and are used chiefly for decorative candles.

6. No known synthetic hardening agent for candle wax can be satisfactorily substituted for stearic acid, even in such a mixture as 95% paraffin (MP 135°) and 5% stearic acid.

LITERATURE CITED.

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(5) Geller, L. W., to Will and Baumer. U. S. Patent 1866025. (July 5, 1932.)
Geller, L. W., to Will and Baumer. U. S. Patent 1960994. (May 29, 1934.)
(2) Jaeger, A., to Selden Co. U. S. Patent 1959164. (May 15, 1934.)
(6) Luedecke, Wachse, page 40.
(3) Luedecke, Wachse, page 108.
(1) Seifensieder Zeitung, Vol. 44, 1933, page 791.
(4) Will, H. C., to Will and Baumer. U. S. Patent 1954659. (April 10, 1934.)

REPORT OF THE OLIVE OIL COMMITTEE

By M. F. LAURO, Chairman

PRESENTED AT THE 26TH ANNUAL MEETING, AMERICAN OIL CHEMISTS' SOCIETY, MAY 23-24, 1935

AS may be remembered, this committee undertook the drafting of certain specifications for Olive Oil and for Olive Oil Foots. We had a precedent for this in the work of the American Society for Testing Materials, in establishing values for linseed, soya bean and perilla oils. We had a stimulus for this in the increasing demand by the trade in these commodities for more definite and modern standards. At present neither text nor authority supply satisfactorily the needed information.

As a start, the following preliminary classification of values was sent around to each member for his comment and criticism.

For SPANISH, GREEK AND ITALIAN OLIVE OILS (comprising by far the largest group of oils being imported into this country):
oils being imported into this country):

	Normal or Recommended Limits	Outside Limits
Specific gravity at 15.5 C	0.915 to 0.920	.....
Iodine value (Wijs)	82 to 86	79 to 90
Saponification value	189 to 195	188 to 196
Titer of the fatty acids	17 to 26 C.	.....
Unsaponifiable matter (FAC)	Maximum 1.5%	.....
Crismer test	69 to 71 C. plus or minus 0.5	

Halphen, Villavecchia and Bellier tests to be negative.
Coin or Silver Benzoate tests and the Beilstein test to determine extracted oils.

For ALL FOOT OR SULPHUR OILS (irrespective of origin):

Iodine value (Wijs)	80 to 86	77 to 90
Saponification value	188 to 195	185 to 200
Titer of the fatty acids	16 to 23	.....
Unsaponifiable matter (FAC)	Maximum 2.25%	.....
Ash content	Maximum 0.20% to consist chiefly of iron oxide and only traces of lime, etc.	0.25%

Replies were received from time to time. And since the publication in the November, 1934, issue of our OIL AND SOAP of the committee report directing attention to its work and inviting comment from the trade as well as from chemists, I have had also some very interesting letters from dealers and sources outside the membership.

Dr. Jamieson states he would consider 90 as a proper outside limit for the iodine value of Italian and Spanish olive oils exported to this country, but for Tunisian and Dalamatian oils the limit should be 94. He also directs attention to the fact that the majority of iodine values given in the literature were determined either by the old Hubl method or that of Hanus, that the Wijs figures are some 2 to 4 points higher at times, and that therefore the values which I gave may be somewhat low. Agreeing with him that 86 as a normal upper limit for olive oil is too low, I would change this to 88. There is no question that the matter of method for obtaining iodine numbers is one to take into account in arriving at our limits. On page 93 of his text on "Vegetable Fats and Oils" we have the analysis by him of some authentic samples representing certain types of olive oils, as follows:

	Californian	Italian Bitonto	Spanish Borjas	Tunisian Sousse
Iodine No. (H)	85.1	84.4	83.7	86.0
Sap. No.	190.6	190.6	192.4	193.6
Unsap. matter	1.0%	1.1%	0.8%	0.8%
Acid value	1.5	1.8	1.8	1.9
Sp. Gr. 25/25 C	0.9119	0.9120	0.9116	0.9131

Mr. Dickhart gives the interesting information that he had outlined rules, some time ago, for use by the Olive Oil Association in transactions in olive oil products. He would classify olive oil by reviving the four grades, namely, Edible, Commercial, Technical and Olive Oil Foots. The edible grade would follow the U. S. Pharmacopeia requirements, except that the iodine value be determined by the Wijs method and be not less than 82 nor more than 85, that the specific gravity at 15.5 C. be from 0.914 to 0.919, the titer 17 to 26, coin, etc., tests negative. For commercial grades, moisture and impurities must not be over 2 per cent and free fatty acidity as oleic must be under 5 per cent. The technical oils must show either a positive coin test or the copper wire (Beilstein) test, to indicate that they are extracted olive oils. And olive oil foots must be oil extracted from olives or the pulp of same with carbon bisulphide or other (halogenated) solvent, and to grade "Prime Green," must be of a natural green color, not dyed, and must saponify with 20 degrees Beaumé lye to a soap of a definitely green coloration.

Dr. August Gill gave his approval to the proposal to draw up specifications and considered the limits first tendered as being reasonable ones.

M. L. Sheely supplied data representing 40 samples of olive oil

and 21 samples of olive oil foots, as follows:

OLIVE OIL:	Minimum	Maximum	Average	Suggested Limits
Iodine No. (W)	80.3	88.7	84.4	80 to 89
Crismer value	68.2	70.6	69.3	68 to 71
Sap. value	...	...	...	189 to 195
Titer	...	...	...	17 to 25
Unsaponifiable	...	...	...	Maximum 1.5%
Free fatty acids	1.1%	5.7%	4.2%	Maximum 5%*
Moisture	0.04%	0.94%	0.21%	Maximum 1%*

*These values would apply to the commercial and not edible grades. Halphen, Coin, Silver Benzoate and Beilstein tests to be negative.

OLIVE OIL FOOTS:	Minimum	Maximum	Average	Suggested Limits
Sap. value	186.0	192.8	190.1	186 to 193
Iodine value	77.1	83.2	79.8	77 to 86
Titer	17	24.4	21.3	17 to 24
Free fatty acids	33.7%	62.6%	52.4%	.....
Moisture	1.00%	2.40%	1.82%	Maximum 2.00%
Unsaponifiable	1.32%	2.18%	1.87%	Maximum 2.00%
Total M. I. U.	2.86%	4.48%	3.73%	.....

R. C. Stillman agrees with Dr. Jamieson that a satisfactory way to arrive at values for oils from Algeria, Tunis, Morocco and Dalmatia would be to determine the characteristics on samples obtained for this purpose. He also feels as Mr. Sheely indicates, that limits for free fatty acidity and for moisture should be included in our classification. The following figures are submitted by him for consideration as typical olive oil foots, having approved in general the basic values for olive oil that were presented him for comment.

From the preceding data, Mr. Stillman concludes that while the values I submitted agree fairly well with what he has found, perhaps my limits on iodine and titer values are somewhat too narrow.

Summing up, it would seem that we are not far from substantial agreement. A good start has been made. We hope to take up the study of oils from other localities than Italy and Spain just as soon as the chairman can obtain the necessary samples. Meantime he is in receipt of some comment from the trade which, together with additional data from the committee, will appear in a subsequent report. We repeat our invitation to the olive oil trade to favor us with comment and criticism, in order that we may submit a draft of tentative values for adoption at the fall meeting.

OLIVE OIL FOOTS.

	Max.	Min.	Avg.	Mean Deviation	Limits*
		32 samples			
Saponification No.	199.0	189.5	194.5	1.6	189 to 200
Iodine value	88.3	84.8	83.3	3.2	73 to 93
Titer	25.0	17.7	21.5	1.4	17 to 26
		33 samples			
Saponification value	199.7	187.5	193.3	1.6	188 to 199
Iodine value	89.8	76.8	82.7	2.3	75 to 90
Titer	23.0	17.5	20.5	1.1	17 to 24

*Based on a limiting value equal to Avg. ± 3 times the mean deviation.

13 samples

Saponification value .....avg. 194.2
Iodine value .....avg. 85.0
Titer .....avg. 20.4

OILS AND FATS

By O. E. JONES

ADDRESS GIVEN AT ANNUAL CONVENTION OF THE NATIONAL COTTONSEED PRODUCTS ASSOCIATION, MEMPHIS, TENN., MAY 27, 1935

THE program committee requested me to take part in this program, and further asked that I handle the subject of oils and fats. Before attempting to picture the world situation, and, possibly, the price trend in oils and fats, we must first consider the political and commercial tendencies represented nationally and internationally. This is necessary because we are attempting to point out that trade obstacles are on the increase, and that the normal flow of goods has been intercepted by hitherto unheard of governmental, political, and commercial relations dealing with devaluation of currency, restriction of production and rather wild schemes to promote an immediate return to more normal times. In times of stress nations try to build a wall around themselves and think first of treating their own ills. Generally speaking, there has been a distinct turn towards nationalism in every respect, nearly all countries encouraging supply and requirements of their own production, restricting importation. Clearly this is a short-sighted nationalistic policy, because a reduction in world production does not make for normal trade movement and the necessary expansion of international commerce, nor for the full employment of men and resources.

National trade encouragement is too artificial. Subsidies are granted, import quotas imposed, and production restricted, destroying the very traditions made up of conclusions of generations of men who successfully operated industries and trade.

Government aid may be necessary at times, but it should even then conform to basic economic laws and trade customs, yet in the large majority of cases legislation along protective lines has been definitely opposed to well-established practice.

It seems to me there are two courses to follow; either nations can produce all of their requirements, utilizing bonuses, quotas, and restrictions, which will result in higher living costs, and a reduction in competitive power and exports. This policy has never kept people employed and has not cut down administrative costs permanently, because the system itself cannot last under the present methods of production and distribution. The other course is to demand reduction in trade barriers to make for reasonable international commerce. This would mean we would still have duties, each country collecting revenues according to its trade and needs.

Unemployment has grown to be a major world problem. Many and varied solutions are offered, each nation seeking its own panacea ranging from:

1. Government loans.