

History of Wesson Oil and Snowdrift Company Inc.

IN TWO YEARS the Wesson Oil and Snowdrift People will celebrate their Diamond Anniversary. Wesson preceded other shortening manufacturers by at least 10 years and has maintained its quality and leadership during all this time.

Though Wesson is wholly indigenous to the South, by some turn of fate it was founded in the cradle of the nation, Philadelphia, on March 5, 1887, with the following officers: Henry C. Butcher, president and director; Amos R. Little, vice president; and Alan H. Harris, secretary-treasurer. This corporation had a New Jersey charter and was known as The Southern Cotton Oil Company. It was to become an important factor in the cottonseed industry.

Some of the very early "crude" mills were built in Charlotte, S.C.; Columbia, S.C.; Savannah, Ga.; Memphis, Tenn.; Atlanta, Ga.; Little Rock, Ark.; Houston, Tex.; and Gretna, La.

The crushing mill is an agrarian utility, and Wesson has from the beginning been interested in the gathering of seed and the production of cottonseed oil. This is attested by the fact that at one time Wesson had as many as 400 gins and more than 70 crude mills in operation. Wesson, for many years, was the largest prime producer of cottonseed oil in the United States, producing between 12 and 14% of the entire crop and using about 20% of the entire cottonseed oil produced. With the present westward trend of cotton production this percentage has been reduced somewhat.

As time went along, Wesson lost its intimate connection with the soil and became more of a factory unit. This trend has been forcibly brought out by the significant decrease in number of gins, crude mills, and fertilizer mixing-plants and by their increase in size. Further to emphasize this trend to modern factory methods in crude mills, Wesson has built some of the finest solvent-extraction plants in the industry.

The refinery end of the business was started prior to 1895, with refineries at Savannah, Ga.; Bayonne, N.J.; and Gretna, La. In 1899 the company introduced an entirely new method of deodorization, the work of far-sighted David Wesson, chief chemist for Wesson and one of the founders of the American Oil Chemists' Society. This invention, which utilized vacuum and high temperature, was to revolutionize the oil industry. Previously cottonseed oil had been deodorized by heating the oil with a steam coil and blowing live steam through the oil at atmospheric pressure. The prejudice which had been built up against cottonseed oil that had been poorly deodorized was largely overcome by this new Wesson process.

IN 1902 the Virginia Carolina Chemical Company became interested in the Southern Cotton Oil Company for its fertilizer sideline and purchased it. The company continued to operate under the name of Southern Cotton Oil Company however with Samuel T. Morgan as president and L. W. Haskell as vice president. Later it went into the paint and roofing business

mainly to get rid of the residue left from the distillation of acidulated soapstock. This paint department, which started in 1907, exists today as Southport Paint Company Inc., a subsidiary of Wesson.

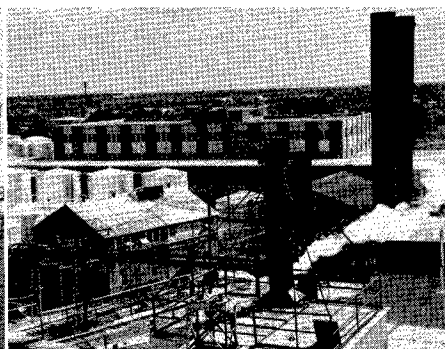
Besides cottonseed oil, the company handled tons of coconut which arrived from the Orient in five-gallon cans and some time later, after the invention of hydrogenation in 1909, imported soybean oil from China and partially hydrogenated it.

The Southern Cotton Oil Company could have weathered the financial break after World War I in good order. But Southern Cotton Oil Company's parent company, Virginia Carolina Chemical Company, caught in a credit squeeze extended to fertilizer distributors in boll-weevil-infested areas, was forced into receivership in 1924. It soon became apparent that Virginia Carolina could not be straightened out without cutting loose Southern Cotton Oil Company. Several companies and individuals dickered over the purchasing of Southern Cotton Oil Company. A. D. (Pat) Geoghegan, A. Q. Petersen, and a group of New Orleans bankers finally closed the deal for \$9,000,000, about 60% of which was New Orleans money. They organized a Louisiana corporation, The Southern Cotton Oil Company of Louisiana, on May 20, 1925. After about three months the name was changed to Wesson Oil and Snowdrift Co. Inc. Under new name and management the company prospered and in 1950 had a net profit about equal to its purchase price in 1924.

(Continued on page 8)



Refinery



View from Refinery



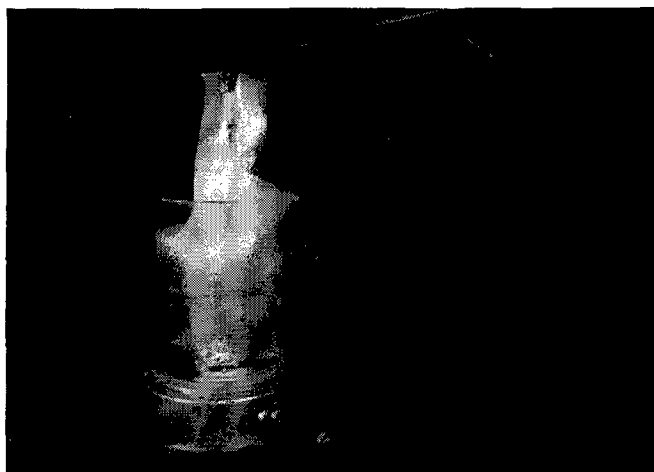
Filling Plant

• Report on Fats and Oils

Don't Fail to Read No. 367

THE FIRST full progress report on electronic oil-content testing of soybeans has been released by the U.S.D.A. The report provides considerable hope that an acceptable method is not far off. Further development may be slight refinements of existing equipment rather than a change in the direction of research. The equipment is not the theoretically desirable final answer, *i.e.*, usable at the country-elevator level, but perhaps that was asking too much. (This might still come some day.)

The development itself has been long awaited. The grade specifications on which beans are classified and purchased are perfectly adequate for grain but do not answer the problems of the processor. However beans grew up in the Midwest, traditionally a grain-growing area. Neither farmers nor country-elevator operators (indeed not even terminal-elevator operators) could be persuaded to think oilseed instead of grain. Had beans started up in the South, where cottonseed thinking is prevalent, or in the Southwest where the protein of wheat is always under consideration, all this might not be the great problem that it is. Actually the three cases are not the same. Much of the protein-wheat land is suitable only for wheat whereas beans must compete with corn, a solidly established crop. Since processors have almost always been worried about supplies, they could not press farmers too hard. In the cotton belt seed is viewed as an incidental by-product of the growing and ginning of lint cotton. This by-product status makes sellers less conscious of how prices are determined. Support programs have followed these trends. The bean loan is only interested in bushels, with no consideration given to product out-turn (which after all is basically what "quality" means or should mean). On the other hand, cottonseed support and purchase programs have long been basis-grade 100. The hard-wheat loan falls somewhere between these two.



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The Handi-Hot Plate costs only \$16 and is used by thousands of laboratories for all types of heating tasks where dependability counts. Here, you see it being used at The Paint Research Center of the Glidden Company to boil 60% NaOH in which chemical resistant film is being tested. The hot plate is a little battered by this tough wear but is still boiling merrily away.

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State-by-State Soybean Oil Yields for October,* 1955-1959

	1959%	1958%	1957%	1956%	1955%
Arkansas.....	16.4	NA	NA	NA	NA
Illinois.....	18.9	17.8	18.5	18.4	18.9
Indiana.....	18.6	17.2	18.0	17.8	17.5
Iowa.....	18.0	17.4	18.2	18.8	18.6
Minnesota.....	18.3	17.2	15.6	17.2	18.0
Mississippi.....	17.9	NA	NA	NA	NA
Missouri.....	NA	NA	NA	NA	NA
Kentucky.....	NA	NA	NA	NA	17.9
Ohio.....	18.7	16.7	17.6	17.7	18.2
Tennessee.....	17.8	NA	NA	NA	NA
Other.....	18.2	17.9	18.8	17.7	17.5

* October was chosen to try to reduce bias from movements of beans across state lines. This should be less early in the season.

Some monetary consideration is given to protein but much less than is commercial practice.

It is difficult to predict what the attitude of the farmer will be toward inclusion of oil content as a grading factor. Chances are that, if it is clearly and intelligently explained, enough farmers will not oppose the plan so that it will be in danger. The farmer who is willing and able to grow for quality will receive his due, largely at the expense of the man who cannot or will not.

As will be noted from the table, yields of oil vary greatly, not only year-to-year but state-to-state within the same month. Year-to-year differences show similarities but are far from dead parallel. These are state totals, in effect huge averages. These averages almost certainly mask actual variations that are much larger. Using the current price difference of 5¢ a pound between oil and meal, it is obvious that a 4% oil yield variation on a 60-lb. bushel will change the net return of 12¢ a bushel. From an economic standpoint this difference has probably been passed back and forth between crusher and farmer depending on the year. Maybe in the long run they are even. However the quality producer is probably still behind, and the junk producer is probably ahead.

One very important attraction of grading for oil would be the resulting encouragement given to genetic research on the soybean plant along oil lines instead of along bushel lines, which are presently the controlling factor. Perhaps inclusion of an oil specification on class will result eventually in development of a nitrogen specification. This would put both quality factors out in the open. This is not to say that the crusher does not exercise some control now. He does. When he buys country-run beans, he buys them as much as possible from areas where he has bought before and knows the oil content history, good or bad. The terminal-elevator operator is in a different position. He handles his space, his merchandising, and his billing differently from the way the crusher does. As a result, the crusher must take pot-luck from the terminal, and economics dictates that terminal beans must be an important source of supply. Terminal operations could be greatly affected.

An oil specification could improve our export position. Overseas buyers view U. S. grades and grading with some suspicion. This would be just one more way to tighten up our grades so that buyers everywhere would know more exactly what they are getting.

JAMES E. McHALE, Merrill Lynch, Pierce, Fenner, and Smith Inc., Chicago, Ill.

Production Falls

Production of fatty acids in November 1959 totaled 38.9 million lbs., down in comparison with the record October output of 47.6 million lbs. but up from the 37.0 million lbs. reported for November 1958. The major decrease from October occurred in tall oil fatty acids.

November disposition was 41.8 million lbs. as against 45.3 million lbs. in October and 40.0 million lbs. in November 1958.

Finished goods inventories amounted to 36.9 million lbs., down 1.0 million lbs. from October. Work-in-process stocks fell about 2.7 million lbs. from October.

• Hobby Department

GARDENING AND GENEALOGY are the avocations of Reid T. Milner, head of food technology at the University of Illinois, Urbana. Perhaps his interest in both these hobbies can be traced to his birth and early years on a farm in that interesting and historic section of southern Illinois known as "Egypt."

His urge to grow things was repressed during the years he spent as a child in Chicago, was educated, and held his first jobs; but when he first had a house of his own, a vegetable garden appeared at once. Dr. Milner has developed his tastes past the point of quantity production (after Mrs.



Milner pointed out that the labor of preserving vegetables was greater than that of growing them), and in recent years he has concentrated on tomatoes, the vegetable type of soybeans, Cocozell squash, and Bibb lettuce, all of which are consumed direct from the garden.

An enthusiast for green vegetable soybeans, Dr. Milner has introduced this delectable legume to many of his friends who hitherto had known soybeans only as a source of oil and high protein meal. He says, "not only are green soybeans better than baby green limas, but the Mexican bean beetle doesn't touch them."

His only contribution to gardening appliances has been the development of a sturdy, durable, tomato-vine frame, home-made from galvanized wire clothes line, pieces of copper tubing, and 1 x 1 x 42-in. wood stakes. These frames support the vines most successfully and can be collapsed and stacked easily for winter storage. They have been copied by many of his friends.

For many years, while living in Peoria, Ill., and working at the Northern Regional Research Laboratory, U.S.D.A., he had a large perennial flower border, but in his present smaller space he has only a few flowers. Much of his effort is devoted to the lawn, where the fight against the heat and drought of central Illinois summers and crab-grass, dandelions, chickweed, and fungi offer a continual challenge.

GENEALOGY, in contrast to gardening, provides a year-round interest, one that has involved study in libraries, such as the Newberry in Chicago, correspondence and unexpected contacts, scrambles through cemeteries, and the poring over courthouse records in southern Illinois and southeastern Ohio. The constructing of an hypothesis from bits of information and then the checking of death records, wills, deeds, and census records furnish all the thrills of detective work and none of the risks.

Like scientific research, genealogy sometimes yields unexpected dividends. One was the discovery of a nonagenarian, living in Ohio, who shares two of Dr. Milner's three names and is a third cousin through one line and a sixth cousin through the other. Dr. Milner's main objective is to trace all his ancestors back to their arrival in the United States. His present stumbling-block is the origin of his great-great-grandfather Edward Milner, born in 1746, who moved from Loudon County, Virginia, to Belmont County, Ohio, about 1803 with his wife and 14 children. [Genealogists and local historians please note. Anyone who can draw the

veil of mystery back even a little will win Dr. Milner's undying gratitude.]

While the next topic cannot be classed as a present hobby, Dr. Milner has assembled several hi-fi sets for his own enjoyment. Shortly after completing the assembly of an amplifier, pre-amplifier, and AM and FM tuners (all Heathkit), he visited the University Audio Laboratory and discovered that he could hear nothing above 13,000 cycles. Since then his activities have been limited to acquiring new LP records.

A member since 1936, Dr. Milner was president of the American Oil Chemists' Society in 1947 and interim editor of the *Journal* in 1948. He has been a member of the Education Committee since its establishment in 1948 and was chairman of the first short course, held at Illinois in 1948. He has also served on numerous committees: Soybean Analysis, Refining, Color, Bleaching Methods, Membership, Fat Analysis, Seed and Meal Analysis, Spectroscopy, Constitution and By-Laws, and Nominating and Election.

A.O.C.S. Commentary

(Continued from page 4)

An important subsidiary of the company is Blue Plate Foods Inc., started in 1930 and operated by a group of men from the former Gulf and Valley Cotton Oil Company, which Wesson took over. With plants at New Orleans and Atlanta they manufacture mayonnaise, margarine, preserves, peanut butter, coffee, etc.

Wesson acquired the Southern Shell Fish Company at Harvey, La., in 1934. This company was extensively rebuilt and is one of the largest packers of shrimp in the United States and the first to use chemical control in the industry.

President Geoghegan died August 1, 1940, and was replaced by A. Q. Petersen, who held office until December 1956. Then E. A. Geoghegan (A. D.'s son) took over.

The company has gone through an extensive building program, having built a new factory in Chicago and replaced all old buildings at Gretna, La. The Gretna refinery building is constructed of Williamsburg Restoration Brick (for aesthetic reasons only). Other factories are located at Savannah, Ga.; Bayonne, N.J.; Memphis, Tenn.; and Houston, Tex.

Today Wesson is one of the 500 largest industries of the United States with a capitalization of more than 100 million dollars.

JAMES J. GANUCHEAU
Wesson Oil and Snowdrift
Company Inc., Gretna, La.

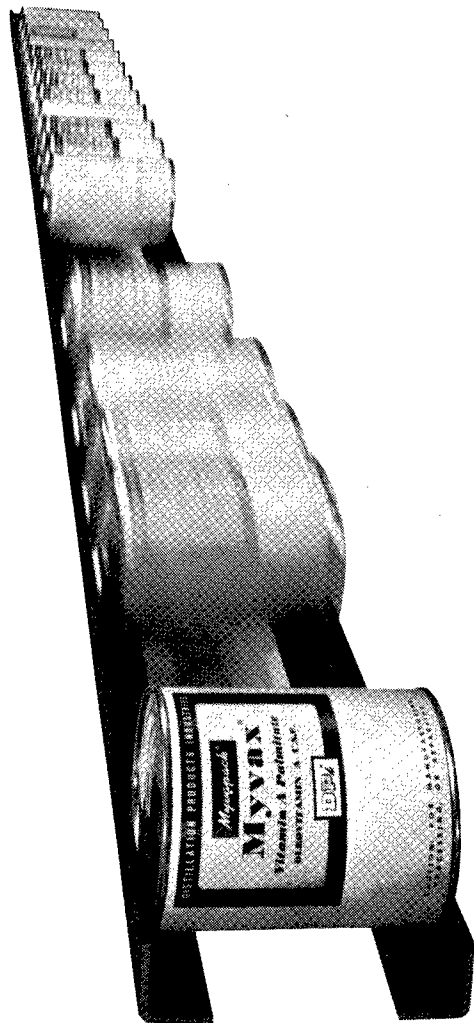
To Index Chemicals

"Index Chemicus," a monthly index to 50,000 new chemicals reported each year in scientific literature will be published by Eugene Garfield Associates, 1122 Spring Garden street, Philadelphia 23, Pa. The first issue will appear early in 1960. New chemical compounds will be reported in the Index within 30 days after original publication.

The Index will contain listings of chemical names, structural diagrams, and molecular formulas as well as complete bibliographical information including article title, authors, institution, addresses, and original journal reference and page location for each compound. It will be cumulated monthly, quarterly, and yearly.

Publish Dictionary

The Council of Scientific and Industrial Research (CSIR), Old Mill Road, New Delhi, India, is publishing an encyclopedic dictionary of the economic products and industrial resources of India, entitled "The Wealth of India." There will be 10 volumes, each appearing in two parts, one dealing with raw materials and the other with industrial products. Five volumes on raw materials have already appeared, covering A to K, and four on industrial products covering A to H.

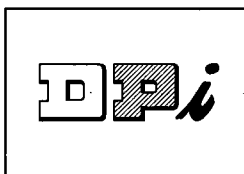


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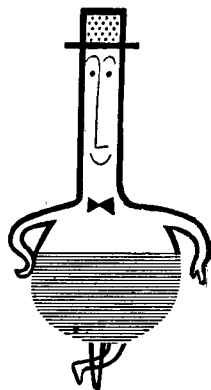
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Meetings

A.O.C.S. National Meetings

- 1960—Dallas, Baker hotel, April 4-6
New York, The New Yorker, October 17-19
- 1961—St. Louis, Sheraton-Jefferson hotel, May 1-3
Chicago, Pick-Congress hotel, October 30-31,
November 1
- 1962—New Orleans, Roosevelt hotel, May 7-9
Toronto, Royal York hotel, October 2-4
- 1963—Atlanta
Minneapolis, Radisson hotel, September 30-October 2

A.O.C.S. Section Meetings

- North Central—bi-monthly at the Builders' club, Chicago, 6:30 p.m. (March 23, May 25).
- Northeast—first Tuesday of February, April, and June, at Whyte's Restaurant, New York, 6 p.m.
- Northern California—May, September, and November at selected places
- Southwest—second Thursday of every other month, beginning January, at Rodger Young Auditorium, Los Angeles, 6:30 p.m.

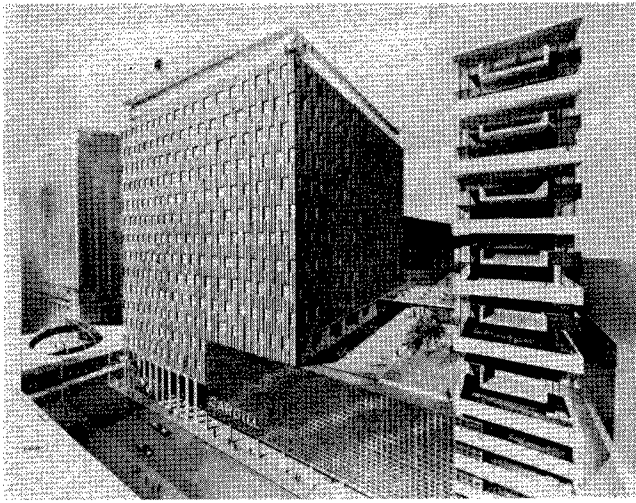
Other Organizations

- February 15-16—Ninth Annual Cottonseed Processing Clinic of Mississippi Valley Oilseed Processors' Association Inc. and Southern Regional Research Laboratory, U.S.D.A., New Orleans, La.
- February 18—Protective Coatings Division Conference, of Chemical Institute of Canada, Toronto; on 19th in Montreal
- February 21-24—42nd National Meeting, American Institute of Chemical Engineers, Atlanta-Biltmore hotel, Atlanta
- February 29-March 4—11th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Penn-Sheraton hotel
- March 16-18—25th Annual Chemurgic Conference, Sheraton-Park hotel, Washington, D.C.
- April 11-12—29th Annual Meeting, Inter-Society Color Council, Philadelphia Museum College of Art

• Industry Items

A plastic spray tower first used as a working model in the design of more efficient commercial soap and detergent towers has been presented to the University of Delaware by the Colgate-Palmolive Company. This will be used in connection with a special problems course for undergraduates studying flow theory.

Leybold Rotary Gas Ballast Vacuum Pumps, manufactured in West Germany by E. Leybold's Nachfolger, are now being distributed in North America by Arthur S. LaPine and Company, Chicago, Ill. Models available include single-stage pumps and pumps with two stages in series, each in two sizes.



CARGILL BUILDING—Plans have been announced for a \$20-million complex of new construction in downtown Minneapolis, Minn., to include a 16-floor Cargill building for offices, a large motel, an above-street plaza and restaurant, new Northwestern National Bank services, a roof-top garden and swimming pool, a shopping arcade, and an 1,000-car parking ramp. Construction will begin in the fall of 1960, with occupancy expected in 1962. Baker Properties Inc. is its original planner, and Northwestern Bank and Cargill Inc. are major participants and future tenants. The Cargill building, to cost \$13 million, will have about 30,000 square feet per floor. Cargill expects to move about 650 employees into the new building.

• *Names in the News*

Armour and Company, Chicago, Ill., has appointed Victor Conquest (1934), a vice president since 1951, as European representative, with offices in Paris. He will supervise Armour research and development activities with universities and private industry in Western Europe and Great Britain.

Eric Jungermann (1951) has been named manager of soap research for the Grocery Products Division, Armour, Chicago. He was formerly head of the Organic Research Section, Armour Industrial Chemical Company.

A. Kenneth Tosh (1950) has been appointed quality control manager for the Household Products Division, Colgate-Palmolive Company, New York, N.Y. John Major succeeds him as quality control manager for the Toilet Articles Division.

M. J. Thomas (1954) was named director of chemical market development and David P. Langlois director of administrative services for market development, A. E. Staley Manufacturing Company, Decatur, Ill.

Lester F. Borchardt has been named managing director of General Mills' Central Research Laboratories, Minneapolis, Minn., succeeding R. H. Manley, who retires February 1 and takes a new position as executive director of the Arizona Research Foundation, Tucson, Ariz.

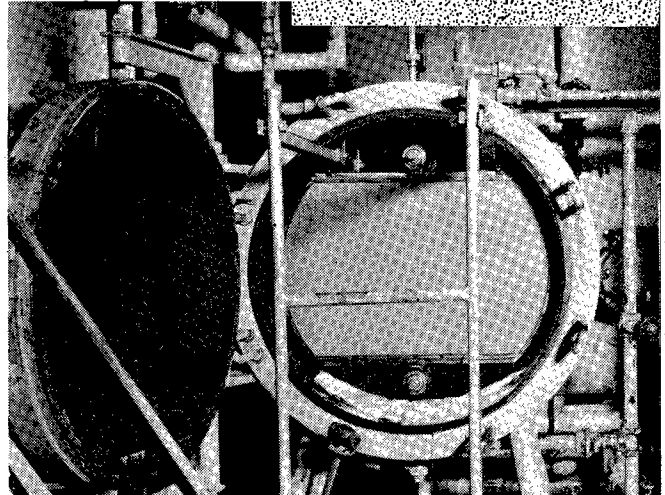
New officers of the Corn Industries Research Foundation Inc. are: president—Frank K. Greenwall, New York, N.Y.; vice presidents—William T. Brady, New York, N.Y., and A. E. Staley Jr., Decatur, Ill.

Officers of the International Castor Oil Association for 1960 are: president—Ernest H. Bluman, Upper Montclair, N.J.; vice president—H. A. C. Rauchfuss, Philadelphia, Pa.

Just-elected officers of the Chemical Specialties Manufacturers Association are: president—George W. Fiero, New York, N.Y.; vice presidents—Charles E. Beach, Baltimore, Md., and Charles E. Allderice Jr., Chicago, Ill.; treasurer—Frederick G. Lodes, New York, N.Y.; and secretary—A. A. Mulliken.

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• *Received in the Journal Office*

A copy of "Iodine Abstracts and Reviews" (Vol. 4, No. 3), containing a table of Physical Properties of Iodine and Its Inorganic Compounds with a listing of 687 substances, has been sent in by the Chilean Iodine Educational Bureau Inc., New York.

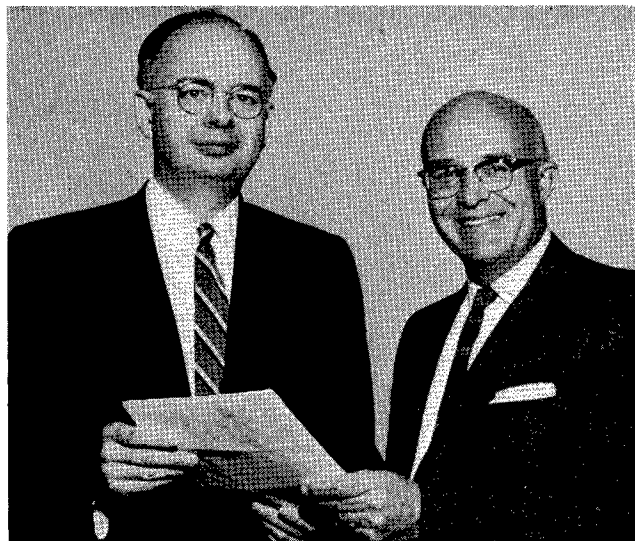
G. Carriere of Unilever N.V., Rotterdam, has sent a copy of the October issue of *Oleagineux*, which is devoted to his glossary entitled "Industrie des Produits de Lavage" in English, German, and French as a fifth edition of the work.

From the Food Research Institute at Stanford University, Stanford, California, have been received three booklets: "Agriculture and Recent Economic Conditions," issued by the Federal Reserve Bank of San Francisco between covers; and two reprints of writings by Karl Brandt, associate director of the FRI. One is called "Logistics for Task Forces in Rural Development Action" and the other, "The Threat of Inflation in the Underdeveloped World."

A pamphlet entitled "Die gas-chromatographische Trennung von Fettsaureestern" has been proffered by the Dansk Fedtforskings Institut of Copenhagen, Denmark.

Mail from India brought a pamphlet on Vegetable Oils, prepared by V. G. Rao of Ernakulam, Kerala. Credit is given to various members of the American Oil Chemists' Society for their comments on the work while in preparation.

The mail has brought four reprints from the Australian Journal of Dairy Technology, April-June 1959, through the courtesy of the Commonwealth Scientific and Industrial Research Organization: "The Organoleptic Detection of Sodium Hypochlorite in Milk and the Effect of Its Presence on the Methylene Blue Test" by E. G. Pont and W. P. Rogers; "A Survey of the Incidence of Sodium



A.A.A.S. AWARDS—John A. King (left), director of research, Armour and Company, Chicago, Ill., and Herbert E. Robinson (1940), vice president for research, Swift and Company, Chicago, Ill., accept for their companies the Industrial Science Achievement Award for 1959 at the annual meeting of the American Association for the Advancement of Science in Chicago, Ill., December 28.

Hypochlorite in Farm Milks" by Pont and Rogers; "A Method for Following the Syneresis of the Rennet Coagulum in Milk" by R. Beeby; and "Investigations in Casein Manufacture and Quality" by L. L. Muller.

Published by the Comite Français de la Detergence, 70 Champs-Élysées, Paris 8^e, France, is a 68-page booklet entitled "Contribution a l'Étude de l'Action des Surfactifs de Synthese sur l'Organisme" by P. Joly.

Petroleum Today, first published in August 1959, is a handsome quarterly issued by the American Petroleum Institute, 1271 Avenue of the Americas, New York.

In Spanish is a reprint from Tintoreria Industrial, Vol. VI, No. 45, entitled "Dodecibenceno Sulfonatos" by Juan Carlos Espector, of the Departamento Tecnico de Jose Franchina Ltda., Buenos Aires, Argentina.

Selling for \$6.25 is a 175-page book entitled "Symposium on Solid State Diffusion" and published by Saclay, France, and Interscience in New York. It represents a collaboration of 32 authors from various metallurgical institutes, mining schools, and atomic-energy installations in France and a few from Great Britain.

Another recent arrival is the June 1959 issue of The Journal and Proceedings of the Oil Technologists' Association of India, Kanpur, Part I, Vol. 14. K. S. Murti (1947) is a member of the publication and research committee for 1959.

"Understanding Chemistry," by Lawrence P. Lessing, published by Interscience at \$3.50 and by Mentor for 50¢, is a survey, for the general reader, of the laws of chemistry and chemistry's role in modern life.

A 16-page reprint of an article from La Revue Française des Corps Gras, Paris, entitled "Détermination du Pouvoir Moussant" and written by J. de Launoit, L. Sironval, and H. Ramakers is at hand through the courtesy of Société des Produits Tensio-Actifs et Dérivés of Liège.

"Literature Review on Oils and Fats 1957," by B. Y. Rao is the ninth of a series published by the Council of Scientific and Industrial Research, New Delhi, India.

Die Nahrung is a monthly journal of chemistry, physiology, and technology, published by the Institut für Ernährung, Deutsche Akademie der Wissenschaften zu Berlin, Arthur-Scheunert-Allee 114-116, Potsdam-Rehbrücke, Germany.

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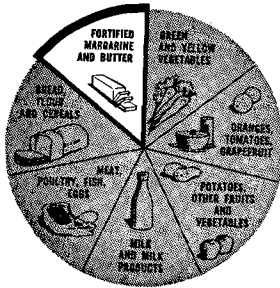
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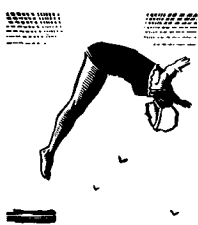
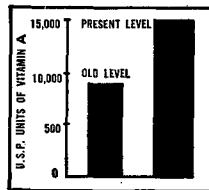


The "Basic 7" Good Foods

Over a hundred million pounds of margarine are used a month as a table spread and in cooking and baking. Included in the "Basic 7" food list, margarine serves as one of the finest and most concentrated energy foods. It is a shining example of a food which has been repeatedly made better.

In the original product, invented more than 80 years ago, beef fats were used. Later lard and vegetable oils came into use. When unpurified these have several drawbacks: unpleasant odor and taste, low melting point and unsatisfactory color. These have been overcome by scientific refining methods, hydrogenation and the use of officially-approved food colors. Strictly phrased Federal Definitions and Standards of Identity assure maintenance of very high quality, uniformity and nutritional value.

During this history of product improvement, it was natural that margarine makers should decide to make their food more valuable nutritionally by adding vitamin A. For many years some brands of table margarine were marketed with a label statement that they contained 9,000 U.S.P. units of vitamin A per pound. Then the industry decided to give the public the higher nutritional value of 15,000 U.S.P. units per pound, the present legal minimum. Now virtually all brands are fortified to this level.

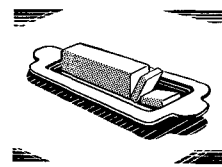


Here are some of the benefits that vitamin A supplies. Scientific evidence is available showing that it helps to maintain normal vision and to overcome night blindness; that it increases the body's resistance to infections; that it promotes physical and mental development; and that it aids in maintaining normal glandular function.

Soon after the Second World War several processes were developed to produce vitamin A synthetically. One of the most successful, announced in 1947, was evolved by the Roche research team headed by Dr. Otto Isler.

Vitamin A produced by the Roche synthesis has many positive advantages for food processors. Among these are light, clear color; complete absence of any "fishy" odor, taste or

after-taste; reasonable and stable price; stability, purity and uniformity; and the assurance of a steady, economical supply.



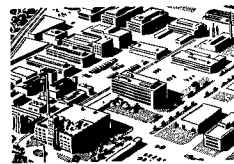
It is interesting and important to margarine manufacturers that the Hoffmann-La Roche synthesis of vitamin A led to another synthesis and then the commercial production of the closely related pro-vitamin A (beta carotene).

Beta carotene is the *natural, non-toxic* yellow color found in butter and other dairy products. It is *naturally* safe for coloring foods such as margarine, shortening, edible oils, yellow baked goods and many others. In addition to its value as a safe coloring agent, beta carotene contributes vitamin A potency — for better health and well-being.

Beta carotene 'Roche' assures food processors of fully safe, standardized yellow color; vitamin A activity, high purity, proven stability and uniformity. Beta carotene 'Roche' has been widely accepted; margarine manufacturers now use it for coloring and fortifying their product.

It is not practical to use beta carotene alone for both coloring and fortification because too deep a color would result. Roche chemists met this problem by developing a blend of 'Roche' vitamin A and 'Roche' beta carotene which meets the vitamin fortification requirement and gives margarine the safe, desirable color demanded by the consumer.

In a multi-million-dollar plant at the huge Hoffmann-La Roche operation in Roche Park over 500 pieces of large-scale chemically engineered equipment are working constantly to produce superior 'Roche' vitamin A which is built up into a molecule identical with Nature's own. Other highly complex equipment delivers beta carotene 'Roche.'



Again, developments by the Roche people, who manufacture not only vitamin A and beta carotene but many other essential vitamins, *by the tons*, have contributed to the making of more nutritious foods—and thus to the public welfare.

This article, reprints of which are available without charge, is published as a service to the food industry by Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, P. Q.

Indicates Topics for Short Course

GENERAL TOPICS for the 1960 short course on edible fats, to be held at the University of Illinois, Urbana, July 25-29, are nutrition, technology of fats and oils, legal aspects in fat and oil usage, economics, and analytical methods, according to L. R. Dugan Jr., program chairman, who is with the American Meat Institute Foundation, Chicago.



J. C. Cowan

Assisting him are R. A. Reiners, Corn Products Company, Argo, Ill.; and the following from Chicago: H. T. Spannuth, Wilson and Company; R. J. Vander Wal, Armour and Company; S. S. Fein, Kraft Foods Company; and T. J. Weiss, Swift and Company.

Under nutrition are fats in animal feeds, fats in human nutrition, dietary fat and heart disease, and health hazards from mishandling fats. Subjects under technology are morphology of fats, oils, and shortenings; glyceride structure of fats and oils; hydrogenation; interesterification; production of specialty edible fats; emulsifiers; and refining, bleaching, stabilization, deodorization, and plasticizers of fats, oils, and shortenings.

Under nutrition are fats in animal feeds, fats in human nutrition, dietary fat and heart disease, and health hazards from mishandling fats. Subjects under technology are morphology of fats, oils, and shortenings; glyceride structure of fats and oils; hydrogenation; interesterification; production of specialty edible fats; emulsifiers; and refining, bleaching, stabilization, deodorization, and plasticizers of fats, oils, and shortenings.



H. T. Spannuth



R. J. Vander Wal

Legal angles will be concerned with food and drug laws as viewed by regulatory agencies and the problems posed for the industry by the food and drug laws. Under economics will be the factors in world-wide fat and oil supply and usage, problems and practice of trade in fats and oils. The newer analytical methods for the fat and oil industry will also be considered under methods.

In charge of arrangements at the university is R. T. Milner, head of the food technology department at Illinois. The course is being given under the auspices of the Education Committee of the American Oil Chemists' Society, of which J. C. Cowan, Northern Regional Research Laboratory, Peoria, Ill., is chairman.

Information about fees and housing arrangements will be announced later. Inquiries should be addressed to the American Oil Chemists' Society, 35 E. Wacker Drive, Chicago 1, Ill.

Active

- Earl L. Barkley, product sales manager, Synthetic Resin Chemicals, Heyden Newport Chemical Corporation, New York, N.Y.
- James H. Bishop, chemist, Swift and Company, Chicago, Ill.
- Robert C. Brumberger, sales manager, Catalyst Division, Nuodex Products Company, Elizabeth, N.J.
- Joseph E. Coleman, chemist, U.S. Department of Agriculture, Philadelphia, Pa.
- Wayne Collier, plant superintendent, J. H. Filbert Inc., Macon, Ga.
- S. Cukier, development chemist, Chemical Developments of Canada Ltd., Montreal, Quebec, Canada
- James W. Horner Jr., manager, Technical Information, Archer-Daniels-Midland Company, Minneapolis, Minn.
- Evan C. Horning, chief, Laboratory of Chemistry of Natural Products, National Heart Institute, Bethesda, Md.
- J. J. Kazimierzak, development engineer, E. F. Drew and Company Ltd., Ajax, Ontario, Canada
- David R. Kime, assistant director, Quality Control, Cudahy Packing Company, Memphis, Tenn.
- Gene Kritevsky, research associate, Department of Biochemistry, City of Hope Medical Center, Duarte, Calif.
- Paul Manocchio, margarine foreman, E. F. Drew and Company Inc., Boonton, N.J.
- Suttekiti Maruyama, professor, Faculty of Education, Kobe University, Kobe City, Japan
- Kenichi Miyamoto, chief, Central Research Laboratory, Nitto Kagaku Kogyo K.K., Yokohama, Japan
- Milton J. Rosen, assistant professor, Department of Chemistry, Brooklyn College, Brooklyn, N.Y.
- John Sheperd, plant manager, Cargill Inc., Minneapolis, Minn.
- Rosemary Linden Shull, junior research biochemist I, Department of Home Economics, U.C.L.A., Los Angeles, Calif.
- Frederick Thomas Taylor, subforeman, Canada Packers Ltd., Toronto, Ontario, Canada
- Minoru Terada, research staff, Showa Sangyo K.K., Yokohama, Japan
- J. Donatus von Mikusch-Buchberg, in charge of research laboratory, Margarine-Union GmbH, Hamburg, Hamburg-Harburg, Germany
- Calvin J. Waitkus, manager, Textile Lubricant Laboratory, E. F. Drew and Company Inc., Boonton, N.J.

Electronics to Aid

Streamlined patent-searching, using electronic computer techniques, is being tested at the U.S. Patent Office, Washington, D.C., and officials say it may accomplish in about half an hour a job that formerly took a skilled researcher up to a full day. The new system is being tested first on patent data covering chemical compounds that form the basis for many commonly used plastics. This area, covering the polymer chemical group, was singled out because it is one of the broadest and most difficult fields in patent research.

Findings of the researchers are presented in Patent Office Research and Development Report No. 13, entitled "A System of Retrieval Compounds, Compositions, Processes and Polymers."

Call to Annual Meeting

Active members of the American Oil Chemists' Society are hereby notified of the 51st annual meeting, to be held at the Baker hotel, Dallas Tex., April 4-6, 1960, for the purpose of transacting Society business, announcing the election of officers for the coming year, hearing of committee reports, and so on.

N. D. Embree, president

R. W. Bates, secretary

Dallas Program, Climate, Scenery to Attract A.O.C.S.

PLANS ARE beginning to jell for the 51st annual meeting of the American Oil Chemists' Society, according to R. C. Pope, general chairman. It is to be held April 4-6 at the Baker hotel, with committee meetings and a mixer on Sunday the 3rd, and promises to have interesting and entertaining events for everyone, including the wives (bless 'em). Mildred Pope is taking an active hand in the preparations along with her husband.



R. C. Pope

Although Dallasites will tell you that any time is a good time to visit, April really is a prize month. The city will be lushly green and garlanded with flowers. Redbud trees and brilliant azalea bushes will line the streets and yards.

Dallas in early April is normally at its best. Texans have a saying that only fools and newcomers predict the weather; but just to give you some sort of idea, the last five years have shown April 3-6 to have an average temperature of 77 degrees high and 54 degrees low.

This ought to help you choose your clothes although you should also know that temperatures have been as low as 43 degrees and as high as 89 during those four days. Rain has been rare, but it has happened.

If you haven't been a visitor to Dallas in the past two years, you'll find lots of new things to see. Downtown Dallas has several new skyscrapers, including the gigantic Southland Center. Its new Memorial Auditorium is capable of accommodating the nation's largest conventions. As a grand entrance to the city from the North there's the new 16-lane Stemmann Freeway, as big as any highway in the nation and providing an unparalleled view of the city. The only theater ever designed by Frank Lloyd Wright, and it's really unique, is in full swing.

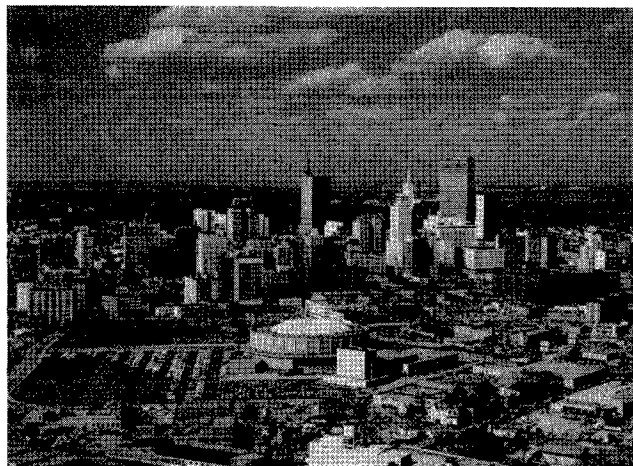
ROOMS have been set aside at the Baker hotel, 400 of them, and living quarters should be reserved by writing direct to the hotel. The Sunday mixer is in charge of Paul Cretien.

Monday, April 4, will be an interesting day for everyone. Mrs. Stuart Johnson, in charge of women's events, has arranged for a coffee and unique fashion show at world-famous Neiman-Marcus. In the afternoon there will be a tour of Everts Jewelers and the Times-Herald newspaper plant.

The first of the technical sessions will be held Monday morning, and the papers already promised are listed below. A total of 40 is expected by J. D. Lindsay, program chairman, Texas A and M College, College Station. He urges that those wishing to present papers send 200-word abstracts to him by February 15.

The golf tournament is also scheduled for Monday, with Dick Doughtie in charge. More details will be forthcoming in the next issue of the Journal, but it is already known that some very valuable and interesting prizes are being obtained through the efforts of Charles Manning, "Doc" MacGee, Bill Coleman, and others.

For those who do not wish to play golf, tours have been arranged by Stuart Johnson to either Texas Instruments or Sherwin-Williams. The latter occupies brand-new facilities. The former is one of the fastest growing companies in the electronics field and also occupies new facilities. It makes transistors and assembles components and devices for modern computers and controls. It is considered one of the largest manufacturers of transistors in the United States.



"DAZZLING DALLAS"—Heart of a metropolitan area with more than a million population, this presents one of the nation's most dramatic skylines, including the two tallest buildings west of the Mississippi river. In the foreground is the new Memorial Auditorium, built as a convention hall.

According to custom, the annual Past Presidents' Dinner will be held Monday evening, with R. R. King in charge, at the Town and Country restaurant.

TUESDAY the ladies' luncheon will be at the Bali Hai restaurant, one of the newest glamor spots in Dallas. The traditional dinner dance will be that evening.

Technical sessions will be held Tuesday and Wednesday. The annual Awards luncheon, for golf and Smalley winners, is scheduled for Wednesday.

There will be the usual business sessions of the Society; two meetings of the Governing Board (the outgoing Sunday, and the incoming Wednesday), presided over, respectively, by N. D. Embree and R. W. Bates; and various committee meetings. Chairmen wishing to reserve conference rooms should notify A. H. Lamb of Anderson, Clayton and Company, Sherman, Tex.

A partial list of the technical papers, as provided by Dr. Lindsay at presstime, is as follows:

- Preparation of Tung Oil Monoglycerides. Development of a Pilot-Plant Method, by P. H. Eaves and J. J. Spadaro, Southern Regional Research Laboratory, New Orleans, La.
- Methyl Esters Directly from Acidulated Soapstock. Preliminary Cost Study, by K. M. Decossas *et al.*, Southern Regional Research Laboratory, New Orleans, La.
- New French Stationary Basket Extractor, by Ralph P. Hutchins, French Oil Mill Machinery Company, Piqua, O.
- Filtration in the Processing and Refining of Edible Oils, by J. B. Levy, Sparkler Manufacturing Company, South Gate, Calif.
- Use of Computers, by B. C. Moore, Data Processing Center, Texas A & M College, College Station, Tex.
- Condensed Report of the Technical Safety Committee, by Paul R. Sheffer, Corn Products Company, Argo, Ill.
- Industrial Application of Ion Exclusion to the Purification of Glycerines, by H. W. Keller, Illinois Water Treatment Company, Rockford, Ill.
- Applications of Analytical Flavor and Odor Evaluation, by John F. Angeline, Arthur D. Little Inc., Cambridge, Mass.
- Fundamental Study of Drying Mechanism of Linseed Oil at Elevated Temperatures, by E. R. Mueller and D. A. Berry, Battelle Memorial Institute, Columbus, O.
- Trends and Consumption of Cottonseed and Competing Vegetable Oils, by Leonard Smith, National Cotton Council of America, Washington, D.C.
- Lipid Characterization by Micro and Semi-Micro Procedures, by James H. Benedict, Procter and Gamble Company, Cincinnati, O.

Program Committee



H. D. Fincher



Raymond Reiser



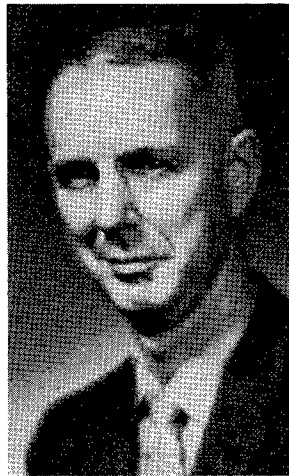
A. C. Wamble



W. D. Harris



A. H. Lamb



O. K. Sieplein

An *in-Vitro* Study of Glyceride Absorption, by H. C. Tidwell and J. M. Johnston, Southwest Medical School, University of Texas, Dallas

Phosphatidic Acids as Related to the *in-Vitro* Absorption of Fatty Acids, by J. M. Johnston and J. M. Bearden, Southwest Medical School, University of Texas, Dallas

The Application of Thin Layer Chromatographic Methods to Fatty Acids and Other Lipid Materials, by Helmut Mangold, Hormel Institute, Austin, Texas

The following papers are all from the Southern Regional Research Laboratory in New Orleans:

- Formation of Isomers During the Hydrogenation of Methyl Oleate in Solvents, by E. R. Cousins and R. O. Feuge
- Confectionery Fats. II. Characterization of Products Prepared by Interesterification and Fractionation, by Werner Landmann, N. V. Lovegren, and R. O. Feuge
- Fractionation of Cottonseed Oil Pigments by Molecular Sieves, Countercurrent Distribution, and Low Temperature Crystallization, by Gerald B. Verberg, E. R. McCall, R. T. O'Connor, and F. G. Dollear
- Derivatives of Jojoba Oil as Plasticizers for Vinyl Resins and Rubber, by Sara P. Fore, H. P. Pastor, J. P. Hughes, and W. G. Bickford
- Effect of Processing on the Composition of Sesame Seed and Meal, by Fairie Lyn Carter and Layton Allen
- Properties of Hexane-Acetone Azeotrope-Extracted Cottonseed Meal, by W. H. King and V. L. Frampton
- Adsorbents for Bleaching of Off-Colored Cottonseed Oils, by W. A. Pons Jr., J. C. Kuck, and V. L. Frampton
- Spectral Absorption as a Measure of Cottonseed Oil Color, by W. A. Pons Jr., J. C. Kuck, and V. L. Frampton

More program detail will be given in the March issue of the Journal, also more information about the meeting in general.

T. S. McDONALD

• *35 Years Ago*

In "A New Type of Color-Comparator" (Vol. II, No. 1, of the Journal of Oil and Fat Industries, 1925), Herbert S. Bailey, Journal editor, reports on widespread dissatisfaction with the current methods of color comparison in the cottonseed oil industry and describes and diagrams his new instrument.

In the same issue Carl W. Keuffel reports on "The K. and E. Color Analyzer" and describes it as a direct-reading spectrophotometer, much more satisfactory for scientific measurement of color than any "colorimeter."

A. O. Snoddy contributes a paper entitled "The Detection and Estimation of Small Amounts of Chromium in Fats."

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• New Books

METHODS OF BIOCHEMICAL ANALYSIS, Vol. VII, edited by David Glik (Interscience Publishers Inc., New York, 353 pp., \$9.50). This is the seventh volume of an annual series devoted exclusively to the review of procedures for the determination and assay of substances and systems of biological importance. The eight procedures discussed in this volume are: immuno-electrophoretic analysis (Pierre Grabar), analysis of basic nitrogenous compounds of toxicological importance (A. S. Curry), spectrophotometry of translucent biological materials—opal glass transmission method (Kazuo Shibata), determination of inositol, ethanolamine, and serine in lipides (John M. McKibbin), assay of lipoprotein lipase *in vivo* and *in vitro* (Edward D. Korn), determination of creatinine and related guanidinium compounds (John F. Van Pikum), determination of ethyl alcohol in blood and tissues (Frank Lundquist), and determination of heparin (Louis B. Jacques and Helen J. Bell). The chapters by McKibbin and by Korn will be of special interest to the readers of the Journal of the American Oil Chemists' Society.

Each chapter is a critical review, contains discussion of the principles involved, and presents a detailed outline of the method or methods which the author recommends. A laboratory worker can use it to carry out an analysis and have a clear understanding of the principles on which the method is based.

This volume shows much less variation in style and presentation than one would expect in a book written by scientists located in eight different countries and speaking five different native languages. These chapters are generally lucid and precisely written and are more readable than most books of laboratory methods.

In the preface to this series of volumes the editor expressed the hope that "as they accumulate, these volumes should comprise a self-modernizing encyclopedia of methods of biochemical analysis." It is clear that his hopes are being realized. The cumulative list of the important methods written by highly competent authors for the first seven volumes in this series is certainly imposing. This volume, and the previous six volumes in the series, belong on the reference shelves of all libraries of biological and medical science.

ROBERT S. HARRIS, Massachusetts Institute of Technology, Cambridge, Mass.

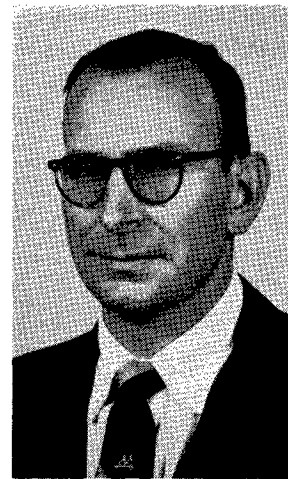
ALIPHATIC FLUORINE COMPOUNDS, by Alan M. Lovelace, William Postelnek, and Douglas A. Rausch (ACS Monograph N. 138, Reinhold Publishing Corporation, New York, 1958, 370 pp., \$12.50). This book consists of 13 chapters, each dealing with a different class of organic compound. Throughout the book there are 61 tables describing the physical properties of some 4,500 aliphatic compounds. The text thoroughly reviews various methods which have been used to prepare fluorinated compounds. Previous books on this subject have dealt more with the chemistry rather than with the preparation of such compounds, therefore this book is a valuable reference for those individuals directly concerned with organic fluorine chemistry. There are 259 methods for introducing fluorine into a molecule or preparing derivatives from fluorinated starting-materials.

Because the field of fluorine chemistry has grown tremendously since Moissan's time, the authors have not attempted to include every fluorine-containing compound nor has every published paper been included in the bibliographies. However there are adequate examples provided, and anyone with experience in organic synthesis should have little difficulty in extending these methods. Every chemist concerned with the preparation or properties of fluorinated organic compounds should have access to this treatise.

The monograph is consistent with previous monographs in maintaining high quality.

HARVEY A. BROWN, Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Robert L. Terrill (1946) has been elected a director by the board of Spencer Kellogg and Sons Inc., Buffalo, replacing Alexander Schwarcman, retired. He has been with the company since 1938, first at Edgewater, N.J., then in Buffalo. He became director of research and vice president in June 1958. He is active on the technical committee of the National Soybean Processors Association, also on its lecithin committee.



EXPERIMENTELLE EINFÜHRUNG IN DIE ANORGANISCHE CHEMIE, by Heinrich Blitz, Wilhelm Klemm, and Werner Fisher (Walter de Gruyter and Company, Berlin, 50th edition, 1958, 216 pp., 26 illustrations, 1 table, DM 14.80). A thin, handy laboratory manual, the jubilee edition is a compilation of clearly, simply, and accurately described experiments from which those uninitiated in chemistry and unhindered by a language barrier may obtain a valuable introduction to inorganic chemistry.

The book is divided into sections and subsections instead of chapters. The introduction outlines general precautions associated with laboratory work and assists on transferring reagents; filtering, centrifuging (recently added); on cutting, melting, and bending glass; and cork boring.

Two sections are devoted to nonmetallic compounds, Parts I and II. Part I includes a discussion of some theory (italicized) on acids, bases, salts, chemical decomposition, concentrations of solutions, normal solutions, electrolytic dissociation, ions, formation of chemical linkages, and oxidation and reduction. Simple experiments are described, involving hydrochloric, sulfuric, sulfurous, nitric, carbonic, and phosphoric acids and nitrogen dioxide, carbon dioxide, and hydrogen sulfide. Nonmetallic compounds, Part II, concerns the halogens; hydrogen peroxide, sulfur acids, selenium, and tellurium; hydrazine, hydroxylamine, nitrous acid and nitrites, phosphoric and phosphorous acids; silicon and boron.

Two additional sections are devoted to metallic compounds, Parts I and II. Part I includes simple experiments concerning alkali metals (sodium and potassium) and ammonia; alkaline earth metals (calcium, strontium, and barium) and magnesium; aluminum; silver, copper, zinc, cadmium, mercury; transition elements (iron, cobalt, nickel) and chromium and manganese; and the tin and arsenic groups, including tin, lead, arsenic, antimony, and bismuth. Discussions on theory in this section cover chemical equilibrium; the Law of Mass Action, its application to homogeneous reactions in aqueous solutions and its significance with respect to heterogeneous reactions; acid- and basic-forming oxides; complex compounds and double salts; decomposition and sulfides. The last section, metallic compounds, Part II, discusses lithium, beryllium, titanium, zirconium, thorium, vanadium, niobium, tantalum, molybdenum, tungsten, uranium, and thallium. An appendix follows, containing a useful list of reagents and their concentrations. After the author and subject index there is a handy, removable table of the Periodic System of the Elements, on the back of which is printed a list of first-aid hints in case of accident.

Without the 49th or any other edition available it is difficult to assess how much has been added to the 50th edition. A review of the 44th edition however was obtained, and it was learned that since then two illustrations and approximately nine pages of text have been added. According to the authors, some of the sections have been extensively rewritten for the 50th edition, for example, those dealing with phosphoric acid, solution concentrations, electrical

affinities, and part of the section on the Law of Mass Action. The illustrations are very simple, the experiments are little more than the test-tube variety, but the manual can and will make the chemistry student conversant with basic principles of inorganic chemistry in a clear and easily understood manner.

MADÉLINE G. LAMBOU, Southern Regional Research Laboratory, New Orleans, La.

PRINCIPLES OF DAIRY CHEMISTRY, by Robert Jenness and Stuart Patton (John Wiley and Sons Corporation, New York, N.Y., 446 pp., 1959, \$8.75). This book can best be defined as an excellent compendium on the chemistry of milk. In its 13 chapters the authors discuss the chemistry of milk constituents, emphasizing the basic composition, structure, and properties of milk as well as the chemistry of changes occurring during processing. The editors are to be congratulated for the skill with which they have presented the newer findings. The book contains many fine illustrations and tables to complement the text.

The first chapter sets the stage for the book with a tabulation of the individual constituents that have been identified in cow's milk and discusses the causes for variations in the gross composition. The second chapter deals with one of the more important constituents of milk, namely lipids. In this chapter it can be seen that a wide variety of constituents are present in the lipid fraction so that a study of their composition and identification is complicated and difficult. Methods of identification and isolation of the fatty acids are presented in detail in this chapter. Chapter 3 deals with lactose, its properties, chemical reactions, methods of measurement, and uses. The fourth chapter deals with milk proteins, giving a review of protein and amino acid structures, fractionation procedures for milk proteins, physical properties, and chemical reactions of milk protein. In the chapter on salts a distinction is made between the major constituents and trace elements.

The brief chapter on the enzymes in milk is of interest as it illustrates how the destruction of one of the enzymes is widely used as a test, for the adequacy of pasteurization. Chapters 8, 9, and 10 deal with the physical properties of milk and milk fat and how processing affects them. These three chapters are very comprehensive and summarize the present knowledge on the subject. The last three chapters deal with the effects of heat, flavors, and off-flavors, and nutrition of milk.

To those, who like the reviewer, desire a technical book dealing with a particular branch of science and embracing in condensed and accurate form essential information and interpretation of dairy chemistry, this book is a welcomed addition.

IRVING I. RUSOFF, General Foods Corporation, Tarrytown, N.Y.

PRINCIPLES AND PRACTICE OF GAS CHROMATOGRAPHY, contributed by C. M. Drew, S. A. Greene, H. S. Knight, and H. W. Patton and edited by Robert L. Pecosok (Publishers: New York, John Wiley and Sons Inc.; London, Chapman and Hall Ltd.; 226 pp., 1959, \$6.75). This book comprises 13 chapters covering in sequence theoretical principles of partition chromatography, mechanism of separation when the mobile phase is an inert gas, detailed description of mobile and stationary phases, effects of operational parameters, column selection and construction, sample introduction, temperature control, analytical methods, and an extensive bibliography.

It represents an outgrowth of a course on the subject first offered by the University of California at Los Angeles in February 1959. The lectures were elaborated and edited to provide continuity.

This book does not attempt to review critically a large number of applications but does provide a bibliography essentially complete through 1958 and includes some 1959 references. It provides an effective over-all coverage of the

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- Tall oil
- Terpene oxides
- Silicones
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subject with special attention given to those topics of most value to beginners and those with limited experience in the field.

R. L. GREGORY, Swift and Company, Chicago, Ill.

GENERAL BIOCHEMISTRY, Second Edition, by Joseph S. Fruton and Sophia Simmonds (John Wiley and Sons Inc., New York, 1958, 1077 pp., \$18). Very rapid developments in the field of biochemistry necessitate early revisions and extensions of textbooks of biochemistry. As a consequence the authors of "General Biochemistry" have made extensive changes in the second edition of their text. Each chapter has been revised, and a new chapter on alternative pathways of carbohydrate metabolism has been added.

This edition provides the reader with an especially appealing introduction to biochemistry, presents the fundamentals clearly, develops the concepts to their present status, and supplies a wealth of references.

Greatest emphasis is placed upon the role of proteins and enzymes in metabolism. Bacteria, plants, micro-organisms and animals are all used for descriptive material. Radio-isotopes and their use in biochemical studies are discussed briefly but used extensively, both for the factual data and in the development of the various metabolic pathways.

This book should be very useful to all individuals interested in biochemistry. It will be a valuable text for the beginning and advanced student of biochemistry as well as for students of the allied sciences of bacteriology, physiology, and medicine. Of all recent texts in biochemistry this reviewer knows no other that he could recommend as highly as Fruton and Simmonds' second edition of "General Biochemistry."

WALTER J. FRAJOLA, Ohio State University, Columbus, O.

KUNSTSTOFF-, LACK- UND GUMMI-ANALYSE, Chemische und Infrarot-spektroskopische Methoden, by Dieter Hummel (Carl Hanser Verlag, Munich, 1957, one volume of text, 409 pp., one atlas of 549 IR spectra, both DM 148). The outstanding chapters of the text volume are those on properties and identification of macromolecular raw materials (200 pp.) and on plasticizers, stabilizers, and vulcanizers (38 pp.). The author discusses very briefly the theory of IR spectroscopy and then gives, in greater detail, the methods for preparation of samples (18 pp.). Other physical methods of identification are outlined (7 pp.); and general chemical procedures for detection of functional groups are discussed in more detail (24 pp.). The last chapter illustrates various analytical procedures with several technical materials (30 pp.).

An appendix includes tables of a decimal classification of plastic raw materials, as suggested in the text, a listing of trade names and their owners, and conversion tables of wavelength and wave number. This is followed by references (34 book titles and approximately 650 journal article titles) and the index. The second volume consists entirely of IR spectra, which are reproductions of photographs obtained from drawings made by a Perkin-Elmer Model 21 instrument. In each case the source of the sample and the method of handling are given.

Major emphasis is given to IR analysis, which is obviously of great interest to the author. He is aware however that chemical analysis cannot be neglected. A great many raw materials, both natural and synthetic, are described. Their chemical characteristics are given, together with a thorough discussion of the various spectra that may be obtained, depending upon method of polymerization or chemical treatment. Some of the items discussed are ester and acid resins, various drying and modified oils, waxes, cellulose derivatives, asphalts, phenolic resins, polyhydrocarbons, urea-formaldehyde products, silicones, and numerous mixed polymers, indicating the broad concept of the presentation. Plasticizers, stabilizers, and vulcanizers are also thoroughly treated. The subject-matter is handled with experienced discretion, and the bibliography is compre-

hensive. The nonGerman literature has received strong consideration. The writing is clear and specific and should be understandable to any investigator having average knowledge of scientific German.

The reproductions of the IR spectra permit readings to less than 0.1 μ . They are of equal size, and all cover the range of 2 to 14.4 μ , thus facilitating comparison. They are arranged according to a coding system suggested in the text. This is a decimal classification, using only two places, and it necessitates some compromise. Wavelengths are used throughout both volumes, but in the text volume wave numbers are added in parentheses in nearly all cases.

Both volumes can be recommended to any laboratory concerned with the analysis of polymeric materials. The presentation is necessarily selective in regard to methods and materials. The former are well covered and balanced, with due emphasis on IR methods. One notes some omissions among the materials, as for example in regard to copolymers, but these deficiencies cannot be regarded as serious.

While printing paper and binding are of high quality, the insertion of blank pages into the bound volume of spectra is not entirely satisfactory. These pages serve as a "thumb index" of the system, and the preservation of this convenience will require care in handling of this volume.

HERMANN SCHLENK, Hormel Institute, Austin, Minn.

THE CHEMISTRY OF NATURAL PRODUCTS, MONO- AND SESQUITERPENOID, Vol. II. by P. de Mayo (Interscience Publishers Inc., New York, 320 pp., 1959, \$7.50). This interesting, well-written volume is divided into six chapters covering monoterpenoids, monocyclic and bicyclic monoterpenoids, and sesquiterpenoids. The material is well organized, resulting in a very readable and comprehensible volume.

The literature in the field is covered through the early part of 1957. In spite of this the treatment of the subject is "up-to-date" in that the application of such new tools as nuclear magnetic resonance to terpenoid chemistry is intelligently discussed.

The subject-matter is beautifully elucidated with structural diagrams which take up nearly half of the pages of the book. Generally speaking, the structural diagrams are conveniently arranged on the page opposite the text in which references are made to them. One small criticism—the quality of the structural diagrams is only fair, but undoubtedly improvement in this area would have added greatly to the cost of the book.

For those who are working directly in the field of terpenoid chemistry, this book is, of course, a "must." But many others working on the periphery of this field or in adjoining fields, such as essential oils, naval stores, or minor components of fats and oils, will also find this to be a useful volume.

F. L. JACKSON, Procter and Gamble Company, Cincinnati, O.

• *New Literature*

SARGENT POLAROGRAPHY, BULLETIN P. History of the origin and development of Sargent and Sargent-Heyrovsky Polarographs and description of various models and accessories. E. H. Sargent and Company, 4647 Foster avenue, Chicago 30, Ill., has maintained a bibliographical service since 1939, and their current bibliography contains 10,000 subject entries.

TALL OIL BIBLIOGRAPHY, THIRD EDITION. Published by the Institute of Paper Chemistry, under the sponsorship of the Tall Oil Products Division of the Pulp Chemicals Association, it covers more than 1,600 articles, reviews, and patents to the end of 1957 and is available from the Association at 60 E. 42nd street, New York 17, N.Y.

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TWO DISTINGUISHED MEMBERS of the American Oil Chemists' Society have been elected to honorary membership by mail ballot as of December 7, 1959. They are T. C. Law (1909) and A. S. Richardson (1921).

Mr. Law is a charter member of the Society and was president in 1916. He has served on the Referee Board and such committees as Fat Analysis, Color, Seed Analysis, Peanut Analysis, Journal, Refining, Uniform Methods, and Smalley. He is the founder of Law and Company, industrial chemists, Atlanta, Ga.

Dr. Richardson was president of the Society in 1931; member of the Referee Board from 1931-54, serving as chairman many years; member of the Smalley Committee from 1946 to 1952; member of the Editorial Advisory Board from 1932 to 1948. He is retired associate director, Chemical Division, Procter and Gamble Company, Cincinnati, O., and lives in Wyoming, O.

Other honorary members of the Society are J. C. P. Helm, New Orleans; H. L. Roschen, Chicago; and J. J. Vollertsen, Chicago.

• Obituary

Leslie G. Boatright (1955), commercial development department, Escambia Chemical Corporation, New York, was killed in the Viscount accident on May 12, 1959, according to information just received from his firm.

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