of the Society in general. With such interest and enthusiasm now and in the future, the Society is bound to grow in numbers, enthusiasm and value to the fats, oils and wax industries, and consequently to our country at large.

Committee: H. B. BATTLE, Pres., H. J. MORRISON, P. P. HINDERLANG, J. R. MAYS, T. B. CALDWELL, L. M. TOLMAN, C. B. CLUFF, F. B. PORTER, R. W. PERRY.

SMALLEY FOUNDATION

Check Meal Samples for 1923-1924

BY H. C. MOORE

The following tables give a concise summary of the coöperative analytical program for 1923–1924. A careful study of the tables is about all that is really necessary for this report, but a few comments will be added.

It is interesting to note that exactly 78 collaborators participated in each of the last two years. While a number who were enrolled in 1922–1923 dropped out, the same number of new collaborators were enrolled.

Table 1 shows the standing for the 36 collaborators who have determined oil in all of the samples. Last year 38 reported on the full series.

TABLE 1

STANDING FOR OIL RESULTS (30 Samples)

Place	Analyst no.	Total points off	Average error per sample	Efficiency per cent
1	74	34	0.0113	99.844
2	53	50	.0166	99.771
3	37	55	.0183	99.747
4 and 5	21	56	.0186	99.744
..	49	56	.0186	99.744
6	33	58	.0193	99.734
7 and 8	5	59	.0196	99.730
..	54	59	.0196	99.730
9	58	70	.0233	99.679
10	20	78	.0260	99.641
11	6	80	.0266	99.633
12	19	81	.0270	99.627
13	39	86	.0286	99.605
14	42	93	.0310	99.572
15	50	95	.0316	99.564
16	23	111	.0370	99.489
17	24	124	.0413	99.430
18	73	126	.0420	99.420
19	55	137	.0456	99.370
20	26	142	.0473	99.347
21	45	143	.0476	99.343
22	35	147	.0490	99.323
23	1	150	.0500	99.310
24	76	159	.0530	99.270

25	51	160	.0533	99.264
26	4	180	.0600	99.171
27	43	181	.0603	99.164
28 and 29	46	205	.0683	99.057
..	72	205	.0683	99.057
30	40	206	.0686	99.052
31	3	207	.0690	99.047
32	62	253	.0843	98.836
33	25	304	.1013	98.601
34	64	443	.1476	97.961
35	7	466	.1553	97.855
36	68	640	.2133	97.054

Table 2 shows the corresponding standing for the 50 collaborators who reported ammonia determinations on all of the samples. Last year 56 reported ammonia results on the entire series.

TABLE 2

STANDING FOR AMMONIA RESULTS (30 Samples)

Place	Analyst no.	Total points on	Average error per sample	Efficiency per cent
1	12	5	0.0017	99.979
2 and 3	21	19	.0063	99.923
..	66	19	.0063	99.923
4 and 5	23	21	.0070	99.915
..	74	21	.0070	99.915
6	11	22	.0073	99.911
7	72	25	.0083	99.899
8	43	26	.0086	99.895
9	37	30	.0100	99.878
10 and 11	24	33	.0110	99.866
..	26	33	.0110	99.866
12	58	36	.0120	99.854
13	20	37	.0123	99.850
14	50	38	.0126	99.846
15	1	42	.0140	99.830
16	35	43	.0143	99.826
17	6	45	.0150	99.817
18	33	47	.0156	99.810
19, 20	5	50	.0166	99.798
21 and 22	16	50	.0166	99.798
..	49	50	.0166	99.798
..	53	50	.0166	99.798
23	48	53	.0176	99.785
24	62	54	.0180	99.780
25 and 26	19	55	.0183	99.777
..	27	55	.0183	99.777
27	38	57	.0190	99.769
28	54	58	.0193	99.765
29	40	60	.0200	99.756
30	3	62	.0206	99.749
31	4	63	.0210	99.744

TABLE 2 (*Concluded*)

Place	Analyst no.	Total points off	Average error per sample	Efficiency per cent
32 and 33	10	64	.0213	99.740
..	42	64	.0213	99.740
34, 35	25	73	.0243	99.704
and 36	32	73	.0243	99.704
..	45	73	.0243	99.704
37	44	74	.0246	99.700
38 and 39	51	76	.0253	99.691
..	76	76	.0253	99.691
40	7	81	.0270	99.671
41	73	112	.0373	99.545
42	28	115	.0383	99.533
43	55	123	.0410	99.500
44	39	126	.0420	99.488
45	46	130	.0433	99.472
46	29	131	.0436	99.468
47	34	151	.0503	99.387
48	68	169	.0563	99.313
49	64	174	.0580	99.293
50	69	182	.0606	99.261

Table 3 shows the laboratory standing for both oil and ammonia results for the 36 collaborators who completed all determinations as compared with 38 who reported on all the samples last year.

TABLE 3

LABORATORY STANDING FOR BOTH OIL AND AMMONIA RESULTS (30 Samples)

Place	Analyst no.	Efficiency per cent
1	74	99.880
2	21	99.834
3	37	99.813
4	53	99.785
5	33	99.772
6	49	99.771
7	58	99.767
8	5	99.764
9	54	99.748
10	20	99.746
11	6	99.725
12	50	99.705
13 and 14	19	99.702
..	23	99.702
15	42	99.656
16	24	99.648
17	26	99.607
18	35	99.575
19	1	99.570
20	39	99.547
21	43	99.530

22	45	99.524
23	73	99.483
24	76	99.481
25 and 26	51	99.478
..	72	99.478
27	4	99.458
28	55	99.435
29	40	99.404
30	3	99.398
31	62	99.308
32	46	99.265
33	25	99.153
34	7	98.763
35	64	98.627
36	68	98.184

TABLE 4

RESULTS OF OTHER COLLABORATORS WHO FAILED TO REPORT ON ALL SAMPLES, OR WHOSE RESULTS WERE RECEIVED TOO LATE TO ACCEPT

Analyst no.	Number reported	Total points off	
		Oil	Ammonia
2	27	233	42
8	28	102	61
9	29	118	..
9	28	...	85
13	28	...	77
14	29	...	168
15	29	...	87
17	27	...	57
18	29	...	72
22	22	129	70
30	29	...	210
31	30	...	23*
36	30	932	287**
41	29	...	93
47	29	474	86
52	27	92	76
56	29	201	65
57	22	56	55
59	28	...	195
60	15	...	21
61	29	289	160
63	28	...	25
65	29	128	44
67	30	205	63**
70	23	107	54
71	28	85	77
75	21	...	79
77	29	...	76
78	16	50	29

* Reported on all, but results on one sample not received in time to accept.

** Reported on all, but results on two samples not received in time to accept.

Several who reported on all of the samples for both oil and ammonia last year, but whose results were received too late to be included in the official standing, were included in the tabulation given, with notes to this effect. This year, however, those whose results were received too late are reported in Table 4. Three of this number reported on all 30 samples, but their results were received too late.

It might be stated in this connection that the Chairman has been as liberal as he dared in accepting late reports. The rules have provided that only those reports received on Monday could be accepted. In many cases, however, reports have come in on Tuesday, and these results have been accepted, as have also some others which have been mailed on time and been lost in the mails, but which were received by the Chairman prior to the time when the mailed reports could have reached the collaborators. In the case of the last two samples, which were reported together, there was some misunderstanding; some forgot to report on No. 30 along with No. 29. All results in the case of these two samples have been accepted where they showed evidence of being mailed by the collaborators prior to the time when they could have received the printed report. The rules have thus been stretched just as far as it has seemed advisable, and it is hoped that the interpretation thereof will meet with the approval of all.

Many of the collaborators have been disappointed on several occasions that their results were received too late for acceptance, which may have caused them to lose some interest early in the series, but all have had the privilege of availing themselves of the Chairman's offer to wire any collaborator, collect, in case the results are not received on time. There have been many instances of failure of the mails to bring in reports, even though mailed in ample time. If a collaborator wishes to insure receipt of his results on all the samples, it is advisable to take advantage of this service.

The prize awards for the best work done on these samples as published in the August, 1923 number of the *Cotton Oil Press*, are as follows:

Grand Prize Award

"A laboratory cup will be awarded to the collaborator having the highest average standing both for oil and ammonia for the entire series of thirty samples."

Certificates of Merit

"In addition to the cup, the following certificates will be awarded:

"One certificate to the collaborator having the second highest average standing for both oil and ammonia for the entire series of thirty samples.

"Two certificates to the collaborators having the highest average standing in the oil work for the entire series of thirty samples.

"Two certificates to the collaborators having the highest average standing in the ammonia work for the entire series of thirty samples."

The winners of these prize awards are as follows:

The laboratory cup for the highest average for both oil and ammonia is awarded to L. B. Forbes, of Memphis, Tenn., Analyst No. 74, whose per cent efficiency is 99.880.

The certificate for second place is awarded to Barrow-Agee Laboratory, of Shreveport, La., Analyst No. 21, whose per cent efficiency is 99.834.

The certificates for the highest averages for the ammonia results are awarded to:

W. R. Austin, of Nashville, Tenn., Analyst No. 12, whose per cent efficiency is 99.979.

Barrow-Agee Laboratory of Shreveport, La., Analyst 21, and Stillwell Laboratories, of New York, Analyst No. 66, who have tied for second place with a per cent efficiency of 99.923.

Certificates for the highest averages for the oil results are awarded to:

L. B. Forbes, of Memphis, Tenn., Analyst No. 74, whose per cent efficiency is 99.844.

G. C. Hulbert, of Augusta, Ga., Analyst No. 53, whose per cent efficiency is 99.771.

In accordance with the resolution adopted at the last meeting, it was decided that each collaborator should be assigned a number, and that his identity should not be known except in the case of those who won the awards.

The method for determining the standing of the various collaborators and their per cent efficiency was the same method as used last year, as follows:

All results within 0.02% of the accepted average have been counted as 100% or "no points off." The total number of points off for any collaborator for either oil or ammonia, divided by thirty, gives the average error per sample, and this average error, in the case of oil, divided by 7.24 (the average of the accepted oil averages is 7.237) and divided by 8.20 for ammonia (the average of the accepted averages being 8.197) gives the average percentage error. This subtracted from 100 gives the per cent efficiency. Thus in the case of Table 1, L. B. Forbes has an average error of 0.0113 for oil. This, divided by 7.24, equals 0.156% error, or 99.844% efficient.

It was remarked in the Chairman's last report that "it hardly seems likely that the standard set by the leaders in the oil and ammonia work can soon be surpassed." It will be observed that a new record has been established by the leader in the ammonia series. The other results for oil and ammonia this year would also average slightly lower in efficiency than those of last year. This difference however is but slight, and may possibly be explained by the fact that last year one or two samples were thrown out on account of a number of wide results and indications of lack of uniformity

of the samples. It was decided at the meeting last year that no samples would hereafter be discarded.

Judging from the comments of the collaborators, the samples this year, with the possible exception of No. 25, have been generally very uniform. A number of collaborators expressed the belief that this sample was not uniform. This was confirmed later by several of the collaborators who exchanged samples with each other and found quite different results than on their own samples. There has been very little cause, however, for criticism of the samples, which have been generally very satisfactory.

There have been more instances this year of collaborators failing to receive samples on time. This has kept several who otherwise would have reported on all 30 samples from being included in the final reports. This is partly, however, the fault of the collaborators in failing to notify Mr. Bailey in time to have another sample mailed.

Only about half of the collaborators responded to the Chairman's request published on report No. 30 that they figure up their number of points off on each sample and advise the Chairman of their findings. The Chairman has not double-checked the results except those who have earned certificates. It would seem that in view of the time required by a Chairman of any of our active committees in the conduct of work of this kind that the collaborators might reply to requests of this kind, which indicates a willingness to coöperate, and will make the work much more enjoyable to all.

Two members of the Ammonia Committee have suggested that check samples be continued throughout the year, but that they be not sent so often during the summer months. The Chairman does not concur in this recommendation, and does not believe that the Society will, for many obvious reasons.

The Ammonia Committee during the past year has undertaken no additional research or study of methods, and has nothing in addition to report.

Committee: H. C. MOORE (Armour Fert. Works, Chicago), L. B. FORBES, C. A. BUTT, JOHN MALOWAN, C. H. COX.

SOAP STOCK COMMITTEE REPORT 1923-24

BY A. A. ROBINSON

The committee this year divided its work into three sections:

First was a continuation of the work begun by last year's committee on the F. A. C. Committee (American Chemical Society) method for unsaponifiable as applied to soap stock.

Second, it tried out two methods, or rather two modifications of one method for Free Oil in soap stock.

Third, two proposed changes in the official method for total fatty acids