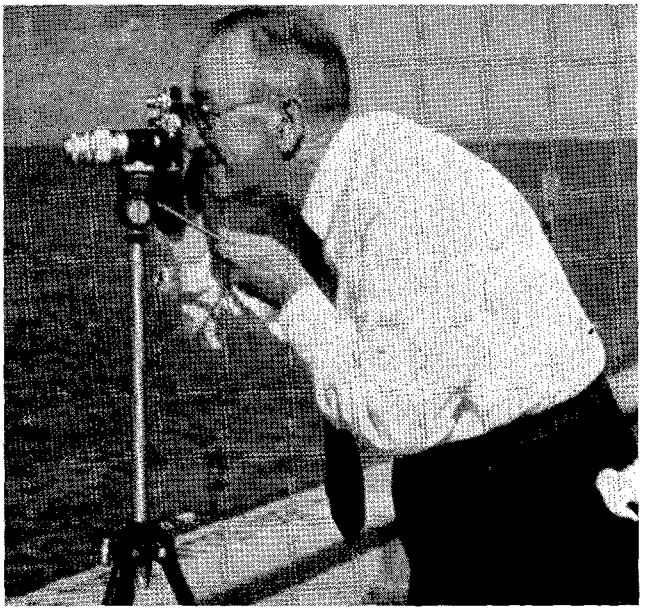
• *Hobby Department*

J. J. Ganucheau of New Orleans, La., is widely known on two fronts. One of these is the professional, for he is district chemist of the Wesson Oil and Snowdrift Company, Gretna, La. The other is the amateur, for he is a prize-winning photographer.



For his achievements in the Society since 1918 he has been appointed to such committees as crude mill operations, refining, advertising, soap in refined oils, uniform methods, and soapstock. He was elected third vice president in 1936, second vice president in 1942. He also served on the Governing Board from 1954 to 1957.

Honors in the photographic field are equally numerous, although covering only the past 10 years. He has a completely equipped dark room, does his own developing and printing in black and white, and makes dye transfer color prints. His prints and color slides have been exhibited throughout the United States, and he has earned the "Two-Star Exhibitor" award from the Photographic Society of America.

"Jimmie" won "Best Print" in the Louisiana Art Commission Show in Baton Rouge and the Grand Prize in the Orleans Camera Club. He has acted as salon judge for several international color slide shows in Texas, Louisiana, and Mississippi. He is president of the Orleans Camera Club, former president of the Gulf States Camera Club Council, and district representative for PSA in Louisiana.

• *Received in the Journal Office*

The 328-page 1959 issue of Seifen Industrie Kalender is available from Verlag und Anzeigenannagme: Delius, Klasing and Company, Berlin W. 35, Schoneberger Ufer 59, Germany.

Glossario de Plantas Oleaginosas e Ceriferas. II. *Euforbiaceas,* by Jacy Bondar Nogueira and Paul Dodsworth Machado, is a 156-page book giving the common names, description, and places where plants of the *Euphorbiaceae* family are found. The volume is published by Instituto de Oleos, Av. Maracana 252, Rio de Janeiro, Brazil.

Neuzeitliche Wachs-Forschung, an 88-page journal published by Fette-Seifen- Anstrichmittel, Industrieverlag Von Hernhaussen KG, Munster, Germany contains 17 technical chapters.

The Bulletin of Japan Society of Mechanical Engineers, an 85-page book containing 14 technical papers, is published by the Society in the Marunouchi bldg. 2, 2-chome Marunouchi, Chiyodaku, Tokyo Metropolis, Japan.

A 16-page illustrated manual entitled "Color in Relation to Illumination Levels" has been prepared for the American-Marietta Company, Chicago, Ill., by Walter C. Granville, president of the Inter-Society Color Council.

Einfuhrung in die Ultrarotspektroskopie, by Werner Brugel, a 377-page bound volume, is divided into four major sections entitled "Grundzuge der Theorie der ultraroten Spektren in Gaszustand," "Apparatove Ausrustung und Praparative Technik der Ultrarotspektroskopie," "Methoden der Praktischen Ultrarotspektrodkopie," and "Ergebnisse und Anwendungen." The Publisher is Verlag Von Dr. Dietrick Steinkepff, (16) Damstadt, Gotzhofallee 35, Germany, and the price is DM 52, bound.

The ETA Project No. 19 of the Escritorio Technico de Agricultura, Brazil, is entitled "Survey of the Vegetable Oil Industry in *Poligono das Secas*" and has been compiled by Klare S. Markley in a 100-page mimeographed bound volume. It was published in October 1958 and is available from the International Cooperation Administration, Point IV, Rio de Janeiro, Brazil.

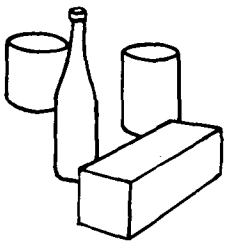
Lehrbuch der Organischen Chemie, by Friedrich Klages, a 717-page book containing 29 technical chapters, is published by Walter de Gruyter and Company, Genthiner Strasse 13, Berlin W 35, Germany, and costs DM 104.

The Organization for European Economic Cooperation, 2 Rue Andre-Pascal, Paris 16, France, has published a 203-page book entitled "The Chemical Industry in Europe." The text is divided into four parts: General Trends in the Chemical Industry in 1957 and During the First Six Months of 1958; The Situation of the Chemical Industry in Member Countries and the United States in 1957 and the First Six Months of 1958; Sector Studies; and Statistical Annexes. The volume is available for $2.50.

The Story of Nature's Yellow

WHY IS COLOR SO IMPORTANT?

Colors call to your appetite. You pick the big, red, beautiful apple and every bite seems to taste better because it's so nicely red. The good, thick steak looks crusty brown, and the center's a wonderful pink.



Some foods are naturally attractive. Some must be made so. Butter and margarine must be a good yellow for widest appeal. Gelatin desserts, children's lollipops and hard candy, soft drinks, ice cream, and many other foods must be colored for consumer acceptance. Man so often must help nature out!

Making foods look better, making them taste better, making them nutritionally more valuable are practices everyone accepts and expects. Food processors can now add pure beta carotene Roche* to give natural yellow color, plus vitamin A value, to their good foods.

WORDS AND MEANINGS

Carotene (sometimes spelled *carotin*) is the root word. It designates a color compound which occurs naturally in some vegetables and fruit.

Carotenoid describes a family of color compounds, found widely distributed in nature, which gives many flowers, fruits, leaves, and vegetables their characteristic color. The ending "oid" is the way chemists say: "like carotene." All carotenoids are similar, chemically, to beta carotene which is the most important and widely distributed member of the carotenoid family.

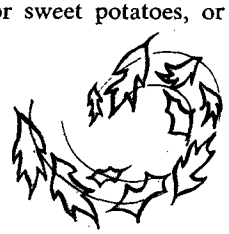
Beta Carotene. The Greek-letter prefix is used to distinguish this compound from *alpha* and *gamma* carotene — compounds which have somewhat similar chemical structure but are not nearly so important in human nutrition.

Provitamins describe substances which are changed in the body into vitamins. Beta carotene is a provitamin; the body converts it into vitamin A which we all need for good health.

*Roche — Reg. U. S. Pat. Off.

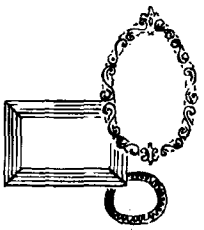
CAROTENE IS NO STRANGER

Carotene is as common as carrots, or sweet potatoes, or green leaves, or the natural yellow of butter. Carotene is the pigment which makes carrots, *carrot-colored.* Carotene and other carotenoids, with chlorophyll, are present in the green leaves of plants. Vivid proof of this is seen when tree leaves turn yellow in the fall.



A LARGE FAMILY WITH MANY RELATIONS

Nature has many pigments: the delicious red of a ripe strawberry, the many shades of green in leaves, the blue of cornflowers, the lavender of lilacs, the differing browns of bark, the bright yellow of daffodils, the darker yellow of plump pumpkins.



All of the carotenoid colors have somewhat the same chemical structure. As their chemistry varies, so do their properties. Different carotenoids may exist side by side, as in some tomato species which contain beta carotene and lycopene, the so-called tomato red.

No one knows exactly how many carotenoids there are in nature. Some authorities believe there may be as many as 200.

Of all the carotenoids now known, beta carotene is the most useful for human beings, because of its value as a provitamin A. Not all carotenoids are provitamins. Alpha carotene, gamma carotene, cryptoxanthin (found in yellow corn) and some less well-known compounds have this property to only a limited extent.

BETA CAROTENE DESCRIBED

In pure form, beta carotene is deep violet-red in color; in dilutions its color is yellow. The crystals are flat platelets in form. The pure product has very powerful coloring properties. For example, three grams of the pure crystals, enough to cover an American quarter-dollar, will color a half-ton of margarine to the accepted yellow color.

Beta carotene is soluble in various oils, vegetable oils being preferred for food use. It is insoluble in water.

In the solutions customarily used in food processing, beta carotene Roche has practically no odor or taste, nor does it impart any odor or taste to the foods with which it is mixed.

Only a minute amount of crystalline beta carotene is needed for coloring. To simplify measurement for food processors, Roche has made suspensions of its finely ground crystals in vegetable oil. These are standardized, so that products with uniform color will result when they are used.

BETA CAROTENE IS A SAFE COLOR

Beta carotene is one of nature's own coloring agents. It has been consumed in food for thousands upon thousands of years. Even with this evidence of safety in usage, Hoffmann-La Roche did not market its man-made duplicate of nature's product until careful studies showed that this substance produced no undesirable effects in test animals. These and other tests indicate that beta carotene produced by the Roche process is safe and desirable for use in foods.

. . . BETA CAROTENE

by SCIENCE WRITER

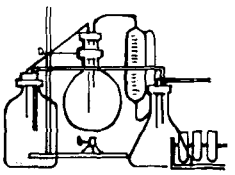
A CAPSULE HISTORY

In 1831, Wackenroder, curious to know what caused the characteristic color of carrots, isolated carotene from the roots of that vegetable. Based on his observation, Willstätter established carotene's empirical formula in 1906.

In 1919 the vitamin A activity of the carotenoids was discovered by Steenbock.

Between 1928 and 1930, Zechmeister, Karrer, and Kuhn established the constitution of carotene and assigned its structural formula.

In 1953, the successful synthesis of beta carotene was made by Hoffmann-La Roche whose chemists *duplicated* nature's own color in the laboratory. Commercial production followed within a year.



Carotene has been used by food processors in the United States for many years. Natural extracts have been made from carrots, palm oil, alfalfa, and other sources for more than 25 years. None of these natural extracts, however, has the purity of the man-made substance produced by Hoffmann-La Roche.

FOODS USING BETA CAROTENE

Beta carotene Roche is now used every day as a safe, natural, yellow coloring agent for such foods as:

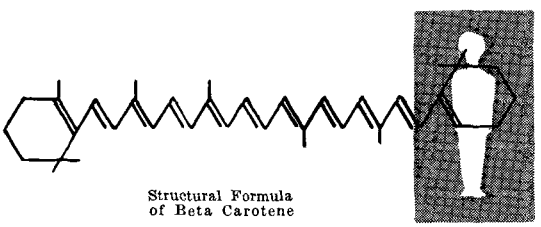
Margarine	**Salad and Cooking Oils**
Shortening	**Confections**
Lard	**Yellow Baked Products**
Butter	**Beverages**
Cheese	**Ice Cream**

It is capable of being used in almost any processed food. Developments at Hoffmann-La Roche have made it available for use in fatty foods and in special water-dispersible form for other foods.

An acceptable coloring in the U.S.A. since 1947, beta carotene has also received official sanction in Austria, Australia, Denmark, Finland, Brazil, Germany, Great Britain, The Netherlands, Norway, and Switzerland.

NUTRITIONAL VALUE

Beta carotene is a provitamin; it is converted into vitamin A in the healthy human body.



Structural Formula of Beta Carotene

Its biological activity is measured in units of vitamin A activity. One gram of beta carotene equals 1,666,700 U.S.P. units of vitamin A, while a gram of vitamin A (alcohol) equals 3,333,300 U.S.P. units. One U.S.P. unit is equal to 0.344 micrograms of vitamin A acetate.

We need vitamin A to guard the health of our eyes and our skin, membranes, and other specialized tissues. It helps build our resistance to infections. Vitamin A is needed for normal growth from infancy to maturity.

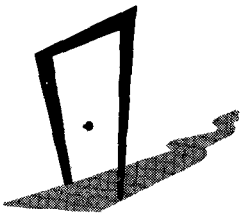
Beta carotene Roche is more than just another efficient food color. As it is so intimately associated with vitamin A, it comes close to being an essential substance in itself.

Of the six provitamins A known to exist in nature, beta carotene is the most widely distributed, the most potent in vitamin A activity, and the most readily available.

The Food and Nutrition Board of the National Research Council recommends that healthy adults in the U.S.A. receive 5,000 U.S.P. units of vitamin A daily in their diets. The requirements for pregnancy, for infants and children, vary above and below this amount.

OPENING ANOTHER DOOR TO THE FUTURE

The successful synthesis of vitamin A by Roche scientists led to the synthesis of beta carotene. The latter synthesis will no doubt lead to the manufacture of other carotenoids. Right now, work is being done on "duplicating" lycopene, the dominant red of tomatoes, and on cryptoxanthin, a yellow color found in corn. The development of pure beta carotene Roche is really only a beginning, not an ending.



SOME NEW WORDS ON FOOD PACKAGES

The identifying words: "artificially colored with beta carotene" on the labels of margarine, yellow shortening, yellow cake mixes, and various other food products signify that the manufacturer has used a safe yellow color which was conceived by nature itself for coloring foods and adding to their nutritional value.

HELP FOR YOU

Reprints of this article are available in reasonable quantities as a teaching aid or for public education. For food processors the Roche technical brochure is available. Those interested specifically in the scientific study of beta carotene will find published material from Roche most helpful. In making your request, please specify the type of information you want. There is no charge, of course.

Please address all requests to Vitamin Division, Department of Education, Hoffmann-La Roche Inc., Nutley 10, N. J. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q.

• *Industry Items*

General Mills recently purchased a half interest in the Nebraska safflower processing plant of the Pacific Vegetable Oil Corporation, Sidney, Neb. This will provide General Mills with facilities to begin immediate production of safflower oil and meal from the current crop of safflower.

Johnson's Wax announces a plan to enter the specialty chemicals field as a basic supplier of diphenolic acid, DPA, which has potential uses as a raw material and additive for polymers and coating compositions, also for plasticizers, lubrication agents, oxidation-corrosion inhibitors, and cosmetics.

Woburn Chemical Corporation, 1200 Harrison avenue, Harrison, N.J., producer of specification fatty acids, synthetic drying oils, and other organic chemicals, announces completion of the expansion of their existing hydrogenation facilities.

The organization of a new affiliate company, Blaw-Knox Chemical Engineering Company Ltd., London, England, to meet the overseas demand for the company's consultation, design, engineering, and construction services, is announced by the Blaw-Knox Company, Pittsburgh, Pa.

Tantalum, which is resistant to all acids except hydrofluoric and is particularly desirable at elevated temperatures, is in use as a liner for reactors, according to The Pfaudler Co., division of Pfaudler Permutit Inc., Rochester, N.Y., and Haynes Stellite Company, division of Union Carbide Corporation, Kokomo, Ind.

A new fellowship to further research in cereal chemistry, established by the Ogilvie Flour Mills Company and administered by The Chemical Institute of Canada, is open to graduates in chemistry, biochemistry, or chemical engineering from a Canadian university, who are proceeding to a master's or doctor's degree in these fields at a Canadian university or at an institution which is accredited for postgraduate work. It is valued at $2,200 per annum for two years.

President G. R. Bryant of Jefferson Chemical Company Inc., has announced the completion of a new ethylene plant at Port Neches, Tex., first of several units to be built in the present expansion program.

The Glidden Company, Cleveland, O., announces that "The Glidden Company Lectures in Chemistry" will be continued in 1959 and will be presented at Johns Hopkins University, University of Illinois, University of Michigan, University of Minnesota, University of Florida, Case Institute of Technology, and the University of Toronto.

Chemetron Corporation announcers the formation of a new division, the Cardox Division, as the result of its acquisition of the Cardox Corporation's carbon dioxide division, chlorine division, and fire equipment division.

A newly designed differential thermal analyzer for measuring catalyst activity has been installed in the Girdler Catalysts laboratories of the Chemetron Corporation in Louisville, Ky.

The Fisher Scientific Company announces the development of a disposable, heavy-duty, polyethylene bag inside a 5-gal. drum to replace glass carboys in the transporting of a variety of solvents, chemicals, and solutions.

Girdler Construction Division of Chemetron Corporation, Louisville, Ky., has announced an agreement to act as sole North American agent for chemical processes developed and owned by the German engineering firm of Josef Meissner, Cologne, Germany.

The Harshaw Chemical Company, Cleveland, O., is the producer and marketer of the "Sun Yellows," a new yellow paint that retains its yellowness through years of outdoor exposure by use of nickel as pigment.

A low-molecular-weight type of Polyvinylpyrrolidone, PVP K-15, is now commercially available through the Antara Chemicals Division of General Aniline and Film Corporation, New York, N.Y. It acts as a loose color scavenger to prevent color migration from one fabric to

another during laundering and has considerable potential as a protective colloid for pigments used in paints and inks.

The North American Car Corporation, Chicago, Ill., recently entered the chemical and tank-farm storage field through acquisition of the Alexander Chemical Corporation of Chicago.

The Wyandotte, Mich., plant of the Archer-Daniels-Midland Company of Minneapolis is now producing amides under the trade name of Adogen, including coco, hydrogenated tallow, stearyl, erucyl, and oleyl amides.

Emery Industries, Cincinnati, O., has entered the epoxy-type of plasticizer field with the introduction of three epoxy plasticizers to its line, Plastolein 9058 DOZ, Plastolein 9078 ST Plasticizer, and Plastolein 9720 Polymeric.

Equipamentos Industrias EISA Ltda., Sao Paulo, Brazil, has recently concluded arrangements with the Hercules Filter Corporation, Newark, N. J., for the manufacture and sale of Hercules Pressure Leaf Filters in Brazil.

Foster D. Snell Inc., Chicago, Ill., the official testing laboratory for the Maple Flooring Manufacturers Association, announces the completion of a program for testing samples of finishes for maple, beech, and birch floors for conformance to the MFMA Specifications of September 1, 1958. Lists of the approved products may be obtained by writing the Maple Flooring Manufacturers Association, 35 East Wacker drive, Chicago 1, Ill.

The Geigy Chemical Company, Box 430, Yonkers, N.Y., will be host to the New York Chapter of the Society of Cosmetic Chemists at a May 6, 1959, meeting of the Society.

Two technical commissions of the Comité International de la Detergence, the International Commission on Terminology, and the International Commission on Methods of Analysis met in January, 1959, in Paris, France.

Buckeye Cellulose Corporation, Memphis, Tenn., has announced the development of a method for faster, safer, more accurate estimation of tall oil in kraft black liquor.

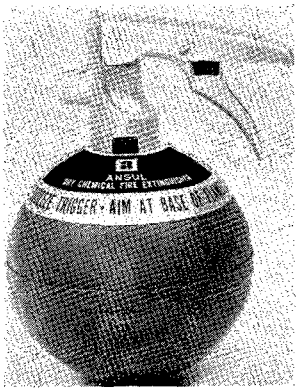
At an initial meeting held recently in Houston, Tex., the Heat Transfer Engineers Society elected the following officers: Bill Baker, Lummus Company, president; Fil Powell, Wolverine Tube Company, vice president, program; Wright Wilson, Coynco, vice president, membership; Leroy Swift, Alco Products, secretary; Dick Pritchard, A. O. Smith Corporation, treasurer.

The Inter-Society Color Council announces the publication of an illustrated version of Circular 553, to be finished by July 1959 and to sell for $500 per set to individuals, member bodies, or commercial groups and companies that may wish to evaluate or use them within their own organization in their color research. They will be available from Mr. Norman Macbeth, Inter-Society Color Council, Box 950, Newburgh, N.Y.

Bulletin No. 18, "Tall Oil in Industry," published by the Tall Oil Products Division, Pulp Chemicals Association, 122 E. 42nd street, New York 17, N.Y., includes such sections as Syndets Market, Syndet Types, Ionics, Nonionics, Syndet Materials, Syndet Products, Polyoxyethylenes, Esters, Alcohols, Sulfates, and Sulfonates and Amines and Amides.

The Eighth Cottonseed Processing Clinic, sponsored by the Valley Oilseed Processors Association and the Southern Utilization Research and Development Division of the U.S.D.A., met February 16–17 at the Southern Regional Research Laboratory, New Orleans, La.

Model HR, a new type of diatomite filter that combines the cake stability of a horizontal plate with dry-cake automatic discharge has been made available by the Sparkler Manufacturing Company, Mundelein, Ill.



Ansul Chemical Company, Marinette, Wis., has developed a new fire extinguisher, the Monitor, which features a spherical design and disposable cartridge. After use the "ball" is thrown away, and a new cartridge (inspected and labelled by Underwriters' Laboratories) is installed. Light-weight and efficient, the Ansul Monitor is designed to replace toxic, vaporizing liquid extinguishers.

Schedule Three Conferences

The Gordon Research Conferences for 1959 will be held from June 15 to September 4 at Colby Junior College, New London, N.H.; New Hampton School, New Hampton, N.H.; and Kimball Union Academy, Meriden, N.H., according to the director, W. George Parks, Department of Chemistry, University of Rhode Island, Kingston, R.I.

The conference on lipide metabolism will be held June 15–19 at Kimball Union Academy with D. B. Zilversmit as chairman and C. R. Treadwell as vice chairman. Topics will be blood coagulation, metabolism of adipose tissue, role of lipides in enzyme activity, and mechanisms of fat transport.

The conferences were established to stimulate research in universities, research foundations, and industrial laboratories. Applicants are screened by the Conference Committee, and registration is limited to 100 individuals. The fee is $100, covering registration, room, and meals.

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Pfizer pure Vitamin A is available in bulk quantities or batch-size cans in any one of these convenient formulations:

- ***Vitamin A Acetate or Palmitate*—dissolved in refined winterized cottonseed or corn oil (no color added).**
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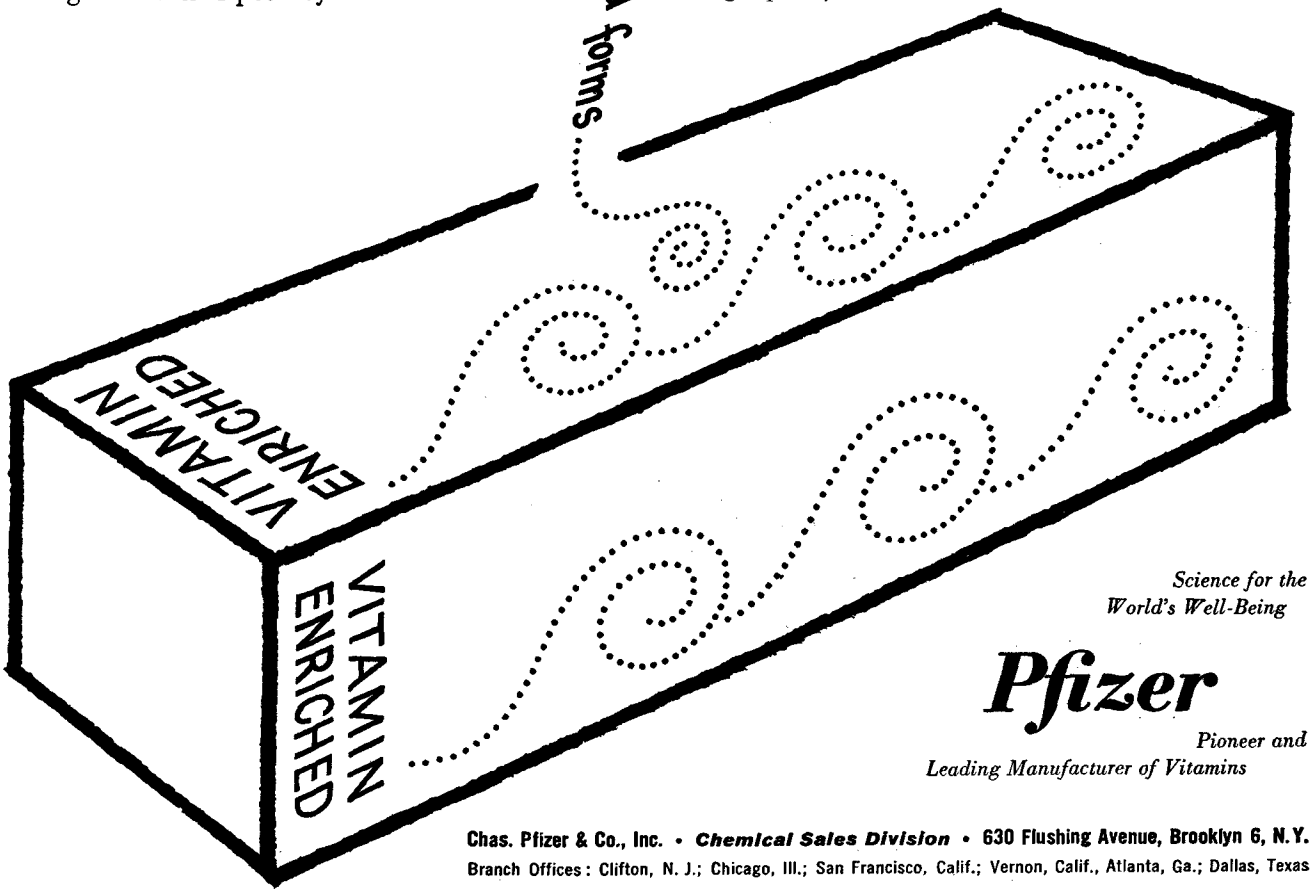
The various combinations of Pfizer vitamins and color products can be pre-blended to meet your specifications. When looking for vitamin products of uniform high quality in convenient forms—think of Pfizer first.



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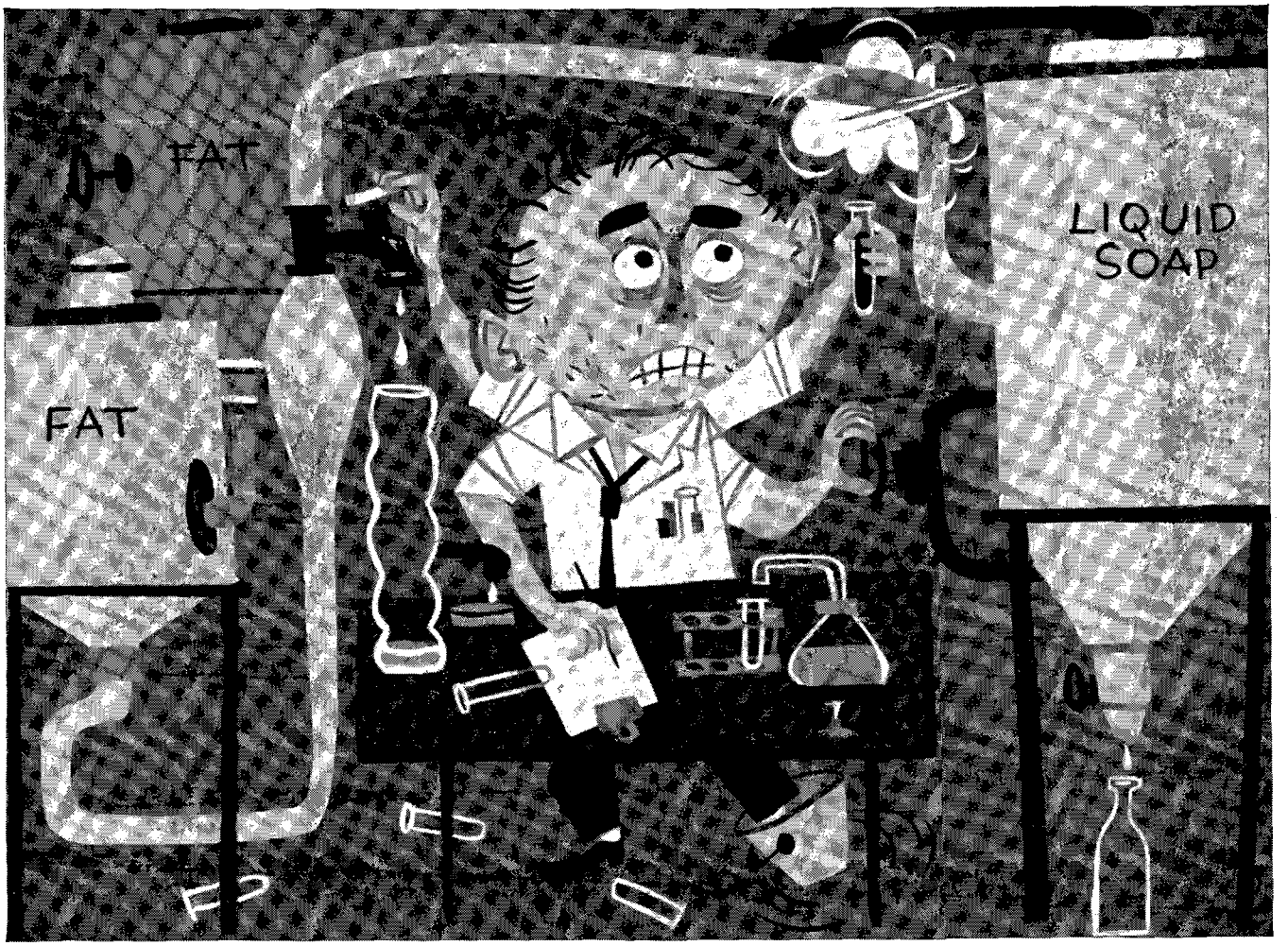

"If this is the only way we can keep our product uniform, we'd better switch to a fatty acid!"

More and more manufacturers are finding that fatty acids have important advantages over natural fats and oils for making a host of products: soaps and surfactants... textile finishes... cosmetics and toiletries... paints and plastics... lubricants... and numerous intermediates.

Although natural fats and oils may appear inexpensive on a raw material cost basis, the use of fatty acids can save a great deal of money... in equipment, in processing and in man-hours. Type for type, as compared to natural fats and oils, fatty acids are more reactive and permit faster and more complete saponification, esterification or other reactions.

Fatty acids are products of known composition and predictable behavior. They give maximum flexibility in the choice and ratio of fatty constituents. They have improved stability, because factors responsible for rancidity and decomposition have been removed.

Hidden Processing Costs Rule Out Fats and Oils. In the industrial soap field and in toiletries, the decision to saponify a fat or the corresponding acid may be an economic one, but many hidden costs of starting with the fat are frequently overlooked. The fatty acid yields savings in steam and labor, gives greater output per unit of equipment cost. It gives assurance of a uniformly good product, with the proper viscosity, odor and color characteristics. Greater flexibility in choosing fatty composition is possible, and products can be adapted to changing demands.

Controlled Composition Insures Product Acceptance. In many industries, fatty acids offer definite quality control advantages over fats and oils. For example, triple-pressed stearic acids like Groco 55L are produced with closely balanced physical and chemical properties which make these fatty acids invaluable in precise reactions. A case in point is esterification procedures. Such precision would be impossible with a natural fat.

Fast Reactions Make Equipment More Productive. In lube grease manufacture, fatty acids or their metallic soaps permit closer control and faster reaction during saponification than do fats and oils. Plant equipment can be used more productively. Better end products are possible. The use of oleic acids such as Groco 4, for example, with closely controlled titre, has done much to assure greases of uniform lubricating and bodying characteristics, greases which will not separate during long storage under extreme temperatures.

For more information on specification fatty acids for your consideration, send for the brochure "Fatty Acids in Modern Industry."

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