TABLE VI

Effects of Slurrying Time Upon Residual Lipides and Mass Velocities

Slurrying time, min.	15	30	60
Slurrying temperature, °F	130	130	130
Wash temperature, °F.	130	130	130
Mass velocity, lbs./hr./sq. ft.	2217	2372	2612
Residual lipides, %	1.44	1.28	1.20

materials having necessary characteristics for the successful application of the filtration-extraction process. Mass velocities in excess of 2,000 and residual lipides contents below 1% were obtained when these materials were slurried and extracted at slightly elevated temperatures (130°F.).

The conditions of rolling had an appreciable effect upon the efficiency of extraction of flaxseed. One pass through five-high rolls with clearances of 0.002 in., 0.002 in., 0.002 in., and 0.000 in. between respective rolls proved satisfactory. Apparent optimum cooking moisture levels for efficient oil extraction fall between 17 and 24% maximum initial, and 8.0 to 10.5% as discharged from the cooker. Mass velocities were significantly lowered when maximum initial cooking moisture contents were below 14% since at these moisture levels it becomes necessary to reduce the moisture content to below 8%, as discharged from the cooker, to achieve suitable cooking. At these low moisture levels crisping by evaporative cooling is not effective.

The versatility of the filtration-extraction process, which had been previously adapted to the extraction of oil from cottonseed, soybeans, sesame seed, peanuts, and rice bran, has been extended, with some minor but important modifications in the preparation and extraction conditions, to the extraction of oil from flaxseed.

Acknowledgment

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Report of Smalley Committee—1955-56

THIS SEASON eight different types of samples were distributed by six subcommittees. These included cottonseed, peanuts, soybeans, meal, vegetable oils, tallow and grease, glycerine, and drying oils. In all, 3,533 samples were distributed to 398 collaborators and more than 13,000 results were tabulated. The distribution and participation are given in Table I.

From this table it can be seen that the preparation and distribution of samples together with the tabulation of the results has become a sizeable task.

The cost of preparation, packaging, and mailing has reached such a level that your chairman feels that an accounting should be given to the Society. In this report we are merely listing the receipts from the collaborators and the expenditures made. These were:

Total receipts	$5195.23
Total expenses	5152.59
Net	42.64

A detailed accounting will be given to the Governing Board. It has not been the policy of the Smalley Committee to attempt to bring actual revenues to the Society, nor have we wanted the Society to subsidize the program. We attempt to adjust the charge for participation so that the program is self-supporting, with some surplus for the Society's overhead.

TABLE I

	Number of collaborators	Number of samples	Number of determinations per sample
Cottonseed	47	10	5
Peanuts	10	7	4
Soybeans	22	10	2
Meal	115	15	3
Vegetable oils	92	6	3
Tallow, grease	73	5	7
Glycerine	24	6	8-3
Drying oils	15	6	4

For brevity this year the details of the activities of the various subcommittees will not be discussed in detail. In each case a complete report has been given to the collaborators by the chairmen. Several unusual items or features will be discussed however:

1. The subcommittee on meal voted to present the Smalley Cup, beginning this season for combined proficiency on moisture, oil, and nitrogen. No certificate will be given for proficiency on combined oil and nitrogen. This deviation from precedent had the unanimous approval of the Governing Board.
2. At Mr. Doughtie's suggestion the method of calculating the grades in the Meal Series was changed. The method described here, for the record, gives a more realistic numerical grade as formerly most grades ran 99% and up. The method of grading is as follows:

$$\text{Grade equals } 100\% - \frac{\text{points off} \times 100 \times 0.392}{\text{no. of samples} \times \text{no. of determinations}}$$

The combined grade for moisture, oil, and nitrogen is calculated as follows:

$$\text{Combined grade equals: } \frac{\text{Moisture grade} + 2\ \text{oil grade} + 2 \times \text{nitrogen grade}}{5}$$

The factor 0.392 was selected to adjust a grade of 99.5 to 90.0%. Thus 90.0% will be considered reasonably good work and represent about 50 points off in any series.

In the combined grade more emphasis has been given to the oil and nitrogen on a unit system. In all cases the customary tolerances have been retained.

3. The cottonseed grading was changed slightly. The formula 100 — (6 times total deductions) has been changed to 100 — (5 times total deductions). Formerly the collaborators were graded on four factors and other deductions while this year five factors were involved. The determination of linters having been added.

4. The results on sample No. 5 in the Meal Series were not included with the grades. Your chairman, in collaboration with the American Association of Cereal Chemists, distributed a dry meat meal sample. We felt that we were justified in doing this inasmuch as nearly 40% of the collaborators analyze this type of product regularly. It was also our personal opinion that the A.O.C.S. methods would be applicable. Further, the collaborators were given prior notice that this type of sample would be sent out.

Unfortunately the oil results were very poor, and the nitrogen results were only fair. The moisture results however were excellent. Sixty-seven per cent of the collaborators were within the tolerance, and 40% were within the tolerance on nitrogen (0.02%). While the committee would have been justified in retaining the moisture and nitrogen results, it was felt that it would be fairest to all concerned if all of the results on sample No. 5 were eliminated from the grading. The writer has seen the results on this sample as reported by the two associations, and it was apparent that our group had demonstrated the greater accuracy.

We make no apologies for having distributed this sample as we feel that the information gained is of considerable value.

5. The subcommittee on drying oils developed what appears to be a good system of grading the proficiency of the collaborators. It appears to be statistically sound. To stimulate interest in the series we have decided to give certificates to the two collaborators having the highest grades this season.

6. A number of ties resulted again on the meal series. Where ties have occurred for the highest grade, no second place certificates will be given. Where ties occurred for second place, the results were recalculated with no tolerance, to break the ties. Honorable Mention has been given certain individuals in lieu of certificates. However we feel that an excessive number of ties have resulted but, in fairness, we feel that all in first place must receive certificates this year.

Next year most ties will be eliminated, using the following rules:

(a) Those tying for the Smalley Cup will share the honor.

(b) Ties for second place for the Smalley Cup will be broken by a recalculation, using no tolerance for moisture, oil, and nitrogen. If still tied, duplicate certificates will be given.

(c) Where two or more tie for the Smalley Cup, no second place certificate will be given.

(d) If not more than two tie for first on moisture, oil, or nitrogen, duplicate certificates will be given. If more than two are tied, the grades will be recalculated, using no tolerance. The two chemists with the least deviation from the accepted standard will receive first and second place certificates. Those eliminated will receive Honorable Mention.

(e) Ties for second place in any category will be broken by recalculation, using no tolerance.

(f) These rules will apply to the entire Smalley Series.

The application of these rules this year would have resulted in the presentation of 18 certificates instead of 25 and the confusion inherent in a situation where honors must be shared. These rules were approved by the Governing Board in August 1955, but your chairman neglected to advise the collaborators and is doing so at this time.

Listed are the individuals showing the greatest proficiency in the Smalley check sample work for the 1955–56 season.

Meal Series

The honor of winning the Society's Cup was shared by two chemists of the Woodson-Tenent organization.

J. R. Simpson of Cairo, Ill., and H. L. Hutton of Clarksdale, Miss., attained the highest proficiency on the determination of moisture, oil, and nitrogen with a grade of 99.60.

R. C. Pope of the Pope Testing Laboratory, Dallas, Tex., received a certificate for second place with a grade of 99.44%.

M. D. Etheridge of the Mississippi State Chemical Laboratory, State College, Miss., was given Honorable Mention.

In the determination of moisture six chemists were tied with perfect grades of 100%. All were given certificates:

R. C. Pope, Pope Testing Laboratory, Dallas, Tex.
B. P. Harper, Southwestern Laboratories, Dallas, Tex.
C. E. McLean, Arizona Testing Laboratory, Phoenix, Ariz.
J. R. Simpson, Woodson-Tenent Laboratory, Cairo, Ill.
H. L. Hutton, Woodson-Tenent Laboratory, Clarksdale, Miss.
H. G. Oliver, Western Cotton Oil Company, Pecos, Tex.

Four were tied for first place on the determination of oil with perfect grades of 100%:

T. C. Law, Law and Company, Atlanta, Ga.
E. R. Hahn, Hahn Laboratory, Columbia, S. C.
J. R. Simpson, Woodson-Tenent Laboratory, Cairo, Ill.
H. L. Hutton, Woodson-Tenent Laboratory, Clarksdale, Miss.

Only one chemist was first on the determination of nitrogen. His grade was 99.60:

R. C. Pope, Pope Testing Laboratory, Dallas, Tex.

Three were tied for second place, but a recalculation with no tolerance resulted in a certificate for:

J. D. Neighbors, San Joaquin Cotton Oil Company, Chowchilla, Calif.

Honorable Mention was given to:

M. F. Etheridge, Mississippi State Chemist's Laboratory, State College, Miss.

W. E. Saunders, Vegetable Oil Products Company, Gilbert, Ariz.

Cottonseed Series

First place with a grade of 99.90 was attained by:
O. E. Wilkins, Memphis Testing Laboratory, Memphis, Tenn.
Second place with a grade of 98.50 went to:
A. H. Grimes, Barrow-Agee Laboratory, Decatur, Ala.

Soybean Series

In this series there was a tie for first place. Both chemists had perfect grades of 100%:

O. E. Wilkins, Memphis Testing Laboratory, Memphis, Tenn.
Biffle Owen, Planters Mfg. Company, Clarksdale, Miss.

Peanut Series

First and second place were attained with grades of 99.12 and 97.72%, respectively. The winners were:

M. L. Hartwig, Law and Company, Montgomery, Ala.
T. C. Law, Law and Company, Atlanta, Ga.

Vegetable Oil Series

First place with a grade of 98.9% was attained by:

L. R. Brown, A. E. Staley Manufacturing Company, Decatur, Ill.

Second place resulted with grades of 98.3% in a three-way tie among:

P. D. Cretien, Texas Testing Laboratory, Dallas, Tex.
E. H. Tenent, Woodson-Tenent Laboratory, Memphis, Tenn.
H. J. Keith, Western Cotton Oil Company, El Paso, Tex.

Drying Oil Series

The first first-place certificates ever given in this series went to:

K. E. Holt, Archer-Daniels-Midland Company, Minneapolis, Minn., with a grade of 94.5%.

J. R. Mays Jr., Barrow-Agee Laboratory, Memphis, Tenn., was second with 93.5.

Tallow and Grease Series

The following chemists were high in this series:

A. G. De Poy, Swift and Company, St. Paul, Minn., with a grade of 99.97%.

J. S. Boulden, Lever Bros. Company, Baltimore, Md., with a grade of 99.93%.

The Society is deeply grateful to the subcommittee members who made the program possible.

R. J. HOULE — R. T. DOUGHTIE JR.
J. P. HEWLETT — C. P. LONG
L. V. ANDERSON — R. W. BATES, chairman