#### News of the Month\_

Also included on the agenda are discussions of the gibberellins, soil sterilants, and the growth, management, and future of the agricultural chemicals industry in Canada.

#### PEOPLE

## New President for Smith-Douglass

Willard A. Ashburn, senior vice president of Smith-Douglass since last January, has been elected president of the company. He succeeds Ralph B. Douglass, who moves to the new position of board chairman.

W. B. Copeland, who was executive vice president of Smith-Douglass, has joined Olin Mathieson's plant food division as division vice president.

**R. M. Yoder**, vice president of the Dobbins Division of Chamberlain Corp., was elected president of the National Sprayer & Duster Association recently. Elected vice president was **E. M. Myers**, vice president of F. E. Myers & Bros. Co. Named treasurer was **P. L. Hauser**, sales manager for Root-Lowell Mfg. Co.

**A. B. Chadwick** has left Koppers Co. to become director of manufacturing for Velsicol Chemical.

Sam R. Aldrich has been appointed professor of agronomy extension, specializing in soil fertility, at the University of Illinois college of agriculture. He has been at Cornell.

Robert L. Riggs has been appointed manager of the Hopewell, Va., plant of Allied's Nitrogen Division. Formerly manager of the Omaha plant, he succeeds Frank A. Ernst, who retired Aug. 31. Virgil A. Peringer will succeed Riggs at Omaha, moving up from general superintendent.

**David F. Green** has left Allied's Nitrogen Division, where he was working on the use of urea in ruminant feeds, to join Merck, Sharp & Dohme Research Laboratories as executive director of animal science activities.

Kenneth W. Brighton has been promoted from general manager of American Can's new products department to director of research for the company. He succeeds Robert W. Pilcher, who has been named scientific coordinator.

Edward D. Weil has been named research supervisor of the agricultural chemistry group in the research department of Hooker Electrochemical.

Charles Lupsha has been appointed assistant to E. W. Cannon, Calspray's vice president and general manager of marketing. He was branch manager of merchandising at the Maryland Heights, Mo., office of Calspray.

W. B. Andrews has resigned from Mississippi State College to become technical sales director with Mississippi Chemical Corp. and Coastal Chemical Corp. He has been an agronomist with Mississippi State since 1931.

George H. Reid has been named manager of the Garfield, Utah, plant of Western Phosphates, Inc., succeeding E. R. Scammell, who has resigned. James A. Malloch has been promoted from maintenance superintendent of the plant to chief engineer.

John N. Mahan has left TVA to join USDA where he will be responsible for publication of the annual "Fertilizer Situation." His position is with the agricultural chemicals staff, Food and Materials Requirements Division, Commodity Stabilization Service.

**H. E. Causey** has left Illinois Farm Supply Co., where he was manager of the Tuscola, Ill., plant, to become technical sales engineer for the potash division of International Minerals. He will work directly with fertilizer manufacturers, assisting them in solution of technical production problems.

James A. Naftel has been appointed by U. S. Potash to head its newly created plant food development department. Chief agronomist will be James R. Turner. Both were with Pacific Coast Borax before its merger with U. S. Potash.

E. W. Sale has been transferred by American Agricultural Chemical Co., from plant superintendent at Detroit to the chemical department at Detroit; J. A. Layton, from the New York production department to superintendent at Detroit; H. C. Mac-Kinnon from superintendent of production at Saginaw, Mich., to assistant superintendent at Carteret; R. L. Etheridge, from assistant superintendent at Cleveland, Ohio, to superintendent at Saginaw.

**R. L. Hockley** has been elected to the board of directors of Amoco Chemicals Corp. He is to devote a substantial part of his time to study and counsel on all management matters at Amoco, including particularly development and marketing. He was formerly president of Davison Chemical and vice president of Olin Mathieson.

George L. Innes has been appointed to head chemical sales and development activities for Climax Molybdenum. He has been manager of chemical sales for the company since 1955.

#### DEATHS

Henry Sontheimer, retired vice president in charge of foreign affairs for American Chemical Paint, died July 24 at the age of 75. Born in Munich, Germany, of American parents in 1882, he was reared and educated abroad. He was with ACP from 1925 until his retirement in 1940. He helped pioneer the licensing of European and South American firms to make American chemical products.

#### ACS Meeting Program

The programs of the Division of Agricultural and Food Chemistry and the Division of Fertilizer and Soil Chemistry for the approaching ACS meeting are printed below. The meeting opens on Sept. 8 and continues through Sept. 13. Sessions of the Ag and Food Division will be held in the Sheraton-McAlpin Hotel, and those of the Fertilizer and Soil Division in the New Yorker Hotel. The symposium on gibberellins will be in the Statler Hotel.

#### DIVISION OF AGRICULTURAL AND FOOD CHEMISTRY

D. M. Doty, Chairman

F. M. Strong, Secretary-Treasurer

Monday Morning and Afternoon

#### General

#### D. M. Doty, Presiding

D. M. DOTY. Introductory Remarks.

ABRAHAM LEVITON AND MICHAEL J. PALLANSCH. The Application of Microviscometry to the Study of the Heat Stability of Milk.

DANIEL P. SCHWARTZ AND MICHAEL J. PALLANSCH. Identification of Some Hitherto Unreported Ninhydrin-Positive Compounds in Cow's Milk.

ABRAHAM LEVITON AND MICHAEL J. PALLANSCH. The Binding of Riboflavin and Riboflavin Phosphate by Milk Proteins.

W. E. SCOTT, S. F. HERB, P. MAGID-MAN, AND R. W. RIEMENSCHNEIDER. Unsaturated Fatty Acids of Butter Fat.

EUGEN WIERBICKI AND F. E. DEATHERAGE. Determination of Water-Binding Capacity of Fresh Meats.

P. V. HANSEN, F. L. KAUFFMAN, AND L. H. WIEDERMANN. A Direct Spectrophotometric Determination of Butylated Hydroxyanisole in Lard and in Hardened Lard.

E. L. PIPPEN, M. NONAKA, F. T. JONES, AND FRED STITT. Volatile Carbonyl Compounds of Cooked

# Insects have <u>no</u> future with MALATHION SPRAYS\*

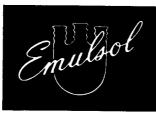
# emulsified with **ENCOLS** H-140 and H-141

Crop or Fly Sprays in hard or soft water have the requisite spontaneity and emulsion stability when EMCOLS H-140 and H-141 are used—and you reduce your formulating costs with these stable, fluid emulsifiers.

#### \*Recommended:

EMCOL H-140—for 50% or 5 lb. Malathion per U. S. Gal. EMCOL H-141—for 8 lb. Malathion per U. S. Gal.

The regional Emulsol Technical Representative is at your service for consultation . . . or contact us directly. And . . . yours for the asking, our Technical Bulletin #42 describing the EMCOLS H-140 and H-141.



DEPT. J-9

**EMULSOL CHEMICAL CORPORATION** 

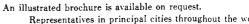
division of Witco Chemical Company

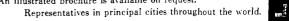
MOVED TO: 75 East Wacker Drive, Chicago 1, III.

serving many other industries with dozens of EMCOL emulsifying agents . . . especially the pesticide and herbicide fields.

#### NITRIC ACID PLANTS

Through The Chemical & Industrial Corporation, complete facilities for nitric acid are available in all markets of the world. C&I plants employ the du Pont, high pressure process and are designed and constructed to their rigid specifications. Only the finest materials and components are utilized guaranteeing a maximum safety factor, a minimum of maintenance and tremendous day-in and day-out efficiency. C&I nitric acid plants are time tested and proven and the larger units can now be made selfsufficient after start-up.





THE CHEMICAL AND INDUSTRIAL CORP. CINCINNATI 26, OHIO Designers and Constructors of Plants for the Processing of Ammonia Available World-wide,

Visit Us at the 26th Chemical Show. Collseum, New York, December 2nd to 6th, 1957

available world-wide

Chicken I. Compounds Obtained by Air Entrainment.

Discussion.

#### F. M. Strong, Presiding

JAMES KANEGIS, BRENDA KANEGIS, AND ROGER GILMONT. Faster Cooking with Glycerol.

N. I. LEMACK, G. E. LIVINGSTON, L. R. PARKINSON, D. L. ANDERSON, AND C. R. FELLERS. The Nutritive Value of Ocean Perch and Herring Scales as Animal Feeds.

V. CHALAM METTA AND B. CONNOR JOHNSON. Effect of Radiation Sterilization on the Nutritive Value of Foods. III. Biological Value of Corn Protein and Wheat Gluten.

M. C. BURNETT, R. L. LOHMAR, AND HERBERT J. DUTTON. Sorghum Lipides, Countercurrent Distribution of Leaf and Stem Extract.

J. C. PICKEN, JR. AND H. E. BIESTER. Studies on the Mode of Formation and the Chemical Nature of the Toxic Entity Causing the Aplastic Anemia in Cattle Fed Trichloroethylene-Extracted Soybean Oil Meal.

BERNARD L. OSER, MYRON BRIN, AND FELIX OSER. Toxicological Screening Tests of Food Flavoring Compounds.

SAUL GORDON AND CLEMENT CAMP-Characterization of Plant-De-BELL. rived Food Products by Thermogravimetry and Differential Thermal Analysis.

#### Symposium on Future Utilization of Agricultural Commodities

#### **Tuesday Morning**

G. E. Hilbert, Presiding

G. E. HILBERT. Introductory Remarks.

G. O. KOHLER. Future Utilization of Forage Crops and Alfalfa.

REID T. MILNER. Future Utilization of Cereal Crops. Recess

R. W. JACKSON. Potential Utilization of Agricultural Commodities by Fermentation.

H. B. HASS. Future Utilization of Sugar Crops.

Divisional Luncheon. Speaker: JULES HIRSCH, Rockefeller Institute for Medical Research, "Studies of the Dietary Effects on Serum Lipides.

#### **Tuesday Afternoon**

#### C. H. Fisher, Presiding

GEORG BORGSTROM. Future Utilization of Fruits and Vegetables.

W. C. Ault and J. C. Cowan. Future Utilization of Animal Fats and Oilseeds.

LEONARD SMITH. Future Utilization of Cotton.

GERALD LAXER. Future Utilization of Wool.

**Divisional Business Meeting.** 

#### Symposium on Chemistry and **Physiological Actions of** Gibberellins

Joint with Division of Biological Chemistry

Tuesday Afternoon

Frank H. Stodola, Presiding

F. H. STODOLA. Introductory Remarks.

PAUL C. MARTH AND BERNARD C. MALE. Effects of Gibberellic Acid SMALE. on Plant Growth and Development.

BERNARD O. PHINNEY AND CHARLES A. WEST. Gibberellin-like Substances

from Higher Plants. G. W. PROBST AND MARTHA STAMPER. Production and Isolation

of the Gibberellins. B. ARISON, G. V. DOWNING, R. A. GRAY, M. A. MANZELLI, J. D. NEUSS, O. SPETH, N. R. TRENNER, AND F. J. WOLF. Gibberellic Acid Assay Methods.

B. E. CROSS, J. F. GROVE, J. MAC-MILLAN, AND T. P. C. MULHOLLAND.

Chemistry of the Gibberellins. Discussion.

Divisional Business Meeting.

#### Wednesday Morning

#### G. E. Hilbert, Presiding

ELL DEE COMPTON. Future Utilization of Hides and Skins.

D. M. DOTY AND B. S. SCHWEIGERT. Improved Quality, the Key to In-creased Utilization of Meat.

D. B. JOSEPHSON, F. J. DOAN, AND WART PATTON. Future Utilization STUART PATTON.

of Dairy Products. WHEELER MCMILLEN AND HARRY

J. PREBLUDA. New Crops for American Agriculture.

G. W. IRVING, JR. Summarization of Future Utilization of Agricultural Commodities.

#### **PESTICIDES SUBDIVISION**

Wendell F. Phillips, Chairman

Hobart O. Thomas, Secretary

Wednesday Morning

#### General

Wendell F. Phillips, Presiding

WENDELL F. PHILLIPS. Introductory Remarks.

DONALD D. Abbott, Elias W. PACKMAN, AND J. W. E. HARRISSON. Acute Oral Toxicity of Sodium Arsenites.

JOE R. WILLARD, JOHN F. HENA-HAN, E. F. ORWOLL, AND JACK R. GRAHAM, Niagara 1240, A New Organophosphorus Pesticide.

JOE R. WILLARD, JOHN F. HENA-HAN, AND S. K. REED. Niagara's Phostex, a New Organophosphorus Pesticide.

KERMIT GROVES. Some Problems Involved in the Determination of Demeton Spray Residues by Acetylcholinesterase Inhibition.

G. E. STODDARD. J. L. SHUPE, G. Q. BATEMAN, J. R. HARRIS, L. E. HARRIS, AND D. A. GREENWOOD. Effects of Feeding Aldrin– and Chlordan– Treated Alfalfa Hay and Aldrin in Corn Oil to Lactating Dairy Cows.

D. H. PETERSEN AND H. J. WEBB. A Spore Germination Technique for

Bioassay of Agricultural Fungicides. JOSEPH A. LAMBRECH AND JOHN R. KILSHEIMER. Sevin, a Wide Spectrum

Carbamate Insecticide.

SHIRLEY DUBREUIL. The Synthesis of Insecticidal Pyridazinyl Substituted Phosphate Esters.

#### Wednesday Afternoon

#### J. A. Jensen, Presiding

J. A. JENSEN. Introductory Remarks.

NATHAN GREEN. Synthesis of Car-boxy-Labelled C<sup>14</sup>-N,N-Diethyl-m-toluamide.

W. B. BURTON, J. C. POTTER, AND M. SILVERMAN. The Synthesis of Aldrin and Dieldrin Labeled with Chlorine-36.

R. L. WEINTRAUB, N. D. FOLTS, J. H. REINHART, J. R. HODGSON, AND A. S. NEWMAN. Factors Responsible for Loss of Isopropyl N-phenylcarbamate and Isopropyl N-(3-chlorophenyl) Carbamate from Soil.

JOHN N. KAPLANIS. Studies on Dermal Application and Oral Administration of  $P^{-32}$  Bayer 21/199.

JENS A. JENSEN, EDWARD W. DALE, AND GEORGE W. PEARCE. Radio-assays of DDT and Related Compounds Labeled with Carbon-14.

Allen E. Smith, Gracie M. Stone, John W. Zukel, and Mary E. DAVIES. The Adsorption and Translocation of Carbon-14 Tagged Maleic Hydrazide in Plants.

Business Meeting, Pesticides Subdivision.

#### FERMENTATION SUBDIVISION

Nestor Bohonos, Chairman

J. C. Sylvester, Secretary

Wednesday Afternoon

#### General

#### Nestor Bohonos, Presiding

NESTOR BOHONOS. Introductory Remarks.

N. E. WIDEBURG AND W. H. PETER-Interconversion of Penicillins V SON. and G by Growing Cultures of Penicillin Chrysogenum.

R. F. ANDERSON, M. ARNOLD, G. E. N. NELSON, AND A. CIEGLER. Micro-bial Production of Carotenoids. II. The Effects of Selected Medium Adjuncts on  $\beta$ -Carotene Synthesis. SAEED KHESHGI AND R. K. SAUN-

DERS. Microbiological Evaluation of Peptones.

#### News of the Month\_

A. E. WASSERMAN, W. J. HOPKINS, AND NANDOR PORCES. Whey Utiliza-tion. I. Studies on the Conditions for Growth of Saccharomyces Fragilis. Business Meeting, Fermentation

Subdivision.

#### Symposium on Fermentation **Process and Equipment Design**

**Thursday Morning** 

#### E. L. Gaden, Jr., Presiding

E. L. GADEN, JR. Introductory Remarks.

PHILLIP WINTER, H. R. BILFORD, C. E. JACOB, AND R. A. KEMMERER. Location of Microscopic Leaks in Cooling Coils and Jackets of Antibiotic Production Fermenters.

E. L. GADEN, JR. AND R. P. RHODES. Evaluation of the Shaken Flask as a Fermentation Reactor.

D. H. PHILLIPS AND M. J. JOHNSON. Oxygen Transfer in Agitated Vessels. Discussion.

E. L. GADEN, JR. Gluconic Acid Fermentation Kinetics.

KARL GUENTHER AND M. J. JOHNson. Continuous Propagation of Bacteria.

BERNARD MILAN AND JACK WEST-HEAD. Production of L-Tryptophan in Submerged Culture.

Discussion.

#### **Fermentation Process and Equipment Design:** Symposium on pH Control

Thursday Afternoon

#### J. M. West, Presiding

J. M. WEST. Introduction to the Symposium.

T. J. KEHOE. A Survey of the Status of Continuous pH Measure-ment in Pharmaceutical Fermentors.

F. W. DENISON, JR., I. C. WEST, M. H. PETERSON, AND J. C. SYLVESTER. A Practical System for pH Control of Larger-Scale Submerged Fermentations.

G. J. FULD, T. J. DE TER BEERST, L. A. GOULD, AND P. E. SMITH, JR. Dynamic Behavior of a Flow-Type pH Control System on a Pilot Plant Fermentor.

Discussion.

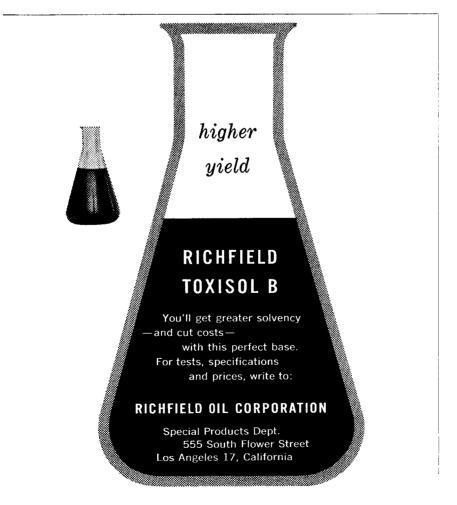
R. W. Souires and Peter Hosler. A Pilot Plant Fermentor with Continuous Platinum Electrode Potential Measurement.

#### Symposium on Nonclinical Uses of Antibiotics

Friday Morning

H. A. Nelson, Presiding

H. A. NELSON. Introduction to the Symposium,



W. KLOMPARENS, J. H. FORD, G. A. BOYACK, AND C. L. HAMNER. Cycloheximide (Acti-Dione) in Agriculture.

A. J. LEMIN, G. A. BOYACK, W. C. HASKETT, A. STEINHARDE, AND G. SWANK, Systemic Antifungal Activity of Cycloheximide Derivatives. J. W. MITCHELL AND B. C. SMALE.

Antibiotics, Their Intake and Transport as Related to Plant Disease Control.

Discussion.

S. H. Ross. Antibiotics as Preservatives for Industrial Materials.

S. F. SNIESZKO. Antibiotics in Fish Disease and Fish Nutrition.

F. E. DEATHERAGE, H. H. WEISER, AND J. M. JAY. Mode of Action of Chlortetracycline in Controlling Meat Spoilage.

D. C. GROVE. Public Health Significance of Antibiotics in Foods. Discussion.

#### DIVISION OF FERTILIZER AND SOIL CHEMISTRY

Stacy Randle, Chairman

M. D. Sanders, Secretary-Treasurer

Monday Afternoon

#### General

#### Stacy Randle, Presiding

STACY RANDLE. Introductory Remarks.

R. F. LEYDEN AND S. J. TOTH. Plant and Soil Studies with Radioactive Zinc.

E. L. HOBSON AND K. C. BERGER. Anion Balance in Potato Fertilization.

A. A. NIKITIN. Availability of Nutrient Elements as a Spray for Direct Foliar Treatment.

ARTHUR M. SMITH. Agronomy Economy of Anhydrous Ammonia. FRED V. GRAU AND JAMES M.

O'DONNELL. New Horizons for Fertilizer and Turf.

J. F. BARTZ AND K. C. BERGER. Urea-Formaldehyde Concentrate-85, A Promising Control for Potato Scab.

JAMES M. O'DONNELL, ROBERT J. CICIONE, AND FRED V. GRAU. Urea-Formaldehyde Reactions in the Fertilizer Industry.

E. R. HOLDEN AND W. L. HILL. The Influence of Cosmoposition and Particle Size of Borosilicate Glasses on the Boron Status of Alfalfa.

#### **Tuesday Morning and Afternoon**

#### General

#### K. G. Clark, Presiding

J. C. BROSHEER AND F. A. LEN-FESTY. Ammoniation of Nitric Acid Extracts of Rock Phosphate.

An All-Nitric PAUL CALDWELL. Nitric Phosphate.

M. R. SIEGEL, R. S. MELINE, AND T. M. KELSO. Pilot Plant Production

# TWICE THE GRANULES

VERMICULITE CARRIER FOR AGRICULTURAL CHEMICALS

# Cuts Carrier Costs Increases Coverage Approved by Ag-Chemical Companies

With twice the granules per pound Terra-Lite vermiculite carrier offers high, even absorption... formulates easily without caking or balling, even at high concentrations...gives better toxicant diffusion.

Versatile Terra-Lite was first used as a chemical carrier over seven years ago. Today it helps to combat weeds and soil pests in lawns; iron chlorosis in citrus groves; and insects and weeds in farm application. Leading producers of agricultural chemicals heartily endorse it. This free-flowing, wide-covering mineral is the way to develop business for yourself in the booming new granular field!

There are over 40 Terra-Lite processing plants in the U. S. and Canada, including the one near you. Write today for FREE sample and formulating instructions, plus address of nearest plant.

# DEVELOPS New Business For You in the Great and Growing Granular Field

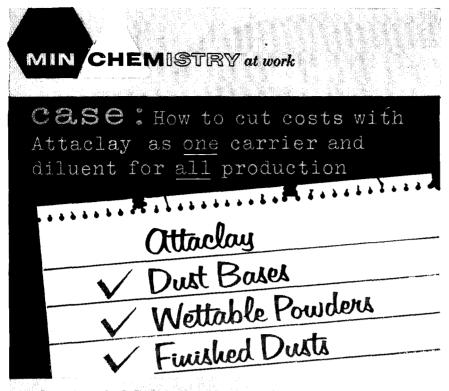
### Free to formulators

Let us send you FREE inspection sample and formulating instructions.



PUN

	Dept. AFC-97, 135 S. LaSalle St., Chicago 3, III.
	Send me FREE sample of Terra-Lite granular carrier and formulating instructions. Also send me field studies on commercial use, and address of nearest Terra-Lite plant.
	Name
The second se	Firm
	Address
	CityZoneState



Carrier And Diluent Report: Pesticide processors—with product lines that range up to sixty and more mixtures—make substantial savings through *across-the-board* use of Attaclay as carrier and diluent.

This "one-material plan" cuts costs in many obvious (and some less obvious), areas:

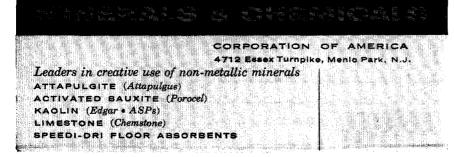
- (1) Attaclay works well with all of the popular poisons . . . helps turn out premium products.
- (2) Its great sorptivity shortens cycle times . . . cuts "clean-out" down-time in mills, impregnators, mixers.
- (3) Permits greatly simplified inventory.
- (4) Scheduling and procurement problems eliminated.
- (5) In-plant carrier and diluent handling costs minimized.
- (6) Less chance of error in formulation.

Our business is to supply low-cost, nature-given products that make things go smoothly in your plant... well in your markets. Use the coupon.

MINERALS & CHEMICALS CORPORATION OF AMERICA 4712 Essex Turnpike, Menlo Park, N.J.

I'm interested in a natural mineral product for\_\_\_\_\_

Send: 🗌 Detailed ''agchem'' literature	Free samples
name	title
company	
address	
cityzone	state



#### News of the Month\_

of Ammonium Phosphate-Nitrate Fertilizers.

T. P. HIGNETT, M. R. SIEGEL, DAVID MCKNIGHT, AND F. P. ACHORN. Pilot-Plant Production of Nitric Phosphate Fertilizers Using the TVA Continuous Ammoniator.

WALTER DROBOT. Thermal Decomposition of Ammonium Nitrate in Mixed Plant Food.

J. G. MACARTHUR AND J. W. JONES. A Simplified Approach to the Calculations for Formulating High-Analysis, Mixed Fertilizers.

R. S. TINSLEY AND G. R. GILLIAM. A Method for Predicting the Effect of Various Factors on the Liquid Phase of Granular Mixed Fertilizers. Divisional Luncheon. Speaker:

Divisional Luncheon. Speaker: MR. FRANK APP, "The Proper Use of Fertilizer for Optimum Crop Production."

#### M. D. Sanders, Presiding

JULIUS SILVERBERG, JAMES R. LEHR, AND GEORGE HOFFMEISTER, JR. Microscopic Study of the Mechanism of Caking and Its Prevention in Some Granular Fertilizers.

A. B. PHILLIPS, G. C. HICKS, J. E. JORDAN, AND T. P. HIGNETT. Effect of Particle Size of Raw Materials on Granulation of Fertilizers.

R. R. ROUNSLEY AND D. R. BOYLAN. The Effect of Grinding on Acidulation of Phosphate Rock.

J. D. HATFIELD, D. W. RINDT, AND A. V. SLACK. Rate of Reaction of Phosphate Rock with Sulfuric Acid. Effect of Basic Process Variables and of Additives.

A. B. PHILLIPS, R. D. YOUNG, J. S. LEWIS, JR., AND F. G. HEIL, JR. Development of One-Step Process for Production of Granular Triple Superphosphate.

Divisional Business Meeting.

#### Wednesday Morning

#### General

For more data, see

Pages 330-334

Catalog

**Chemical Materials** 

#### Stacy Randle, Presiding

K. G. CLARK, J. Y. YEE, AND T. G. LAMONT. Nitrification Characteristics of Urea Pyrolyzates, Cyanurates, Melamine, and Related Compounds.

M. M. STRIPLIN, JR., DAVID MC-KNIGHT, AND G. H. MEGAR. Phosphoric Acid of High Concentration.

M. M. STRIPLIN, JR., J. M. STINSON, AND J. A. WILBANKS. High-Analysis Liquid Fertilizers from Polyphosphoric Acids.

J. D. HATFIELD, A. V. SLACK, G. L. CROW, AND H. B. SHAFFER, JR. Corrosion of Metals by Liquid Mixed Fertilizers.

VINCENT SAUCHELLI. New Technologies but Same Old Chemical Control Problems in the Fertilizer Industry.

CHARLES E. WATERS AND ROBERT G. ZEIGLER. Apparent Loss of Organic Nitrogen in Fertilizers Containing Urea and Natural Organics.