Set Future Convention Dates

LOOKING AHEAD, the Governing Board of the American Oil Chemists' Society discussed future convention locations and dates at its two meetings at the Sheraton-Jefferson hotel in St. Louis April 30 and May 3, with the following results:

New Orleans and Chicago, 1964 and 1967
Houston and Cincinnati, 1965
Los Angeles and Philadelphia, 1966

The recommendation of the Education Committee that there be a 1962 short course on industrial fatty chemicals, with W.C. Ault and Daniel Swern as co-chairmen, was approved.

Harold Slosson and E.M. James were approved for transfer from active membership to emeritus. Active junior dues were raised from $5 to $5.50 as of 1962. T.L. Rettger of Memphis, Tenn., was appointed executive secretary of the Society, effective June 1, to succeed Mrs. Lucy R. Hawkins.

A new rate card, showing a 7½% increase in advertising rates effective July 1, was approved upon the recommendation of the Journal Committee, after consideration by the Advertising Committee.

New Orleans representatives were reappointed: J.J. Ganucheau and T.H. Hopper. Also reappointed as chairman of the Journal Committee and editor of the Journal was A.R. Baldwin. A special committee was named to consider referee certification: R.W. Bates, chairman, N.W. Ziels, and A.S. Richardson.

All members of the Examination Board were reappointed: N.W. Ziels, chairman, R.T. Doughtie Jr., E.R. Hahn, R.R. King, and R.C. Stillman.

T.H. Hopper was named chairman of a special committee on constitution and by-laws to consider qualifications for emeritus membership, elimination of the three-months grace period for unpaid membership dues, membership year, fiscal year, succession of officers upon death, disposal of convention funds to agree with convention manual, section representation on the Governing Board, referee certification, etc.

It was agreed that the secretary of the Society should act as liaison officer with the sections. New members of the Journal Committee were announced as W.C. Ault, G.C. Cavanagh, and D.H. Wheeler for three-year terms, replacing J.C. Cowan, R.T. O'Connor, and Dorothy Rathmann. R.A. Reiners was reappointed chairman of the Abstracts Committee, and E.M. Sallee, technical editor of the Official and Tentative Methods of Analysis.

Representatives to affiliated groups were also named: Inter-Society Color Council—W.T. Coleman, chairman, Francis Scofield, and H.B. Stevenson as representatives, and the following as accredited delegates, R.T. O'Connor, A.L. Schulerud, H.G. Shimp, R.J. Smith, and R.C. Stillman; National Fire Protection Association, Flammable Liquids Committee, also Section Committee on Solvent Extraction—P.R. Sheffer; National Research Council, food protection committee—R.T. Milner; Agricultural Research Institute—S.B. Detwiler Jr.; U.S.A. Committee for ISO/TC 48, committee on international standards for laboratory glassware—W.J. Paterson; and Advisory Board, Office of Critical Tables, Academy Research Council—A.L. Sawyer.

Consideration of publication of a membership directory in 1962 was put over until the fall meeting of the Governing Board in Chicago.

T.L. Rettger (1921), emeritus member of the American Oil Chemists' Society and retired division chemist, Buckeye Cotton Oil Company, Memphis, Tenn., was appointed executive secretary of the Society, effective June 1, 1961, with headquarters at 35 E. Wacker drive, Chicago 1, Ill. He has been active on several Society committees.

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Attendance Tops 500

A SMALL, energetic convention committee put on the 52nd annual meeting of the American Oil Chemists' Society at the Sheraton-Jefferson hotel in St. Louis May 1-3 and drew an attendance of 502. There were 329 members, 90 nonmembers, and 83 ladies. Of the first two classifications there were 60 tickets for single sessions.

General chairman was E. L. Metcalf of the R. J. Brown Company, assisted by F. W. Ries and J. W. Baggs. T. J. Potts of the Ralston Purina Company was program chairman, R. T. Doughtie Jr. of the U.S.D.A., Memphis, golf and hotel chairman, Alexander Kitun of the P. D. George Company, registration chairman.

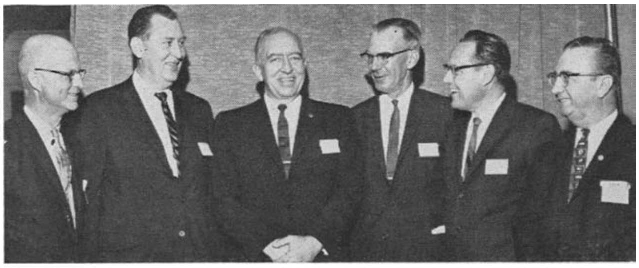
Sunday, April 30, was busy with committee meetings, registration, Board meeting with R. W. Bates in the chair, a mixer for early arrivals under the sponsorship of several companies, and the Past Presidents' dinner at the Missouri Athletic club. May Day was devoted to a short business session, of which the principal feature was the presidential address by Mr. Bates; to a choice of trips: Ralston Purina Research Farm and Laboratories or Anheuser-Busch Inc., golf tournament, or seminar on toxic residues, which was attended by 100 or more.

Triple sessions marked the technical program on Tuesday and Wednesday morning, and the annual Awards luncheon closed the meeting formally. Smalley certificates were presented, also the two cups (Smalley and the new cottonseed trophy presented by Barrow-Agee), to the winners in the check sample series, by W. J. Miller, chairman. A. E. MacGee and R. T. Doughtie Jr. gave out the golf prizes, and D. H. Wheeler put the Bond medal in the hands of D. C. Malins, to be given to H. K. Mangold, who presented the best paper at the two 1960 meetings. Both authors were given certificates. In a final ceremony Lamar Kishlar, president of the Society in 1943, told how the late Felix Paquin, first president, consulted him about setting up a fund to defray the expense of giving a key annually to the outgoing president, and presented the key this year to Mr. Bates. The fund is in the form of a $500 government bond.

After the luncheon the incoming Governing Board met with A. R. Baldwin presiding.

The ladies, under the chairmanship of Mrs. Metcalf, enjoyed shopping tours, a tour of the city including the Missouri Botanical Garden's Climatron, and a luncheon Tuesday in the Sheraton-Jefferson.

At the dinner dance Tuesday Mrs. Lucy R. Hawkins, retiring as executive secretary after 17 years with the Society, was given a handsome diamond-studded Swiss watch by the various sections, J.T.R. Andrews, and J.J. Ganucheau. A.E. MacGee made the presentation for the membership. A.S. Richardson, president of the Society in 1931, won a large silver tray as door prize and then presented it to Mrs. Hawkins.



ST. LOUIS COMMITTEE—The principal figures in running the 52nd annual meeting of the American Oil Chemists' Society in St. Louis May 1-3 are shown above: T.J. Potts, A. Kitun, E.L. Metcalf, R.T. Doughtie Jr. (of Memphis), J.M. Baggs, and F.W. Ries.

St. Louis Program Strong

THE 52ND ANNUAL MEETING of the American Oil Chemists' Society in St. Louis May 1-3 was characterized by strong and varied technical sessions. Seventy-eight papers were presented on subjects as diverse as housekeeping in food-processing plants and the preparation of rigid urethane foams from castor oil.

The first session to get under way was an excellent seminar on Toxic Residues in Foods with H.C. Schaefer as moderator. George C. Decker spoke on the values and dangers in the use of pesticides. He emphasized that basically pesticides are toxic and must be used with care but that, if the instructions of the manufacturer are followed to the letter, the hazard can be minimized. H.E. Heineman's paper on pesticides in the dairy industry followed. He pointed out that the problems in milk are of a special nature because milk is so widely used by all sectors of the population. Although it is agreed that a zero tolerance of chlorinated compounds would be desirable, Dr. Heineman's data showed that, during the summer months, more than half of the milk samples examined contained detectable amounts of chlorinated insecticides. DDT and its decomposition products were the chief compounds found in the milk. As a result of these findings a vigorous campaign was undertaken to educate the dairyman regarding the dangers of contaminated milk. Analytical results from recent samples indicated the success of this effort. The average level of contaminated samples has dropped from 1.5 p.p.m., based on fat, to about 0.5 p.p.m. although the number of contaminated samples remained about the same. It is Dr. Heineman's opinion that the low levels of chlorinated insecticides still found in milk fat can be traced to dairy feed and forage.

J.E. Fahey of the U.S.D.A. spoke on pesticide residues in foods and feeds and pointed out the many different ways in which insecticides are applied. Once on the plant some products decompose rapidly to innocuous compounds, others oxidize to even more toxic compounds. R.S. Roe then concluded the seminar with a brief review of the history of legal control and regulation of pesticide residues on foods and feeds.

THE WELL-ATTENDED session on Biochemistry and Nutrition was presided over by F.W. Quackenbush. In the first paper G.E. Mann presented data to show that cottonseed meals extracted with a mixture of acetone, hexane, and water were superior to commercial meals for promoting growth of chicks. Good correlation was obtained between weight gain and lysine content of the meals.

Vegetable oils at the 20 to 30% level in diets of adequate protein content, according to Raymond Reiser of Texas A. & M. College, stimulated the growth of chicks. Increasing the vitamin and/or mineral level or adding sources of unknown growth factors to these diets high in oil showed no beneficial effect.

L.J. Machlin then reported his findings regarding encephalomalacia in aged chickens. Birds fed for 64 days on a diet high in linoleic acid and containing Santoquin grew normally. On removal of Santoquin from the diet, encephalomalacia developed within 12 days.

Results of the work of H.B. Lofland and T.B. Clarkson on the effect of dietary fat, protein, and cholesterol levels on atherosclerosis in pigeons was presented. Birds fed corn oil exhibited significantly lower serum cholesterol levels and less severe atherosclerosis than did birds receiving coconut oil.

Fred Snyder and co-workers have demonstrated that fatty acids of adipose tissue are the source of the elevated liver glycerides that appear within 48 hrs. after the intravenous administration of cerium.

A series of three papers was then presented by B.C. Tarladgis of Michigan State University. In the first of these he concluded that ferric heme compound initiated lipid oxidation while the ferrous heme compounds are inactive as catalysts in the absence of preformed peroxides. The last two papers dealt with the application of quantum mechanical principles to the interpretation of the spectra of meat pigments. The pigment of cooked meats is an outer, ionic, paramagnetic, ferric-porphyrin coordination complex. Heat-denatured oxyhemoglobin appears to be an inner, covalent, paramagnetic, ferric-porphyrin coordination complex. The sequence of events and the mechanism of curing was discussed as well as the mechanism of the fading of the cured meats.

ONE FEATURE of this spring meeting was a technical session devoted to detergents. This was ably chaired by J.C. Harris. In the first paper Eric Jungermann presented data to show that the standard deviation of a single determination by the Terg-o-Tometer method of detergency evaluation was 0.54 percentage units of soil removal. This precision is independent of sample, concentration, or water hardness.

The spray cleaning of hard surfaces represents an unique problem, according to J.W. McCutcheon. The usual standards of detergent evaluation such as surface tension, wetting time, emulsifying time, and oil solubility failed to predict actual performance. The special equipment needed to evaluate spray-cleaning performance was described.

M.E. Ginn then showed that maximum detergency occurs at concentrations considerably in excess of the critical micelle concentration. A direct correlation was found between cmc, solubilization, and soil removal.

PAST PRESIDENTS—Gathered at the Missouri Athletic club, St. Louis, April 30, are the following: (clockwise) T.C. Law, charter member, Mrs. and Mr. H.C. Dormitzer, Mrs H.A. Schuette, Procter Thomson, R.W. Bates, Mrs. Thomson, Dr. Schuette, Mrs. C.E. Morris, R.R. King, Mr. Morris, Mrs. King, A.S. Richardson, N.D. Embree, Mrs. H.C. Black, J.R. Mays Jr., Mrs. Bates, Dr. Black, J.C. Konen, Mrs. and Mr. T.H. Hopper, Mr. and Mrs. Lamar Kishlar.

TOXIC RESIDUE SEMINAR—Standing is H.C. Schaefer, chairman; (*left to right*) The others are R.S. Roe, H.E. Heineman, Jack E. Fahey, and G.C. Decker.

The unique steps in a new method for the determination of germicides in soap, as presented by Jungermann, were the initial extraction of the soap with dimethylformamide, followed by evaporation of the extract to dryness to remove most of the perfume and destroy the dye. The resulting mixture is readily analyzed by spectroscopy.

An improved gas-chromatographic technique for the identification of soap stocks was described by E.C. Beck. An automatic attenuator permits the use of a single chart for accurate determination of both major and minor components.

Two papers were presented by the Eastern Regional Laboratory group headed by A.J. Stirton. In the first the properties of sodium α-sulfopelargonic acid and its esters were described. The acid was of little value as a detergent. The esters however had excellent wetting, foaming, and detergent characteristics. In the second paper the oxyethylation products of 9,10-octadecanediol and of 9,10-dihydroxystearonitrile were evaluated. Materials containing four oxyethyl groups had optimum emulsifying properties.

THE TREMENDOUS interest in thin-layer chromatography was attested to by the fact that no less than four papers were given on this subject during the sessions on Analytical Methods, presided over by K.E. Holt. In the first of these Rudolf Kammereck of the Hormel Institute described fractionation of classes of lipids containing nitrogen, phosphorus, or sulfur. Thin-layer adsorption chromatography on silicic acid, diatomaceous earth, or alumina caused separation according to types of compounds. After isolation each lipid class is amenable to further fractionation by complementary methods, such as reversed-phase paper chromatography or gas-liquid chromatography. L.A. Horrocks presented data to show that thin-layer chromatography may be useful in separating brain lipids. E. Vioque described a method for the determination of lipid esters, employing separation by thin-layer chromatography and quantitative estimation as hydroxamic acids. The method is suitable for analyses of ordinary, epoxy, monohydroxy, and dihydroxy fatty acid esters as well as mono-, di-, and triglyceride mixtures. T.H. Applewhite then discussed chromatography on glass strips coated with 5% starch-bonded silicic acid. Ease of preparation is one of the principal advantages of these strips.

CHEMICAL REACTIONS. I.—Left to right are (*seated*) A.F. Mabrouk, E.H. Pryde, Janina Nowakowska, R.C. Stillman, chairman, W.J. Dejarlais, and L.J. Morris; (*standing*) E.J. Gauglitz Jr., H.B. White Jr., R.E. Kelly, and C.K. Lyons.

There were two papers on the use of gas-liquid chromatography. The first, presented by R.B. Iden, was on the analysis of tall oil fatty acids. He emphasized the need for the rigorous exclusion of oxygen during preparation and storage of the methyl esters and the importance of an internal standard. In the second paper W.H. Adam showed that reliable estimates of the molecular weight of alkyl benzenes could be obtained from the gas-chromatographic spectra even though the individual components could not be isolated.

Two papers were presented on infrared analysis. E.L. Schneider discussed modification of inexpensive infrared spectrophotometers so that their performance was nearly equivalent, in some respects, to that of much more expensive instruments. The utility of infrared spectra for the analysis of fatty amide mixture was the topic of a paper by W.E. Link. The sensitivity of this method can be extended to 0.03%.

C.D. Evans discussed the use of partition chromatography for analysis of hydroxy fatty acids. Results of analyses of ricinoleate in castor oil compared favorably with chemical and infrared methods.

Countercurrent distribution was applied to the analysis of polyoxyethylene (8) stearate by a group from Atlas Powder Company. Their results indicate that the polymer distribution approximates a Poisson distribution.

The last paper in this session, presented by B.G. Tarladgis, was on the chemistry of the 2-thiobarbituric acid test. Heating this reagent above or in the presence of acids caused formation of a compound with maximum absorption at the same place as the TBA-malonaldehyde complex.

BIOCHEMISTRY AND NUTRITION—Above are shown B.G. Tarladgis, G.E. Mann, H.B. Lofland, F.W. Quackenbush, chairman, F.L. Snyder, L.J. Machlin, and Raymond Reiser.

B.N. STUCKEY presided over the session on Processing and Fat Composition. In the first paper H.B. White Jr. gave the results of analysis of individual beans on a soybean plant. Seeds in the same pod showed greater variation in stearate, oleate, and linoleate percentages than could be accounted for by analytical error. The range of fatty acid esters from the different locations on the plant was palmitate (8.6 to 11.2%), stearate (2.3 to 4.3%), oleate (21.6 to 26.2%), linoleate (53.7 to 59.4%), and linolenate (5.0 to 8.3%).

A procedure for producing a bland edible oil and a palatable meal from mustard seed was disclosed by G.C. Mustakas. The novel step is the enzymatic hydrolysis of the mustard glucoside to yield allyl isothiocyanate, which is removed during cooking of the seeds in preparation for oil recovery.

The properties of iron weed (*Vernonia anthelmintica*) seed oil were examined by workers at the Eastern Regional Laboratory. The oil contained 69% of vernolic acid (*cis*-12:13-epoxyoleic) and was of some utility in plastic compositions.

Two papers were presented on the work at the Northern Regional Research Laboratory regarding the search for new industrial oils. Seed oils of 88 species were examined. Wide variability in composition was encountered.

The direct esterification of glycerol with fatty acid was discussed by R.B.R. Choudhury. The reaction was found to proceed in two stages. Initially triglycerides were formed along with monoglycerides; in the latter stages the triglycerides underwent glycerolysis.

E. Von Sydow of the University of Gothenburg, Sweden, presented the results of his work on molecular arrangement of fatty acids and their methyl esters in the solid state.

CHEMICAL REACTIONS. II.—These speakers are (*seated*) W.R. Noble, J.C. Cowan, chairman, Wilma J. Schneider, W.C. Ault; (*standing*) Abner Eisner, E.T. Roe, F.H. Otey, E.W. Bell, E.J. Dufek, and L.E. Gast.

The number of states in which a molecule can exist tends to increase with the complexity of the molecule.

The structure of fatty acids containing triple bonds was examined by H. Susi, A.S. Jahn, and D. Lutz. The structure of these acids was considerably different from the known forms of saturated acids and depended on the position of the triple bond.

The first section of the Chemical Reactions and Derivations session, presided over by R.C. Stillman, was opened by H.B. White Jr., who reported that the addition of mercuric acetate to the methyl esters of ethenoid acids proceeded rapidly and quantitatively. The derivatives were easily separated chromatographically, and the original esters could be regenerated by acidification. Linolenate esters of high purity were prepared by this method. An important advantage, in addition to high yields, was that the fatty acids were recovered in their original state.

Preparation of high-purity linoleic acid from vegetable oils, using the traditional low-temperature crystallization technique, was reported by Janina Nowakowska. Analyses of this "pure" linoleic acid revealed that it contained 90 to 95% of 9,12-dienoic acid, about 5% of dienes with the first double bond at the C_8 position and the second bond either at C_{12} or C_{13} and a small amount of nonconjugatable 9,15-*cis, cis*-dienes.

A study of the autoxidation of methyl linoleate emulsions in aqueous phosphate buffer solution in the presence of glycose, fructose, and sucrose was presented by A.F. Mabrouk. The rate of oxygen up-take increased with the increasing concentration of sugars. At comparable molar ratios of sugar to methyl linoleate, the rate of oxidation in the presence of fructose was greater than with glucose, which in turn was greater than with sucrose. Oxidation rates increased with the pH of the system until a maximum rate was reached at pH 8.0.

R.E. Kelly presented a paper for C.A. Genge, J.A. Hudy, and D.E. Reid, in which the composition of the difficultly esterifiable rosin acids in distilled tall oil fatty acids was described. The distillable rosin acids were of much different composition from that of tall oil rosin.

ANALYTICAL METHODS—In this group are (*seated*) C.D. Evans, W.E. Link, K.E. Holt, chairman, L.A. Horrocks, R.B. Iden; (*standing*) T.H. Applewhite, R.F.G. Kammereck, Eduardo Vioque, A.H. Silver, and E.L. Schneider.

The alkali-induced cyclization of the trienoic acid components of linseed or tung oils to produce cyclic monocarboxylic acids with an ortho disubstituted cyclohexadiene structure was discussed by W.J. Dejarlais. A number of nitrogen derivatives of these acid mixtures were prepared, and their properties were compared with similar substances prepared directly from fatty acids.

C.K. Lyon presented data to show that castor oil could be advantageously substituted for more costly polyols in the preparation of solvent-blown, rigid urethane foams. Solutions of tri-isopropanolamine or a mixture of tri-isopropanolamine and tri-ethanolamine in castor oil were used as the polyol component.

Preparation of a polyaldehyde product called aldehyde oil was described by F.H. Pryde. Ozonization of soybean oil, followed by reductive decomposition of the ozonolysis products, gave yields of 80 to 90% of theory. The polyaldehyde product is a yellow, viscous oil which readily undergoes condensation reactions with phenolic compounds, urea, amines, and polyols to give cross-linked polymers. There were soft, infusible, insoluble solids.

The absolute optical configuration of *cis*-12:13-epoxyoleic acid from *Vernonia* oil was determined by L.J. Morris. The asymmetric centers were shown to have the D configuration by two methods.

Alcoholysis of menhaden oil to yield alkyl esters proceeded rapidly with quantitative yields, according to E.J. Gauglitz Jr. There was virtually no change in double-bond structure.

DETERGENTS—In the usual order are J.W. McCutcheon, M.E. Ginn, E.C. Beck, J.C. Harris, chairman, Eric Jungermann, A.J. Stirton, A.N. Wrigley.

After luncheon Tuesday the Chemical Reactions and Derivations session reconvened with J.C. Cowan in the chair. F.H. Otey presented the first paper, describing the preparation and properties of polyoxyethylene methyl glucoside fatty acid esters. The esters exhibited good emulsifying action, and the unsaturated esters possessed interesting film-forming properties.

The results of studies of the reaction between dimethyl maleate or related dieneophiles with vegetable oils under autogenous conditions was reported by E.W. Bell. Linolenate is more reactive than linoleate, but both will react. Under practical conditions oleate does not react.

The preparation of mono- and diesters of carboxystearic acid was described by E.T. Roe. Monoesters of both types have been prepared as well as diesters. Some showed promise as low-temperature plasticizers, others as low-temperature lubricants.

W.C. Ault reported results of experiments on the addition of phenols and phenol ethers to oleic acid in the presence of acid catalysts. Methane sulfonic acid when used as catalyst and reaction medium gave the best results.

Three papers were then given on the reactions of unsaturated fatty alcohols by the Northern Regional Laboratory group headed by H.M. Teeter. In the first paper the properties of copolymers formed by reacting vinyl ethers of conjugated soybean or linseed oil alcohols with vinyl ethers containing cyclic groups, such as cyclohexyl or abietyl, were described. Films from these copolymers showed outstanding improvement in hardness and alkali resistance. The second paper dealt with the preparation of copolymers of conjugated linseed oil vinyl ethers and styrene by refluxing in an aromatic solvent. Twenty to 40% by weight styrene was incorporated. Baked films of these products showed improved gloss, color, and hardness. The third paper on this topic concerned improvements made in the styrenation of fatty vinyl ethers by use of dipentene as a solvent. Up to 67% of styrene could be incorporated. Film properties were correspondingly improved.

Two papers were presented on the metal soaps of wool wax acids. In the first the preparation of di- and trivalent metal salts was described. In general, soaps of trivalent metals were more soluble than those of divalent metals. The second paper described results of testing these salts as light stabilizers in plasticized polyvinyl chloride polymers. Barium, cadmium, and lead soaps performed well.

THE CLOSING section of the session on Chemical Reactions and Derivations was chaired by H.T. Spannuth. It was opened by two papers on fatty acid morpholides as plasticizers for vinyl chloride resins, given by F.C. Magne. The data presented permit preparation of morpholides of good compatibility from fatty acids of almost any composition.

E.F. Jordan Jr. presented data on the low-temperature aminolysis of methyl stearate, catalyzed by sodium methoxide. Optimum conditions, using a variety of amines, were given.

Reduction of the ozonide of petroselenic acid with sodium borohydride yielded lauryl alcohol and hydroxycaproic acid in experiments reported by Sara P. Fore. A procedure for the recovery of hydroxycaproic acid free of lactones and polyesters was also revealed.

A series of fatty acid esters of amylose was prepared by reaction with the fatty acid chloride, according to R.O. Feuge. As the chain length of the saturated fatty acid group increased, the softening point first decreased and then increased; the minimum was obtained with myristate.

PROCESSING AND FAT COMPOSITION—These speakers are (*seated*) K.L.Mikolajczak, B.N. Stuckey, chairman, R. Basu Roy Choudhury, C.F. Krewson; (*standing*) G.C. Mustakas, F.R. Earle, H.B. White Jr., Erik Von Sydow, and H. Susi.

INTEREST in the papers presented at the Edible Fats and Oils session was high, as evidenced by excellent attendance. K.F. Mattil presided. The first three papers gave results of the recent work at the Northern Regional Research Laboratory on the hydrogenation of linolenates. C.R. Scholfield spoke first on the kinetics of the reaction. Evidence for the triene to monoene shunt (direct conversion of linolenic acid to oleic or elaidic acid) has been obtained for the nickel-catalyzed reductions. Preferential attack on the trienoic ester was also found to occur. Chemical reduction of linolenate with hydrazine was studied, but no evidence of the triene to monoene shunt was found. H.J. Dutton then described a clever means of evaluating hydrogenation catalysts for selectivity. It is based on the analysis of linolenate after absorption of 0.5 mole hydrogen by an equimolar mixture of linoleate and linolenate. Application of this method for the evaluation of commercial catalysts was described by A.E. Johnston.

S.S. Chang of Rutgers University then presented two papers, in which he described a new technique for the isolation of flavor components from fats and oils and its application to reverted soybean oil. Low temperature, vacuum steam-scrubbing of oils was found to remove flavor components, which were then recovered in low-temperature

CHEMICAL REACTIONS. III.—The lady is Sara P. Fore; to the left is E.F. Jordan Jr., and to the right are H.T. Spannuth, chairman, and F.P. Wetterau; standing are F.C. Magne, R.O. Feuge, and B.G. Tarladgis.

EDIBLE FATS—Ranged for the photographer are (*seated*) S.S. Chang, K.F. Mattil, chairman, D.H. Saunders Erik von Sydow; (*standing*) S.F. Herb, Norman Lovegren, A.E. Johnston, Rexel Scholfield, and H.J. Dutton.

traps. This distillate is essentially free of fatty acids and of oil. The distillate from reverted soybean oil (0.4 g. from 20 gal. of oil), when added to bland oil, caused it to taste like reverted soybean oil. The flavor concentrate from reverted soybean oil contained ethyl formate, ethyl acetate, ethyl alcohol, *n*-butyl alkehyde, 2-heptanone, and 2-heptenal. Several unidentified compounds were also separated. Nitrogen compounds were found.

Two papers were presented on the effect of amino acids on the autoxidation of linoleate esters. D.H. Saunders showed that, under their conditions, histidine had a strong pro-oxidant action. Phosphate buffer inhibited this effect. Ferrous or ferric ion accelerated the oxidation greatly, cupric ion had little effect. Von Sydow showed that, at pH less than 7, amino acids exert a pro-oxidant effect. This can be converted to an antioxidative one by the addition of either phosphate or Tween emulsifier.

S.F. Herb reported work on the fatty acid composition of lard with emphasis on the minor constituents. Evidence was obtained of the presence of saturated acids of 15, 17, 19, and 20 carbon atoms, a monoene of 20 carbons, and highly unsaturated fatty acids of 20 and 22-carbon atoms.

The dilatometric properties of 1-oleodistearin and 2-palmito-oleostearin were the subject of N.V. Lovegren's report. These compounds were characterized by a rapid transformation to the stable polymorph even at low temperatures.

ONE OF THE most heavily-attended sessions of the meeting was that presided over by N.H. Witte on Plant Operations. The first paper was one on the solvent extraction of peanut grits (ground peanuts) given by R.B.R. Choudhury. He used hexane, absolute ethanol, or 95% ethanol as extraction solvents. Oil extraction was poorer with grits than with flakes, and preheating of the grits did not increase the extraction rate. From 10 to 25% of the 95% of ethanol extract and about 8% of the absolute ethanol extract were nonlipids.

The properties of oil extracted from cottonseed with a mixture of acetone-hexane-water were given by V.L. Frampton. Slightly more neutral oil was obtained than with hexane, but most of the gossypol originally present in the meal was in the oil. This was easily removed by alkali refining to yield a finished oil of light color.

PLANT OPERATIONS—Seated are (*left to right*) L.A. Baumann, N.H. Witte, chairman, K.W. Becker, R. Basu Roy Choudhury; standing, V.L. Frampton, E.J. Loew, and L.D. Kirk.

Two papers were presented by G.C. Cavanagh of Ranchers Cotton Oil Company. In the first he compared the Rancher's Miscella Refining Process with several conventional processes and showed that the miscella process gave greater yields of oil of lower color. This oil was then bleached in miscella to remove soap with a minimal oil loss to bleaching earth. The process gave finished oils of good stability (AOM = 19 hrs.) because of low-temperature processing and refining. In the second paper he described a continuous winterizing process, employing commercial hexane as the solvent, which has been in commercial operation for the past six years. The process produces a high quality of stearine from a 50% miscella in about 2 hrs. The stearine is obtained in 14–16% yield, based on oil and has an iodine value of 65-75, a palmitic acid content of 50-58%, and a color of 1.0-1.6 Red (Lovibond). The salad oil has a cold test of 16-24 hrs. without additives. It has a linoleic acid content of about 55%.

L.A. Baumann reported on the changes which occur in both crude and refined oil when stored in field tanks or in drums. Changes in moisture, volatile matter, and free fatty acids did not, in most cases, alter the quality or value of the oils in storage up to four years. As a result of this work it is possible to estimate probable changes of oil characteristics during various periods of storage.

The removal of alcohols from defatted soybean flakes which had been washed with aqueous alcohols to obtain edible-grade proteins of good flavor was the subject of L.D. Kirk's talk. A two-stage, flash-desolventizer was found effective in lowering the residual alcohol to values in the range of 0.25 to 1.0%. After this minimum value for residual solvent was reached, further removal of alcohol was very difficult, probably because of hydrogen bonding between the alcohol and the protein. Aqueous alcohol-washed flakes analyzed 72 to 77% protein; the best-flavored products resulted from the flakes, which were extracted with 50 to 70% methanol.

A commercial flash-desolventizing system, which is presently in operation in soybean extraction plants, was described by E.J. Loew. This method of desolventizing flakes has the advantage of simplicity, safety, and compactness. Residual solvent content was less than 0.5%, and the soluble protein content of the desolventized flakes was within 2% of that of flakes directly from the extractor.

A word of warning was given by K.W. Becker of the Blaw-Knox Company with reference to the more rigid sanitation standards and stricter F.D.A. regulations, which are sure to come. These are forcing food processors to develop and adopt improved sanitation and housekeeping techniques. New units must be designed so that sanitation is facilitated.

R. A. REINERS AND J. C. PRESSICK,
Corn Products Company, Argo, Ill.

SMALLEY AWARDS—In this group are (*sitting*) P.E. Smith, Edward R. Hahn, Biffle Owen, W.J. Miller, D.L. Henry; (*standing*) F.M. Tindall, F.A. Adams, Kenneth Holt, L.H. Hodges, and W.J. Howard at the St. Louis meeting May 3, 1961. Mr. Miller, chairman, holds the new Cottonseed Cup.

BOND AWARDS—(*lower left*) D.H. Wheeler, chairman (*left*), holds the certificate for D.C. Malins while Malins displays the medal won by H.K. Mangold.

GOLF PRIZES—Displaying the top trophies are (*left to right*) George R. Payne, Leonard Smith, Robert Hastert (for Earl Ray), and Frank C. Magne.

Prize Winners Announced

HEREWITH are presented lists of three sets of prize winners at the 52nd annual meeting of the American Oil Chemists' Society at St. Louis, Mo., May 1-3, 1961. Information about winners, prizes, and donors has been supplied by R.T. Doughtie Jr., chairman of the golf committee.

Golf Prizes

Low Gross

Earl Ray, leg on Clyde C. McInnes Trophy and sterling silver bowl, American Mineral Spirits Company, Chicago, Ill.

Low Net

Paul Garvey, carry-all bag, De Laval Separator Company, Chicago, Ill.

Second Low Gross

E.W. Tenent Jr., GE pocket transistor radio, V.D. Anderson Company, Cleveland, O.

Second Low Net

George Payne, carry-all bag, Chas. Pfizer and Company, Brooklyn, N.Y.

Third Low Gross (tie)

F.C. Magne, portable mixer, Harshaw Chemical Company, Cleveland, O.
Leonard Smith, dozen golf balls, Milwhite Company, Houston, Tex.

Third Low Net

Winfred Braun, electric hot tray, Hercules Filter Corporation, Oak Park, Ill.
Wayne Kottwitz, French Oil Mill Machinery Company, Piqua, O.
J.C. Lamping, silver ice bucket, Sharples Corporation, Philadelphia, Pa.

Highest Score

S.G. Sourelis, golf seat, Milwhite Company, Houston, Tex.

Fourth Low Net (tie)

W.J. Miller, English silver tray, Bauer Bros. Company, Springfield, O.
D.P. Arndtsen, dozen golf balls, Skelly Oil Company, Kansas City, Mo.

Fifth Low Net (tie)

W.J. Howard Jr., 24-hour electric timer, Foster Wheeler Corporation, New York.
Harry T. Boyer, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
Rex Wingard, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
M. W. Formo, golf umbrella, De Laval Separator Company, Chicago, Ill.

Sixth Low Net (tie)

Thomas Miller, golf putter, L.A. Salomon and Bro., New York.
Willard Stuhlfaut, set of *de luxe* ash trays, Star Porcelain Company, Trenton, N.J.

Seventh Low Net (tie)

Lee Witnauer, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
Don Bezold, 1-hour manual kitchen timer, Foster Wheeler Corporation, New York.
A.V. Graci Jr., dozen golf balls, Milwhite Company, Houston, Tex.

Eighth Low Net (tie)

David Barlow, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
Tom Moran, dozen golf balls, Mine Safety Appliance Company, Pittsburgh, Pa.

Ninth Low Net

Emory Payne, set of wood covers, Chas. Pfizer and Company, Brooklyn, N.Y.

Tenth Low Net (tie)

F.M. Tindall, dozen golf balls, Hoffmann-La Roche Inc., Nutley, N.J.
R.L. Campbell Jr., miniature hat box and gift certificate, Signal Oil and Gas Company, Oak Park, Ill.
E.M. Deck, dozen golf balls, Bennett-Clark Company, Nacogdoches, Tex.
Thomas Barker, set of glasses, bowl, and stand, Kimble Glass Company (Owens-Illinois), Toledo, O.
A.M. Schulten, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
Ken Olsen, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
Edward Handschumaker, Ronson cigarette lighter on Lenox china base, Hayes G. Shimp Inc., Albertson, L.I., N.Y.
Roy Hodson, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
R.T. Doughtie Jr., Aneroid barometer, Fisher Scientific Company, St. Louis, Mo.
L.C. Brown, Starflash camera kit, Distillation Products Industries, Rochester, N.Y.
Don Ogg, dozen golf balls, Atlas Powder Company, Wilmington, Del.
Clyde Aders, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
John Hanrahan, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.

J.R. Harrison, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
L.J. Weber, dozen golf balls, U.S. Borax and Chemical Company, New York

Blind Bogeys

Frank Passalaqua, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
Kurt Meyerhoeffer, golf ball marker, Wurster and Sanger Inc., Chicago, Ill.
A.E. MacGee, dozen golf balls, U.S. Borax and Chemical Company, New York.
C.D. McGrath, golf ball marker, Milwhite Company, Houston, Tex.

Technical Session Prizes

Session H

Edward Handschumaker, Beckman pocket pH meter, Beckman Instruments Inc., Fullerton, Calif.
F.M. Tindall, Corning Pyroceram percolator, Scientific Glass Apparatus Company, Bloomfield, N.J.
Carter Litchfield, Samsonite 1-suiter travelling bag, Girdler Process Equipment Division, Chemetron Corporation, Louisville, Ky.

Session I

Billy A. Presson, silver tray, West Virginia Pulp and Paper Company, Chicago, Ill.
Lois S. Crauer, Chemex coffeemaker, H. Reeve Angel Company Inc., Clifton, N.J.

Ladies' Luncheon Prizes

Mrs. R.C. Pope, Westinghouse transistor radio, Blaw-Knox Company, Pittsburgh, Pa.
Mrs. C.R.A. Senior, silver bowl, R.J. Brown Company, St. Louis, Mo.
Mrs. J.C. Lamping, box of candles, A. Gross and Company, New York.
Mrs. S.J. Rini, set of four cocktail glasses and decanter, Kimble Glass Company (Owens-Illinois), Toledo, O.
Mrs. T.J. Potts, covered silver vegetable dish, Esso Standard Division, Humble Oil and Refining Company, Memphis, Tenn.
Mrs. F.W. Ries, set of steak knives, Hoffmann-La Roche Inc., Nutley, N.J.
(Names are missing for these prizes: silver bread tray, Hayes G. Shimp Inc., Albertson, L.I., N.Y.; two boxes of candles, A. Gross and Company, New York).

Banquet Prizes

A.S. Richardson, 18-inch silver serving tray, R.J. Brown Company, St. Louis, Mo.
B.L. Thomas, silver shrimp dish, Esso Standard Division, Humble Oil and Refining Company, Memphis, Tenn.
(Names are missing for these prizes: set of eight glasses, Kimble Glass Company (Owens-Illinois), Toledo, O.; silver butter dish, Hayes G. Shimp Inc., Albertson, L.I., N.Y.; walnut serving tray, E.F. Drew and Company, Inc., Boonton, N.J.; mahogany and Lenox china serving tray, Sharples Corporation, Philadelphia, Pa.)

• *New Books*

The Encyclopedia of Spectroscopy, edited by George L. Clark (Reinhold Publishing Corporation, pp. 787, 1960, $25. The content is divided into 23 major divisions: Absorption Spectroscopy-Visible and Ultraviolet, Band Spectroscopy, *beta*-Ray Spectroscopy, Differential Thermal Analysis, Electron Paramagnetic Resonance Spectrometry, Emission Spectroscopy-Light, Flame Photometry, Fluorophotometry and Phosphorimetry, *gamma*-Ray Spectrometry, Infrared Emission Spectroscopy, Infrared Spectrophotometry, Mass Spectrometry, Microwave Spectroscopy, Monochromators, Neutron Spectrometry, Nuclear Magnetic Resonance Spectra, Raman Spectroscopy, Solar Spectroscopy, Vacuum Spectroscopy, X-Ray and *gamma*-Ray Absorption Photometry, X-Ray Characteristic Absorption Spectrometry, X-Ray Diffraction or Crystal Spectra, and X-Ray Emission Spectrometry.

These major divisions are subdivided into parts, each written by an authority on the subject. The book has approximately 120 contributors from academic and industrial laboratories. The text contains numerous illustrations taken from the literature. The cloth-bound book, with pages 7×10 in. is printed on a good quality of paper. This encyclopedia has two companion publications: "The Encyclopedia of Chemistry" and "The Encyclopedia of Microscopy," edited by the same editor and published by the same company.

The organization of the book is peculiar, apparently based upon alphabetizing the subheadings in each major division in the table of contents. Thus, for example, the sequence of subjects under "Emission Spectroscopy-Light" begins with "Accuracy in Spectrochemical Analysis, Analytical Emission Spectroscopy, and Applications of Emission Spectroscopy," proceeds later through "Bohr Theory: Introduction," and much later through "History and Origin," followed by "Introduction: Designation of Spectra."

A serious omission in any book is made more serious by the lack of organization in this one; it has no subject index. The search for a specific subject requires the perusal of six pages of table of contents, each section of which is alphabetized separately. The collection of articles by numerous authors inevitably has some duplication of subject matter. Thus, for example, there are two sections on infrared spectrophotometry of fatty acids.

The scope of the book is encyclopedic, and the subject matter is treated in sufficient depth to be useful to a researcher. Most subjects are accompanied by bibliographies. This book should be useful to members of the American Oil Chemists' Society, and of particular interest may be sections on ultraviolet spectroscopy of fats and oils, paint industry applications, and infrared spectrophotometry of fats and fatty acids. This brief list should not imply limited usefulness to oil chemists, but, on the contrary, numerous techniques explained in the encyclopedia offer considerable promise in our field. The avowed purpose of the editor to put between two covers a compendium of present-day knowledge of spectroscopy is laudable, and he has succeeded to the point that his volume is a very useful reference. It is recommended for inclusion in research libraries.

Ralph T. Holman,
Hormel Institute, Austin, Minn.

Syntheses of Heterocyclic Compounds, Vol. III and IV, edited by A.L. Mndzhoian, translated from the Russian by A.E. Stubbs (Consultants Bureau Enterprises Inc., New York, 156 pp., 1960, $6). The format of this book is similar to that of "Organic Syntheses," in which preparations are submitted by various investigators, and these are independently checked. The main feature of Volumes III and IV of this series is that they contain related groups of synthetic methods. Thus Volume III contains much material on the synthesis of approximately 30 furan derivatives. Volume IV is concerned not only with the synthesis of furan derivatives but also with methods of preparing compounds of other heterocyclic series. Although many of the syntheses can be readily found in "Organic Syntheses" and other United States publications, the fact that each volume concentrates on a particular class of organic compounds adds considerably to the value of these volumes. The reviewer is in no position to evaluate the reliability of the methods submitted, but a random check of some of the physical properties reported for some of the compounds suggests that the work is apparently reliable.

The English translation is excellent, and the directions appear to be explicit enough for the preparations to be readily duplicated. The typography and format are excellent, but the indexing is mainly on the basis of compounds rather than type of reactions. This is a minor weakness.

There is relatively little in Volumes III and IV which is applicable directly to fat chemistry. Some of the reaction types are applicable, and the techniques can certainly be used in various ways. The fact that so much of the information in these volumes is so readily available in numerous other sources makes the value of these volumes limited.

Daniel Swern, Eastern Regional Research Laboratory, Philadelphia, Pa.

Soap, Perfumery, and Cosmetics Year Book and Buyers' Guide, 18th ed., edited by F.V. Wells (United Trade Press Ltd., London, 327 pp., 1960, 1£-10-0). This book is a compendium of technical and commercial information for the soap, perfumery, pharmaceutical, cosmetic, and allied industries. Approximately one-third of the book is the Buyers' Guide Section, which is a comprehensive directory to all sources of supply. The rest of the book consists of the following sections:

The Cosmetic Industry in 1960. Six papers discuss the Bergamot industry and the fundamental principles, scientific formulation, and the future of the cosmetic industry.

Laboratory Information. This section is practically a handbook for those in the field of soap, perfumery, and cosmetics. There are charts and tables of physical and chemical constants and various kinds of information concerning raw materials as well as finished products.

Marketing and Export. This is a short section, giving regulations of the trade. A complete list of associations and societies in the soap, perfumery, cosmetic, pharmaceutical, fine chemical, and related fields is included.

Standards for Raw Materials and Finished Products. The tables are concentrated largely on finished products. Last year's section dealt solely with standard specifications for raw materials. The Indian standard methods of sampling and test for soaps are reprinted.

In conclusion, this book provides excellent information for all those who are dealing with soap, perfumery, and cosmetics.

Stephen S. Chang, Rutgers, The State University, New Brunswick, N.J.

Organic Electronic Spectral Data, Vol. I, 1946-1952, edited by Mortimer J. Kamlet (Interscience Publishers Inc., New York, 1208 pp., Vol. 1, 1960, single copy price $28.50, subscription price $25). This book contains the ultraviolet and visible spectra abstracted from the 1946-1952 volumes of more than 60 chemical and allied journals. The material for this book was compiled by Organic Electronic Spectral Data Inc. with the assistance of 51 contributors.

Volume 1 of this series contains only information published in the years 1946-1952. Volume II, recently published, contains spectral data published in the years 1953 to 1955.

The organization and use of the data are described fully by the author. The tables themselves show the compound studied, the solvent used (or the phase studied if a solvent was not used), the wavelength values in millimicrons for all of the maxima, shoulders, and inflections, and the logarithms of the corresponding molar absorptivities. A reference to the original data is given in all cases.

Within the table the arangement of compounds is according to molecular formulas and corresponds in most respects to that in the Chemical Abstracts Formula Index. The arrangement of symbols is alphabetical except that "C" always comes first. The arrangement of compound names under any molecular formula is alphabetical according to the preferred name of the isomer. The solvent or phase in which the spectrum was determined is generally clear, but in some instances it may be necessary for the reader to refer to the original paper for complete detail. The references to the original papers are coded to the final section of the book, which contains all of the references listed by year and by journal.

LADIES' COMMITTEE—Entertainment for the wives visiting St. Louis was in charge of these local women: (*seated*) Mmes. J.M. Baggs, E.F. Metcalf, chairman, and F.W. Ries; (*standing*) A. Kitun, Robert Brown, and T.J. Potts.

The authors of this book point out that it is almost impossible to avoid errors of two types, those occurring in the original literature and those arising during the process of translating the literature data into book form. It would indeed be surprising if in such a magnificent piece of work a considerable number of errors did not occur. None are obvious however. The book is easy to read, and the amount of data is tremendous.

This book is perhaps the first of its kind in which data characterizing substances by their ultraviolet and visible absorbancies can be found. It will be invaluable to anyone making such studies.

R.C. Stillman, The Procter and Gamble Company, Cincinnati, O.

Organic Electronic Spectral Data, Vol. II, 1953-1955, edited by Herbert E. Ungnade (Interscience Publishers Inc., New York, 919 pp., Vol. II, 1960; single copy price $17.50, subscription price $15). This is the second volume of a comprehensive, monumental compilation of visible and ultraviolet absorption data abstracted from some 75 journals and covering the years 1953 to 1955. The first volume covered the years 1946 to 1952. Organization of the material follows the pattern set in Volume I. Additional volumes are planned to bring the series up to the present date.

Organization and use of the data are described adequately by the authors. After describing the criterion for data inclusion, it is pointed out that compounds are organized according to the molecular formula index system now used by Chemical Abstracts and Beilstein. The solvents or compound phase is indicated in the second column of the tables. The numerical data shown in the third column give wavelength data for all maxima, shoulders, and inflections, and the logarithms of the corresponding molar absorptivities. In the fourth column is a reference to the original data, showing journal, page number, and year.

This book is indeed a necessary adjunct to Volume I. It will be extremely useful to anyone characterizing materials by their visible and ultraviolet absorptive properties.

R.C. Stillman, The Procter and Gamble Company, Cincinnati, O.

Organometallic Chemistry, edited by H. Zeiss (Reinhold Publishing Corporation, New York, 1960, 549 pp.,

PAQUIN KEY—Lamar Kishlar of St. Louis *(left)* presents the Felix Paquin key to the outgoing president of the American Oil Chemists' Society, R.W. Bates of Chicago, in an annual ceremony established by the first president.

$17.50). This is the most recent monograph in the fast-growing field of organometallic chemistry. Since the pioneering work of Victor Grignard 60 years ago organomagnesium compounds have held an unique position as intermediates in organic synthesis. In this time there has been a steady growth of knowledge in organometallic chemistry, but the past decade has brought a spectacular renaissance of new and important work in this convergent area of organic and inorganic chemistry. It is the purpose of this book to bring to the graduate student and the research chemist a reliable account of contemporary research in organometallic chemistry.

The scope of the book and the prominence of the individual authors can be seen in the following list of chapters: 1. Carbon-Metal Bonding, by James W. Richardson; 2. Benzyne Chemistry, by Rolf Huisgen; 3. Vinylmetallics, by H.D. Kaesz and F.G.A. Stone; 4. Organoboranes, by Herbert C. Brown; 5. Organo-Aluminum Compounds, by Karl Ziegler; 6. Organosilylmetallic Chemistry, by Henry Gilman and Hans J.S. Winkler; 7. Cyclopentadienyl Metal Compounds, by P.L. Pauson; 8. Arene Complexes of the Transition Metals, by H. Zeiss; 9. Transition Metal Alkyls and Aryls, by G.E. Coates and F. Glockling; and 10. Metal Carbonyls and Related Compounds, by J. Chatt, P.L. Pauson, and L.M. Venanzi.

As comprehensive as these topics appear to be, the monograph does not attempt to cover all organometallic chemistry. The selection of topics is limited to areas where important new work is being done. The survey of this work has been written by the researchers in the field.

In the first chapter the nature of carbon-metal bonding is developed mostly by the qualitative molecular orbital approach. Where appropriate, this view-point is correlated with the more familiar valence bond approach. Ligand field theory is briefly touched.

Next the chemistry of benzyne (1,2-dehydrobenzene) is covered. This is a postulated reactive intermediate for many reactions of lithium compounds with aromatic halides. It is useful in explaining rearrangements in various nucleophilic substitutions.

An important extension of the Grignard reagent has been made into the vinyl compounds of lithium, sodium, and magnesium ($CH_2 = CH - Li$, etc.). These vinyl metallics have opened the way to vinyl derivatives of mercury, boron, thallium, and many other elements.

Brown traces the development of organo-boron chemistry from the first synthetic work of Frankland in 1859. In the author's own laboratory was discovered the important reaction of hydroboration, the formation of trialkylboranes from an olefin, sodium borohydride, and a boron trihalide. With more accessible boranes, their chemistry is being rapidly developed, and they are already valuable intermediates in synthesis.

The addition of borane to an olefin parallels the earlier work of Ziegler on the formation of trialkyl aluminum compounds by the addition of aluminum hydride to an olefin. Among the most important reactions of aluminum alkyls is their stereocatalytic effect on olefin polymerization.

The recent development of organosilylmetallic compounds, written by Gilman and Winkler, started with the first successful synthesis of a stable type, *tris*-(triphenylgermanyl-silyllithium, $[(C_6H_5)_3Ge]_3SiLi$. This was followed by other derivatives with silicon bonded to potassium, lithium, etc. These reactive compounds are used to synthesize many organosilicon derivatives.

Certainly one of the outstanding discoveries in organometallic compounds is the hydrocarbon-transition metal compounds, such as *bis*-cyclopentadienyl iron (ferrocene). Compounds of this type, also those which contain another ligand besides the hydrocarbon group, are discussed by Pauson, who first made ferrocene in 1951. These compounds involve complex chemical bonding because of the combinations of ionic, *sigma,* and *pi* bonds. Further the cyclopentadienyl group in certain metallic compounds has acquired sufficient aromatic character to undergo electrophilic and free radical substitution reactions. This is a surprising change from the high olefinic activity of cyclopentadiene itself.

The editor discusses the arene complexes of the transition metals which include mostly chromium derivatives such as *bis*-benzene chromium and many cationic derivatives, such as $(C_6H_6)_2Cr^+I^-$. Derivatives of other transition metals contain iron, manganese, palladium, tungsten, etc.

Transition metals also form derivatives with various alkyl and arene radicals where the carbon-metal bonding is a relatively stable *sigma* type (Coates *et al.*). Many of these compounds have been made since 1955. There are nickel, palladium, and platinum complex compounds containing a phosphine group such as $[(C_6H_5)_3P]_2PtMe_2$.

The monograph concludes with the survey of recent work on metal carbonyls and related compounds (Chatt *et al.*). Carbon monoxide is no longer unique as a ligand for transition elements since so many hydrocarbon complexes have been made. Related to carbon monoxide in these structures are isonitriles, phosphines, arsines, etc.

No attempt is made in this review to emphasize practical applications of the organometallic compounds. However these compounds are used as catalysts, additives in polymers, etc., and there are undoubtedly many other uses yet to be discovered. Material of direct interest to oil chemists is limited, but every chemist should have access to this volume, at least in his organization's library. The physical composition of the book is satisfactory. Structural formulas and equations are clear and easily read.

The editor and authors have made an important contribution to the literature of chemistry by this timely review of an extremely active area in inorganic-organic chemistry.

OLIVER GRUMMITT, Western
Reserve University, Cleveland, O.

• 35 Years Ago

President R.H. Fash, in his editorial in the June 1926 issue of the Journal of Oil and Fat Industries, emphasized the importance of the member. He commented that "the work of the Society can only progress insofar as the individual members take part in its activities. Participation in the work of some committee will aid not only the Society, but the individual . . . A man may never attend an annual meeting, but by the work he does on committees he may mould the activities of the Society so that his influence is in reality greater than that of any officer."

Committee reports in the June issue included: Detergents, by Archibald Campbell; Ammonia and Smalley Foundation, by H.C. Moore; Analysis of Commercial Fats and Oils, by W.D. Richardson; Moisture, by P.S. Tilson; Seed Committee for 1925-26, by D.C. Picard; and Planning, by David Wesson.