voted much time and study to the formation of an industry wide marketing and research organization, the National Tung Oil Marketing Cooperative. Mr. Ballard recommended that serious consideration be given to the proposed organization. "Because I believe in the plan, I have caused my company to sign as a charter member of the new organization," he asserted.

Instrumentation of the Food Processing Industry Continues

Automatic evaporator control improves product quality and lowers cost

CHICAGO.—The food industries are coming in for their share of attention in the trend towards greater instrumentation in the process industries. Food processing applications were indicated by many of the more than 300 booths of exhibits at the conference and exhibit of the Instrument Society of America here on Sept. 21 to 25.

Evaporation. Whether an evaporator is used to concentrate milk, sugar, or grape juice, comparable instrumentation is employed, said J. E. Barber, Taylor Instrument Co. As the food industry's demands grow for product quality improvement and lower costs for evaporator operation, the application of more complete and satisfactory instrumentation become increasingly important.

Heat input, liquid feed level, concentration of final product, rate of evaporation, and final effect pressure or temperature may be controlled automatically and thus decrease evaporation costs and improve the quality of the product, according to Mr. Barber.

Heat input to an evaporator may be controlled by regulating either the pressure of the steam chest or of the vapor space above the evaporating liquid. In either case temperature-activated controllers are made to operate the valve governing the incoming steam.

Steam chest control is the more desirable method for heat sensitive materials. If the vapor space pressure is the controlled variable, any build-up of solids on the evaporator tubes will result in ever increasing steam chest pressure to maintain the vapor space pressure, and will, therefore, overheat the liquid being concentrated.

Concentration. Concentration of the product is the most vital, and also the most difficult, variable to control in an evaporator. Concentration cannot be measured directly, but must be related to some characteristic such as density, viscosity, or the boiling point rise. Boiling point rise is the most desirable variable to control, but it is only useful when it changes sufficiently with concentration. The difference between the temperature of the product withdrawn and the vapors (after removing the superheat) is a function of the boiling point rise.

Density may be measured by circulating a small stream of the product through a sample column. A tube immersed to constant depth in the liquid in the column is connected to an air source and a manometer. A small quantity of air is allowed to bubble through the tube. Any change in density of the liquid is reflected in a change in back pressure which is recorded by the manometer. There are several other continuous density measuring devices, including a submerged float whose varying buoyancy may be recorded.

Feed Level. Control of the feed level is a necessary part of the concentration control. The concentration control mechanism will open the withdrawal valve, but a level controller is needed to govern the addition of more dilute material to the evaporator effect.

Liquid level control on all effects enables each one to operate at maximum efficiency. Low levels decrease the available heat transfer surface, while high levels cause excessive hydrostatic pressure in the lower portion of the liquid, resulting in boiling starting too far up the body tube, said Mr. Barber.

Recording spectrophotometer, shown by Beckman Instruments, automatically runs more samples in an hour than an operator could handle in a day with conventional equipment, according to company

Industry

Carnation Centralizes Research In New California Laboratory

Unit under study flakes and cooks cereals in one short operation

CARNATION CO., which moved its headquarters to Los Angeles in 1949, formally opened its new research facilities in nearby Van Nuys, Oct. 8. The new lab, costing about $750,000 and containing 31,000 square feet of floor space, consolidates in one place the research operations Carnation previously carried on in Milwaukee and Oconomowoc, Wis., and Oakland, Calif.

The new laboratory consists of six laboratory rooms (for engineering, cereals, bacteriological, biological, processing, and analytical work) plus pilot plant space for "wet" (milk) and "dry" (cereal) product processing. Carnation, like most of the food industry, is not neglecting short time, high temperature processing. An experimental Martin aseptic canning unit has a prominent place in the "wet" pilot plant. In the "dry" pilot plant room, a unit Carnation has dubbed a flame flaker is being used to investigate the high-short possibilities for processing the so-called instant cereal preparations. This unit, which is a typical cereal industry flaker, has its rolls heated by direct application of gas flames. It thus flakes and cooks a cereal within a matter of seconds and is expected to eliminate the present two-step operation of coldroll flaking followed by cooking.

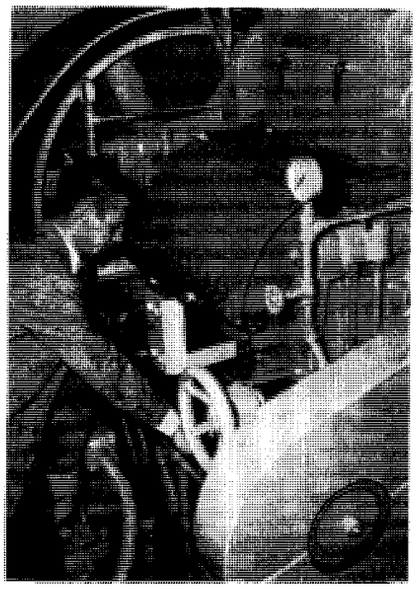
Carnation, like most companies, is mum about the specific products or processes it will work on in the new lab. However, Phillip K. Bates, Carnation general manager of research and president-elect of the Institute of Food Technologists, points out the following as being among the challenges facing his company and others in the field:

Special Diets for the Aged. Canned baby foods, unknown in the not too distant past, are now an established consumer item, and they serve a large and

expanding market. Virtually untouched, however, is the market for similar products for the country's elder citizens. Each year their number is increasing, and research directed toward their special needs must be undertaken.

Morning Malnutrition. Nutritionists now know that the body stores essential food elements for only a few hours. Therefore, a diet of vitamins and minerals for breakfast, for instance, followed by carbohydrates for lunch, and proteins for dinner would be virtually useless. Each meal needs to be a combination of these essentials if proper nutrition is to be achieved. An especially serious problem as a balanced meal is breakfast—coffee and toast and a flying dash to catch the morning bus do not lead to a healthful existence. The challenge to Carnation and others—a breakfast preparation which can be fixed easily and rapidly, which is palatable, and which covers the nutrition waterfront.

With its new facilities ready to "work," Carnation is expanding its staff at Van Nuys, under Research Director E. B. Oberg, from its present 30.



Phillip Sautier, Carnation director of engineering research, demonstrates the "flame flaker," unit being studied as possibility for flaking and cooking cereals in one short operation

Delegates to ACP international convention representing 54 countries included Richard K. Tam, Hawaii, (left) and Fumio Watanabe, Japan, (right) who were accompanied on a tour of the American Chemical Paint Co. experimental farm by Leon Cherksey, president of the firm

Doing the honors in ribbon untying at the opening of Carnation's research laboratories are John Irwin, deputy major of Los Angeles; E. H. Stuart, Carnation president; L. A. DuBridge, CalTech; and W. C. Cross, Carnation vice president

American Chemical Paint Entertains Foreign Guests

Fifty-four foreign guests, representing chemical manufacturers of most of the free world's countries, were entertained by American Chemical Paint Co. late last month. Delegates were from companies who operate on American Chemical Paint's trade-marks and know-how contracts.

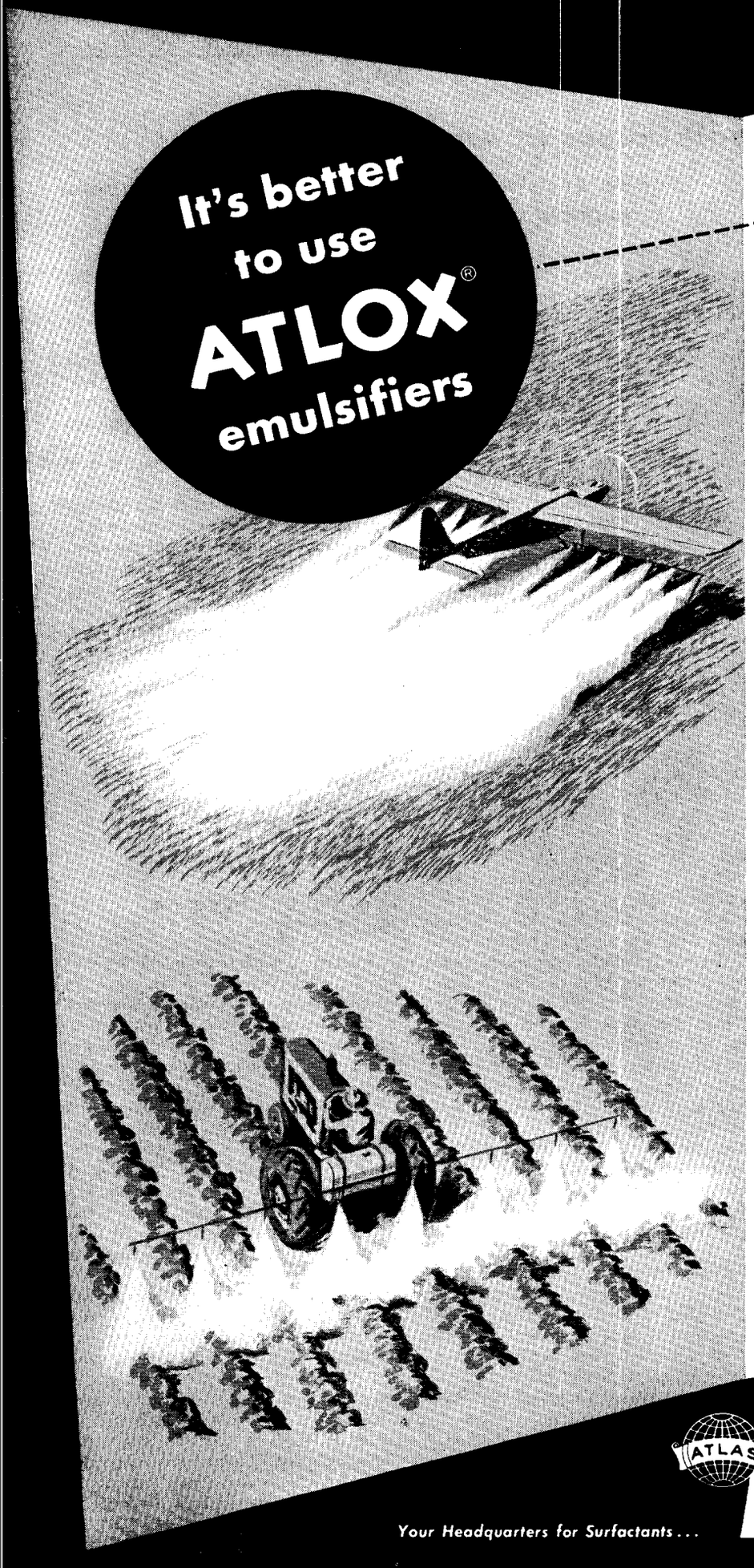
The guests attended a week-long schedule of business and scientific sessions on metalworking and agricultural chemicals. Those interested in agricultural chemicals toured the company's new research farm at Ambler, Pa., where weeds are cultivated for test purposes with the company's herbicides, such as 2,4-D.

During the early part of the week, the program for agricultural chemical delegates was held in Ambler, with much of the scientific sessions devoted to talks on manufacture and use of herbicidal chemicals. A large part of the program was on market research and development, sales, and advertising.

Late in the week, delegates journeyed to Washington, D. C., for conferences with government officials and tour of the USDA's experimental station at Beltsville, Md.

Neville Changes Name

The Neville Co. has announced the change of its name to Neville Chemical Co. to reflect more accurately the nature of their company and its products. Neville has plants at Neville Island, Pa., and Anaheim, Calif., where it manufactures a range of chemicals, including coal



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Ansul to Begin Operation Of New Pyridine Plant

Ansul Chemical has scheduled Nov. 1 as the first day of production for its synthetic pyridine plant at Marinette, Wis. Among the products will be refined pyridine, α-picoline, γ-picoline, 2-methyl-5-ethyl pyridine, β-collidine, and a mixture of alkyl pyridine higher boilers.

Chief market for the pyridines is expected to be in the pharmaceutical industry, but other uses for the products are expected in insecticides, solvents, dyes and plastics.

Family Testing Panel Organized in Ohio

A family product testing panel has been organized in Columbus, Ohio, by Research Associates, 1513 High St., Columbus. The panel is composed of 500 families divided into three income groups for a complete cross section of Columbus population. According to Ernest L. Little, president, the families will test in their homes free samples of new products and report their finding on the value of the products, make suggestions for improvement, and note whether they would purchase the product if placed on sale. Products to be tested include any product used in the home. Several new food products are to be tested by the panel soon.

On The Cover

Browning a Complex Chemical Reaction

The production of a tempting loaf of bread demands a rich brown crust. Brown crust is so old and bread so basic that it never is thought of as a complicated product. But, during recent years the brown color, not only in bread where it is desirable, but in other foods where it is almost ruinous, has provided a very complex problem for the food research chemist.

Browning produces many a headache to the fruit packer or vegetable canner. With the development of food dehydration on a large scale it became especially important and drew a great deal of attention. In this issue, John Hodge (page 928) summarizes the great mass of research which has been done on the subject and presents some correlations and conclusions on this phenomenon so dear to the baker and coffee roaster but so little loved by many other food processors.

Photo Courtesy General Baking Co.

Government

Craft Unions at American Potash?

NLRB decision may have important implications throughout chemical industry

THE QUESTION of craft severance for unions in the chemical industry may be decided as a result of hearings which were conducted Oct. 7 in Washington.

The hearings before the National Labor Relations Board resulted from petitions of three separate unions for craft severance from the industry-wide union at the American Potash and Chemical Co. plant at Trona, Calif.

The NLRB, however, asked for the hearings to consider the whole question of severance of craft units from industry unions. The NLRB called representatives of labor and industry to present arguments to determine if the board should change its present policy on craft severance. Specifically the board asked for a discussion of the relative importance of a long history of stable labor relations under single industry-wide units and how this history should affect petitions for recognition of craft units desiring to be split off from the industry units. Another basic principle discussed was the importance of the integration within basic industries and how important this should be as a factor in deciding questions of craft severance.

The Manufacturing Chemists' Association, representing the major basic chemical producers, submitted evidence and argument contending that the high degree of integration in the basic chemical processing industry requires that single industry-wide bargaining unions be maintained. The MCA also pointed out that plant wide units are the most prevalent system of organization in the chemical industry and these units have been an important factor in the history of stable industrial relations for the industry.

The case which is considered to be of vital importance to the question of craft *vs.* industry units is concerned specifically with petitions filed by The International Union of Operating Engineers, AF of L, The International Brotherhood of Electrical Workers AF of L, and International Association of Machinists. These unions are seeking recognition as bargaining agents for their potential members who are employed by American Potash in its huge Trona, Calif., plant.

Previously American Potash has bargained with the United Mine Workers, District 50, representing all the Trona workers. Recently, however, there has been a movement for craft severance, and the company opposes them as being inappropriate for bargaining purposes.

NLRB has previously denied craft severance of unions in cases involving highly integrated industries such as aluminum refining, timber, and wet milling. In these cases the board found that production and maintenance workers were so interdependent for the production process that stability of the production process would be harmed if multiple unions were involved.

American Potash argues that in their process there is an even greater interdependence of maintenance and production workers. Unions which are seeking representation represent maintenance workers at Trona. As in many other continuous process plants the Trona maintenance workers are actually assigned to manufacturing units. Rather than a single maintenance organization, the maintenance people work in the production units alongside production people.

The company and the present industry union at Trona contend that craft severance in this case would not contribute to harmony of industrial relations, and it would be further inappropriate because the groups which seek severance do not constitute a craft group.

Red Tide Still Threatens Gulf Fishing

A recent outbreak of the "red tide" off the west coast of Florida seems to have temporarily subsided. The red tide is the popular name given to a discoloration of the sea water caused by a great increase in the microorganism *Gymnodimium brevis*. The amber-colored or red water causes a widespread death of fish and other marine animals which are subsequently thrown up on the beaches in great numbers. The loss to commercial fishing of these outbreaks cannot be estimated. The most recent outbreak, in 1946, was, however, regarded as a disaster to the commercial and sport fishing industries.

Last month there were reports that the red tide had been reported off the Florida coast. The stormy weather associated with the recent hurricane broke up the concentrations of the plankton before the bloom could become widespread. At present the threat seems to be fairly quiet although the U. S. Fish and Wildlife Service and the Board of Conservation of the State of Florida seem to be concerned about the possibility of a new outbreak.