largely because of the failure of the Chinese crop.

### Cottonseed Flour Utilization

Slightly more than 3,500,000 lb of cottonseed flour have been produced annually for human consumption since 1950. This poundage has been used primarily in bakery products, and where used, comprised from 1-5% of the total formula.

#### ACKNOWLEDGMENTS

Drawings for this manuscript by G. I. Pittman. Assistance in obtaining information reported by Mrs. A. de B. Kleppinger and Katherine Upton. Photographs by A. F. Fayette and J. J. Bergquist.

#### REFERENCES

1. Anonymous. "Cotton and Cottonseed Products in Texas." Univ. of Texas, Cotton Econ. Research, Austin, Res. Rept. No. 52 (1960).
2. Anonymous. "Cottonseed Oil and Competing Materials, Consumption in Major End Uses, 1956-60." Natl. Cotton Council of America, Memphis (1961).
3. Anonymous. "Cottonseed and Its Products," 6th Ed., 24 pp. Natl. Cottonseed Products Assoc., Inc., Memphis (1960).

(Continued on page 18)

# Technical Program . .

(Continued from page 10)

## GAS CHROMATOGRAPHY OF CIS-TRANS FATTY ACID ISOMERS ON NITRILE SILICONE CAPILLARY COLUMNS

Carter Litchfield, Raymond Reiser, A. F. Isbell, and G. L. Feldman, Department of Biochemistry and Nutrition, Texas Agricultural Experimental Station, Texas  
G. L. Feldman, Institute of Ophthalmology, Baylor University, College of Medicine, Houston, Texas

## SODIUM ALKYL PHOSPHATE SURFACTANTS PROPERTIES AND USE IN HEAVY DUTY DETERGENTS

R. S. Cooper and Allen Urfer, Research Department, Victor Chemical Division, Stauffer Chemical Co., Chicago Heights, Ill.

## ELECTROPHORETIC PROPERTIES IN AQUEOUS DETERGENT SYSTEMS

M. E. Ginn, R. M. Anderson, and J. C. Harris, Monsanto Chemical Co., Dayton, Ohio

## STUDIES IN DETERGENCY CORRELATION

C. F. Pickett, Technical Director, U. S. Army, Coating and Chemical Laboratory, Aberdeen Proving Ground, Md.

## NUTRITIONAL STUDIES WITH POLYGLYCEROL ESTERS

V. K. Babayan, H. Kaunitz, and C. A. Slanetz, Drew Chemical Corp., Boonton, N. J. and Department of Pathology of Comparative Medicine, Columbia University, New York, N. Y.

## USE OF MEDIUM CHAIN TRIGLYCERIDES (MCT) IN HUMAN DIET

Hans Kaunitz and Vigen Babayan, Drew Chemical Corp., Boonton, N. J. and Department of Pathology of Comparative Medicine, Columbia University, New York, N. Y.

## LONG CHAIN $\alpha$ -PHOSPHONO FATTY ACIDS, SALTS AND ESTERS

E. W. Maurer, A. J. Stirton, W. C. Ault, and J. K. Weil, Eastern Regional Research Laboratory, Philadelphia, Penn.

### Technical Session E

Tuesday, April 23—10:00 a.m.

#### Symposium: Special Method in Lipid Chemistry

George Rouser, Presiding

#### X-RAY DIFFRACTION STUDIES OF SINGLE CRYSTALS OF UREA AND THIOUREA ADDUCTS OF LIPIDS

Nicholas Nicolaides, Division of Dermatology, University of Oregon Medical School, Portland, Ore.

#### FRACTIONATION OF LIPIDS BY COUNTERCURRENT DISTRIBUTION

D. G. Theriault, U. S. Army Research Institute of Environmental Medicine, Natick, Mass.

#### PREPARATIVE GAS CHROMATOGRAPHY FOR THE ISOLATION OF PURE FATTY ACIDS

Nicholas Pelick, Applied Science Labs. Inc., State College, Penn.

#### ACID-TREATED FLORISIL AS AN ADSORBENT FOR COLUMN CHROMATOGRAPHY

K. K. Carroll, The University of Western Ontario, London, Ontario, Can.

#### LIPID COMPOSITION OF BEEF BRAIN, BEEF LIVER, AND THE SEA ANEMONE: TOTAL FRACTIONATION BY COLUMN CHROMATOGRAPHY OR BY COMBINATION OF DIETHYLAMINOETHYL-CELLULOSE COLUMNS WITH PAPER AND THIN LAYER CHROMATOGRAPHY

George Rouser, City of Hope Medical Center, Duarte, Calif.

#### THE STUDY OF BIOLOGICAL STRUCTURE WITH STEREO-MOLECULAR MODEL PROJECTIONS

F. A. Vandenhevel, Animal Research Institute, Canada Department of Agriculture, Ottawa, Ontario, Can.

### Technical Session F

Tuesday, April 23—10:00 a.m.

T. J. Potts, Presiding

#### GLASS PAPER CHROMATOGRAPHY AND ELATOGRAPHY OF TRIGLYCERIDES

J. R. Swartwout and R. J. Gross, Department of Gynecology and Obstetrics, Emory University,

## A STEPWISE HYDROGEN BROMIDE TITRATION METHOD FOR CYCLOPROPENOID AND EPOXY FATTY ACIDS

J. A. Harris, F. C. Magne, and E. L. Skau, Southern Regional Research Laboratory, New Orleans, La.

## FURTHER OBSERVATIONS ON THE 2-THIOBARBITURIC ACID METHOD FOR THE MEASUREMENT OF OXIDATIVE RANCIDITY

T. C. Yu and R. O. Sinnhuber, Department of Food Service & Technology, Oregon State University, Corvallis, Ore.

## A LABORATORY CENTRIFUGAL REFINING METHOD FOR CONTROL APPLICATION

W. D. Pohle, R. L. Gregory, and S. E. Tierney, Research Laboratories, Swift & Co., Chicago, Ill.

## MEASUREMENT OF SOLIDS IN TRIGLYCERIDES USING NUCLEAR MAGNETIC RESONANCE

J. R. Taylor, W. D. Pohle, and R. L. Gregory, Research Laboratories, Swift & Co., Chicago, Ill.

## ANALYSIS OF SOAPS WITH HYDROGEN BROMIDE IN GLACIAL ACETIC ACID

E. T. Haeberer and G. Maerker, Eastern Regional Research Laboratory, Philadelphia, Penn.

### Technical Session G

Wednesday, April 24—10:00 a.m.

M. H. Fowler, Presiding

## CYCLIC FATTY ACIDS: PRODUCTION AND COST

R. A. Eisenhauer, V. E. Sohns, R. E. Beal, and E. L. Griffin, Northern Regional Research Laboratory, Peoria, Ill.

## PREPARATION OF 9-TRANS,12-TRANS-OCTADECADIENOIC ACID

R. D. Harlow, Carter Litchfield, and Raymond Reiser, Texas Agricultural Experimental Station, College Station, Texas

## STUDIES ON THE OZONIZATION OF METHYL OLEATE

O. S. Privett and E. Christense Nickell, University of Minnesota, The Hormel Institute, Austin, Minn.

## DIMER ACID STRUCTURES. THE DEHYDRO-DIMER FROM METHYL OLEATE AND DI-T-BUTYL PEROXIDE

R. F. Paschke, L. E. Peterson, S. A. Harrison, and D. H. Wheeler, General Mills Central Research Laboratories, Minneapolis, Minn.

## VERNONIA ANTHELMINTICA (L.) WILLD. HIGHLY PURIFIED EPOXY FATTY ACID COMPONENTS FROM THE SEED OIL

C. F. Krewson and F. E. Luddy, Eastern Regional Research Laboratory, Philadelphia, Penn.

## Recent Utilization . . .

(Continued from page 16)

4. Anonymous. Fats and Oils Situation (U. S. Dept. Agr. Econ. Res. Serv.) *FOS-210*, 20 (1961).

5. Decossas, K. M., E. F. Pollard, and E. L. Patton, *Oil Mill Gaz.* 64 (4), 7-8, 10-11, 13-14 (1959).

6. Harper, Garlon, Natl. Cottonseed Products Assoc., private communication to Decossas, K. M. 9-15-61.

7. Parvin, D. W., Mississippi Farm Research (Miss. Expt. Sta.) 24 (7), 1, 3 (1961).

8. Peier, J. D., Fats and Oils Situation (U. S. Agr. Market. Serv.) *FOS-203*, 34-37 (1960).

9. Peier, J. D., and C. B. Gilliland, U. S. Dept. Agr. Market Research Rept. No. 360, 2 (1959).

10. U. S. Bur. of the Census, "Fats and Oils, Vegetable Oil Crushers," summaries for 1959, 1960. Current Industrial Reports series M20J-09, M20J(60)-13; monthly reports M20J(60)12-M20J(61)11. Washington, U. S. Govt. Print. Off., 1960-61.

11. U. S. Bur. of the Census, "Fats and Oils," U. S. Census of Manufacturers: 1958, Industrial Report Mc58(2)-20H, Washington, U. S. Govt. Print. Off., 1961, p. 6.

## U.S. Tung Oil Supplies Lessen

This year's tung oil supplies are expected to be approximately 19 million lb less than the previous year. Freeze damage has reduced the tung oil crop to only one-fifth the size of the past year's crop. Therefore, imports from Argentina and Paraguay will be needed to meet domestic requirements.

Drying oil users will be encouraged to transfer to substitutes where possible, as a result of these reduced supplies and corresponding higher prices. Tung oil prices are now at their highest since the spring of 1952.



## Short Course Program . . .

(Continued from page 15)

Part 1 Preparative, D. B. Lake, Du Pont de Nemours

Part II Formulation and Uses of Amine Oxides, T. B. Matson, Continental Oil Co.

Anionic Phosphate Surfactants, R. Cooper, Victor Chemical Co.

Dinner Speaker: E. Scott Pattison, Soap and Detergent Assn. "The Climate for Product Improvement."

Movie on "Challenging Nature's Chemistry" by Firmenich & Co.

### Tuesday, June 25

Symposium on Biodegradability of Detergents: Chairman—E. Scott Pattison, Soap and Detergent Association  
The Nation's Water Pollution Problem, Morris Cohn, Editorial Director of *Wastes Engineering and Water Works Engineering*

Structural Factors Affecting the Biodegradability of Surfactants, R. D. Swisher, Monsanto Chemical Co.

Development in Products and Processes as they affect Surface Water and Ground Water Problems, W. Kline, Colgate-Palmolive Co.

Foreign Requirements and Developments as to Detergent Biodegradability, B. B. Stranz, Shell Chemical Co., Holland

Afternoon Session:

Plant Trips

International Flavors and Fragrances, Inc. Production and Research Facilities, Union Beach, N. J.

Colgate-Palmolive Co., Research and Development Center, New Brunswick, N. J.

Dinner Speaker: G. M. Keller, Vice President, Armour and Co., "Marketing's Responsibility to Research"

### Wednesday, June 26

Analyses and Properties of Detergents

Morning Session: Chairman—J. C. Harris, Monsanto Chemical Co.

New Physical Evaluation Techniques, M. E. Ginn, Armour and Co.

Correlation of Detergency with Physico-Chemical Factors, A. M. Mankowich, U. S. Army Coating and Chemical Laboratory

Physical Chemistry of Non-Ionic Detergents, M. Schick, Lever Bros. Co.

Soil Redeposition, H. B. Trost, Hercules Powder Co.

Afternoon Session: Chairman—A. J. Stirton, Eastern Regional Laboratories

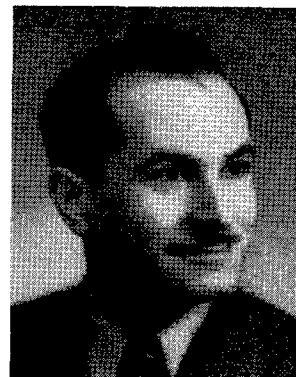
Recent Advances in Non-Instrumental Analyses of Surface-Active Agents, M. J. Rosen, Brooklyn College, N. Y.

Principle and Utility of Nuclear Magnetic Resonance in Structure Determination of Surfactant Chemicals, R. R. Irani, Monsanto Chemical Co.

Optical Brighteners, H. W. Zussman, Geigy Industrial Chemical Co.



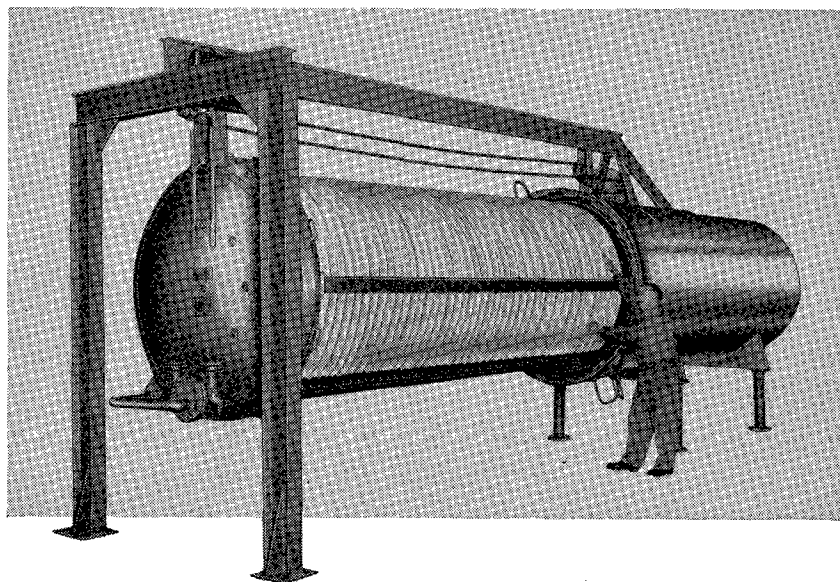
G. M. Keller



M. J. Rosen

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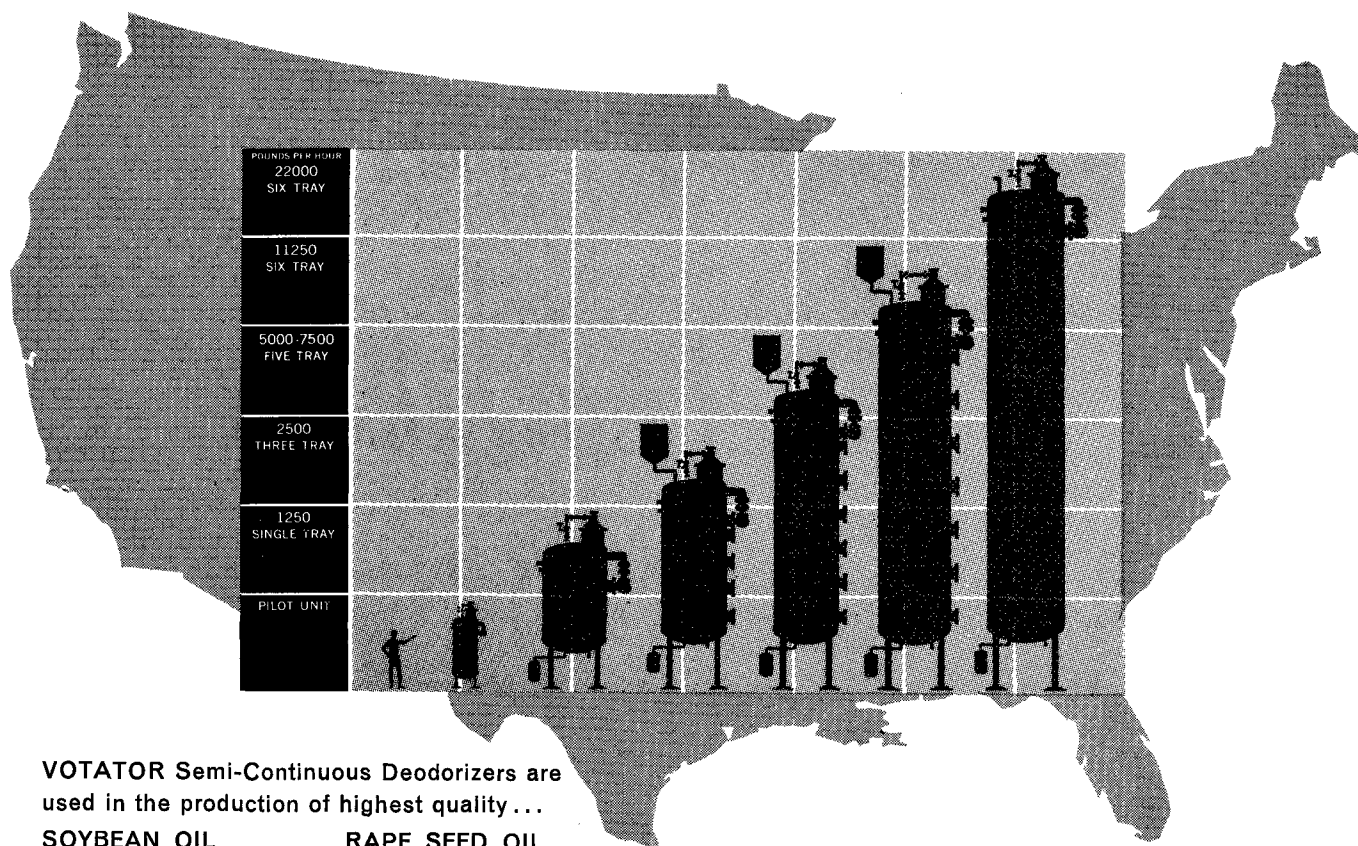
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