

(De Geer), a microcrustacean, that can be used as a test animal to guide the rapid selection of systemics.

The small size of daphnids (maximum length 5 mm.) permits a great many to be reared in a small space, he stated. They are easy to culture, requiring only water containing bacteria or their equivalent for food. Reproductive rate is high; in her life span of 2 months a female may produce 400 or more offspring. The handling of daphnids when conducting tests is a simple matter, he said, of taking several hundred from the stock tank with a dipper and distributing them into test dishes with a pipet.

The use of systemic chemicals to protect plants from insect attack has not been developed so extensively for forest trees as it has been on vegetable crops, indicated Wollerman. "No practical control of a forest insect has been attempted by this method," he stated,

"and very little experimental work has been done."

Wollerman cited successful reports of others with the control of a mealybug on coffee trees through trunk application of hanane, isolan and pyrazoxan similarly applied to apple trees for aphid control, and demeton applied to citrus trees for control of several mite species.

Entomologists at the Central States Forest Experiment Station have also investigated systemics and their usefulness against forest insects in laboratory and nursery tests, he indicated. The most effective materials tried on insects feeding on black locust trees were demeton, schradan, and the benzene hexachloride group of isomers. But tests involving a larger number of trees are necessary before recommendations can be made for practical application, he cautioned.

## Rough Rice Preserved for Six Months by Gas Storage

FORT WORTH.—Rough rice can be stored in the laboratory for as long as six months in the presence of ethylene oxide and carbon dioxide, says Socrates A. Kaloyereas, LSU Agricultural Experiment Station. But large scale experiments under field conditions are needed, and the effect on nutritive value must be thoroughly evaluated, he cautioned.

The process is not one of fumigation, he explained, before the 10th ACS Southwest Regional Meeting here during Dec. 2-4. Rough rice is a physiologically active seed in dynamic equilibrium with its environment. "If we want to preserve such seeds we cannot use methods critically damaging the physiological processes and destroying the established equilibrium," he declared. "All we can do is move this equilibrium to a lower level of activity."

Spoilage of rough rice is caused by a

combination of factors, explained Kaloyereas. High respiration and transpiration of the seeds, the resulting high temperature and humidity in the air of the bin, all contribute to the growth of microorganisms. Success of the process, he claims, is that carbon dioxide depresses respiration and ethylene oxide helps control the growth of microorganisms.

It is possible, says Kaloyereas, that the process may also help preserve vitamins in rice, and LSU has applied for a patent, using 0 to 0.1% ethylene oxide and 30 to 50% carbon dioxide in the atmosphere of storage bins.

At the end of six months storage, the rough rice was in very good condition. It hadn't developed mold, and after cooking it tasted as good as rice preserved in cold storage.

Rough rice (with a normal moisture content of 20 to 28%) cannot be stored unless it is dried to about 12% moisture, explained Kaloyereas. And all of the year's harvest must be dried in a period of several months. A good process for storing rough rice only a few months would reduce drying costs considerably, he says, and would give the farmer a greater bargaining power than he now has. Kaloyereas pointed to the fact that rice buyers in most cases own drying installations and are naturally interested in keeping the price of rice low during the harvesting period.

**Moisture in Ammonium Nitrate.** After extensive investigation, we have found a rapid, accurate method to deter-

mine moisture in ammonium nitrate, indicated R. M. Englebrecht, Lion Oil. Ammonium nitrate moisture must be carefully monitored, he explained, to prevent caking when it is used as a fertilizer.

"We are particularly interested in the moisture content between 0 and 1%, with an accuracy of 0.05%," he stated.

Using the Guichard method as a standard for absolute water content, Englebrecht, Sam Drexler, and F. A. McCoy compared vacuum oven drying, Moisture Teller method, and thermister bridge-calcium hydride techniques against Karl Fischer procedures.

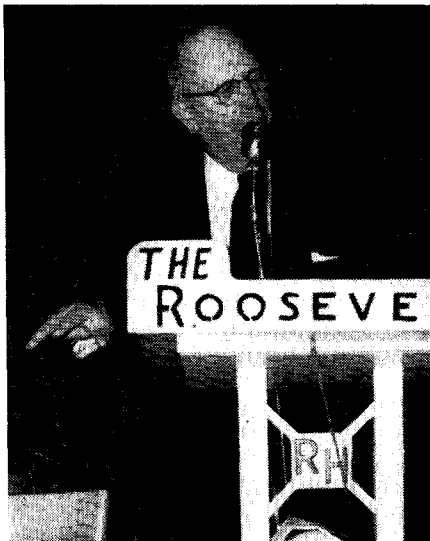
In the Guichard method, says Englebrecht, the sample is placed in an oven for an extended period of time, the weight loss is determined periodically, and the moisture loss curve is extrapolated to zero time for theoretical water content.

Vacuum oven drying is impractical for monitoring process samples, he stated, because the method requires about 3 hours. Moisture Teller takes 30 minutes, and this is still too long.

A thermistor bridge requires only 5 to 6 minutes, and is fine from a time standpoint, he explained, but it is not as accurate as Karl Fischer procedures, even though the accuracy is within

## World Hunger Called Foremost Problem Facing U. S.

The foremost problem facing our country today is to see that the rest of the world has enough to eat according to R. G. LeTourneau of R. G. LeTourneau, Inc. Speaking at the eighth annual Men of Science and Industry dinner in New Orleans recently, he said that "instead of feeding people we have to provide them with the means of feeding themselves, in order not to kill their ambition"



### CALENDAR

**Northeastern Weed Control Conference.** Hotel New Yorker, New York, N. Y. Jan. 5-7, 1955.

**Southern Weed Control Conference.** Soreno Hotel, St. Petersburg, Fla. Jan. 17-19, 1955.

**American Association of Cereal Chemists.** Chase Hotel, St. Louis, Mo. May 15-19, 1955.

**International Seaweed Symposium.** Trondheim, Norway. July 1-16, 1955.

0.05%. For laboratory determinations, the thermistor bridge is inferior to use of Karl Fischer reagent, although it can be adapted for continuous monitoring when used in conjunction with an automatic sampling system.

"Volume sampling instead of conventional weighing has enabled our control chemists to shorten Karl Fischer procedures from 10 minutes down to 5 minutes," declared Englebrecht, "and we are now using this method successfully in plant monitoring."

### **Industry**

#### **Phillips Sets Up Pasture Demonstration Farm**

Phillips Petroleum Co. has established an agricultural demonstration project four miles north of Foraker, Okla. Studies involving the feasibility of nitrogen and phosphate fertilizer on native and introduced grasses and legumes will be conducted. Also under study will be the economics of revegetating areas previously cultivated, range land conservation and management, and the adaptability of various plant species and selected varieties in pasture improvement.

#### **Chemical Enterprises Earnings Increase 27% for Fiscal year**

Net sales of Chemical Enterprises, Inc., and affiliates in the fiscal year ending June 30 amounted to \$7,389,000 compared with \$6,513,000 in the preceding fiscal year, an increase of 13%, according to the company's annual report. Net profit after taxes was \$224,000 compared with \$177,000 in the 1953 fiscal year, an increase of 27%. The parent company's share in these earnings for 1954 was \$196,000. Comparisons of operating results are based on proforma statements.

Chemical Enterprises, Inc., distributes agricultural supplies, principally anhydrous ammonia, through its affiliated companies in key agricultural areas of the United States. During the year the company acquired 10 companies operating in Louisiana, Texas, and Washington and a 50% interest in the Southeastern Liquid Fertilizer Company of Georgia.

The number of anhydrous ammonia stations controlled by the affiliated companies increased from 97 in June 1953 to 193 in June 1954. In addition the companies control 120 outlets for other materials, principally in the Midwest. The parent company presently comprises 21 affiliated companies with 15 subsidiaries. They serve agricultural communities in 19 states whose major crops include cotton, corn, sugar beets, wheat, and other small grains.

#### **Union Carbide Moves Offices To New Building in Cleveland**

Union Carbide & Carbon Corp. has consolidated its Cleveland offices in a new, two-story building. Previously, the company's Cleveland offices were scattered in five different buildings. The new building is at 1300 Lakeside Ave.

#### **Dole Consolidates Offices in San Jose, Calif.**

Dole Hawaiian Pineapple has consolidated its sales and California production divisions into a new office and warehouse building in San Jose, Calif. The sales division was formerly located in San Francisco, only the company's mainland purchasing office remaining there.

### **People**

#### **Field Named Carbide & Carbon VP**

**John A. Field**, former assistant manager of the fine chemical department of Carbide & Carbon, has been appointed vice president of the division. He will be responsible for sales development and related activities.

**H. B. Vickery** of the Connecticut Agricultural Experiment Station has been presented with the Cigar Industry Annual Research Award in recognition of his outstanding contributions to the chemistry of the tobacco plant.

**Henry W. Gadsden** has been named vice president of Merck & Co. and **John G. Bill** has been named vice president and general manager of the Sharpe & Dohme division of Merck.

**W. N. Brock**, vice president and general sales manager of Chase Bag Co., has been elected president of the Chicago Feed Club.

**Bryce L. Rhodes**, formerly vice president of Synthron, Inc., has been named development manager of the phosphate chemicals division of International Minerals & Chemical. **H. Clair Dyer** has been promoted from an assistant sales manager in the phosphate minerals division to eastern area sales manager for the phosphate chemicals division's special products department.

**L. R. Modlin, Jr.**, has been named field sales manager of B. F. Goodrich Chemical's general chemical sales department.

**Fred A. DeMaestri**, formerly technical supervisor of Ehret Magnesia Mfg. Corp., has been elected vice president in charge of operations of Michigan Chemical.

**M. J. Swortfiguer** has been named to a permanent position on the bakery service staff of the American Dry Milk Institute. He has been working on special assignments for the institute during the last six months and was formerly production supervisor for the Kroger Co. bakeries.

**John A. Coleman** has been named assistant laboratory director in product evaluation at the central laboratories of General Foods. He was formerly marketing research associate.

**Lee A. Keane**, vice president of the USI division of National Distillers Products Corp., has been named director of chemical sales for all of National Distillers. **Robert H. Cornwell** becomes director of production for all of the company's chemical plants. **Stuart Schott**, new director of research, will be in charge of the research division for the entire corporation and its subsidiaries.

**John J. B. Fulenwider**, general manager of Hercules Powder's cellulose products department and a member of the board of directors since 1945, has been elected a vice president and member of the executive committee. **Elmer F. Hinner** will succeed him as general manager of the cellulose department and **Edward G. Crum** replaces Mr. Hinner as general manager of the Virginia cellulose department.

**Fred A. Manske** has been elected to the newly created position of executive vice president of National Gypsum. **Wells F. Anderson** was elected vice president in charge of operations and manufacturing, the position formerly held by Manske. **William M. North** was elected vice president to assist the chairman of the board. **Clifford F. Favrot** was elected to the board.

**Carl C. Kesler**, research and development director of Penick & Ford, Inc., has been elected chairman of the Division of Carbohydrate Chemistry of the ACS, succeeding **Nelson K. Richtmyer**, principal chemist at the National Institutes of Health. **John C. Sowden**, associate professor of organic chemistry at Washington University, was named chairman-elect.

**John R. Sargent** has been elected vice president in charge of sales for Federal Chemical Co. **Sam E. Shelby** was elected vice president in charge of production. Sargent has been general sales manager of the company for the past eight years and Shelby has been general production manager for the past two years.