

ern Cotton Oil Company at Savannah, Georgia, in September, 1909, under Dr. F. N. Smalley. After one year there, he was made District Chemist for the same Company at Montgomery, Alabama. He remained there one year, and was transferred back to Savannah as assistant to Dr. Smalley, where he

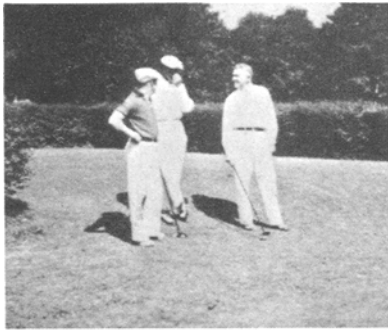
remained until 1917, at which time he went to Memphis to work in the laboratories of G. Worthen Agee. In May of that same year, the Barrow-Agee Laboratories were formed and Mr. Cox was made Chief Chemist, which position he has held since that time.

President Cox joined the Society

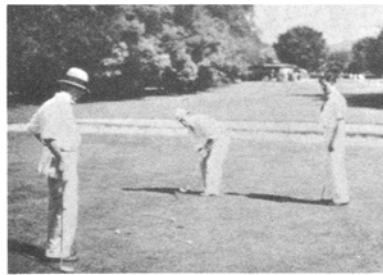
in 1916 and has served, at various times, on the following committees: Soapstock Analysis, Lint on Hulls, Free Fatty Acids in Seed, Copra Soapstock Analysis, Seed Analysis, Sampling, and Soybean Analysis.

His hobbies are archery and bridge.

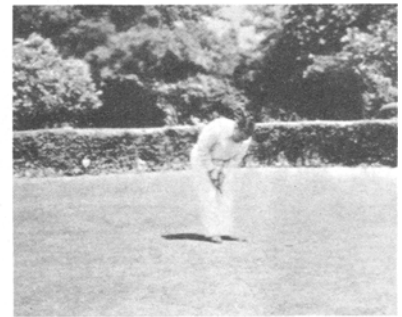
GOLF TOURNAMENT TABULATION



H. C. DORMITZER, E. I. BENNETT and H. S. MITCHELL



M. A. MIDDLEBROOK (Putting—It Sunk After the Picture Was Taken!) and A. F. ERWIN



P. E. RONZONE

LOW GROSS

Winner	Prize	Donor	Winner	Prize	Donor
1. E. H. Tenent	Medal and Fob	Industrial Chem. Sales Co.	13. Fred Dorwood	Brief Case	Southern C. O. Co.
2. N. A. Ruston	Gold Wrist Watch	The Sharples Spec. Co.	14. R. H. Pickard	1 doz. Golf Balls	E. H. Sargent & Co.
3. E. J. Bennett	Crosley Radio	Filtrol Co.	15. A. F. Erwin	1 doz. Golf Balls	Emery Industries
4. G. W. Agee	Tog Bag "Tan"	The Milwhite Co.	16. M. L. Sheely	1 doz. Golf Balls	Cudahy Pack. Co.
LOW NET					
1. E. B. Freyer	Bob Jones Irons	Bennett & Clark Co.	17. Paul Cretien	1 doz. Golf Balls	Sharples Spec. Co.
2. E. R. Barrow	Golf Bag	Emulsol Corp.	18. O. B. Packard	1 doz. Golf Balls	Cudahy Pack. Co.
3. E. M. McBride	Matched Woods	L. A. Salomon & Bros.	19. Mercer Reynolds	Cigarette Lighter	Skelly Oil Co.
4. J. N. Pless	Golf Bag	Bennett & Clark Co.	20. Allen Smith	1 doz. Golf Balls	Foster Wheeler Co.
5. M. M. Jameson	Ice Water Pitcher & Tray	Wilson & Bennett Mfg. Co.	21. Henry O'Dean		
6. P. E. Ronzone	Silver Compotes	Nat. Assn. Marg. Mfgs.	22. E. O. Hodgson		
7. H. C. Dormitzer	Desk Lamp & Pen	Merk & Co.	23. T. A. Marshall		
8. R. T. Doughtie, Jr.	Electric Clock	Laboratory Const. Co.	BLIND HOLE		
9. A. A. Kramer	Sparkler	McKesson & Robbins Co.	1. H. S. Mitchell	Electric Clock	American Can Co.
10. C. H. Cox	Syphon	Central Scient. Co.	2. W. T. Watkins	Buffet Supper Tray	Roosevelt Hotel
11. J. J. Vollertsen	Barometer	Peerless Clay & Min. Co.	3. Nick Hamner	Golf Shoes	The Emil Greiner Co.
12. M. A. Middlebrook	Valet-Pack	Dicalite Corp.	4. Murray Raney	Golf Shoes	H. Reeve Angel Co.
	Brief Case		5. H. A. Golwynne	Tog Bag "Mag"	Southern Cotton Oil Co.

SECRETARY-TREASURER'S ANNUAL REPORT

May 1st, 1937 Through April 30th, 1938

FINANCIAL STATEMENT

RECEIPTS

Office of the Secretary-Treasurer.
Cash Balances May 1st, 1937:

In Petty Cash Drawer.....	\$ 3.42
In Checking Acct. Nat'l Bk. of Commerce in N. O. (Liquid)....	55.81
In Savings Acct. Nat'l Bk. of Commerce in N. O. (Liquid)....	267.41
In Savings Acct. Hibernia Nat'l Bk. in N. O. (Liquid).....	54.84

In Checking Acct. Whitney Nat'l Bk. in N. O. (Liquid).....	1,430.81
In Savings Acct. Whitney Nat'l Bk. in N. O. (Liquid).....	1,603.84
	\$3,416.13
(Frozen Accounts):	
In Checking Acct. Canal Bk. & Trust Co. in Liquidation.....	344.07
In Savings Acct. Canal Bk. & Trust Co. in Liquidation.....	784.02

In Savings Acct. Hibernia Bk. & Trust Co. in Liquidation.....	286.97		
		1,415.06	
			4,831.19
<i>Received During the Year from—</i>			
Interest on Cash in Savings Accts. in N. O. Banks.....	28.95		
Interest from Bonds	64.25		
		93.20	
			\$4,924.39
<i>Dues and Journal "Oil & Soap"—</i>			
Dues—Active, 1937-1938 (\$3.50 each)	1,326.50		
Dues—Individual Associate, 1937-1938 (\$3.50 each).....	38.50		
Dues—Corporation Associate, 1937-1938 (\$7.50 each).....	197.50		
Dues—Active, 1938-1939 (\$3.50 each)	56.00		
		\$1,618.50	
<i>Members Subscriptions to Journal "Oil & Soap"—</i>			
From Payments for year 1937-1938 (\$2.50 each)	1,037.50		
From Payments for year 1938-1939 (\$2.50 each)	40.00		
		1,077.50	
Collected for Back Dues and Subscription to "Oil & Soap".....	18.00		
Share of Proceeds from Advertisements in "Oil & Soap".....	87.69		
		105.69	
			2,801.69
<i>Fullers Earth and Kieselguhr (Filtercel)—</i>			
Sales of Fullers Earth.....	505.00		
Sales of Kieselguhr or Filtercel....	23.00		
Collected for Postage and Expressage, etc., advanced on sales shipments	137.86		
		665.86	
<i>Standard Salts—</i>			
Sales of Ammonium Sulphate.....	46.00		
Sales of Sodium Carbonate.....	53.00		
Collected for Postage advanced on sales shipments	14.34		
		113.34	
			779.20
<i>Standard Glycerine Samples—</i>			
Glycerine Samples sold.....	17.00		
Collected for Postage advanced on sales shipments	2.83		
		19.83	
<i>Moisture Dishes—</i>			
Sales of Dishes.....	166.12		
Collected for Postage advanced on sales shipments	6.26		
		172.38	
<i>Methods of Analysis—</i>			
For Binders sold.....	123.09		
For Sets of Methods complete through 1936-37 Revs.....	330.50		
For 1936 Revisions only.....	2.00		
For extra sets back issued of Revs., Blue Prints, etc.....	31.00		
For 1937 Revisions only.....	61.00		
		547.59	
<i>Convention and Meetings—</i>			
Annual Spring Meeting, Dallas, Tex., May 13 and 14, 1937.....	395.00		
Cash in hands of Local Committee, Chicago, May 1, 1937.....	171.55		
Fall Meeting Receipts, Chicago, Oct. 14, 15, 1937.....	1,028.27		
		1,594.82	
<i>Smalley Foundation—</i>			
For Check Meal Samples 1937-1938 series	1,053.50		
		1,053.50	
<i>Referee Examining Board and Referee Chemists—</i>			
Fees for Referee Chemists' Certification 1937-38 Acct.....	25.00		
Fees for Referee Chemists' Certification 1938-39 Acct.....	155.00		
		180.00	

<i>Collaborative Cottonseed and Oil Samples—</i>	
For Oil Samples 1937-1938 series..	367.50
For Seed Samples 1937-1938 series	195.00
	562.50
	4,130.62
GRAND TOTAL CASH RECEIPTS.....	\$12,635.90

<i>PAYMENTS</i>	
<i>Office of the Secretary and Treasurer—</i>	
Salary of Secretary and Treasurer	\$ 520.00
Salary of Clerical Help, Stenographer, etc.	520.00
U. S. Treasury Bonds bought.....	1,088.70
Postage	50.62
Stationery, etc.	21.76
Office Supplies and Equipment.....	10.97
Sundries Expenses, Rent of Safe Deposit Box, Bond of Secretary-Treasurer, etc.	39.33
President's Contingent Fund, Expenses	
Exchange on checks deposited and other bank handling charges.....	25.55
	\$2,276.93
<i>Dues and Journal "Oil & Soap"—</i>	
Advertisement in "Oil & Soap"....	420.00
Sundries expenses, Postage, Expressage, Telegram, etc.....	11.52
Printing	13.23
Publishers' bills for Journal "Oil & Soap"	618.00
Journal "Oil & Soap" Committee's Expenses (H. L. Roschen, Chairman)	101.52
	1,164.27
<i>Official Fullers Earth and Kieselguhr—</i>	
Postage advanced on sales shipments	138.68
Paper, twine, cartons, boxes, etc., to make shipments	16.00
Labor, boy to pack and make shipments	10.00
	164.68
<i>Standard Salts—</i>	
Postage advanced on sales shipments	14.79
Paper, twine, cartons, etc., boy to make shipments	1.55
	16.34
<i>Aluminum Moisture Dishes—</i>	
Postage advanced on sales shipments	7.08
New Moisture Dishes bought.....	127.06
Freight and Drayage.....	2.38
Paper, Twine, Cartons and boy to make shipments	3.85
	140.37
<i>Standard Glycerine Samples—</i>	
Postage advanced on sales shipments	3.39
Cartons, mailing tubes, etc., to make shipments	1.65
	5.04
<i>Methods of Analysis—</i>	
Postage advanced on sales shipments	24.05
Binders for Methods.....	163.86
Postage, Expressage, Printing, etc..	.50
Labor	20.00
Paper, Twine, Cartons, etc.....	4.50
New 1937 Revisions printed.....	161.70
	374.61
<i>Conventions and Meetings—</i>	
Annual Meeting, New Orleans, May 12-13, 1938, Banquet Bill on account	60.00
Annual Meeting, Dallas, Tex., May 13, 14, 1937:	
General meeting expenses, stenographer, etc.	\$ 72.86
Banquet and entertainment expenses	557.08
	629.94
Telegrams, Postage to send out Notices, Programs, etc.	54.12

Printing Programs, Notices, Badges, Committee Reports, etc.	170.00		
Secretary-Treasurer's expenses to attend Meetings, etc.	70.50		
		294.62	
Fall Meeting, Chicago, Ill., Oct. 14 and 15, 1937:			
Expenditures of Fall Meeting as per statement of John P. Harris, Treasurer, Local Committee....	927.24		
		1,911.80	
<i>Printing—</i>			
President M. L. Sheely's Stationery	15.08		
Certificate of Membership Cards..	6.19		
Constitutions and By-Laws.....	28.08		
1938 Membership Rolls.....	31.46		
General A. O. C. S. Letterheads...	3.25		
		84.06	
<i>Smalley Foundation—</i>			
Special Postage, Telegrams, etc....	1.24		
Chairman J. J. Vollertsen's General Expenses	470.51		
Cup Expenses			
T. C. Law, preparing and sending out Check Meal Samples.....	534.80		
		1,006.55	
		3,377.02	
<i>Referee Examining Board and Referee Chemists—</i>			
Postage	4.77		
Refund of Referee Fees.....	5.00		
Printing, Referee Chemists' Certificates	9.46		
		19.23	
<i>Collaborative Cottonseed and Oil Samples—</i>			
Preparing and Sending out of Oil Samples	375.00		
Preparing and Sending out of Seed Samples	200.00		
		575.00	
		594.23	
GRAND TOTAL PAYMENTS.....			\$7,738.88

RECAPITULATION

Total Receipts	\$12,635.90	
Total Payments	7,738.88	
Total Cash Balances in various conditions as shown below, May 1, 1938		\$4,897.02
Available and Liquid:		
In Petty Cash Drawer.....	.28	
In Checking Account, Nat'l Bk. of Commerce in N. O.	54.81	
In Savings Account, Nat'l Bk. of Commerce in N. O.....	553.45	
In Savings Account, Hibernia Nat'l Bk. in N. O.....	55.24	
In Checking Account, Whitney Nat'l Bk. in N. O.....	1,199.66	
In Savings Account, Whitney Nat'l Bk. in N. Y.....	1,627.97	
		\$3,491.41
Cash in Bank, Chicago Local Committee	272.58	272.58
Cash Frozen in Banks in New Orleans:		
In Savings Account, Hibernia Bk. & Trust Co., in Liq.....	286.97	
In Savings Account, Canal Bk. & Trust Co., in Liq.....	588.01	
In Checking Account, Canal Bk. & Trust Co., in Liq.....	258.05	
		1,133.03
TOTAL BALANCES, CASH, LIQUID AND FROZEN		\$4,897.02
<i>Resources (April 30, 1938)—</i>		
Cash on hand and in banks (in Liquid State) including Chicago deposit	\$3,763.99	
Frozen in Hibernia Bk. & Trust Co. and Canal Bk. & Trust Co. (in Liquidation).....	1,133.03	

<i>Bonds and Securities—</i>		
Bonds of U. S. Treasury.....	\$1,000.00	
Bonds of National Union Mortgage Corp.....	1,600.00	
		\$2,600.00
Participating Certificate, Chicago Medical Arts Bldg. (Practically Insolvent).....	1,500.00	1,500.00

<i>Bills Receivable (April 30, 1938)—</i>		
For Fullers Earth, Moisture Dishes, Standard Salts, etc.:		
California Cotton Oil Corp., Los Angeles, Calif.	1.28	
The Sharples Specialty Co., Philadelphia, Pa.	1.45	
Illinois State Geological Survey, Urbana, Ill.	1.43	
Capital City Products Co., Columbus, Ohio.	2.69	
Allen B. Wrisley Co., Chicago, Ill.....	3.20	
Lever Bros. Co., Toronto, Canada.....	9.07	
Durkee Famous Foods, Berkeley, Calif.....	8.06	
The Ohio State University, Columbus, Ohio	2.69	
University of N. Carolina, Chapel Hill, N. C.	1.43	
Vegetable Oil Products Co., Los Angeles, Calif.	1.64	
Chemical & Engineering Co., Chicago, Ill....	.38	
		33.32

For Collaborative Check Oil and Seed Samples:		
N. E. Katz, Meridian, Miss.....	12.50	
Wm. M. Black, Augusta, Ga.....	12.50	
		25.00

For Smalley Foundation Samples:		
N. E. Katz, Meridian, Miss.....	12.50	12.50

<i>Bills Receivable—For Methods of Analysis—</i>		
Armour & Co., Fort Worth, Tex.....	2.00	
Attapulugus Clay Co., Philadelphia, Pa.....	3.00	
All's Chalmers Mfg. Co., West Allis, Wis..	3.00	
Armour & Co., Chicago, Ill.....	12.00	
L. J. Wernke, Cincinnati, Ohio.....	3.00	
Swift & Co., South St. Joseph, Mo.....	.50	
W. Virginia Pulp & Paper Co., Charleston, N. C.	3.00	
Shellabarger Grain Products Co., Decatur, Ill.	3.00	
		29.50

<i>Supplies and Material on Hand (April 30, 1938)—</i>		
Official Fullers Earth.....	12 cans	
Official Kieselguhr or Diatomaceous Earth.	221 cans	
Sodium Carbonate and Ammonium Sulphate	3300 4 oz. bottles	
Moisture Dishes	4807 dishes	
Colorless Clear Glasses for Tintometer for oils	213 glasses	
Standard Glycerine Samples.....	52 4 oz. bottles	
Methods of Analysis (complete sets without binders)	725 sets	
Binders for Methods of Analysis.....	92 binders	
One set of 32 standardized Red Lovibond Glasses for oils		

LIABILITIES

<i>Bills Payable (April 30, 1938)—</i>		
Miss F. McCann, assistant to J. J. Vollertson, Chairman, Smalley Foundation Committee.....	\$14.00	
Gillette Publishing Co., Chicago, Ill.....	35.00	
J. J. Vollertsen, Chairman, Smalley Foundation, Postage Bills	2.43	
Victory Printing Co., New Orleans, La.....	42.64	
		\$94.07

REPORT OF MEMBERS LOST AND MEMBERS RECEIVED INTO THE SOCIETY FOR YEAR, AND STATUS OF THE MEMBERSHIP OF THE SOCIETY, MAY 12, 1938

We have members as follows:	
Honorary	4
Active	405
Individual Associate	11
Corporation Associate	26
	446
Total Membership May 12, 1938.....	446
During the 1937-1938 year we have received into the Society new members as follows:	
Active	68
Individual Associate	1
Corporation Associate	2
	71
Total Members received	71

During the same period we have lost members as follows:

By resignation	14
By non-payment of dues.....	18
By death	2
	<hr/> 34
Total Membership of the Society May 12, 1938.....	446
Total Membership of the Society May 13, 1937.....	409

Net Gain of Members for year ending May 12, 1937..... 37
Mr. President:

In submitting the foregoing report I ask that an Auditing Committee be appointed to make a thorough audit of the accounts of the Secretary-Treasurer, and report back to the Society before the adjournment of our meeting, May 13, 1938.

J. C. P. HELM, Secretary-Treasurer.

DETERMINATION OF TOTAL SATURATED FATTY ACIDS

By K. A. PELIKAN, Ph. D., and J. D. Von MIKUSCH, Ph. D.

FROM THE LABORATORIES OF THE WOBURN DEGREASING CO. OF N. J., HARRISON, N. J.

Abstract

This paper discusses the methods of previous investigators and shows variations of results as obtained in studies of corn, sesame, and liquid cotton fatty acids—as well as of artificial blends from oleic and palmitic acids. The Bertram method was found to be most reliable while procedures of other authors gave inconsistent results. A detailed description of the Bertram method, as adopted by the Woburn Laboratories, follows.

DURING the study of the composition of some commercial fatty acids the necessity of determining the saturated fatty acid content arose.

The method by S. H. Bertram (1) is generally said to be more accurate than older methods. It makes use of the oxidation of unsaturated fatty acids in alkaline permanganate solution under conditions which leave the saturated portion unchanged. The temperature during the oxidation according to Bertram must not be allowed to rise above 25°.

Later, however, in working on Linseed Oil, P. J. Gay (2) came to the conclusion that the temperature used by Bertram is not sufficient to insure complete oxidation of the unsaturated portion. He recommended using two subsequent oxidations at 50 to 60° and 70 to 80°, respectively. A third oxidation at 80°, according to Gay, is sometimes advisable but not always necessary.

Hilditch and Priestmann (3), on the other hand, employed a single oxidation at 35 to 50°. The latter procedure omits the extraction of the unsaponifiable matter.

We applied the above three modifications to the following materials. Sample A represented an average of the liquid portion of cotton fatty acids obtained by pressing. Samples B and C represented averages of a number of commercially distilled fatty acids from corn and sesame soapstocks respectively.

The results obtained by the three modifications are shown in table 1.

The actual oxidation temperature in the Bertram procedure was be-

TABLE 1.
Saturated Fatty Acid Content of Three Commercial Fatty Acids by Bertram Method and Two Variations.

	Sample A	Sample B	Sample C
Titer ° C.....	23.1	27.5	26.2
Iodine Value (Hanus 1 hour).....	116.4	122.3	102.5
Unsaponifiable Matter.....	3.2%	4.5%	2.5%
Saturated Fatty Acids determined by Bertram Method. (Uncorrected).....	{ 17.5	{ 18.9	{ 18.6
(Ditto, corrected)*, average.....	{ 16.7	{ 18.7	{ 18.4
Hilditch-Priestmann method.....	16.5	18.6	18.4
Gay method.....	8.4	10.7	7.6

*The corrections have been derived from the iodine values of the separated fatty acids, which varied between 0.5 and 1.2.

tween 5 and 15° C. It will be noted that duplicate determination employing this method agreed fairly closely; the Hilditch-Priestmann procedure in the two cases where it was used led to results identical with those obtained by the Bertram method. The Gay procedure, on the other hand, in which we oxidized twice at the specified temperatures, gave entirely different results, all of them lower than those above. In order to evaluate these methods a blend was made from c. p. palmitic acid (I. V. = 0.6) and supposedly c.p. oleic acid (I. V. = 92.45). Unfortunately, however, most "c.p. oleic acids" contain appreciable amounts of saturated as well as higher unsaturated fatty acids. Although the actual composition of this "c.p. oleic acid" was not known, a comparison of the results obtained by the Bertram method and the Gay procedure shows beyond doubt that the latter method actually gave a decidedly low value. As shown in table 2, only 8.6% of saturated acids were found by the latter method in the sample which con-

Through the courtesy of Professor H. P. Kaufmann of Muenster, Germany, we later obtained a small sample of c.p. oleic acid [analysis as given, I. V. (Kaufmann method) = 89.6; Thiocyanogen V. = 89.3]. To 4,000 grams of this oleic acid we added 0.772 gram of palmitic acid (I. V. = 0.6). This blend therefore contained 16.07% (corrected) of saturated fatty acids.

This mixed sample was then analyzed according to the Bertram procedure, the petrolether extraction of the unsaponifiables being omitted. The result is shown in table 3.

TABLE 3.
Higher Saturated Fatty Acid Content Determined on Sample of Known Composition.

Palmitic Acid (I. V. = 0.6).....	= 16.18%
Palmitic Acid, corrected.....	= 16.07%
Oleic Acid.....	= 83.93%
Higher Saturated Fat Acids found.....	= 15.6%
Error.....	0.47

Conclusions:

Identical results were obtained by the Bertram method and its variation by Hilditch-Priestmann for the saturated fatty acid content of three commercial fatty acids.

TABLE 2.
Saturated Fatty Acid Content of (1) "C. P. Oleic Acid" and (2) of a Blend Containing 84.14% "C. P. Oleic Acid" and 15.86% (corrected 15.76%) Palmitic Acid.

Saturated F. A. determined by	"C. P. Oleic Acid"	Blend	Blend (calculated)
Bertram Method (corrected).....	5.2	19.5	20.2
Gay Method.....	1.6	8.6 (1)	17.1

tained at least 15.76% of saturated fatty acids. The figures in the last column represent the saturated constituents of the blended sample calculated by adding the quantity of palmitic acid used (15.76% corrected) to the saturated acid contained in the oleic acid, as determined by the method in question (see first column).

The Bertram method gave an almost theoretical result on a sample of known composition.

The two-fold oxidation at higher temperatures as recommended by Gay in the cases studied led to low results, a large part of the saturated fatty acids obviously being oxidized under these conditions.

Since the same results were ob-