Eisenhower Greets Meeting

TELEGRAMS FROM President Dwight D. Eisenhower and Vice President Richard M. Nixon, also a letter from Governor Nelson Rockefeller of New York to the president of the American Oil Chemists' Society, R. W. Bates, were read by Mr. Bates during the 34th fall meeting in New York October 17-19, 1960, at the Hotel New Yorker.

The president's message read thus: "It is a pleasure to send greetings to the members and guests of the American Oil Chemists' Society assembled at their 34th fall meeting. For his daily diet man depends much upon the food properties of fats and oils. In more recent times these products have also been widely employed in industry. Our scientists are constantly seeking ways to improve and to broaden the use of animal, marine, and vegetable fats and oils. By these means they are helping to make ever more effective use of America's abundance. Best wishes for a fine meeting!"

From the vice president was received this message: "It is a pleasure to extend greetings to all those participating in the 34th fall meeting of the American Oil Chemists' Society. It is encouraging to know of the important contributions the members of your organization have made through scientific research toward meeting the great challenges which face our nation. I welcome this opportunity to send you and to all your members my very best wishes for continued success in the work you are carrying on, which is so important in maintaining the continued greatness of America."

The meeting was also marked by a tribute to the late W. A. Peterson, president of the Society in 1955, who was to have been chairman of the convention, and greetings from the City of New York by Mr. Tackman, substituting for Vincent J. O'Shea, deputy commissioner, department of commerce and public events.

Registration totalled 778, divided among 486 members, 98 nonmembers, 117 ladies, and 77 exhibitors. Canada sent speakers, members, and guests; so did England. From Latin America came Abraham Jesurun and Murray E. Othmer of C.A.I. Productora de Grasas, Caracas, Venezuela, and J. L. Schnake of Anderson, Clayton in Lima, Peru.

As usual, the convention committee planned no luncheon meetings, no speaker's table at the dinner dance. There was a mixer Sunday evening however, through the courtesy of the New York committee. Monday a cocktail party was given by Distillation Products Industries and Eastman Chemical Products Inc. Tuesday's dinner dance was marked by an excellent dinner and fine entertainment.

Under the guidance of the co-chairmen, Mrs. E. A. Lawrence and Mrs. Henry G. Salomon, the ladies were kept busy and happy. There was a tour of the United Nations Monday and luncheon in the Delegates' Lounge; Tuesday a breakfast and fashion show at Altman's Charleston Gardens, followed by a sight-seeing boat tour around Manhattan Island.

LOCAL COMMITTEE—At the time set for the picture-taking only five could be rounded up: *(seated)* Eugene Marshack (entertainment); D. S. Bolley (chairman), and F. B. White (hotel); *(standing)* W. C. Ault (program) and E. A. Lawrence (co-chairman).

STATE OF NEW YORK
EXECUTIVE CHAMBER
ALBANY

NELSON A. ROCKEFELLER
GOVERNOR

October 4, 1960

Dear Mr. Bates:

It gives me great pleasure to extend a most cordial welcome to the American Oil Chemists' Society on the occasion of its 34th Fall Meeting. The people of New York are glad you have chosen to hold this session in the Empire State.

The Oil Chemists of America are outstanding among groups whose skill and research have contributed in spectacular fashion to the advancement of our technology, our industry and our economy. Your members are to be congratulated upon the progress they have achieved.

My best wishes for a successful meeting.

Sincerely,

Nelson Rockefeller

Mr. Robert W. Bates
President, The American
Oil Chemists' Society
Hotel New Yorker
8th Avenue and 34th Street
New York, New York

Committees met almost around the clock, and the Governing Board conducted its fall meeting on Sunday, October 16, with reports from various committee chairmen, such as Uniform Methods, National Program, Education, Convention Locations, and Smalley. It was decided to have the 1964 fall meeting in Chicago; the 1965 meetings in Houston and Cincinnati; the 1967 meetings in New Orleans and Chicago. No decision was made for 1966.

Exhibits by 31 different companies greatly added to the interest of the meeting, which presented a total of 58 technical papers. Committee chairmen were: D. S. Bolley, general chairman; E. I. Marshack, entertainment; Henry G. Salomon, exhibits; Robert Hussong, finance; F. B. White, hotel; F. C. Naughton, printing; W. C. Ault, program; J. T. Costigan, publicity; and J. A. Preston, registration.

Program Well Balanced

A WELL-BALANCED technical program was organized by W.C.Ault and Foster Dee Snell for the 34th Fall Meeting of the American Oil Chemists' Society held at Hotel New Yorker, New York, on October 16-19. Fifty-eight technical papers were reported by oil chemists representing six universities, seven government laboratories, 15 industries and institutions, and two foreign countries. The seven technical sessions were presided over by L.F. McKenney, J. Fred Gerecht, J.T. Scanlan, Foster Dee Snell, C.M. Gooding, Richard Sasin, and B.F. Daubert, respectively.

Fat Prices Influenced by Demand

The trends in industrial markets for fats and oils derivatives were analyzed by M.W. Sills of the Department of Agriculture. The new fat type of plasticizers are currently consuming 60 million pounds of fats annually. Synthetic lubricants will probably be consuming 20 million pounds

OPENING SESSION—Foster D. Snell is missing from this group, but the other speakers *(in the usual order)* are L. J. Morris, L. F. McKenney (presiding), M. W. Sills, and F. J. Poats.

of fatty esters annually by 1965. Animal feeds consume approximately 600 million pounds of fats annually. The protective coating market as an outlet for fats continues to decline. The demand for use as chemical raw materials was therefore considered as not enough to influence the price of fats.

L.J.Morris of the University of Minnesota proposed some bases for a verbal abbreviation system of nomenclature for fatty acids. This may avoid the cumbersome, systematic nomenclature and therefore prevent the christening of new fatty acids with meaningless, trivial names.

Winterization by Solvent Crystallization

W.G. Mertens of Canada Packers Ltd. obtained a yield of 75-78% cottonseed salad oil with a cold test of from 15-20 hrs. by rapidly chilling a 9:1 oil-solvent mixture in a Votator type of heat exchanger to around 0° C. H.R. Kaiser of Podielniak Inc. presented a two-step process for water degumming, caustic refining, and water washing of soybean oil. In this process two unique centrifugal type of machines were used; one for degumming and the other for separation of oil from soap, plus simultaneous countercurrent water-washing in a single rotor. Lois S. Crauer of the De Laval Separator Company offered a quick, accurate laboratory procedure for measuring refining efficiency by determining the indestructible sodium ion present in each of the stream flows.

The preparations of high-purity fatty acids and esters ranging from the common straight-chain saturated derivatives to such uncommon monoenes as *cis* and *trans* myristoleic, branched-chain and extra long-chain materials were reported by Arthur Rose of Applied Science Laboratories Inc. The production of linolenic acid of 95 to 98% purity on a pilot-plant scale by liquid-liquid extraction of mixed fatty acids derived from linseed oil was described by R.E. Beal of the Northern Regional Research Laboratory.

Pilot-plant production of undenatured, debittered soybean flakes was reported by G.C. Mustakas of the Northern Regional Research Laboratory. Under controlled conditions, defatted soybean flakes can be successfully debittered by countercurrent washing with alcohols, and the entrained solvent can be recovered by flash-desolventizing without excessive denaturation of protein.

A novelty fluid shortening made of an oil in water emulsion was reported by A.S. Geisler of the Atlas Powder Company as excellent for cake baking and cream icing. The emulsion contains 50% water and can be produced from all common shortening base stocks by using sorbitan monostearate, polyoxyethylene sorbitan monostearate, and mono- and diglycerides as dual-purpose emulsifiers.

METHODOLOGY—Behind the table are *(seated)* H. K. Mangold, Paul Magidman, J. Fred Gerecht (chairman), S. F. Herb, and M. R. Sahasrabudhe; *(standing)* H. J. Dutton, O. S. Privett, E. H. Gruger Jr., A. P. Tulloch, Heino Susi, and V. R. Bhalerao.

Mechanisms for Treatment of Lard

T.J. Weiss of Swift and Company reported that, during the rearrangement of lard, the sodium methoxide first reacts with a triglyceride molecule to form an active catalyst, the enolate ion. This is followed by crystal modification, in which the crystal structure is completely and permanently changed through intraesterification with a simultaneous loss of disaturated monounsaturated triglycerides. During the final phases of rearrangement the fatty acids of the triglycerides approach random distribution through interesterification as indicated by the increase in trisaturated glycerides. L.H. Wiedermann of Swift and Company compared the physical and functional properties of lard interesterified by several patented processes. He reported that a stable shortening with good baking characteristics is produced by crystal modification, that is, a complete and permanent alteration of the mixed, *beta,* and *beta*-prime pattern of lard to a *beta*-prime pattern. He also reported a new diffraction pattern for lard products, produced by directed interesterification. This was found to be stable, exhibiting strong *beta* type of characteristics.

BIOCHEMISTRY AND NUTRITION—With gaze fixed upon the "birdie" are these: *(seated)* F. E. Luddy, R. P. A. Sims, J. T. Scanlan (chairman), L. N. Norcia, and Raymond Reiser; *(standing)* G. D. Michaels, George Rouser, B. M. Craig, R. T. Holman, and Hans Kaunitz.

The hydrogenation of linolenate by hydrazine reduction was reported by H.J. Dutton of the Northern Regional Laboratory. The hydrogenation products contain no *trans* isomers, and the double bond farthest from the carboxyl group shows a slightly faster rate of reduction. L.F. Albright of Purdue University reported that the selectivity and isomerization during partial hydrogenation of cottonseed oil and methyl oleate are essentially unaffected by temperature and catalyst concentration at the high rates of agitation but are decreased at higher pressures. E.M. Meade of the Meade Laboratory and Process Company reported that, during the direct acetolysis of fats by acetic acid at a temperature below 120°C., the apparent acetolysis is, in fact, a slow hydrolytic fat splitting to partial glycerides, followed by a rapid acetylation, and water is an essential reagent. Substances showing high acidity in an acetic acid medium are effective catalysts. He also reported that triacetin can be made by the acetolysis of hardened tallow, accompanied by an 80% yield of good-purity saturated acids, and some 10% of a fraction of high diacetoglyceride content.

E.N. Frankel of the Northern Regional Research Laboratory isolated relatively pure monomeric hydroperoxides from autoxidized methyl linolenate in yields of 30 to 36% of the oxygen absorbed. J.F. Hudson of Unilever Ltd. reported that even a pure, fully-saturated triglyceride is rendered inedible by degradation at temperatures from 190°C. in the absence and in the presence of oxygen.

Separation of Surfactants with Resins

M.J. Rosen of Brooklyn College reported a process for the separation of mixtures of anionic and nonionic surfactants or cationic and nonionic surfactants by stirring

DETERGENTS—These speakers are *(seated)* J. C. Harris, Foster D. Snell (chairman), and M. J. Rosen; *(standing)* C. A. Slanetz, B. E. Brown, A. J. Stirton, and L. I. Osipow.

an aqueous solution of the mixture with a small amount of a strong ion exchange resin. The resin-ionic surfactant complex is removed by filtration, and nonionics are recovered from the filtrate. L.I. Osipow of Foster D. Snell Inc. reported a relationship between detergent efficiency and the tendency to form anisotropic solutions with the ionic-nonionic surfactant combinations. The formation of anisotropic solution is related to the hydrophile-lipophile balance of the system.

A.J. Stirton of the Eastern Regional Research Laboratory reported that a nearly-colorless, *alpha*-sulfostearic acid is obtained by sulfonation of stearic acid with dioxine sulfur trioxide. Sodium *alpha*-sulfopelargonic acid shows only limited surface-active properties, but its octyl ester is a very efficient wetting agent. J.C. Harris of the Monsanto Chemical Company discussed the removal of soil from glass. Nonionics were found to be the most effective detergents for the system, fatty soil on glass, especially when used in baths closely approaching their cloud-points.

The secret of vacuum drying for making soaps was reported by J.W. McCutcheon of John W. McCutcheon Inc. as control of the viscosity of the resulting products through vacuum and temperature adjustments. The avoidance of high oxidation temperatures in the vacuum-drying process encourages the formation of the more soluble soap phases and, on occasion, may permit the use of highly oxidizable materials such as transparency for special effects.

Paints from Linseed Oil Emulsified in Water

H.M. Teeter of the Northern Regional Research Laboratory reported that surface drying of linseed oil emulsion paints left a flat or eggshell appearance. Photomicrographs of the dried films showed porous surfaces in contrast to the smooth surfaces obtained with oil-base paints. He also reported that the dimethyl ester of the acrylic adduct of linoleic acid and its epoxide are potential plasticizers for polyvinyl chloride. The safflower oil adducts and epoxides are incompatible with polyvinyl chloride but have extremely good compatibility with acrylonitrile rubber. C.K. Lyon of the Western Regional Research Laboratory reported that better trichlorofluoromethane-blown, rigid urethane foams were obtained by using tolylene diisocyanate and a mixture of a castor-oil-derived polyol and a lower molecular weight polyol with a higher hydroxyl content.

Gerhard Maerker of the Eastern Regional Research Laboratory obtained excellent yields of glycidyl esters by reacting the sodium salts of stearic or azelaic acid with excess epichlorohydrin in the presence of benzyltrimethylammonium chloride. This reaction is applicable to a variety of acids derived from fats, including commercial mixtures from tallow, wool wax, and soybean oil. Norman O.V. Sonntag of the Colgate-Palmolive Company synthesized fatty acid monohydrazides through the acylation of hydrazine hydrate. He also synthesized fatty acid dihydrazides through the Schotten-Baumann technique.

Isomeric Linoleic Acids Found in Depot Fats

B.M. Craig of the Prairie Regional Laboratory found three isomeric linoleic acids in the hydrogenated rapeseed oils, and these appeared in the body fat of the rats in similar proportions. Hans Kaunitz of Columbia Univer-

PROCESSING AND FAT COMPOSITION—Ranged for the photographer are *(seated)* G. C. Mustakas, C. M. B. Gooding (chairman), M. R. Sahasrabudhe, and Mrs. Lois S. Crauer; *(standing)* H. R. Kaiser, L. F. Albright, and B. J. F. Hudson.

sity concluded that linoleate regulates the type of fat deposited; it facilitates the laying down of a fat more representative of the fat in the diet. Raymond Reiser of the Texas Agricultural Experiment Station reported that the differences in the degree of incorporation of labelled acetates into cholesterol are inversely related to the levels of cholesterol but follow the same pattern as lipogenesis, being high in the animals on the fat-free diet, intermediate in those which received saturated fat, and lowest in those which received linoleic acid. R.T. Holman of the Hormel Institute reported that the point of an abrupt change in tissue lipid composition, when the polyunsaturated fatty acid content of tissues is plotted against the linoleate content of the diet of male rats, is the minimum requirement for linoleate.

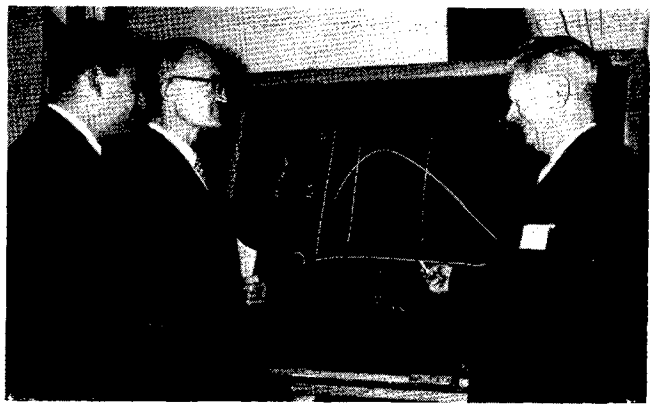
The nutritional properties of lauroyl and myristoyl peroxides were reported by C.A. Slanetz of Columbia University. The two peroxides have pharmacological properties which are similar to each other but different from those of autoxidized cottonseed oil with its high polymer content. G.D. Michaels of the Highland-Alameda County Hospital reported that, in a patient "essential hyperlipidemia," the rate of oxidation of C^{14} palmitate is much more rapid when safflower oil is included in the diet as compared to a fat-free diet. Palmitic acid disappears much more fully from the plasma than does linoleic acid. This difference is not reflected in the rate of oxidation.

60 Fatty Acids in Cow's Milk

S.F. Herb and Paul Magidman of the Eastern Regional Research Laboratory fractionally distilled the methyl esters of cow's milk into 11 fractions and a residue. The latter was further fractionated by chromatography. Each fraction was analyzed by gas-liquid chromatography. They identified more than 60 fatty acids, including several not previously reported, such as odd-numbered carbon chain-length monoethenoid acids from C_{15} to C_{23} and a C_{20} triethenoid acid in which the double bonds do not conjugate on alkali isomerization. E. Vioque of the Hormel Institute isolated and tentatively identified some oxygenated fatty acid constituents of olive oil foots and noted the presence of some triterpenoid acids, one of which was shown to be oleanolic acid.

CHEMICAL REACTIONS AND DERIVATIVES—In this large group are *(seated)* R. E. Beal, Gerhard Maerker, Richard Sasin (chairman), and W. S. Port; *(standing)* E. N. Frankel, Cameron Lyon, N. O. V. Sonntag, H. M. Teeter, and J. P. Friedrich.

H.J. Dutton of the Northern Regional Research Laboratory fractionated corn oil by countercurrent distribution



EDIBLE FATS—Some of the closing session speakers are shown here: A. S. Geisler and E. M. Meade on left and B. F. Daubert (chairman).

and concluded that the accounts of constitutionally different triglycerides of corn oil approximate those predicted for the random distribution pattern.

F.E. Luddy of the Eastern Regional Research Laboratory reported that there are wide variations in the total lipid content of the different layers of steer hide as well as in the distribution of their lipid components. L.J. Morris of the University of Minnesota isolated pure methyl 12:13-epoxyoleate from *Vernonia* oil. J.P. Friedrich of the Northern Regional Research Laboratory obtained liquid C-18 cyclic acids in excess of 30% yields from linseed oil by heating at 295°C. with excess sodium hydroxide. H.J. Dutton of the Northern Regional Research Laboratory prepared fatty acids randomly labelled with C^{14} and with H^3 by culturing soybean plants in the presence of $C^{14}O_2$ and H^3OH in the nutrient medium.

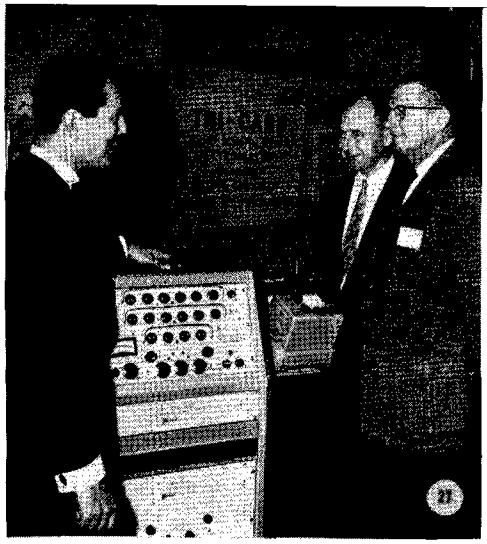
R.P.A. Sims of the Department of Agriculture, Canada, reported that oil in immature flaxseed was more saturated than oil in more mature seed. However the ratio of linolenic acid to linoleic acid that characterizes linseed oil was established by the 20th day after fertilization. He also reported that, during the developing of safflower seed, linoleic acid was present in almost the same amount as oleic acid initially, but by the 20th day after fertilization its concentration was five time that of oleic acid. B.E. Brown of the University of Toronto reported that, during the germination of soybeans, no loss of oleic acid occurred until after the second day of germination and its more rapid loss, comparative to the other fatty acids, occurred during the period of most rapid fat loss.

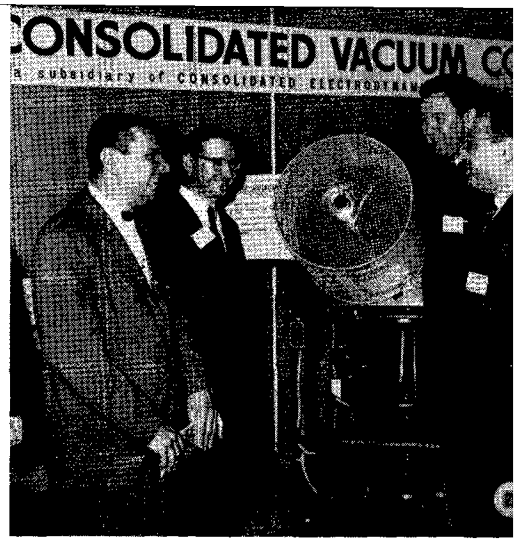
Isomers of Monoglycerides Analyzed by Spectroscopy

The spectra of 1 and 2 isomers of monoglycerides were found by H. Susi of the Eastern Regional Research Laboratory to differ sufficiently in the region of the first overtone of the OH stretching vibration to permit positive identification of pure isomers and semiquantitative analysis of mixtures. O.S. Privett of the Hormel Institute described two techniques for the determination of mono-, di-, and triglycerides. One involves molecular distillation, the other thin-layer chromatography. H.K. Mangold of the Hormel Institute applied the technique of thin-layer chromatography to the separation of a wide variety of lipids, ranging in polarity from hydrocarbons to phospholipids. M.R. Sahasrabudhe of the Department of Health and Welfare, Canada, described an all-glass apparatus for the fractionation of triglycerides on a silicic acid column.

The use of ultraviolet absorption at 270 mμ for detection

(Continued on page 33)





16. **GIRDLER PROCESS EQUIPMENT—J.E. Slaughter *(at right)* plays host to Arnold Carsten and R.R. King, A.O.C.S. president in 1945.**

17. **SPARKLER MANUFACTURING—J.B. Levy shows his material to Eric K. McLean.**

18. **ARTHUR H. THOMAS—The demonstrator is Howard B. Jurgrau; at his right is Eric Jungermann, and across are R.O. Feuge and E.W. Colt.**

19. **APPLIED SCIENCE LABORATORIES—Robert F. Sweeny is the pipe-pointer, for the benefit of O. J. Fiala.**

20. **IVAN SORVALL INC.—E.S. Lutton observes a demonstration by C.G. Lindgren.**

21. **T. SHRIVER—Jan A. Laan watches F.M. Yeiser as he shows a filter.**

22. **DISTILLATION PRODUCTS—R.L. Edward stands beside Mrs. Wallace J. Quick, facing R.G. Jensen and G.W. Gander.**

23. **HOFFMANN-LA ROCHE—From left to right are David P. Kidger, C.E. Karkalits, and W.S. Gilpin Jr.**

24. **ENCYCLOPAEDIA BRITANNICA—Mykola Zajcew examines one of the books R. Barry is displaying.**

25. **DE LAVAL SEPARATOR—Frank Lawatsch *(left)* and J.C. Konen, A. O. C. S. president in 1958, have a quiet talk.**

26. **CROLL-REYNOLDS—M. Elfrada (Faye) Smith, M.F. Lauro, and Richard L. Tracy are enjoying a pleasant exchange.**

27. **PACKARD INSTRUMENT—On the left is C.J. Palais, and on the right are G.N. Walker and H.D. Fincher.**

28. **CONSOLIDATED VACUUM—This smiling foursome is identified as *(left to right)* A.F. Kapecki, L.D. Metcalfe, R.A. Reck, and Frank Jossel.**

29. **HAYES G. SHIMP INC.—The lady is Mrs. J.R. Mays Jr., whose husband was A.O.C.S. president in 1950. At top right is O.J. Acklesberg, and across is Mr. Shimp.**

30. **V.D. ANDERSON—Handling the beverage in the paper cup to J.A. Preston, registration chairman for the New York meeting, is Sheldon Baer. The onlooker is Earl Hammond.**

31. **GREAT LAKES CARBON CORPORATION—With the Dicalite exhibit as background these four pose for the photographer: W.K. Hilty, Morris Mattikow, Gordon Halvorsen, and A.F. Paustian.**

Program Well Balanced

(Continued from page 29)

of the adulteration of virgin olive oil was reported by F.D. Snell of Foster D. Snell Inc. The use of diethylaminoethyl cellulose for the quantitative removal of acidic lipids from lipid mixtures was described by George Rouser of the City of Hope Medical Center. An apparatus for the addition of liquids at a very slow constant rate, such as in the evaluation of water absorption properties of shortenings, was reported by George Christianson of the Rath Packing Company.

V.R. Bhalerao of the University of Illinois described a method based on the reaction between a carbonyl compound and hydroxylamine hydrochloride for the determination of carbonyl compounds in thermally-oxidized oils and fats. A.P. Tulloch of the Prairie Regional Research Laboratory, Canada, reported a method for the determination of the position of double bonds in unsaturated oils by the gas-liquid chromatography of the oxidation products of the oils. This method can be applied to the detection and estimation of isomeric unsaturated acids in natural and hydrogenated oils.

STEPHEN S. CHANG, Department of Food Science, Rutgers, The State University, New Brunswick, N.J.

CSMA Brings out Book

"Proceedings of the 46th Mid-Year Meeting" of the Chemical Specialties Manufacturers Association (50 E. 41st street, New York 17, N.Y.) is just off the press, presenting 256 pages of papers and committee reports of the Chicago meeting last May. Copies are $7.50 each.

LADIES' COMMITTEE—Between the tour of the day and the dinner dance these workers posed for the photographer: *(seated)* Mmes. W. A. Peterson, S. P. Taylor, J. A. Preston, and J. Leslie Hale; *(standing)* Eugene Marshack, E. A. Lawrence (chairman), D. S. Bolley, and Peter Kalustian.