Food Fat Production to Be Up Sharply in 1958-59

Well, most of the important export deals to be made under Public Law 480 are still in the rumor stage, but at least the rumors are gaining detail so we shall take advantage of them to examine the 1958–59 crop year outlook a little more closely. There will still be one tremendous question mark left regarding the disposition of the 185 million pounds of cottonseed oil being acquired by the C.C.C., but if we wait for the answer to that one, the game may be almost over; we'll try to make the best of what's available.

To begin with, production increases will occur in all of the principal food fats and oils during the year which began on October 1, 1958, and they will be substantial. We can estimate that commercial lard production will be 2½ billion pounds, up 253 million pounds from the year before. Using an assumed soybean crush of 380 million bushels and an average oil yield of 10.6 lbs. per bushel will give us 4,030 million pounds of soybean oil, up 230 million pounds from 1957–58. So far as cottonseed oil is concerned, we shall use a figure of 1,520 million pounds, which would be 105 million pounds above last year. (This reflects the increased cottonseed production as well as the expectation of a bigger August-September in 1959 than in 1958.) Finally, we shall estimate the production of the "other" food fats (corn oil, peanut oil, olive oil, and edible beef fats) during 1958–59 at 700 million pounds, up 41 million pounds from the year before, to reflect the larger peanut supply and heavier cattle weights.

The total production in these four groups, then, would be 8 billion, 750 million pounds, compared with only 8 billion, 121 million pounds in 1957–58. These extra 629 million pounds have to be accounted for so let's try and figure out where they will go. It is obvious that the domestic market cannot absorb the increase so we shall have to rely heavily on a bigger export market to avoid a burdensome increase in stocks. Starting from scratch, we shall estimate that the total domestic demand for all fats and oils (except butter) for food uses in 1958–59 will be 6,480 million pounds, compared with 6,457 million pounds in 1957–58. (Actual consumption will increase more than this, but we do not think that the domestic demand will benefit in the current year from the addition to pipeline supplies which apparently occurred last year.) Of this demand, less will probably be satisfied by the food uses of the so-called "nonfood" fats (principally coconut oil and palm kernel oil), leaving more to be satisfied by the four classes of "food fats" whose production we discussed in the second paragraph. We can also guess that more of our food fats will be consumed in nonfood uses (mostly paint and varnish), adding further to their demand. This can all be said in a table.

If the domestic demand, then, for our domestically-produced food fats is going to be 6,650 million pounds compared with 6,579 million last year, this increase of 71 million pounds will help get rid of our 629-million-pound increase in production, but it's plain to see we've still got a long way to go before resting easy. Well, the Department of Agriculture has helped out in this matter by buying 185 million pounds of cottonseed oil. We don't know what they are going to do with it, but, for the time being, let's assume that they just stand still and are content to isolate it from the supply picture. (This may not be a safe assumption, but we'll let the U.S.D.A. worry about those 185 million pounds. We've got enough to worry about. Besides we'll come back to this point later on and see what it might mean if the assumption isn't correct.)

If the domestic demand increases 71 million pounds over last year and the Department of Agriculture takes 185 million pounds off the market, that's 256 million pounds accounted for of our 629 million increase in production, leaving 373 million pounds to concern us. Here we can make the problem a little easier by recalling that last year reported stocks of food fats (and products made from them) decreased 80 million pounds during the year so we can allocate 80 million pounds of our increase in production to hold commercial stocks unchanged this year and prevent another such decrease from taking place. (From our previous assumption however about that U.S.D.A. cottonseed oil, stocks of government-owned oil will be 185 million pounds at the end of the crop year as compared with zero last year.)

TABLE I

Calculation of Domestic Demand for Food Fats and Oils,[a] 1957–58 and 1958–59

	Million pounds	
	1957–58[e]	1958–59[e]
Actual domestic consumption all fats and oils[a] for food	6,360*	6,480*
Increase in pipeline supplies *	97*	0*
Domestic demand all fats and oils[a] for food	6,457	6,480*
Less, food uses of "nonfood" fats[b]	286	260*
Domestic demand food fats and oils[c] for food	6,171	6,220*
Plus, nonfood[d] uses of food fats and oils[c]	476	490*
Total domestic demand for food fats and oils[c]	6,647	6,710*
Less, that part of demand satisfied by imports	68	60*
Total domestic demand for domestically produced food fats and oils[c]	6,579	6,650*

* Estimated.
[a] Except butter.
[b] Principally coconut and palm kernel oils.
[c] Lard, cottonseed oil, soybean oil, corn oil, peanut oil, olive oil, and edible beef fats.
[d] Principally paint and varnish.
[e] October year.

Reliance on Increased Exports

Now we've got our increase in supplies cut down to only (only?) 293 million pounds, and the question is whether the export market can expand this much. If the U.S. can increase its shipments overseas by 293 million pounds, then our original big jump in production is all spoken for. If it can't, then some of the 293 million pounds will go to increase stocks. It's time for another table and then a closer look at exports.

Of the 1,622 million pounds of exports in 1957–58, 459 million pounds were lard, 245 million pounds cottonseed oil, 803 million pounds soybean oil, and 115 million pounds

TABLE II

Calculation of Export Availability of Domestically-Produced Food Fats,[a] 1958–59, Assuming no Change in Stocks

	Year beginning October 1	
	1957–58	1958–59
	(million lbs.)	*(million lbs.)*
Beginning commercial stocks, Oct. 1	796	716
Domestic production of food fats and oils[a]	8,121	8,750*
Total supply	8,917	9,466*
Less, domestic demand for domestically-produced food fats and oils[a] (from Table I)	6,579	6,650*
Less, acquired and held[b] by U.S.D.A.	0	185*
Available for exports and ending stocks	2,338	2,631*
Ending commercial ("free") stocks	716	716*
Available for exports[c]	1,622[d]	1,915*
(Change in stocks during year)	(−80)	(0)*

* Estimated.
[a] Lard, cottonseed oil, soybean oil, corn oil, olive oil, peanut oil, edible beef fats.
[b] Maybe.
[c] Includes shipments to Puerto Rico and U. S. possessions.
[d] Actual exports in 1957–58.

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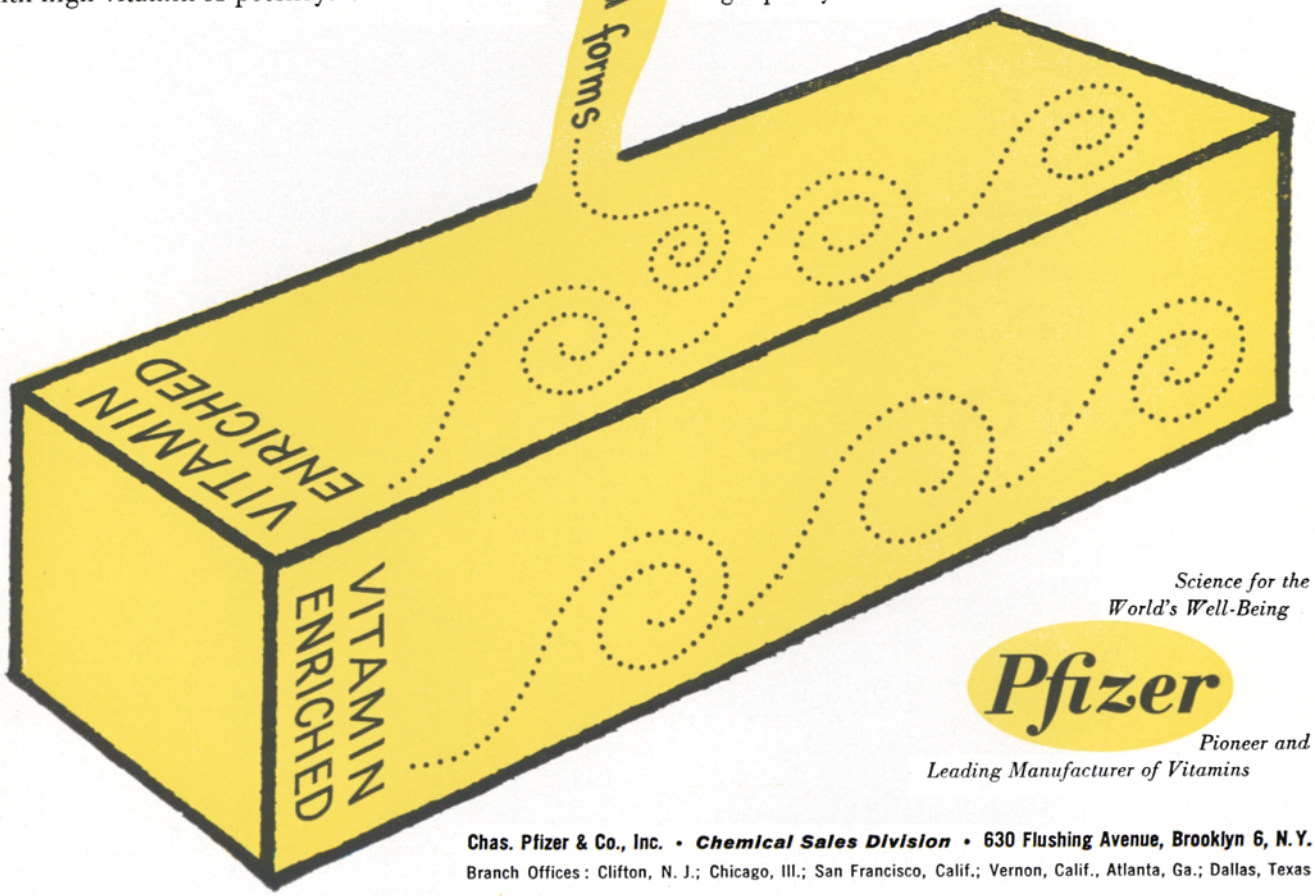

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"other" food fats and secondary products. We might optimistically assume that lard exports will increase to 500 million pounds this year principally because of lower hog slaughter in Europe and that exports of "other" food fats and secondary products will be 130 million pounds. Removing this 630 million pounds from the 1958–59 export availability of 1,915 which we arrived at in Table II, we have 1,285 million pounds to satisfy the export demand for cottonseed oil and soybean oil. Let's see where it might go.

We already have official export figures for these two oils covering October and November and also have a fair idea of bookings for December and January. Besides that, there are some purchase authorizations outstanding under PL 480 and more to follow. Using these as well as those among the current crop of rumors which seem most reasonable and making estimates for free dollar business, we can come up with the following guesses for exports during the 1958–59 season:

	Million lbs.	
Italy	8.0	Shipped under prior PL 480 authorization
Pakistan	44.0	PL 480 agreement signed
Turkey	185.0	PL 480 agreement expected
Ecuador	3.0	Partly shipped and partly authorized under PL 480
Belgium, Holland, and Germany	114.0	Partly shipped and partly on reports of bookings and partly estimated
Morocco	11.0	Mostly shipped
Israel	17.0	PL 480 authorization outstanding
Burma	11.0	PL 480 agreement signed
Poland	35.0	PL 480 authorization outstanding
Spain	467.0	Already shipped, booked, or PL 480 agreement signed
Yugoslavia	75.0	PL 480 authorization outstanding
Canada, Mexico, Central and South America, Caribbean, Europe, Africa, and Far East, exc. above	113.0	Free dollar business
Total	1,083.0	

That's not bad for a starter, considering the fact that last year total exports of these two oils were only 1,048 million pounds, but it still leaves us 202 million pounds so we may have to let our imagination become a little more active.

We hear that the Italian and Greek olive oil production is likely to be sharply lower this year so we might allow 100 million pounds for them to share. (It would probably be under PL 480.) We might also guess that such countries as Morocco, Ecuador, Israel, Poland, Taiwan, and Colombia might take another 40 million pounds among them (besides the quantities listed above) especially if they get any encouragement from the administrators of PL 480. That reduces our problem to a mere 62 million pounds, and we haven't even used up all the Spanish rumors yet. (If you were to accuse me of wishful thinking in this paragraph, we could debate whether it were either wishful or thinking, but we might have to admit to being a little fanciful.)

One thing should be clear by now. It requires a fairly active imagination to dispose of the expected increase in production. If the required export business doesn't entirely materialize, then some increase in commercial stocks would probably occur. This might not be so bad, though, because they were pretty low at the beginning of this year and could stand being a little larger. It's time now to refer again to our earlier assumption that the U.S.D.A. would hold on to its 185 million pounds of cottonseed oil. If this is not the case and part of this oil is used to satisfy any of the export demand we have discussed above, the effect would be to diminish the amount of export business which would come out of nongovernment supplies and add to commercial stocks of oil. There would, of course, be a corresponding decrease in the government inventory.

There could be a good chance incidentally that a large portion of the export business to be done this year will be done in the next four months. If so, stocks may be kept at fairly low levels until the summertime.

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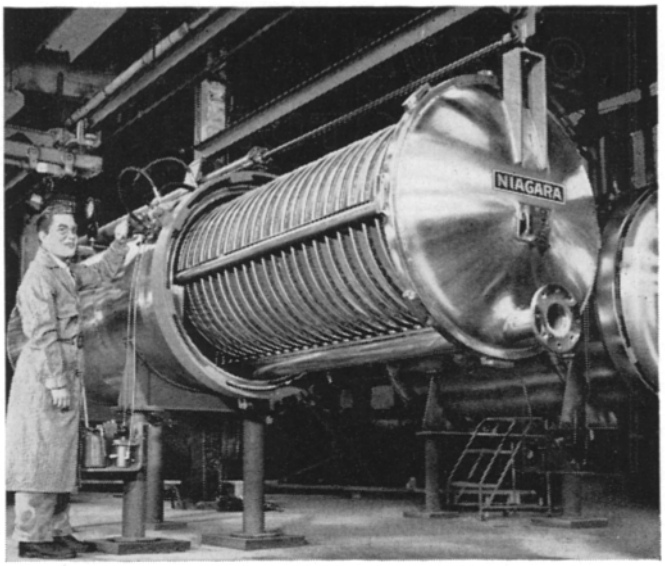

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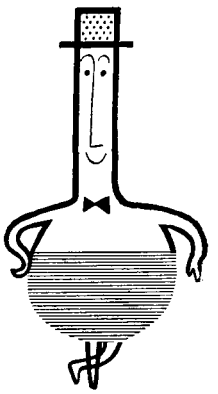

Meetings

A.O.C.S. National Meetings

1959—New Orleans, Roosevelt hotel, April 20–22
Los Angeles, Statler Hilton hotel, September 28–30

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, Hotel Sherman, November 6–8

1962—New Orleans, Roosevelt hotel, May 7–9
Toronto, Royal York hotel, October 2–4

1963—Atlanta
Minneapolis

A.O.C.S. Section Meetings

North Central—March 25, and May 27, 1959, at the Builders' club, Chicago, 6:30 p.m.

Northeast—first Tuesday of February, April, and June, 1959, 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 8, 1959, at Rodger Young Auditorium, Los Angeles, 6:30 p.m.

Other Organizations

February 11–13—National Association of Corrosion Engineers, Canadian regional meeting (west), Calgary

February 16–17—Eighth Annual Cottonseed Processing Clinic, Valley Oilseed Processors' Association, U.S.D.A., New Orleans

March 2–6—Tenth Annual Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Penn-Sheraton hotel

April 1—Twenty-eighth Annual Meeting, Inter-Society Color Council, Statler Hilton hotel, New York

Fatty Acids Reported On

Production of fatty acids in November 1958 totalled 37.0 million lbs., of which 6.0 million lbs. were tall oil fatty acids in the "less than 2% rosin category." Types split from animal and vegetable fats totalled 30.9 million lbs., compared to 35.2 million lbs. in October 1958 and to 33.4 million lbs. in November 1957.

Fatty acid disposition in November was 39.9 million lbs. *versus* 41.1 million lbs. in October. November disposition of fatty acids from tall oil (as defined above) was 6.1 million lbs. Disposition of other types was 33.9 million lbs. in November as compared to 35.5 million lbs. in October and to 31.6 million lbs. last year.

Finished goods inventories were 29.1 million lbs. at the end of November, down 1.7 million lbs. from the October 31 level. Work-in-process stocks increased slightly from last month.

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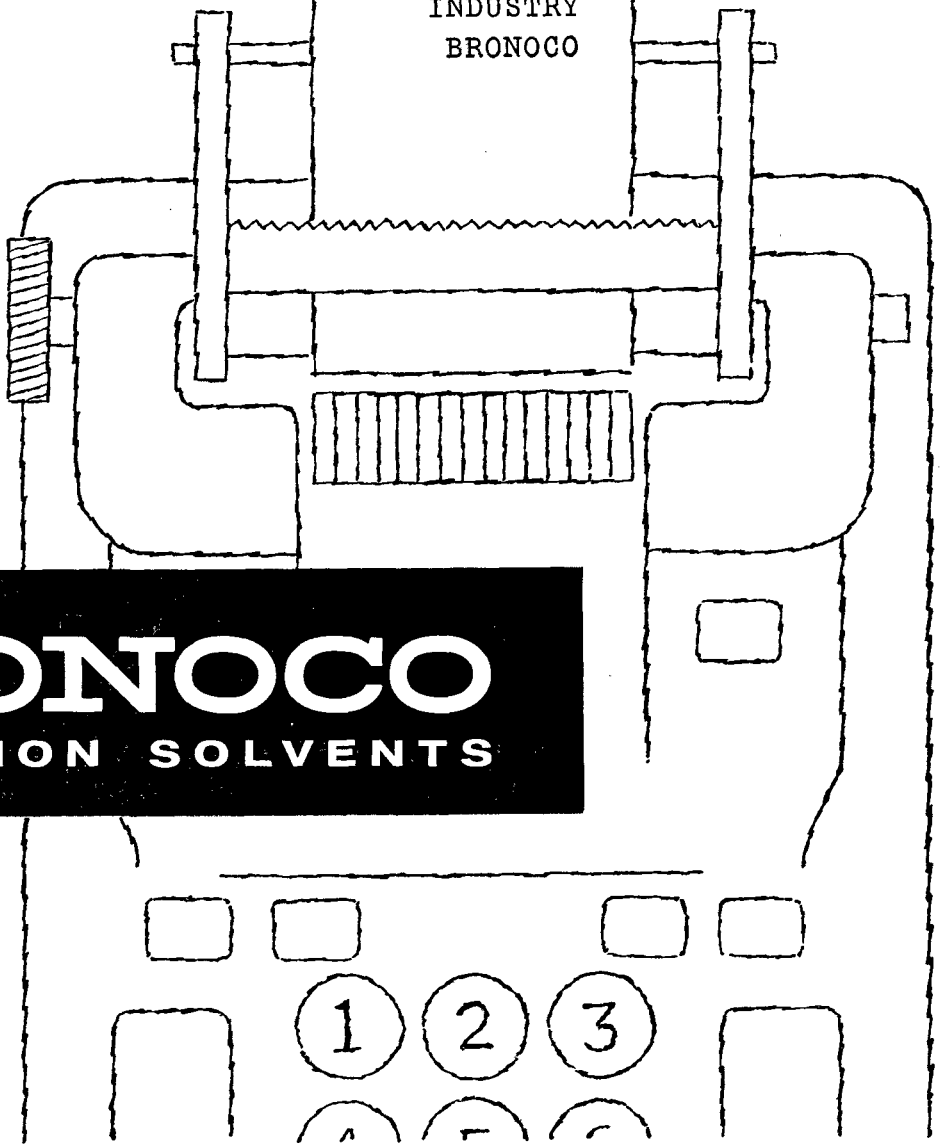

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• *Received in the Journal Office*

The 43rd annual edition of the Chemical Engineering Catalog for the process industries has just been published by the Reinhold Publishing Corporation, 430 Park avenue, New York 22, N. Y. Indices comprise Company Catalog, Functional Guide, Equipment and Materials of Construction Index, Engineering Services Index, and Trade Names Index.

The National Science Foundation, Washington 25, D.C., is publishing a new series of bulletins entitled "Scientific Information Activities of Federal Agencies," the first of which deals with the U. S. Department of Agriculture. These pamphlets will present information on general-subject fields in which scientific reports are prepared; categories of scientific reports issued; policies regarding the announcement and availability of these reports; locations and policies of the agencies' libraries and information centers; and miscellaneous other phases of scientific information programs.

The 10-page 1957–58 annual report of the Dairy Research Section includes data on Cheddar cheese production, development of new food products from milk, flavor chemistry of milk, and exporting of rindless cheeses. Copies may be obtained from the Commonwealth Scientific and Industrial Organization, Dairy Research Section, Box 20, Highett S. 21, Vic., Australia.

The Central Food Technological Research Institute has sent a copy of "Investigations on the Composition and Nutritive Value of Vanaspati," which has been published by the Council of Scientific and Industrial Research, New Delhi, India. This is Vol. II in "A Collected Account of the Researches Sponsored by the CSIR Vanaspati Research Advisory Committee, 1952–57."

G. Dijkstra of Vlaardingen, Holland, has prepared a 105-page book entitled "Infrared Absorption of the Carbon-Carbon Double Bond Stretching Vibration."

The Japan Society of Mechanical Engineers, 561 Marunouchi bldg., Chiyoda-ku, Tokyo, Japan, has published a 60-year history, 1897–1957, of its activities. Also available is the Bulletin of JSME, 1958, Vol. I, No. 3.

A reprint from Tropical Agriculture, a quarterly Journal of the Imperial College of Tropical Agriculture published by Butterworths Publications Ltd., 88 Kingsway, London, W.C. 2, England, is entitled Plantation Crops in Tropical Agriculture and is written by V. D. Wickizer.

The Instituto de Investigaciones Microquimicas, Bulevar Orono, 1261, Rosario, Argentina, has recently published "Publicaciones del Instituto de Investigaciones Microquicias," vol. XXIII, a 272-page bound volume containing 17 technical articles and an index.

• *Names in the News*

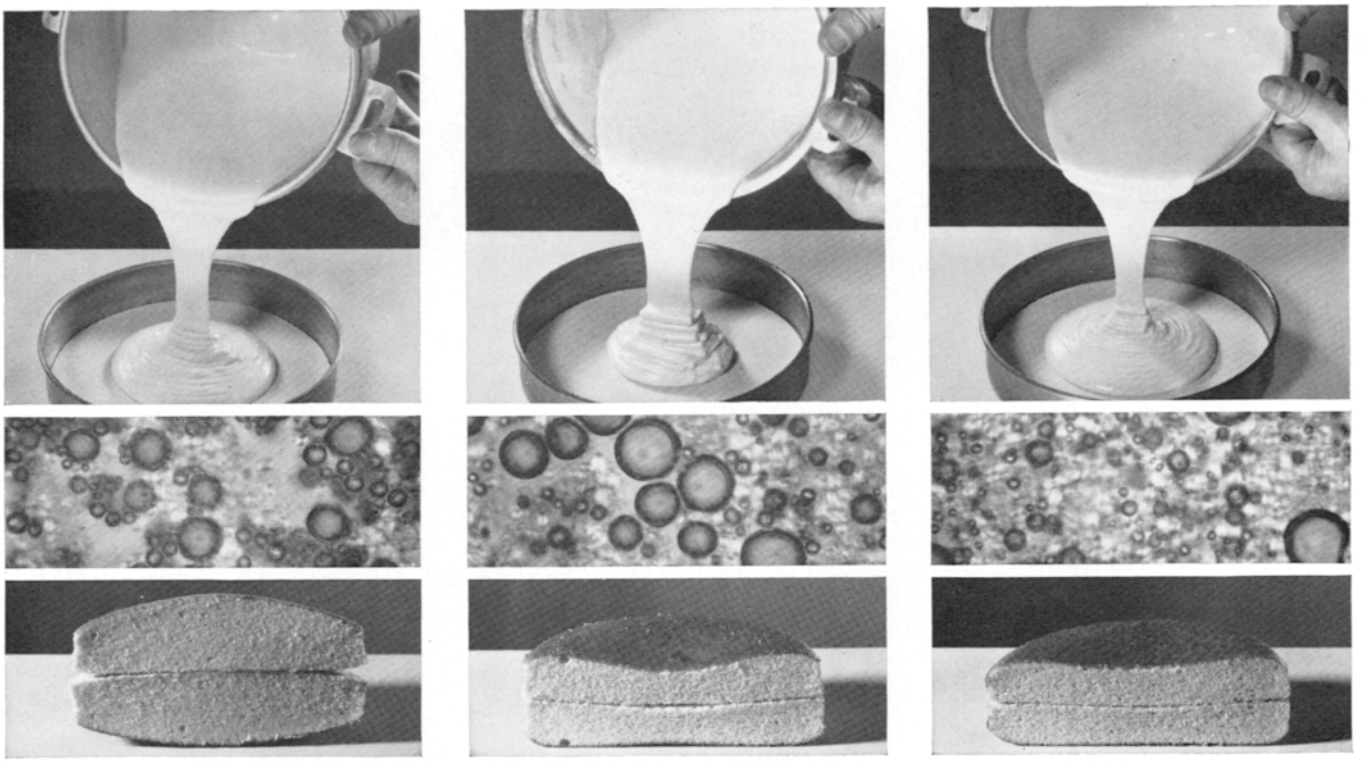
Lee F. Donley (1952) recently received an award for 25 years of loyal service to Hoffmann-La Roche Inc., Nutley, N.J.

S. G. Baker, general manager of the Organic Chemicals Department, E. I. du Pont de Nemours and Company, was elected president of the Synthetic Organic Chemical Manufacturers Association at its 37th annual meeting, held at the Roosevelt hotel, New York City, December 3, 1958.

Robert E. Baarson will evaluate newly developed chemicals within the research department at the Chemical Division of Armour and Company, Chicago, Ill.

A. R. Baldwin, director of research for Cargill Inc., Minneapolis, Minn., and editor, Journal of the American Oil Chemists' Society, was given a Distinguished Service Award at the Diamond Jubilee celebration of John B. Stetson University, Deland, Fla., on November 16, 1958.

Cake drama in three acts, starring the emulsifier



I II III

Curtain raiser Here is a rather thick but pourable batter with a very slight curdle. Below it, a peek into the live batter, one hundred times actual size, reveals a wide distribution of air bubble sizes. Not all the fat has been used up in making bubble walls. Darker areas of reserve fat are seen by the naked eye as curdle. Then, as the relatively weak-walled bubbles gently break during baking, the fat assumes its second role of coating the gluten-and-starch framework. First-act climax: a good cake. Excellent volume, fine and even grain, thin cell walls, whiteness.

Plot thickens It's the same formula otherwise, but emulsifiers have been chosen to make a very smooth, very thick batter. In the photomicrograph you see why there's no curdle: all the fat has been used in making big, thick bubble walls. You also see why the batter is so viscous: the big bubbles get in each other's way. Here, alas, the emulsifier builds *too much* strength into the bubble walls. Suspense. By the time the bubbles finally do break, considerable gas pressure has built up. The sudden release of energy shatters the still tender skeletal structure. Tragedy!

Anticlimax Now we have swung off to another extreme, using in the same formula emulsifiers that produce a very smooth and very thin batter. Note the small, uniform bubbles floating in a sea of liquid. (There's your low viscosity.) Note the fat all used up in making the bubbles strong. (No curdle.) Finale: in the oven, sudden energy release produces the same collapse as in Act II, with thick cell walls and open grain.

Program note: The offstage voice advancing hypotheses about bubble strength is that of one batter theoretician among many. He has never been inside a cake in the oven.

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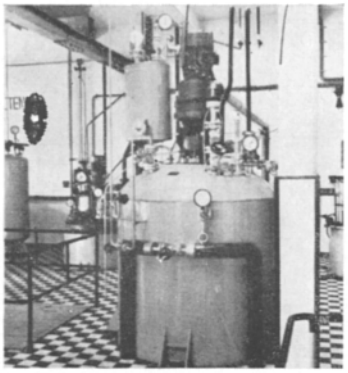
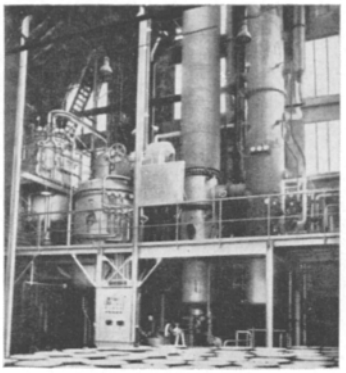
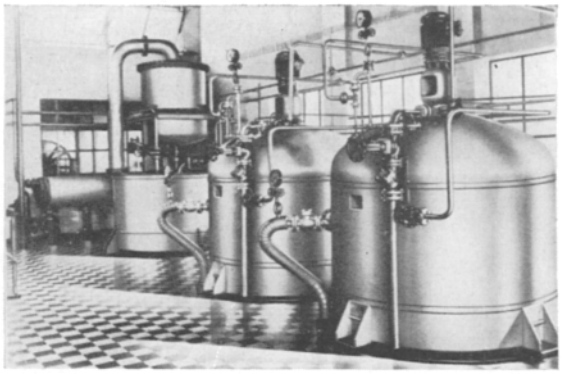


Hydrogenation

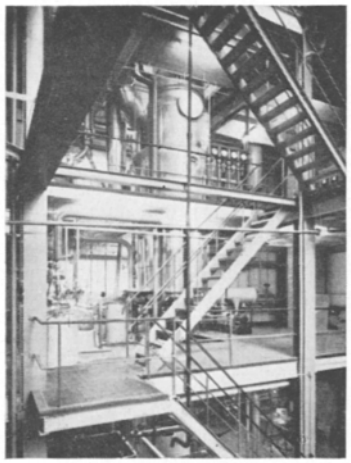


Glycerine Evaporation and Distillation

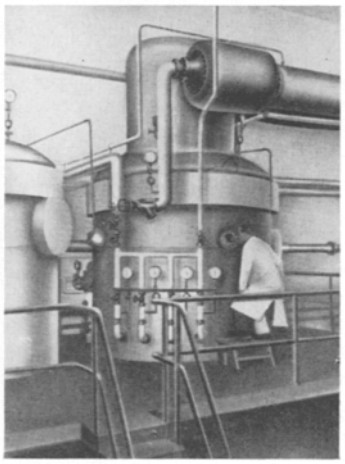


Fat Splitting

Plants and Processes for the Fats and Oils Industry



Fatty Acid Distillation and Fractionation



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Dominion Physical Laboratory, Lower Hutt (New Zealand)
National Bureau of Standards, Washington (United States of America)
National Physical Laboratory, Teddington (United Kingdom)
National Physical Research Laboratory, Pretoria (South Africa)
National Standards Laboratory, Sydney (Australia)

The international yard equals 0.9144 metre, and the international pound equals 0.453 592 37 kilogramme. The international inch is equal to 25.4 millimeters. An international grain equals .06479891 gram.

It has been agreed that, unless otherwise required, all nonmetric calibrations carried out by these laboratories for science and technology on and after July 1, 1959, will be made in terms of the international units or their multiples or submultiples.

ERRL Scientists Honored

Chemists at the Eastern Regional Research Laboratory were honored by the U. S. Department of Agriculture for their development of vinyl stearate, a component of plastics made from animal fats, which is now being produced on a commercial scale. The group received the Department's bronze plaque with a silver medal presented in a ceremony held on November 10, 1958, at the Philadelphia laboratory. It was accepted on behalf of the group by Waldo C. Ault, chief of the Animal Fats Laboratory. Other members of the research group are Daniel Swern, William S. Port, Lee P. Witnauer, Edmund F. Jordan, William E. Palm, and John E. Hansen.

Set Specifications for Drums

Two recent events mark further progress in the development of uniform national standards for metal containers, such as are used widely in the chemical, petroleum, and related industries.

Ten specifications for metal drums and pails ranging from 5 to 55 gallons have just been published by the American Standards Association, Dept. PR22, 70 E. 45th street, New York, N. Y., to sell for $1 a set.

A standards committee has been formed in the A.S.A., sponsored by the Steel Shipping Container Institute, to discuss further national standards work for metal containers and to deal with revisions proposed for existing standards.

The Fisher Scientific Company, Pittsburgh, Pa., announces the formation of a new company, Fisher Scientific de Mexico, S. A., in Mexico City and the opening of a Greater Philadelphia plant at King of Prussia, Pa.

The Milwhite Company, Houston, Tex., will introduce into its line new, high-efficiency, acid-activated clay absorbents for petroleum and edible oil refiners and other process industries about January 1, 1959.

The leading article in a recent issue of the Burrell Announcer of Scientific Equipment, Pittsburgh, Pa., was entitled "The Virginia Institute for Scientific Research," and was written by E. G. Armistead. Topics included in the article are Surface Chemistry, Proteins, Solid State Physics, Crystal Growth, and Equipment.

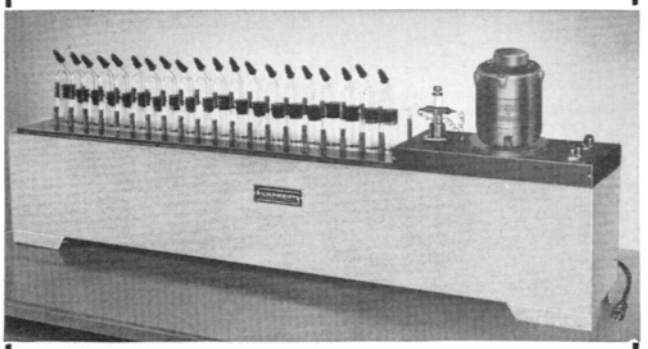
FAT STABILITY APPARATUS

Mercury Regulator—Electronic Relay
High Operating Temperatures—95° to 115°C
Air pre-heating prevents sample cooling

Designed by E. H. Sargent & Co. for use in the determination of relative stability or keeping quality of lards, fats and oils, based on the formation of peroxides and aldehydes in the process of oxidative decomposition.

Adopted as standard, company-wide equipment by principal packing firms. This improved apparatus is now offered with a highly sensitive and extremely reliable temperature regulating system employing an adjustable mercury thermoregulator and the Sargent electronic relaying system.

The apparatus consists of a thermostatically controlled bath to maintain the samples at operating temperature, a pre-heating and distribution system to condition and regulate air passing through the sample, and twenty aeration tubes.



The mineral oil heating bath is contained in a sheet metal tank and is heated by three electrical immersion heaters supplying, respectively, auxiliary power for rapid attainment of operating temperature, constant power to supply in part that heat normally lost through conduction and radiation, and intermittent heat to an extent determined by the thermoregulator. Oil circulation to ensure uniformity of temperature is accomplished by a centrifugal immersion pump. Operating temperature may be adjusted over the range of 95° to 115° C with a regulation of ±0.1° C.

The air distribution system consists of a glass manifold suspended from the cover and surrounded by the heating medium. Outlet tubulatures extend through the cover to each aeration position and are connected by segments of Neoprene rubber tubing through capillary orifices standardized at 2.33 milliliters of air per second. Inlet to the manifold is through a one-fourth inch diameter glass tube of which a forty inch section is immersed in the heating bath and which terminates in a tee connection at the cover.

Aeration tubes are 25x200 mm, Pyrex brand test tubes equipped with rubber stoppers carrying inlet and outlet tubes oriented for convenience in connection to the manifold and in organoleptic testing.

Length, 42 inches; width, 7½ inches; total height, 14¼"; maximum power consumption, 1100 watts.

S-63940 OIL STABILITY APPARATUS — Fat, Peroxide Method, Thermostatic, Electric. Complete with twenty aeration tubes, capillary orifices, pressure regulating columns and cord and plug for attachment to standard outlets but without wet test meter or gas purification train. For operation from 115 volt, 60 cycle A.C. circuits **$400.00**

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