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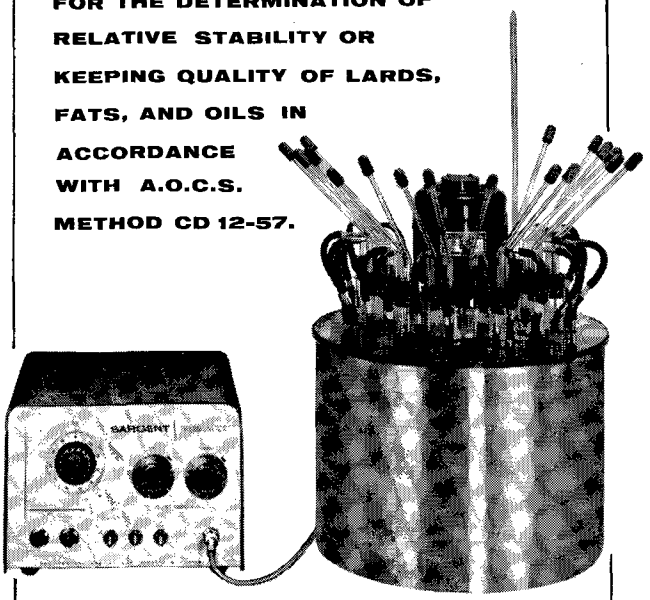

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Program Announced for U of I Lipid Symposium

The program for the Lipid Symposium on Heart Disease Research to be held June 16–18 as part of the dedicational exercises for the U of I's new Burnsides Research Laboratory is announced below.

Advance registration is necessary in order to reserve rooms and to plan for food service. For further information about the symposium, write to Dr. Kummerow at The Burnsides Research Laboratory, University of Illinois, Urbana, Ill.

PROGRAM OUTLINE

SUNDAY, JUNE 16

Registration and Open House—Burnsides Research Laboratory — 1:30 p.m.

Dinner—Illini Union Building — 5:00 p.m.

General Session — 7:00 p.m.
- Introductory Remarks, F. A. Kummerow
- Welcoming Address, D. D. Henry
- Response, D. M. Surgenor

Opening Session — 7:30 p.m.
- I. H. Page, Chairman
- Introduction of Clinical Aspects, L. N. Katz
- Clinical Manifestations of Heart Disease, T. B. VanItallie
- Discussion, Herbert Pollack and G. V. Mann, Moderators

MONDAY, JUNE 17

Morning Session — 9:00 a.m.
- M. K. Horwitt, Chairman
- The Natural History of Human Atherosclerosis, H. C. McGill
- Composition of Lipids in the Aorta, E. G. Perkins
- Physical and Chemical Properties of the Low Density Lipoproteins, Frank Lindgren
- Lipoprotein Stability, Toshiro Nishida

Afternoon Session — 1:30 p.m.
- Campbell Moses, Chairman
- Factors Affecting the Oxidation of Cholesterol by Rat Liver Mitochondria, David Kritchevsky
- Reactions Involved in the Maintenance of Normal Blood Fluidity, F. C. Monkhouse

Open House—Burnsides Research Laboratory — 3:45 p.m.

Evening Session — 7:00 p.m.
- Sune Bergstrom, Chairman
- Chemistry and Biochemistry of Phospholipids, D. J. Hanahan
- The Biosynthesis of Fatty Acids in Animal Tissues, Salih J. Wakil
- The Metabolism of Complex Lipids, E. P. Kennedy

TUESDAY, JUNE 18

Morning Session — 9:00 a.m.
- D. M. Hegsted, Chairman
- Esstential Fatty Acids, R. T. Holman
- Metabolism of C^{14} Labeled Fatty Acids, J. F. Mead
- Physiologic and Pharmacologic Control of Cholesterol Synthesis, Daniel Steinberg
- Interfacial Behavior of Sterols, P. D. Klein

Afternoon Session — 1:30 p.m.
- Cecil Entenman, Chairman
- Function of Polyunsaturated Fatty Acids and Lipid Antioxidants in Mitochondria and Membranes, A. L. Tappel
- New Aspects of Coenzyme Q, Karl Folkers
- Behavior of Phosphorylation Enzymes in Mitochondria, in Particles, and in Solution, Henry Lardy

Open House—Burnsides Research Laboratory — 6:00 p.m.

• *New Products*

CONSOLIDATED VACUUM CORP., Rochester, N. Y., now offers a new vacuum pumping system. The system is designed for maximum flexibility with many standard accessory options.

GENERAL ELECTRIC, Silicone Products Dept., Waterford, N. Y., has announced the development of four new silicone defoamers for improved economy in food processing and general industrial use. Some of the materials are effective in concentrations as low as 0.1 part per million.

ANALYTICAL ENGINEERING LABORATORIES, INC., Hamden, Conn., has developed five new temperature-stabilized polyesters for use as stationary phases in the gas chromatograph analysis of fatty acids. The phases are capable of operating efficiently at temperatures up to 250–270C.

BUSS LTD., Basle, Switzerland, announced the development of a novel continuous process for the refining of vegetable or animal oils and fats. The Buss-Semco process uses centrifuges. Its principal advantages lie in very little loss of neutral oil, perfect lighting up of oil tints, plain servicing, quick change over to other types of oils, great flexibility regarding capacities, and important reduction of capital cost.

F & M SCIENTIFIC CORP., Avondale, Pa., has introduced a new Model 700 Dual Column Gas Chromatograph into its line of research instruments. Its low mass oven permits rapid heating and cooling and ease of column changing. It will also be useful as a teaching instrument. In addition, they announced their Model 810 Dual Column Flame Ionization Gas Chromatograph with a new versatility in injection port design, fully automatic temperature programming, and multiple detection system.

BARBER-COLMAN CO., Rockford, Ill., announced a new Selecta-System Gas Chromatograph, designed with a unit concept and featuring component selection with a flexibility which makes approximately fifty different systems available.

FRENKEL C-D CENTRAL CO., LTD., Basle, Switzerland, has made available a Research Unit which for the first time makes new product formulation, design, and testing a continuous, one-step process. They claim that the only other step required to specifying production is virtually reading from a graph the size and hp of C-D Units required to handle the production outputs. The complete control and automation system and components for the actual production can be designed in conjunction with and tested on the C-D Research Unit directly, and need only be hooked up to the Production Units hereafter.

SCIENTIFIC PRODUCTS, Division of American Hospital Supply Corp., Evanston, Ill., now produces moisture dishes, designed in accordance with specifications outlined in procedure for flour determinations. "Cereal Laboratory Methods," American Association of Cereal Chemists, 6th Ed., 1957. They are supplied with slip-in covers for tight fit, and made of spun aluminum, measuring 55 mm in diameter and 15 mm deep. The Company has also released a flash heater unit, designed to confine heat concentration, enabling an instant rise in temperature. Polished chrome housing measures 6 x 6 in.; height 6½ in. Tapered openings for round bottomed flasks measure 4 in. or more.

ARCHER-DANIELS-MIDLAND CO. has developed a new method of controlling chemical reactions by means of "timed release" particle coatings. The first application of the technology has been to fertilizer, to control the release of plant nutrients. Research scientists are now seeking to apply the coatings technology in other areas.

• *Obituary*

Ernest Schlenker (1951) passed away January 10, 1963. Dr. Schlenker was a consulting chemical engineer in Marseille, France.

Hydrogenation of Triglycerides . . .

(Continued from page 26)

teristics. Catalyst poisons, when present, are generally thought to poison the most active sites first. Consequently, not only is the activity of the catalyst decreased, resulting in slower rates of hydrogenation, but, in addition, selectivity and isomerization characteristics may be changed. Any decreased selectivity and isomerization of used catalyst (with decreased activity) can often be explained, in part at least, by increased hydrogen concentrations on the catalyst surface.

Changes at the catalyst surface with use, such as changes of the type and number of active sites, are important. The literature gives some information pertinent to this. Bailey (6,7) for example indicates that sulfur-poisoned catalysts are less selective. His use of the term selectivity as applied to catalysts is rather ambiguous; however, one of his graphs indicates that either the iso-oleic (or *trans*) acid content increases for a given saturated acid content or the saturated content increases for a given iso-oleic content. He reported a similar finding when a catalyst was used in oils at very low concentrations. At such conditions, the catalyst is "more used" to perform the necessary hydrogenation than when larger quantities of catalyst are used. The type or quality of the oil also appears to be important. Eldib and Albright (13) found, for example, that when they used 0.03% nickel in cottonseed oil, selectivity (as defined by polyunsaturate and saturate contents) was unchanged but isomerization was increased as compared to runs at 0.07–0.15% nickel. On the other hand, Wisniak and Albright (21), who used what was probably a more highly purified cottonseed oil, found that selectivity and isomerization both decreased as the catalyst concentration was decreased from about 0.04–0.07% to 0.02% nickel. In each of the above two series of runs, the rate of hydrogenation (hence the activity of the catalyst) was much lower for the runs made at low catalyst concentrations, than would have been expected as compared to the runs with higher catalyst concentrations. It is hoped that research now in progress will help give information pertaining to used catalysts.

In some continuous flow reactors, possibly the only controlling diffusion step involves an unsaturate or saturate group of the triglyceride. In which case, increased catalyst concentrations would decrease selectivity and isomerization. There may be other reactors in which both diffusion steps for the hydrogen and the unsaturate are partially controlling. Then the ratio of the hydrogen to the unsaturate groups on the surface of a specific catalyst would be most important. Increasing this ratio (caused by changed operating conditions) would result in less selectivity and less isomerization. The results of Sims (20) can be explained by such reasoning. He had hydrogenated at high pressures with probably moderate agitation. Quite possibly in this case mass transfer steps for the unsaturated acid groups were controlling. Hence increased agitation would increase selectivity as occurred in his study.

Increased interest has been shown in the last few years in continuous flow hydrogenators. Procter and Gamble Co. is, however, the only American company that is known to be using such a reactor for partial hydrogenation. In their reactor (18) the oil, catalyst, and hydrogen are contacted at or near the reactor inlet. Obviously some of the hydrogen is dissolved in the oil, but presumably three phases (gas, liquid, and solid) are present at the reactor inlet. As the hydrogen is reacted, possibly the gas phase disappears leaving only liquid and catalyst phases; presumably the controlling diffusion resistances would then involve unsaturated groups rather than hydrogen. Solubility data such as obtained by Wisniak and Albright (21) should be most helpful in designing such a reactor and estimating the selectivity and isomerization characteristics of the resulting hydrogenation.

Mechanism of Catalytic Reactions

Various combinations of adsorption, surface reaction,

and desorption steps have been considered for the hydrogenation of light olefins (17) and later for triglycerides (13,21). Experimental data were needed in which mass transfer resistances were essentially eliminated since it was necessary to know the concentrations of reactants at the catalyst surface. Such data were obtained for hydrogenation runs of triglycerides over wide ranges of operating variables (13,21). These kinetic data indicate that the probable reaction mechanism involves the reaction between the unsaturated group, which is physically adsorbed, and atomically chemisorbed hydrogen. The surface reaction is the controlling step. It is of considerable interest to find that a comparable mechanism has been earlier postulated for the hydrogenation of light olefins (14,15).

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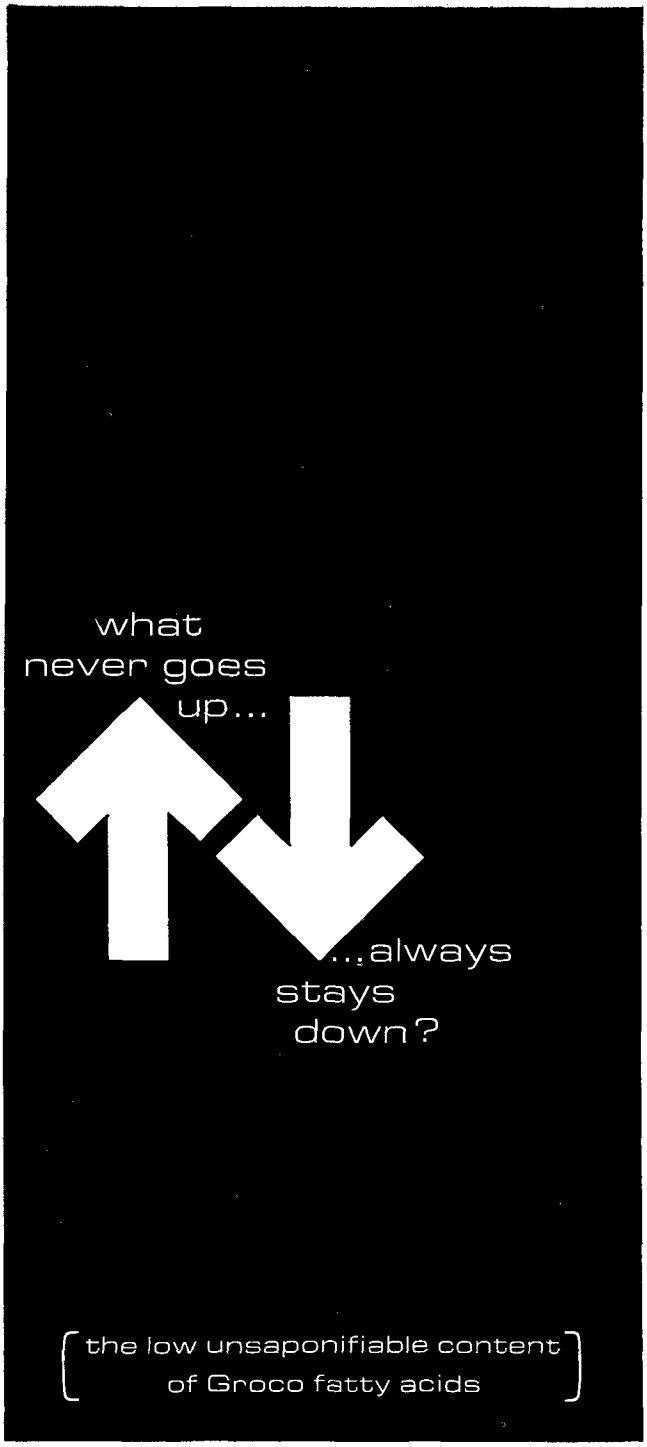
New Solvent Process Announced at A.I.C.E. Meeting

A process for exacting gossypol from cottonseed by a solvent process was announced at the 49th National Meeting of the American Institute of Chemical Engineers. It was the subject of a paper, "Chemical Engineering Development of a Mixed Solvent—Extraction Process for Cottonseed," authored by E. A. Gastrock (1941), E. L. D'Aquin (1938), E. Keating, and H. L. E. Vix (1946) of the Southern Regional Research Laboratory, U.S.D.A., New Orleans.

The problem was to remove as much gossypol as possible, This toxic material "derived originally from small oval-shaped glands" in cottonseed and "responsible for certain toxic and antinutritional properties which limit the use of cottonseed meal as feed for poultry and swine."

In contrast to contemporary commercial extraction processes, this mixed solvent process is reported to use a mixture of hexane, acetone, and water and is designed to: remove most of the gossypol from the meal along with the oil; yield an extracted meal with not over 1.5% residual oil; use processing conditions that will not harm the meal by heat damage, reduction of epsilon-amino-free lysine content or other causes.



And low usually means the lowest available. Unsaponifiables in our Stearic Acids, for instance, average just 0.04%; in our Low Linoleic White Oleine, 0.50% max. Product after product in our line reflects similar reductions in undesirable impurities — reductions that are held from shipment to shipment. What's behind it all? Up-to-date equipment. The latest refining and distillation techniques. More than a century of experience. Where does it all lead to? Reduced costs and fewer rejects for you. Let our technical service staff show you why. Or, write for the latest edition of our publication, "Fatty Acids in Modern Industry."

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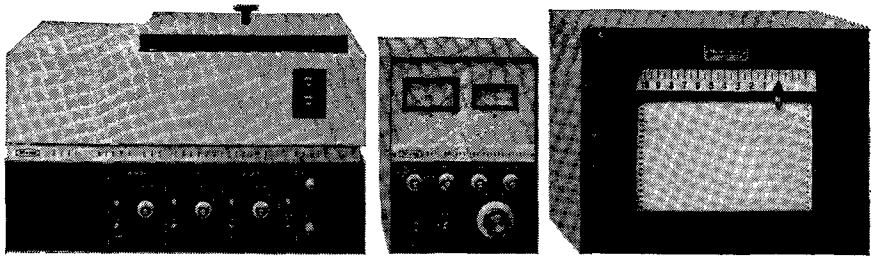

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The Model 700 is an important adjunct to F & M's line of research gas chromatographs. It is ideally suited for separations which must be frequently repeated. The design and rapid heating and cooling characteristics of the column oven makes it possible to quickly and easily interchange columns without baseline disruption. It is also useful as a teaching instrument incorporating such gas chromatographic features as dual column operation, high temperature performance and temperature programming.

The F & M Model 701 is the same as the 700 except that it includes proportional temperature control on the column oven and a DC bridge power supply.

For more information on the Model 700, other F & M instruments and a copy of the new F & M Columns and Accessories Catalog, write to F & M Scientific Corporation, Route 41 and Starr Road, Avondale, Pennsylvania, 215-COlony 8-2281. *European Subsidiary: F & M Scientific Europa N. V., Leidestraat 67, Amsterdam, The Netherlands.*

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Protein Isolates to be a Major Food Industry

"Feeding the world is an astronomical problem," were the words of G. W. Irving (1942), Deputy Administrator, ARS, So. Utiliz. Res. & Dev. Div., U.S.D.A. "It is only with proper use of protein from both seed and animal that this will be accomplished." C. H. Fisher (1951), Director, Southern Division, read Dr. Irving's greeting words to the opening session of the recent Seed Protein Conference in New Orleans.

It was reported that millions of pounds of food will be made in the future from protein isolates, and in many different forms, for less than half the cost of these materials today. They may also be superior in keeping qualities, flavor, fat content, and other characteristics to the animal proteins. To build a solid basis for dealing with seed proteins, however, we must understand them in the environment wherein they exist, in the seed itself—within the framework of protein chemistry and biochemistry.

These protein isolates are now at the place of take-off in the West . . . a whole new industry, and not merely a few new products; it must be approached accordingly. UNICEF is already working on a world program, recognizing not only the importance of seed proteins in this program, but the fact that they can be produced easily, cheaply, and in large quantities in countries where the need is greatest. However, one of the foremost problems is to persuade people to accept new foods that are strange to them. Improved technology in the processing and utilization of seed proteins is badly needed.

• *Industry Items*

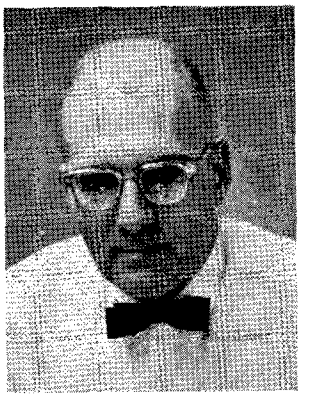
CREST FOOD CO., Chicago, Ill., has announced the formation of Crest Products, Inc., to act as their marketing and technical service representatives. It will also represent the Specialty Products Division, General Mills, Inc., Minneapolis, Minn., in cooperation with that company's present sales and service organizations. Officers of the new firm are Sigmund Hoffman (1956), D. W. Johnson, and E. A. Buelens. Mr. Hoffman will remain in the East.

F. HOFFMAN-LA ROCHE & CO., LTD., Basle, Switzerland, and L. GIVAUDAN & CO., LTD., Geneva Switzerland, jointly announced an agreement for close future cooperation in the field of aromatic chemistry. Hoffman-LaRoche has been actively engaged for several years in this field, which is closely related chemically to some of its existing processes; while Givaudan has long been one of the leading firms in the world-wide production and marketing of these products.

C. A. Snell

S. D. Gershon

T. F. Protzman



Daniel Schoenholz

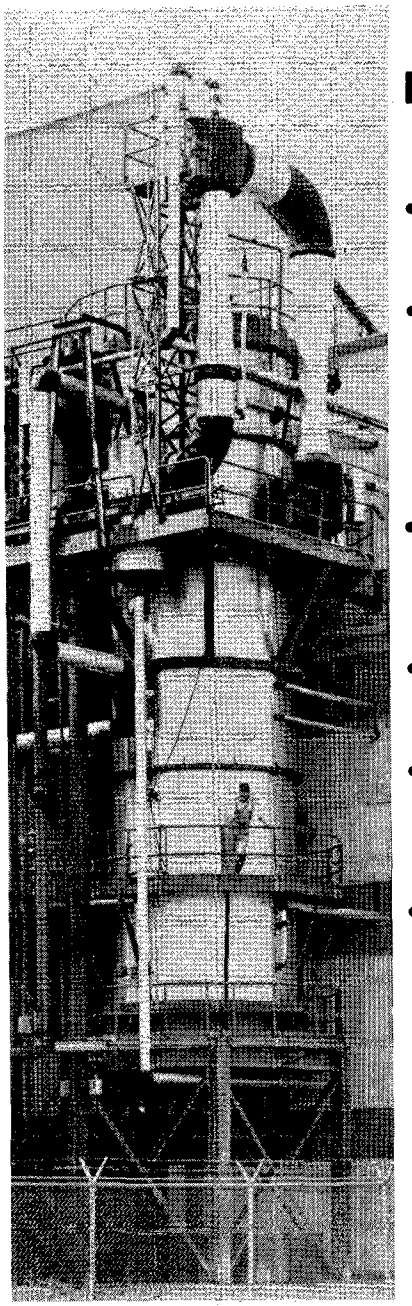
C. A. Snell (1951) recently assumed his duties as Vice President and General Manager of the Baltimore Laboratories of Foster D. Snell, Inc., who are consulting chemists with research services, particularly in the analytical, testing, biological and coating fields. Dr. Snell joined the organization in 1945, serving as Director of Analytical Chemistry and Account Executive. He had previously been associated with Aluminum Research Laboratories.

S. D. Gershon (1952) has been appointed to the newly created position of Associate Research Director for Lever Brothers Company. He had served as Development Manager for Household Products. A former professor of chemistry at the University of Illinois, he joined the Pepsodent Company as a Research Chemist in 1943, a year before it was acquired by Lever Brothers.

T. F. Protzman has been named Director of the Application Research Dept. of A. E. Staley Manufacturing Co. He had served as Section Manager of Physical Sciences in chemical research since 1960. Prior to that date, Dr. Protzman acted as Evaluation Group Leader of the company's physics, physical chemistry, and analytical laboratories. He was previously employed at Rohm & Haas Co.

Daniel Schoenholz has been elected Vice President of Foster D. Snell, Inc. He formerly served as Chemist, Group Leader, Account Executive, and Secretary of the corporation. Previous to joining the firm in 1944, he was a chemist with the U. S. Chemical Warfare Service.

B. W. Beadle (1943) recently joined Consumers Cooperative Association as Executive Director of Research and Development. He will be responsible for organizing and directing a research program in the Midwest that will reach into all phases of the farm supply business and related activities. Dr. Beadle served as Manager of Midwest Research Institutes' chemistry and chemical engineering division since 1957.



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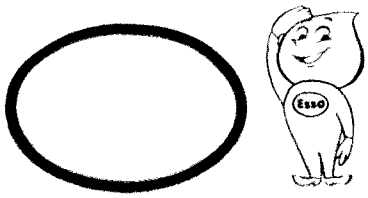

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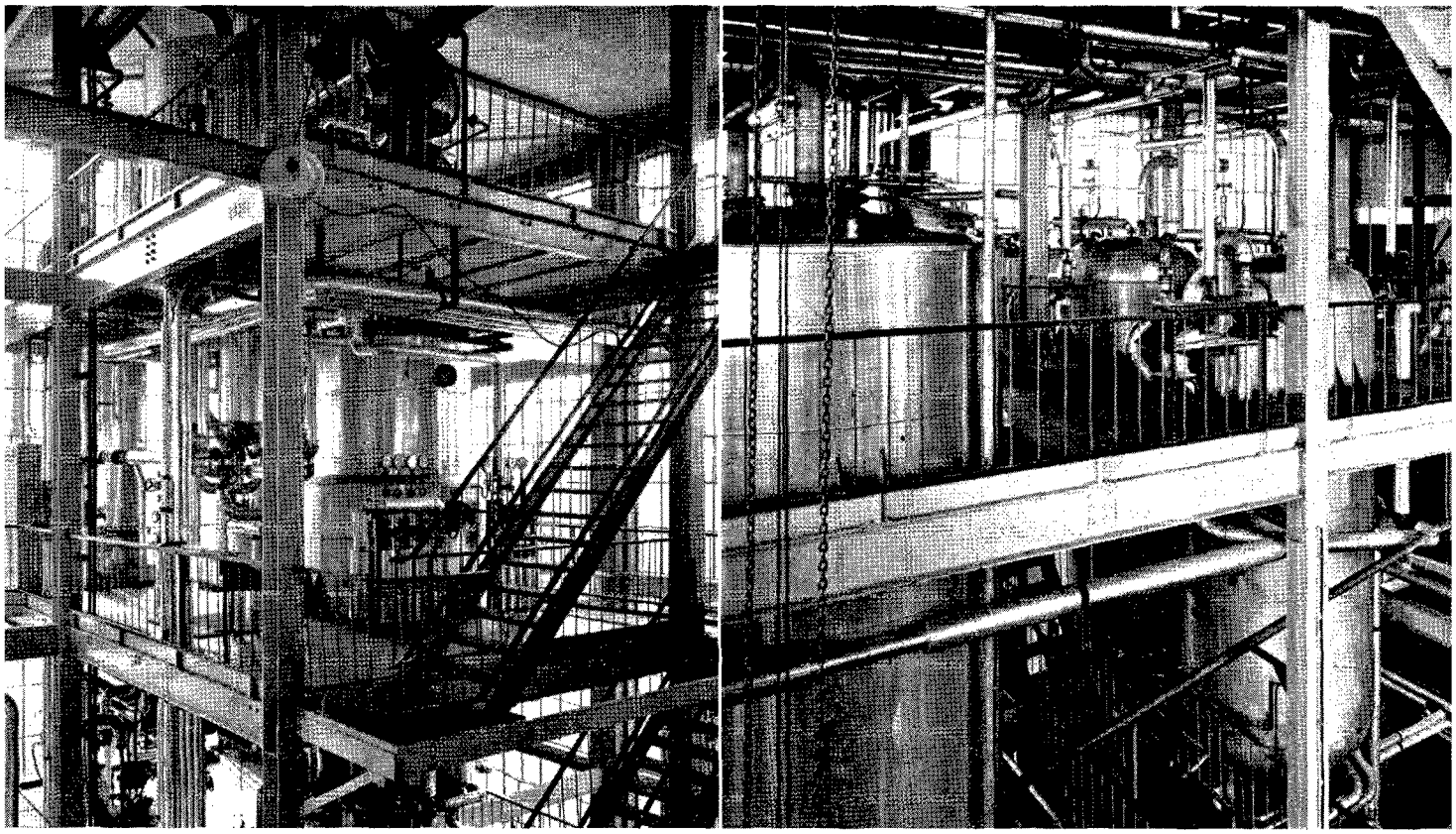

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