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OF

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THE PROCEEDINGS ISSUE OF THE LOUISIANA ENGINEER

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MARCH, 1956

No. 1

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ANNUAL MEETING

Baton Rouge was the scene of the annual meeting held on January 19 - 21. The theme of the meeting held at the Bellemont Hotel was a 20 year forecast of the future of Louisiana covering both general and specific areas of change that will affect engineers. Each topic was presented in the form of prediction of changes, the effects of these changes on the engineering profession and the role of the individual engineer in this development.

The total registration was 376 consisting of 227 members and 149 guests. Technical exhibits added interest to the setting and contributed materially to the financial success of the meeting.

The Louisiana schools were in evidence in a Symposium on Education presided over by Dean Leo J. LaSalle of Louisiana State University. Student representatives of LSU, SLI, LPI and Tulane took part in a discussion of the shortage of engineers and possible solutions to the problem.

Dr. Wayne P. Wallace of Louisiana State University was elected President of the Society for the 1956-57 period.

Among the many prominent speakers featured at the meeting were Dr. Frank J. Soday, vice-president and director of research, Chemstrand Corporation; Dr. William H. Baughn, professor of business administration, Louisiana State University; Gen. Stephen G. Henry, director of community relations, Ethyl Corporation; Harland Bartholomew, of Harland Bartholomew and Associates; Col. Blake R. Van Leer, president of Georgia Institute of Technology; D. O. Swan, manager, Baton Rouge Refinery of Esso Standard Oil Company; Roy S. Nelson, president, Gulf States Utilities Company; I. E. Boberg, Chief Engineer, Chicago Bridge and Iron Company; and Dale Roeder, Chief Engineer, Ford Motor Company, Tractor and Implement Division.

The general chairman for the highly successful meeting was T. J. Innes, Jr.

WAYNE P. WALLACE — L.E.S.'s NEW PRESIDENT

Wayne Paul Wallace was born in Wichita, Kansas in 1913. His father was engaged in the construction business, which brought the family to New Orleans in 1917. His early education was obtained in the public schools of New Orleans and he entered Tulane University in 1930. He received the Bachelor of Engineering degree from there in 1934 and the degree of Civil Engineer in 1936. During his college years and after graduation he worked with his father in the contracting business. In 1936 he was appointed Instructor in Civil Engineering at Louisiana State University and began graduate work at Cornell University. In 1942 he received the degree of Doctor of Philosophy from Cornell and returned to Louisiana State University as an assistant professor. For a short time during World War II he was on leave as a Senior Stress Analyst at Lockheed Aircraft Corporation in Burbank, Calif.

In 1953 he did post-doctoral work in Foundation Engineering at Harvard and MIT. At the present time he is Professor of Civil Engineering at LSU.

In addition to the Louisiana Engineering Society he is a member of the American Society of Civil Engineers, U.S. National Council of Soil Mechanics and Foundation Engineering, the International Association for Bridge and Structural Engineering and the American Society for Engineering Education, Tau Beta Pi and Phi Kappa Phi.

He is married to the former Virgie Frances Bienvenu of New Orleans and they have two sons, Wayne Clifton and Gregory Paul.

MESSAGE FROM THE NEW PRESIDENT

Our Society begins its fifty-ninth year of service with two worthy tasks before it. The first is an expansion of the JET program to all sections of the state and an increased activity in the regular Vocational Guidance Program. We should be constantly alert concerning the calibre of young people that we attract to the profession, for they will eventually take our places, and the prestige and power of the profession will rest much more on their ability and personal ethics than any laws we might make. I earnestly hope that we shall all do our best to make the practice of engineering attractive in both the rewards of achievement and salarywise to those that are qualified.

The second task is the passage of an amended engineering license law so that Louisiana may hold up her head among her sister states. The Legislative Committees have worked long and hard on this project and it is almost ready for presentation. Should the decision be made to place it before the Legislature, again, I hope that each member will give as much of his time and effort as possible to this cause.

W. P. WALLACE

ANNUAL REPORT OF PRESIDENT

Ladies and Gentlemen, this administration will probably be remembered for many years in infamy as the so and sos who raised the dues. However, in keeping with the times, as a matter of political expediency, I should direct your attention to the fact that the study which recommended an increase in dues, was instigated during the regimes of my predecessors. My mention of this is, of course, purely facetious since I have been completely in accord with the approved revision as a necessary step toward keeping our society—one of the finest in the country—on a sound financial basis, and, at the same time, providing the necessary funds to expand our activities in the fields where our members and our profession can benefit most.

Concrete plans are already underway for the material improvement of our publication—The Proceedings—to make it the attractive and readable clearing house for engineering information in Louisiana. In addition, it is my hope that my successor will actively promote the assignment of additional operating funds to the Vocational Guidance Committee as a means of attracting the finer high school students to the engineering profession. In this connection, I would like to express my sincere thanks to Col. J. T. Knight who has put in many hours work in starting a JET (Junior Engineers in Training) program in certain high schools to serve as a pilot operation which, if successful, will be expanded throughout the state.

I have mentioned only two of the society activities which will be released from the bondage of poverty. There are several others, all of which will more than compensate our membership for the slightly increased financial burden and result in a better, more useful society and the greatly improved status of our profession in Louisiana.

During the past year and the previous one, we have, largely as a result of the hard work of Dean Ben Bogard and Calvin Watts, finally obtained approval through the Louisiana Engineers from the local sections of all of the national engineering societies, of certain amendments to the Professional Engineering Registration Law. These amendments, if approved by the State Legislature, will materially strengthen our law and place Louisiana on an equal footing with the majority of the other states.

In closing, I would like to express my sincere appreciation of the effects put forth by the Committee Chairmen, the Board Members and other officers and particularly of the invaluable assistance of our Secretary-Treasurer and walking LES encyclopedia, John Fernandez.

Thank you.

R. M. SEAGO

NEW MEMBERS

The following have been elected to membership in our Society:

FOR MEMBER

- LEO V. BANKSTON**, Baton Rouge; age 39. Endorsed: D. F. Latimer, W. L. Sutton, D. R. Taylor. La. State University, Civil Eng., 1933-36. American Water Works Ass'n., La. Trustee-Active. Baton Rouge Water Works Co., Draftsman, Asst. Engr., Engineer, Supt., 1937 to date.
- JOHN J. COATES**, Baton Rouge; age 40. Endorsed: T. J. Innes, Jr., K. A. Rees, Randall Meyer. Manhattan College, N. Y., B.S.Eng. 1936; New York University, M.C.E., 1939. Sheppard T. Powell, Consulting Chem. Engr., Baltimore, Engineering Assistant, 1939-44. Esso Standard Oil Co., Baton Rouge, Division & General Foreman, Head M & C Dept., 1944-date. Registered P.E., Md.
- ROBERT L. DAVIS**, Shreveport; age 37. Endorsed: C. B. Foster, Jr., J. S. Malahy, T. F. Ruffin. Univ. of Toledo, O., B.E. 1947. Associate Member American Concrete Inst., Detroit, 1955. Registered M.E., Ohio. Libbey Glass Div. of Owens Illinois Glass, Engineer, special design, 1947-48. Libbey-Owens-Ford Glass Co., Engineer, glass tank design, power dist., structural design, material handling, plant layout, 1948-53. Libbey-Owens-Ford Glass Co., Plant No. 2, Asst. Plant Engr., Aug. 1953 to date.
- BOLDEN L. KINCHEN, JR.**, Baton Rouge; age 30. Endorsed: I. M. Gregorie, T. J. Innes, Jr., J. E. Langley. La. State University, B.S.M.E. Jan. 1949. Lane Wells Co., Field Engr., oil well completion work, well surveys, operating well equipment, 1949-51. Esso Standard Oil Co., Engr., Equipment Inspection Dept., 1951-date.
- HARRISON C. LEAK, JR.**, Baton Rouge; age 33. Endorsed: R. W. Ammon, E. W. McNeil, Jr., Randall Meyer. Miss. State College, B.S.C.E. Jan. 1943. Jr. Mbr. ASCE, La., 1943-date. Registered C.E., La. Esso Standard Oil Co., La. Div., Project Engr., Group Head, Asst. Dept. Head, Head, M.E. Dept., 1943-date.
- COLEMAN KUHN**, New Orleans; age 29. Endorsed: C. E. Cassagne, Jr., B. M. Dornblatt, A. M. Fromherz. Tulane University, 1945-46. Univ. of Virginia, 1947-50, B.C.E. 1950. Jr. Mbr. ASCE 1950. Registered C.E., La. F. C. Gandolfo, Jr., Instrumentman, 1946-47. Univ. of Virginia, undergraduate, post-grad. work in C.E., Surveying Instructor, 1947-50. Geo. J. Glover, Field Engr., Estimator, 1950-51. Private engineering practice, also associated with F. C. Gandolfo Jr., Surveyor, in charge of large industrial and commercial surveys, 1951-date.
- CLAYTON R. MAHAFFEY, SR.**, Port Allen; age 30. Endorsed: Ben Louviere, T. E. Alexander, W. D. Poole. La. State University, B.S.M.E. 1951. Member Instrument Society of America, Baton Rouge. Naugatuck Chemicals, Div. U.S. Rubber, Baton Rouge, Sr. Project Engr., design, construction and alteration of plant equipment for production of synthetic rubber and plastics, 1951-date.
- LANDRY MURPHY**, New Orleans; age 39. Endorsed: M. C. Abrahm, A. J. Harris, R. M. Scago. Tulane University, B.E. in M.E., 1940. Member ASME. Westinghouse, Engineer, Mechanical design calculations in turbine plant, 1940-41. U.S. Army Air Force, Instructor in aircraft mechanics, 1941-42. Goodyear Aircraft Corp., Akron, Ohio. Stress Analyst, 1942-43. Mechanical Equipment Co., Asst. Chief Engr., Chief Engr. 1943-46. Tulane University, Part-time instructor in steam power laboratory, 1945-46. Blattmann-Weeser Sheet Metal Works, Mech. Engr. charge design and production of truck bodies, 1946-47. Wm. F. Surgi Equipment Corp., Sales Engr., 1947-52. Marshall, Neil & Pauley, Inc., District Mgr., 1951-52. Allan J. Harris Co., Sales Engr., 1952-date.
- JOSEPH J. QUARTANA**, New Orleans; age 32. Endorsed: H. G. Buse, D. B. Fried, Jr., W. F. Plauche. La. State University, B.S.M.E. 1947. Associate Member ASME, 1956; Jr. Member ASH&AE, 1956. Registered M.E., La. E. I. duPont de Neumours Co., Construction Engr. in charge safety, planning, coordinating construction work of chemical process bldgs. and related services in Texas, Tenn., and Delaware, 1947-52. deLaureal & Moses, Mechanical Supervisor, 1953-date.
- CHARLES R. ROSTRON**, Ruston; age 42. Endorsed: B. T. Bogard, E. L. Mire, R. A. Smith. Iowa State College, B.S.C.E. March 1939. Univ. of Houston, M.S.C.E. Aug. 1954. Member American Rwy. Eng. Ass'n, 1946. Registered C.E., Texas. Economy Forms Corp., Des Moines, Iowa, Draftsman, 1939. The Weitz Co., Inc., Des Moines, Construction Engr., 1940. The Austin Co., Houston, Structural Draftsman, 1941. Southern Pacific Lines, Houston, Draftsman, 1941. N. O. Public Belt R. R., Asst. Engr., 1941-45. Southern Pacific Lines, Houston, Structural Designer, 1945-55. La. Polytechnic Institute, Asst. Professor of C.E., Sept. 1955-date.

- ROY F. SCRIBER**, Baton Rouge; age 42. G. P. Blanchard, O. G. Kirby, W. L. Sutton. Missouri, Columbia, Mo., Civil Eng. course, 1932-33. La. State University, Mathematics, 1945-46. La. Dept. of Highways, Instrumentman, Bridge Dept., 1934-36. Robinson & Young, Contractors, Estimator, Field Engr., Supt. and General Supt., 1936-46. Carruth Contracting Co., Gen'l Supt. and Part Owner, Bridge Dept., 1946-50. Associated Gen'l Contractors, Highway and Heavy Branch, Mgr. 1952-53. W. R. Aldrich & Co., Field Engr. and Estimator, 1953. The White Construction Co., Gen. Mgr., Southern Div., Jan. 1955 to date. Self-employed, bridge construction and pile foundation work, 1950-52.
- DAVID R. VONDY**, Baton Rouge; age 28. Endorsed: D. O. Spann, L. G. Spann, H. D. Richardson. Univ. of Colorado, B.S.M.E., Aug. 1950. Jr. Mbr. ASME, N.Y., 1950; SAE, N.Y., 1950. Assoc. Mbr. American Inst. of Management, N.Y., 1954. Registered P.E., Okla., La. Black, Sivals & Bryson, Oklahoma City, Jr., Field and Project Engr., 1950-54. Midwestern Constructors (later Tuloam Builders), Tulsa, Process Engr., 1954-55. Delta Tank Mfg. Co., Baton Rouge, Design Engineer, Feb. 1955-date.
- LOUIS J. VOORHIES, JR.**, Baton Rouge; age 41. Endorsed: H. L. Landry, D. F. Latimer, H. L. Lehmann. La. State University, Civil Eng., 1932-36. E. . DuPoint, Field Engineer, 1936-37. L. J. Voorhies, Construction Engr., 1937-42. U.S. Navy, 1943-46. Anderson-Dunham, Inc., Vice-Pres. & Sales Mgr., 1946-date.
- WILLIAM D. WEIDNER**, New Orleans; age 36. Endorsed: C. G. Cappel, R. G. Cappel, F. W. Macdonald. Tulane University, B.E. in C.E., 1949. Registered C.E., La., Miss., Tenn., Ark. The Texas Company, Construction Engr., Chief Construction Engr., 1949-date.

FOR TRANSFER FROM JUNIOR TO MEMBER

- ALANSON J. ARNOLD**, New Orleans; age 35. Tulane University, B.E. in M.E., 1945. Registered M.E., La., Babcock & Wilcox, Barberton, O., Mech. Draftsman, 1940-42. The Flintkote Co., N.O., Project M.E., 1945-50. James F. O'Neil Co., N. O., Mechanical Engr., 1950. American Radiator & Standard Sanitary Corp., N. O., Plant Engineer, 1950-55.
- ROBERT D. COSGROVE**, New Orleans; age 37. Tulane University, B.E. in M.E., 1939. Registered M.E., La. U.S. Navy, Naval Aviator, Commander USNR, 1941-45. Gulf Engineering Co., Sales Engr., 1946-47. McWilliams Dredging Co., Design Engr., 1947-48. La. Elevator Corp., President and Gen. Mgr., 1948-date.
- RAYMOND E. DUFRECHOU**, Metairie; age 30. Southwestern La. Institute, B.S.C.E. 1951. F. P. Dufrechou, Gen'l Contractor, Draftsman, Supervisor, 1951-52. Liberty Welding & Iron Works, Job Coordinating & Supervision, Design, Layout, Estimating, 1952-date.
- CHAS. H. EDWARDS, JR.**, Ruston; age 31. La. Polytechnic Institute, B.S. C.E., 1947. University of Texas, M.S.C.E. 1949. Registered C.E., La. La. Polytechnic Institute, Asst. Prof. in C.E., 1949-date.
- NICHOLAS J. GAGLIANO**, New Orleans; age 29. Tulane University, B.E. in E.E., 1948. Cabirac Mechanical Contractors, Engineer, all phases of plumbing, heating and air-conditioning contracting, 1948-54. Loyola University School of Law, Student, 1954-date.
- JOHN R. TOCHO, JR.**, New Orleans; age 34. Southwestern La. Institute, B.S.M.E. 1949. Armstrong Tire & Rubber Co., Natchez, Miss., 1950-51; Inland Steel Container Co., N.O., 1951-52. Bedell & Nelson, Engineers, 1952 to date.

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- RALPH H. BROWN**, Shreveport; age 26. Endorsed: E. M. Freeman, V. A. Lyons, L. H. Roeger. Centenary College, 1947-49. E. M. Freeman & Associates, Party Chief, Draftsman, Sept. 1949 to date.
- GEORGE C. GALLAGHER, Jr.**, Baton Rouge; age 26. Endorsed: W. C. Gaddy, E. H. Owen, W. G. Veltrop. Illinois Institute of Technology, Chicago, B.S.C.E. 1952. La. Section ASCE, Jr. Mbr. 1952. Western Society of Engineers, Chicago, Associate Member, 1952. Registered Engineer-in-Training. Ill. Esso Standard Oil Co., Baton Rouge, Project Engr., M.E. Dept., 1952-date.
- HILARY C. SANDERS, JR.**, Monroe; age 28. Endorsed: J. H. Browne, T. R. Henry, J. D. Wink. La. State University, B.S.M.E. June 1951. Jr. Mbr. ASME 1951-54. Registered M.E., La., No. 2350. Columbian Southern Chemical Corp., Lake Charles, Design Engr., 1951-52. Consolidated-Vultee Aircraft Corp., Ft. Worth, Jr. Engr., 1952. Ford, Bacon & Davis Construction Corp., Draftsman, 1952-54. Columbian Carbon Co., Monroe, Mechanical Engr., 1954-date.

ENGINEERING BRIEFS

Energy Derived from Sunlight Runs Model Auto. Harnessing the sun's boundless energy has baffled scientists for centuries. Automotive research recently came up with its own formula—a sun-powered model automobile.

Twelve photoelectric cells—made of the element selenium, which has the property of converting light into electric power—are located on top of the 15-inch car. Electric current from the selenium cells operates a tiny motor that propels the vehicle.

Automotive officials emphasize that the "sunmobile" is **not** now planned as a forerunner of a full-size solar-powered automobile. Today's photoelectric cells cannot produce sufficient horsepower.

The sun-powered model is offered merely to illustrate the possibility of using the sun as a direct power source.—*Automobile Facts*.

* * *

Fluoridation Battle in British Columbia. In the heated fluoridation battle in British Columbia, supporters of artificial fluoridation of municipal water supplies are toting around a 40,000-year-old, ten-pound elephant's tooth as "exhibit A" in favor of their case. The massive molar belonged to an early-edition elephant, which found its way to the Puget Sound area by crossing the Isthmus from Siberia. Its perfect condition, so the reasoning goes, is largely due to the mammoth's diet—chiefly seaweed, plants and bark—which supplied prehistoric animals with large amounts of natural fluorides.—*Chemical Week*.

* * *

Debut of "Coal" Jewelry. A New York jewelry designer has produced anthracite earrings and cuff links as examples of what can be done with "black diamonds." Hard coal is more than 90 per cent carbon, making it a close cousin of the 100 per cent carbon white diamond. Heretofore, the beauty of hard coal as a "semi-precious stone" has been untapped.—*Coal Age*.

* * *

Win Round Trip to the Moon. Many companies have taken contest winners to the Caribbean, to Paris and even around the world. Now, finally two cooperating Cincinnati firms are offering a trip to the moon as a dealer contest prize, based on the opinion of experts that space flight is possible in this generation. This "out of this world" promotion is aimed at boosting television set sales. If the winner doesn't want to go to the moon, by the way, he can accept \$1,000 cash.—*Electrical Merchandising*.

Russian Pipe Dream. Russia's only producer of automatic machine tool lines has been ordered to triple its output by 1960 and increase its gross output by 50 per cent without any increase in working space.—*American Machinist*.

* * *

Refining Through Radiation? Today's petroleum processors are not standing still waiting to see what others are doing in the field of atomic radiation research. At least seven oil companies—now known to have radiant energy research facilities in various stages of development—are all studying the techniques as a possible tool to use in processing petroleum hydrocarbons. Latest is the use of an electron gun to break apart and reform hydrocarbon molecules.—*Petroleum Processing*.

* * *

Personal Paging Grows. A growing number of physicians, delivery services and repair crews are finding radio paging — through signals received in a pocket-size receiver—essential in their work. The paging transmitter continuously broadcasts numbers assigned to the individual paged, wherever he may be, until the person calls into the office by telephone.—*Electronic Magazine*.

* * *

Skidless Roadways. To prevent skidding, the New Jersey Highway Department is placing a "coarse sandpaper finish" on the roadway of heavily traveled Pulaski Skyway between Newark and Jersey City. The new surface consists of successive layers of hot tar, stone chips, hot tar again and finally a light topping of grits.—*Construction Methods and Equipment*.

* * *

Novel Traffic Penalty. In the Central American country of San Salvador, a motorist who injures a person in an accident in which the driver is at fault must stay in jail until his victim recovers.—*Automobile Facts*.

* * *

Colorful Series. The World Series was an important milestone in the marketing of commercial color-television. Colorcasts of the series created the first minor "boom" in color set sales and particularly opened the way for sales to bars and taverns. Many experts are convinced that color will follow the pattern created during the early days of black and white—the public will be exposed to the new medium by viewing it in bars, taverns and clubs.—*Electrical Merchandising*.

Pyramid Statistics. Statistic-minded U.S. engineers have discovered that one of their smaller projects is much larger than the biggest Egyptian pyramid. Lookout Point Dam on Willamette River and its regulating unit, Dexter Dam, contain three times as much material as the largest pyramid. Lookout Point is 630 feet high, while the largest pyramid is 482 feet.—*Electrical World*.

* * *

Bird's Eye View. Army future equipment will include a reconnaissance drone missile that will transmit a television view of enemy terrain to a hovering helicopter for relay to ground forces. Currently, excessive helicopter vibration is the obstacle to airborne television reconnaissance.—*Aviation Week*.

* * *

Iron in Israel. Workable quality iron ore for pig iron production has been definitely established in Israel. The deposit, located at Manara, has been under study since 1953, and recent tests in France and Germany reportedly indicate 47 per cent iron content.—*Mining Journal*.

* * *

Stainless Steel Money. They're using stainless steel for money down in Costa Rica, where it's claimed that new five and ten-cent pieces not only look pretty, but outlast all other coins.—*American Machinist*.

* * *

Electronic Dimmers Gain. The extra push for safety that the auto industry is now emphasizing may help push the automatic electronic headlight dimmer business. Indications are that sales of these electronic auto eyes will move ahead next year.—*Electronics Magazine*.

* * *

Lightning Helps. Lightning, scourge of man's electric systems, is now thought to perform the vital service of combining atmospheric nitrogen with oxygen to fall in rain and nourish crops.—*Electrical World*.

GOOD IDEAS

Pellet Drilling Holds Promise. A drilling method that pulverizes rock through bombardment with steel pellets has been successfully laboratory tested.

Details of the technique, developed through 37 man-years of research, were disclosed at a recent meeting in New Orleans of the Petroleum Branch, American Institute of Mining and Metallurgical Engineers. Presenting the paper were J. E. Eckel, F. H. Deily, and L. W. Ledgerwood, Jr., of Carter Oil Company's Tulsa research laboratory.

Two nozzles, one above the other, utilize the drilling fluid to circulate pellets at the bottom of the hole. The pellets are shot at high velocity downward against the formation. A modified jet pump supplies the motive power for carrying and recycling the pellets, which do not return to the surface.

Here are some of the advantages visualized for the new technique:

Time would be saved — The pellets can be continually replaced without hoisting pipe out of the hole.

There would be less equipment, less wear-and tear—no rotation is required, thus reducing drill-pipe failures and allowing use of lighter drill pipe and simpler tool joints. No bit weight is required, so the cost of operating and maintaining drill collars would be eliminated. The investment in rig structure, drawworks, and engines would be reduced, since there is no need for high-speed hoisting of heavy load.

Transportation, manpower, and fuel costs would decline—the rig would be lighter, requiring less fuel, less labor in rigging-up.

At the same time, the pellet drilling system retains one major asset of the rotary system: use of a drilling fluid to remove cuttings, maintain the wall of the hole, and control formation pressure.—*Petroleum Week.*

* * *

Cushioned Railroad Crossings. Rubber paving, designed to eliminate the rattle and jolt from railroad crossings, is getting its first commercial tryout at West Salem, Ohio. Railroad officials claim rubber crossing reduces maintenance costs and provides a smooth, cushioned surface for motorists.—*Chemical Week.*

* * *

Latest Vending Machine. A coin-operated motor oil dispenser is being tested for weather durability and maintenance costs in a Swedish gas station. The device can be adjusted to give different amounts of oil and to accept a variety of coins.—*Petroleum Week.*

THE ENGINEER-EXPERT UNDER CROSS EXAMINATION*

If you every find yourself testifying in court as an expert witness, be prepared to face cross examination. Here an expert at being an expert witness gives the benefit of his experiences.

Cross examination is a right granted by courts for developing information that was not sufficiently covered on direct examination or to reveal additional evidence beyond the scope of direct examination. It also may be used to show the credibility of witnesses. The engineer-expert is thereby subject to questioning throughout a very wide range of engineering and scientific theory and practice. However, the scope of questioning is not necessarily beyond the realm of reasonable anticipation and preparation for those experienced in trial procedure.

For example, if the litigation relates to the burning down of an industrial building due to a short circuit in its wiring, questioning can be expected during direct examination regarding fuse ratings, circuits, and the transformer at the service entrance. But on cross examination, the engineer-expert may be asked to calculate the oil temperature rise in the transformer during the transient period under short circuit. Or, the expert might be asked about the transformer's protection against lightning. Indeed, he may be questioned about transient disturbances on the high-voltage lines that supplied power to the transformer.

The significant point is that an alert, experienced expert should anticipate such questions. The transformer here was an important electrical device through which abnormally large fault current was delivered to the short circuit in the plant wiring. It might seem far-fetched to conceive and propound questions during cross examination about the electric generators located miles away that supplied power to the transformer. However, questioning on such remotely related subject matter still lies within the province of the cross examiner.

Challenging the Expert

The opposing attorney may attempt to weaken and belittle the credibility of the expert. To illustrate attacks on the expert's credibility, consider a trial relating to the collision of two vessels. The cause of the collision was held by the plaintiff to be a short circuit in wires insulated with "varnished cambric." The short circuit

* Publication authorized by Consulting Engineer.

made the control system inoperative and the defendant's vessel could not be turned off of the course leading to the collision.

In questioning me about the condition of the control wires in the steering gear switch box, the cross-examining attorney included the term "varnished cambric" in nearly every question. It raised suspicions in my mind that the defense attorney had some ulterior motive in so doing. He made clear in his questions that I had examined the wires and the "varnished cambric" covering many times. Finally, with a long and artful build-up and using his most subtle approach, he asked, "Now, Mr. Beach, suppose I were to tell you the covering on those wires is not 'varnished cambric' at all. What would you say to that?" I replied promptly, "I would agree with you." Actually, the covering was tight-fitting cotton sleeving. This unanticipated answer deflated the attorney and destroyed his attack.

Aggressive Opposition

Aggressive attitudes in opposing counsel may be displayed as soon in the expert's testimony as the first statements of his qualifications are made. The attorney may challenge the experience of the expert. By immediate cross examination, he may try to show to the court and jury a lack in the expert of specific experience in areas of engineering or scientific practice that the counsellor considers fundamental to the case. If he can obtain admissions of limited experience from the expert, he will make much of it in an impassioned appeal to the presiding judge. In his concluding remarks, he will move for the dismissal of the expert on the grounds of incompetence. Obviously, the dismissal of the expert witness would be embarrassing not only to him but also to his attorney. This sudden turn of events might well prove disastrous.

However, the challenge of an expert's qualifications by opposing counsel is a hazard that should be carefully anticipated. The most effective barrier against disqualification of the expert is established by fully elaborating on his experience as it relates to the technical aspects of the litigation. Any prospective expert entering a case should be certain that his experience, both broadly and specifically, covers the scientific and engineering fundamentals on which the case is essentially predicated. His weaknesses by virtue of inadequate experience should be conscientiously analyzed and appraised before taking the case.

War on Nerves

Some lawyers make a point of interrupting the expert witness soon after he starts testifying in direct examination. This strategy is aimed at disconcerting the expert, distracting him, and otherwise frustrate him as early as possible.

The expert's attorney may raise objections to such tactics on the basis of their being irrelevant, immaterial, incompetent, or otherwise out of order. The expert should listen attentively, wait for the ruling of the court, and then proceed accordingly. The court may over-rule the objection. The expert must then answer the question directed to him by opposing counsel. If the court sustains the objection, the expert continues his discourse from the point where he was interrupted and ignores the interjected question. If confused by the rapid interplay of sharp words, the expert should make certain as to how to proceed by asking the court's ruling before continuing his testimony.

If the engineer-expert feels that the force of his previous testimony has been weakened or lost because of the interruption, he should repeat the latter part of his testimony for continuity as well as for emphasis. He may even appeal to the court that the interruption broke the continuity of his testimony, and that he desires to repeat it before proceeding with the remainder.

An alert expert sometimes can put an effective stop to attempted interruptions with sharp-witted, but seemingly friendly, replies whereby the opposing counsellor himself is made to appear ludicrous. To be effective, such repartee must be quick and spontaneous in its humor, arrestment, and wristslapping. When adroitly executed by a well-poised witness, such aggressive replies not only may put a brake on further testing of the expert, but they may also deter the opposition from cross examination at a later period. However, the witness must be cautious never to give the impression of being "smart" or insolent.

You vs. Youse

In one bitterly contested trial, the plaintiff used four expert witnesses, three of whom were subjected to grilling cross examination that lasted for two and three days each. The fourth expert devoted about one day to direct examination. Soon after starting his testimony, opposing counsel interjected a personal question. He received a prompt, humorous, and evasive reply that caused an uproar of laughter by everyone in the court room, including judge and jury:

The expert was enthusiastically gesticulating as he stood before the jury while explaining some electrical drawings sketched on the easel. He was using such phrases as "If you do this . . ." and "If you do that . . .," when the opposing counsel arose. With impressive dignity, he addressed himself to the expert: "Sir, while you were saying 'If you do this. . .' and 'If you do that. . .,' you seemed to be looking directly at me. Did you mean me personally?"

The witness answered, "Counsellor, I come from Brooklyn. If you had been listening attentively, you would have heard me say 'youse,' not 'you.' In Brooklyn parlance, that means everybody and not just you, sir."

One more attempt was made by opposing counsel to nettle the witness, with the same result. He was not interrupted again during the remaining several hours of testimony. To everyone's surprise, he was not subjected to any of the cross examination that would normally be expected to follow later.

Plaintiff's Difficulty

The expert on the plaintiff's side labors under the difficulty of not knowing until comparatively late in the trial what theory the defense will use in rebuttal. Also, the defense's expert may want to modify his theory after first hearing the initial testimony of the plaintiff's expert. The defense's expert thus holds an advantage in learning the plaintiff's theory before the plaintiff's expert learns defendant's theory.

Generally, the defendant has the comforting advantage of having the factual information at hand relating to the events on which the litigation is based. Unless the plaintiff's experts have full access to all elements in the disaster upon which to make a thorough analysis of it and its cause, they may be confronted with uncertainty in using speculative information.

Seek Court Order

To acquire many of the facts necessary for developing a strong and tenable theory, the plaintiff may have to seek a court order permitting examinations of defendant's witnesses before trial, permitting solicitation of defendant's answers to questions, and permitting on-the-site inspections. The expert generally plays a leading role in assisting the attorney in the examinations, in phrasing questions, and in making the inspections.

These actions permitted by the court are often vehemently argued by the defense attorneys. If such arguments are permitted to restrict the plaintiff's investigations, they may render the plaintiff's facts incomplete and unsatisfactory. However, taking the witness stand while being uncertain of salient facts can reflect adversely by lack of confidence in giving direct testimony and in cross examination.

Sometimes, cross examination is made hazardous by the participation of many attorneys who represent related interests in the litigation. They may operate in relays during cross examination.

What bedevilment one of them does not think of, the others are sure to dream up while sitting back and listening to their colleagues.

Sources of Experience

A time-consuming method of becoming better acquainted with the problems confronting an engineer-expert is to attend court sessions and to listen to experts' testimony. But unless an experienced trial lawyer were present to point out significant details, little may be gained by the inexperienced observer.

Another method of learning the problems of expert witnesses in action is to study court records of trials. Here also, unless the virtues and errors apparent in the cold words of the records are explained by an experienced trial lawyer, important information may well escape the attention of the uninitiated. Such trial records are available in law libraries. Any lawyer could advise where and how to find these trial records.

The literature is almost barren of information that would be directly helpful to initiates about to serve in the role of expert witness. Experience is the only qualified teacher.

NATURAL RESOURCES—THE BASIS FOR SOUTHERN INDUSTRIAL GROWTH*

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As an industrial growth of a given state is influenced, to a substantial extent, by corresponding developments in other states in the same area, the natural resources and industrial expansion factors of Louisiana will be discussed in relation to those of the South as a whole.

Probably no development of the last decade has had a more profound effect upon the economy of the nation than the industrial revolution in the South. Starting in a modest way at the turn of the century, gaining momentum in the years following the great depression, and attaining maturity during the late war, it is still sweeping the land with undiminished vigor. It promises to make the South one of the most important centers of industry in the country.

As the South has been variously defined, it may be well to locate it more precisely for the purpose of this discussion. As used in this paper, it will include the ten tidewater states from Maryland to Texas, as well as the adjoining interior states of West Virginia, Kentucky, Tennessee, Arkansas, and Oklahoma. These 15 states are regarded as southern states by the Southern Governors' Conference and by the Southern Association of Science and Industry. They comprise 30 per cent of the land area of the United States and contain 30 per cent of the country's population. While widespread differences exist in these states in many material respects, they are bound together by strong social, political, and economic ties.

Although the South is traditionally an agricultural area, some of the pioneering manufacturing operations were carried out in southern states. The first ships in the New World were built at Apalachicola, Florida, by Panfilo de Narvaez in 1527. They were tarred with pitch which a Greek chemist, known as Don Teodoro, made from pine rosin, the first recorded chemical operation in this country. Fernando de Soto built 7 brigs in the Spanish settlement on Tampa Bay in 1540 for his expedition leading to discovery of the Mississippi River. Three years later, ships carrying the survivors of this expedition to Mexico anchored on the Gulf Coast of Texas near Sabine Pass to collect the crude oil scum floating on the water to caulk their vessels. This is the first recorded use of a petroleum product in North America, 64 years before the first English colonists stepped ashore at Jamestown.

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The first plant for the production of naval stores upon a substantial scale was constructed by Captain John Smith of the Jamestown, Virginia, Colony in 1609. By 1619, the Colony had three iron works, as well as sawing mills and salt plants.

Manufacturing continued to prosper, and by 1810 the South, with 46 per cent of the country's population, had 30 per cent of the industry of the nation. Due to the large returns to be realized from agriculture, however, land became the magnet which attracted the attention of the majority of the people, and industry declined. In 1850, the factories of the South, which had 39 per cent of the country's population, were producing less than 14 per cent of the manufactured products of the United States. Then came the War for Southern Independence and with it the almost complete destruction of southern industry. By 1900, the South had only 9 per cent of the manufacturing facilities of the nation.

This proved to be the turning point as the textile industry, long entrenched in the New England states, started to move South. Growing slowly but surely, the great break-through for industry came during the late war when the government's need for increased production capacity poured in fertilizing streams of money such as the South had never seen before. As the nation's postwar boom continued, the South took advantage of every opportunity to demonstrate that wealth can be generated even out of pine barrens and worn out soil when science and enterprise are permitted to make practical use of some small part of the knowledge available to man.

This industrial surge is largely the product of research and includes such technical operations as the production of petrochemicals, synthetic fibers, and light metals, which owe their existence to the laboratory. While much of this basic research has been carried out in the North, it is plunging the South into an advanced state of technology. In this challenging climate, the South is beginning to build its own research and development facilities to insure its future growth and to maintain its leadership in the highly technical industrial operations which play so prominent a part in southern economy. This, rather than the vast expansion in manufacturing facilities, is the real revolution.

As a matter of fact, the South is engaged in two revolutions at the same time. Still in the midst of its industrial revolution, it has started a marketing revolution which may have an even more lasting effect upon its future development. The balanced economy achieved by blending diversified agriculture with industry has greatly increased the per capita income and the general prosperity of the region. The implications of this growth from a marketing

standpoint are obvious. The South is rapidly becoming its own best customer.

The South's proportion of the nation's manufacturing facilities has increased from 9 per cent in 1900 to nearly 25 per cent in 1954. Of the \$26 billion expended by the government and private industry for wartime construction, \$4.5 billion was spent in the South, which served to double the area's industrial plant capacity. At the height of the building boom following World War II, an average of one new multi-million dollar plant started operations in the South each working day of the year, and this rate was maintained for a period of nearly three years. Today, the South has approximately 15,000 manufacturing establishments employing 50 or more workers. Its industrial output has increased from \$11 billion in 1939 to \$60 billion in 1953.

To illustrate the rapidity with which the South is building its manufacturing potential, the Gulf South area, which includes Texas, Louisiana, Mississippi, Alabama, and Northwest Florida, has accounted for one-sixth of all of the industrial construction in the country during the past ten years. The value of such construction is \$3¼ billion, which is six times the value of all industry built in the New England area during the same period. On an average, over \$1¼ million worth of construction was completed each working day for 10 years.

Today the southern business volume is 23 per cent of the total for the country. The South produces 36 per cent of the raw materials, and has 23 per cent of the trade, 23 per cent of the supplementary business (utilities and finance), and 21 per cent of the processing industries (construction and manufacturing.)

Manufacturing volume represents 26 per cent of the total business volume of the South, ranging from 36 per cent in North Carolina to 11 per cent in Florida. In ten out of the 15 southern states, manufacturing volume comprises at least one-fourth of the total business volume.

If the rate of expansion of industry in the South during the past few years continues, the area should have 30 per cent of the country's manufacturing facilities by 1965. In order to do so, it will be necessary to build three plants per day during this period or a total of 10,000 plants in 10 years. Each state, on an average, should add 700 plants to its industrial potential by 1956.

Resources for Industrial Expansion in the South

The most important single factor in the industrial development of the South has been the character and ability of the people in the area. During the early days of industrial growth in the South, it was found that local workers were ideally suited for manufacturing operations. When heavy demands were made upon the

region for rapidly expanding industrial production during the late war, it was quickly apparent that Southerners could design, build, and operate the most complex manufacturing facilities in an extremely satisfactory manner. In fact, many surveys have shown that southern plants in a variety of industries operate at better efficiencies, and at higher quality and profit levels, than comparable installations in other sections of the country. The native intelligence of the southern worker, coupled with the universal desire to raise the standard of living in the region, has made the South an ideal area for industrial expansion from a personnel standpoint.

Experience has shown that another major factor in the location of new plants in the South is the rapidly growing southern markets for consumer items. The South's share of the expected population growth during the present quarter of a century is 14 million people, or an average of one million persons for each state. As each person uses approximately 18 tons of material each year, the magnitude of the markets available for industry in the South in the coming years is very large. And the per capita income of the South has increased 250 per cent since 1939, 64 per cent above the national average.

As the estimated expansion in manufacturing facilities during the next ten years will require the provision of unprecedented quantities of raw materials, the ability of the South to supply such requirements must be determined. A careful survey shows that no other section of the country is so well endowed in this respect. The farms, forests, and mineral resources of the area can easily support the projected expansion in manufacturing operations.

One of the most important raw materials required by modern industry is water, and the South has an abundance of water resources. The average rainfall is 40 inches, compared with a national average of 30 inches, and the area is well supplied with streams and rivers ideally located for plant operations. And the South is using only 4 per cent of its available water supplies, while the rest of the country is using 18 per cent.

The South is well provided with minerals, and is supplying over 50 per cent of the nation's requirements at the present time. Petroleum, including natural gas, accounts for approximately 80 per cent of the total, and petroleum and coal represent 90 per cent of the overall mineral production.

The importance of petroleum, natural gas, and coal as raw materials for the chemical industry is indicated by the fact that over 5000 chemical products are obtained from them. These include such diverse items as wool-like fibers, nylon stockings, tires, fertilizers, plastics, dyes, and perfumes.

The production of chemicals from sea water will continue to be a fertile field for development. The ocean is the last great undeveloped source of a large number of important minerals, and in the exploitation of this virtually inexhaustible source the South has important locational advantages due to its long coastline. The Dow Chemical Company is presently operating a large plant for the production of bromine and magnesium from sea water at Freeport, Texas.

Many agricultural products are important raw materials for industrial operations, and expanding demands for this purpose have changed the pattern of production of many southern crops. As an example, the development of edible fats from cottonseed oil has changed the status of cottonseed from an unwanted by-product to that of an important agricultural commodity. In certain sections of the South today, cotton is raised primarily for the production of seed instead of fibre. Fisheries also provide raw materials for many industries.

The pine tree is the source of the basic raw materials for one of the oldest as well as one of the most recent southern industries. Rosin and turpentine obtained from pine are the starting materials for the naval stores industry, while cellulose derived from pine is used in making Kraft paper and newsprint. The importance of southern pine to the economy of the nation is due to its rapid rate of growth, which in turn results from the ample rainfall and the long growing season. Growing on a sustained yield basis, southern pine stands will produce a ton of cellulose per acre each year, and commercial saw timber can be grown in 20 years. One ton of wood residue can be processed to yield 110 gallons of liquid fuel, and as the petroleum and coal resources of the South are depleted, the pine tree will become an important source of raw materials for industries based on their use. The forests of the South, which comprise 30 per cent of the country's forest lands, comprise the most important renewable resource of the area.

Another important factor in the industrial growth of the South has been the abundant supplies of energy sources, such as petroleum, natural gas, and coal. As the industrial requirements of the nation increase, the overwhelming superiority of the South in this respect should play an important part in the location of new industries.

Petroleum and natural gas now supply 55 per cent of the energy requirements of the nation, and this proportion is steadily increasing. It is particularly gratifying, therefore, to find that the South has 80 per cent of the natural gas reserves of the nation, and 70 per cent of the petroleum reserves, while producing 75 per cent

of the country's natural gas, and 65 per cent of its petroleum requirements. The South also has 20 per cent of the nation's coal reserves, and mines 25 per cent of its production.

The intensive research for oil and gas, both on the continent and in the offshore fields, and the use of improved exploration and production procedures undoubtedly will result in very substantially increasing the oil and gas reserves of the South,

The growth of electric power in the South probably will proceed at a faster rate than in other sections of the country due to the ready availability of hydroelectric power sites and the large annual rainfall with which to maintain the storage areas supplying such installations at satisfactory levels.

Underground coal gasification, which will permit non-commercial seams to be exploited, low temperature carbonization of coal, and the use of lignite and other low grade coal measures will serve to increase the industrial utilization of this important raw material and energy source.

The South also should play a major role in the development of atomic energy for industrial purposes due to the technology available in the region as a result of the location of a substantial proportion of the government's atomic energy installations in the area. This should provide an opportunity for many manufacturing operations as it has been estimated that the production of components for reactor plants will be a \$700 million a year business by 1963. By 1965, it is estimated that \$7½ billion will be invested in atomic reactors in this country, and that from 30,000 to 40,000 scientists and engineers will be required for this enterprise.

The South has excellent transportation facilities. Approximately 60 per cent of the nation's navigable waterways are located in the South, and ten of the States reach tidewater. The South also has more than one-third of the combined road, railway, and airway mileage of the nation.

Financial resources are important, and while southern finances were inadequate to support any large scale industrial expansions prior to the war, this situation has improved substantially. Finance and realty transactions in the South in 1954 amounted to 21 per cent of the total for the nation. Many large industrial installations are now financed entirely by southern capital.

Planning programs designed to insure the most profitable and efficient use of land for urban and industrial expansion are now under way in many southern states. An outstanding example is the land development program of the Oklahoma City Chamber of Commerce. Such programs will become of increasing importance as the concentration of industry increases in the South.

Technological Resources of the South

These resources are sufficient to support an industrial expansion which could make the South the most prosperous region in the country within the next decade. But wishful thinking will not make this come to pass. To make these dreams come true, even to a modest degree, it will be necessary to use to the fullest possible extent the talents of the scientist and the engineer. The mere possession of abundant raw materials, a good climate, and good soil is no guarantee of future prosperity. The capabilities, ambitions, and industriousness of the people occupying the area are the deciding factors.

An interesting parallel is often drawn between Panama, which, although heavily endowed with excellent resources, has one of the lowest standards of living in the world and Switzerland, which is very poorly supplied with natural resources, yet enjoys one of the highest standards of living of any country.

The fundamental reason why petroleum, natural gas, brine, minerals, and other natural resources of the South, which have been available since the earliest times, have suddenly become the basis for a great industrial empire, expanding employment, and a rising economy is due, in large measure, to the vision and the skill of the scientist and the engineer. Until the vision of the scientist can see in them an answer to a human need, and the engineer supplies the technological skill which enables them to be used, they really do not exist at all as far as economic value is concerned. Dr. Stein of du Pont once said that "with almost diabolical cunning, nature concealed her blessings, thoroughly mixed them up like a giant jigsaw puzzle, and challenged man to put them together." Man's knowledge and understanding of scientific and engineering principles, coupled with vision, leadership, and the availability of investment capital, has resulted in the industrial development which is so rapidly changing the face of the South.

While there are factors limiting the four other major resources of the nation—natural resources, agricultural capacity, industrial facilities, and manpower—there is no foreseeable limitation of technology. This comprises the primary resources of the nation as the application of technology has permitted the country to become highly industrialized and highly mechanized, and has permitted the people to work less and produce more, thus creating the world's highest standard of living. The average output per man-hour for the economy as a whole is six times that of a century ago. In the field of agriculture along, the application of known procedures would enable the state of Texas to produce all of the agricultural products required by the nation.

Technology is opening new gates in uncovering sources of raw materials, so that today's nitrogen for explosives and fertilizers is obtained from the air, and magnesium, the new industrial light metal, comes from sea water.

In his recent paper on the "Role of Research in Economic Growth," Dr. Raymond H. Ewell has pointed out that the United States has the highest economic growth rate among the highly industrialized countries of the world, and that it devotes the highest percentage of its national development to research and development. From this he concludes that research may be the most important single factor in the economic growth of the country.

His studies indicate that \$39 billion has been spent on research in this country to date, and that 45 per cent of this amount has been spent during the past 5 years. As research expenditures amounted to 1 per cent of the gross national product in 1953, while capital expenditures were 11 per cent of GNP, it is apparent that \$11 in capital expenditures will be required for each dollar spent for research. The effect of research expenditure upon the rate of growth of industry in any given area is obvious.

The gross national product has had an average rate of growth of 3 per cent per year, while research expenditures have increased at an average rate of 10 per cent per year. A careful analysis of the effect of research upon the gross national product by Dr. Ewell in adding new products, improving existing products, and lowering the cost of production indicates that the return on research investment during the past quarter of a century has been approximately 150 per cent per year.

These conclusions are eminently sound, and one might conclude that the answer to the development of a richer and more abundant economy would be the provision of larger sums of money for research if a small cloud was not developing on the horizon. In a country made rich by the fruits of technology, and one which is spending nearly \$4 billion each year for research, it may be regarded as heresy to indicate that the technological well is running dry. But such is the case. The great storehouse of fundamental knowledge available for industrial exploitation for the benefit of mankind at the turn of the century has been largely depleted and must be replenished. Unfortunately, the enormous body of scientific research in America is suffering from malnutrition; we have yet to provide all the elements necessary to create and maintain an intellectual atmosphere in which fundamental scientific research can flourish as it should.

Part of the reason for this unsatisfactory state of affairs is financial. While most research administrators regard 10 per cent as the minimum proportion of research funds to be allocated to fundamental research, somewhat less than 5 per cent of total funds expended on research in this country is used for fundamental studies. It is somewhat disturbing to find that a much higher proportion of total research expenditures abroad is devoted to fundamental investigations. As a result, most of the important technological advances made in this country during the past two decades have been based on fundamental discoveries made in other countries. In a list of the twelve most important technical industrial developments in this country during the past quarter of a century, only one—nylon—was based on fundamental investigations made in this country.

While government sponsored research accounts for one-half of the research presently carried out in this country, it has not been an active supporter of fundamental research. Less than 7 per cent of the total research effort of the government can be classified as basic research, and the application of a rigorous definition of fundamental research would reduce this proportion even further.

Fortunately, a number of industrial organizations have recognized their debt to basic research and the need to increase the stockpile of fundamental information. One of these companies, General Electric, has concentrated on fundamental studies so fully that they are able to report that "From basic research we achieve what appears to be an answer to a problem; we then search through our complex technology for the problem." And Alfred P. Sloan, Chairman of General Motors, has recently stated that American industry must expand its facilities for basic research in order to support its applied research and advanced engineering studies.

This problem is of fundamental interest to the South as much of the new industry established in the area has a strong technological base. Thus, for example, the South now has 32 per cent of the chemical industry of the country, and chemical employment is increasing faster than in any other area. The region now employs approximately 15,000 professional chemists, and has 20 per cent of the total membership of the American Chemical Society. Despite these facts, southern schools are not graduating a sufficient number of chemists and chemical engineers to take care of minimum needs of the industry in the area. A survey made by the Southern Regional Education Board recently is summarized in the following Table:

TABLE I
Survey of Southern School (1953)

Item	Number	Per Cent
		of U.S. Total
Accredited Chemistry Departments	41	21
Accredited Chem. Eng. Departments	19	26
Certified B.S. graduates, Chemistry	280	14
Certified B.S. graduates, Chem. Eng.	358	20
M.S. graduates, Chemistry	189	20
M.S. graduates, Chem. Eng.	47	13
Ph.D. graduates, Chemistry	121	13
Ph.D. graduates, Chem. Eng.	20	15.

These data permit the following conclusions to be drawn:

1. Educational activities have not kept pace with the expansion of the chemical industry.
2. The area is not self-supporting in chemically trained manpower at any level of education.
3. There is a considerable export of students for study at the Ph.D. level.

Another survey indicates that the schools in the southern states do not support research to the extent justified by the needs and opportunities existing in the area. Despite the fact that farm income is about one-quarter of the income derived from industry, the schools and experimental stations in two southern states spend less than one per cent as much on scientific and industrial research as on agricultural programs, and no southern state spends half as much for industrial research as for agricultural development programs.

The various state governments in the South undoubtedly would find it advantageous to allocate more funds for basic research to enable the industrial resources of the area to be more completely exploited. The schools of the South also could profitably investigate the expansion of their fundamental research programs. Industrial aid for such investigations undoubtedly could be obtained.

In the field of industrial research, it is also disconcerting to find that the South accounts for only 4 per cent of the industrial research under way in this country. Fortunately, the South is well aware of its needs for research facilities to support its rapidly growing technical industries, and has been providing such facilities at a rapid rate. Over 100 new research laboratories, or major additions thereto, were constructed in 1952, and 40 consulting research units have been established in the region in the last decade. It is predicted that at least 1000 new industrial research laboratories will be constructed in the South in the next ten years, and that 15,000 scientists and engineers will be required to operate the new facilities thus provided. And some 200 new multi-

million dollar plants will be constructed during the same period to manufacture products which do not exist today.

One of the most important problems confronting the nation today is the shortage of scientists and engineers. The minimum requirements for technical personnel in this country during the current year are 60,000 new graduates. As only 22,000 will be available from the colleges and universities in the country, there will be a net deficit of 38,000 engineers. And this is not the whole story as 7,200 of the technical graduates also are ROTC graduates, who will probably be inducted into the armed forces sometime during the year.

Looking into the future, it is predicted that the country will require 120,000 technical and engineering graduates each year by 1965 in order to adequately take care of the needs of industry. As the South is expected to have 30 per cent of the industry of the country in the next ten years, it will be necessary for southern schools to graduate 36,000 engineers each year to take care of the minimum demands of industry in the area. This is an average of more than 2,000 technical graduates in each state annually.

In the face of this increasing demand for technical personnel, the number of graduates has been steadily declining. While there were 52,000 technical graduates in engineering and science in this country in 1950, this had been reduced to 22,000 in 1954. While this condition is expected to improve by 1960, with a doubling in the number of technical graduates, this will not be enough. Some means must be found to again double this number.

While it was not to be expected that southern schools could take care of the immediate technological needs of such industries, due to their rapid rate of growth, they must be prepared to do so within a reasonable period of time. Industries will not continue to expand in an area incapable of supplying the most indispensable personnel required for their operation. Fortunately, the seriousness of this situation is recognized by several southern states, and active measures are being taken to increase the output of technical and engineering graduates. The future of industry in the South depends upon the success of this understanding.

Pattern of Industrial Development in the South

Modern southern industry dates from the turn of the century when the textile industry started to move into the area. Today, food manufacturing (\$8.9 billion) is the South's most important industry, followed by textiles (\$6.6 billion), industries based on petroleum and coal (6.2 billion), and the chemical industry (\$5.6 billion.)

Food processing industries in the South have progressed so rapidly in recent years as to become a major factor in the agricul-

tural and industrial economy of the region. With the average American using 1600 pounds of food a year, production must be steadily increased to take care of the expanding economy of the country. The southern food processing industry consists of 12,000 plants and 400,000 employees.

The South has over 80 per cent of all cotton textile production in the United States, and about the same proportion of the rayon and acetate textile production. The woolen and worsted industry also is moving South at a steadily accelerating rate.

To many Southerners, however, the pot of gold at the end of the rainbow looks remarkably like a test tube. The South is betting on chemicals in a big way. Some \$710 million in new chemical plants were completed during 1954, and another \$780 million are on the way.

While industry in general is expanding at the rate of some 3 per cent per year, the expansion in the field of industrial chemicals over the past decade has been twice as rapid. It is the only industry that serves all of the 72 basic industry groups recognized by the U.S. Department of Commerce, and among all industries it is the firmly wedded to research.

In view of these considerations, it is particularly noteworthy that more than half of the nation's new chemical plants have located south of the Mason-Dixon line in the last few years. Chemical employment is increasing faster in the South than in any other area, and nearly 15,000 professional chemists and chemical engineers are now employed in the southern chemical industry. The South has one-third of the nation's chemical industry, and it is expected that this will increase to one-half within the next ten years. The majority of the chemical industry undoubtedly will be located in the South by 1975.

Petrochemicals are the backbone of the southern chemical industry, and over 80 per cent of all of the petrochemical plants in the country are located in the South, particularly along the Texas-Louisiana Gulf Coast. Petrochemicals are derived from petroleum and natural gas, the South's most important mineral products.

Some 10½ million tons of petrochemicals having a value of \$2.7 billion were produced in 1952, and 15 million tons were produced in 1953. The 1954 production had a value of nearly \$4 billion. Petrochemicals account for over 25 per cent of all of the chemicals produced in this country today, and it is expected that this will increase to 50 per cent within the next decade.

The petrochemical industry was established only a quarter of a century ago, and has seen its most rapid expansion since the last war. It is based entirely upon fundamental studies relating

to the conversion of hydrocarbons to chemical products. Petrochemical production in the South has a value of nearly \$4 billion today.

More than one-third of the petrochemicals produced are used in the manufacture of plastics and plasticizing agents, both of which are products of modern research. This is a continuation of the trend which has been under way for some time to replace steel with plastics and the lighter metals. A fruitful field for development would be the provision of additional plants in the South for converting the intermediate petrochemicals to plastics, as well as for the manufacture of finished articles from such plastics. In this connection, it is interesting to note that 75 per cent of the new plastic, polyethylene, is now being produced in Texas and Louisiana.

Ammonia is an important petrochemical, particularly from the standpoint of southern agriculture. The synthesis of ammonia ranks with the greatest discoveries of all times. Since the dawn of civilization, man had been living on the accumulated stores of nitrogen in the soil, and this capital was running out in the closing days of the last century. In 1887, Huxley, the great English economist, predicted that western civilization would disappear in 50 years as a result of the exhaustion of all available supplies of fixed nitrogen.

It is sometimes darkest just before the dawn, however, and this grim prediction did not materialize. In 1910, after 10 years of research, Fritz Haber achieved the direct synthesis of anhydrous ammonia from hydrogen and nitrogen. At long last, man had discovered a way to renew his capital of this life-giving element indefinitely.

Over half of the country's synthetic ammonia production capacity of 3 million tons is in the South, and the major portion is made from natural gas. Production is growing rapidly and yet has not been able to keep up with demands. Due to the rapidly declining reserves of nitrogen in southern soils, approximately 60 per cent of all agricultural ammonia is consumed in this area. If research had not shown the way to convert the natural gas so readily available in the region into ammonia, southern agriculture would be in a rapidly declining state of productivity today.

Another important field of expansion of the southern chemical industry has been in the manufacture of synthetic rubber. Approximately 70 per cent of the country's production facilities are located in the South. Present installed capacity is one million tons, and this is expected to increase to 2½ million tons by 1975. Without the rapid development of the synthetic rubber industry during the last war, using petroleum and natural gas as the basic

raw materials, the country would have been unable to prosecute the war to a successful conclusion. Today, the synthetic rubber industry in the South contributes substantially to the area's prosperity.

Like the cotton textile industry, the production of rayon is predominantly a southern industry. Approximately 70 per cent of the nation's rayon production capacity is in the South, 19 plants in eight southern states, and contemplated new plant installations recently announced will increase this proportion even further. This is a logical location for the industry, as the basic raw material is cellulose in the form of cotton linters or wood pulp, both of which are available in almost unlimited quantities in the South.

The production of synthetic fibers is almost wholly a southern industry, and the predicted increase in production from 350 million pounds in 1954 to 4 billion pounds in 1975 indicates that it will become one of the most important manufacturing operations in this area. The development of this industry clearly indicates the influence of established related industries upon the location of a new enterprise. First there was cotton and, since it was a southern product, the textile industry inevitably became firmly established in the same area. As the textile industry represents the largest single outlet for chemicals (20 per cent of the total production) a chemical industry grew up in the South to supply this need. As chemicals provide the basic raw materials required for the production of synthetic fibers, and since the established southern textile industry could convert the fibers to yarn and fabrics, the South was the only logical location for the synthetic fiber industry.

While some concern has been felt in certain sections of the country as to the effect of synthetic fibers upon established markets for natural fibers, the South is in the happy position of being on the winning side regardless of the outcome of the competition between cotton, rayon, and synthetic fibers. Producing the bulk of the cotton and rayon, as well as substantially all of the synthetic fibers, the South will continue to supply the greater portion of the fiber and fabric requirements of the country. Technology has guaranteed the region's future in this respect.

The pine tree is the source of the basic raw materials for one of the oldest, as well as one of the most recent, southern industries. Rosin and turpentine obtained from pine are the starting materials for the naval stores industry, while cellulose derived from pine is used in making rayon pulp, Kraft paper, and newsprint. The South's pioneering scientist, Dr. Charles Herty, made revolutionary contributions to both industries. The Herty cup which he developed for collecting gum rosin stopped the wasteful practice of cutting boxes in the tree to receive this product. As the latter

practice usually killed the tree in a short period of time, the almost universal adoption of the Herty cup placed the naval stores industry on a sustained yield basis. His pioneering research to determine the type of pine suitable for the production of newsprint led to the discovery that the use of young trees would produce newsprint of excellent quality. He completed his epoch-making discovery by developing satisfactory methods for bleaching the pulp. The southern newsprint industry rests firmly and securely on his work, and the great stands of pine dotting the southern landscape are his enduring monument.

The production of forestry products, particularly those based on the utilization of pine, are increasing at a rapid rate. Southern newsprint production has now reached 500,000 tons per year, and it is expected that this will increase to 1½ million tons by 1975. The South now produces more than half of the wood pulp manufactured in the country and is the largest producer of chemical wood pulp in the world. Approximately 9 million tons of wood pulp, valued at nearly \$2 billion, are produced each year. The total value of southern forestry products exceeds the total value of the cotton and cottonseed crop.

Even in this field, much work yet remains to be done in utilizing the whole tree. Only 65 per cent of the average tree is converted into useful products by the lumbering industry, and the production of one ton of wood pulp results in the simultaneous production of a ton of lignin, which is almost entirely wasted in present commercial operations. The utilization of only two-thirds of the mill residues in the country would give sufficient molasses to provide three pounds per day for every head of cattle in the United States, and the lignin now wasted could be converted readily into chemicals for the production of nylon and other important consumer items. In addition, one ton of wood residues can be processed to yield 110 gallons of liquid fuel.

As the petroleum and coal resources of the South are depleted, a pine tree will become an important source of raw materials for industries based on their use. The forests of the South comprise the most important renewable resource of the area, and continuing research undoubtedly will make them an increasingly important contributor to the economy of the region.

An outstanding example of the rapidity with which technology can change the whole complexion of an industry in a remarkably short period of time is the development of frozen citrus juice. In the middle of the last decade, Florida was faced with a chronic oversupply of citrus. Turning to research for an answer, the Florida Citrus commission allocated 5 per cent of the money available from a self-imposed tax on the industry to the develop-

ment of new citrus products to expand its markets. Working in cooperation with the U.S.D.A. Citrus Products Station, Dr. McDowell developed a satisfactory process for the production of frozen citrus concentrates by over-concentrating the juice by vacuum distillation, followed by adding an amount of fresh juice to the concentrate sufficient to restore the volatile oils and aromas lost in processing. Within five years from the time the initial research was undertaken, a \$200 million a year industry had been established.

Not satisfied with launching this rapidly growing industry, subsidiary problems were studied and new industries were started to use the by-products from the citrus juice concentrating operations. These include a \$10 million a year business in dehydrated citrus pulp and citrus molasses for cattle feed, the production of essential oils from citrus peel, and a new plant for the manufacture of Vitamin P from the molasses. Research has changed a static industry into a dynamic and rapidly growing one, and has contributed substantially to the economic development of the state.

The examples given illustrate the effect of technology upon the development of substantial areas of the South. The same principles apply to more restricted areas. Thus, in 1950, Calvert City, Kentucky, with a population of 300, had a fluorspar mining industry with an output amounting to \$2¼ million per year. The surrounding area also contained substantial deposits of other minerals. The use of fluorine compounds in petroleum refining was rapidly expanding due to research conducted by a number of the oil companies, and in 1948 Penn Salt started to build a \$2 million plant at Calvert City to convert fluorspar to hydrofluoric acid, using TVA power. At the same time, Pittsburgh Metallurgical started to build a plant to produce ferroalloys. Then, in 1951, National Carbide moved into the area to convert the available limestone and coke into calcium carbide and acetylene in a \$10 million plant. Penn Salt expanded its operations by \$8 million to produce chlorine.

With these plants as a base, Goodrich Chemical entered the picture with a \$5 million vinyl chloride plant, using caustic soda, hydrochloric acid, and sulfuric acid from Penn Salt and acetylene from National Carbide.

Recently, Goodrich began work on a second Calvert City plant, representing an \$8½ million additional investment. And National Carbide is working to double its calcium carbide production capacity which will involve the expenditure of another \$8 million. Thus, technology has pointed the way to a tremendous expansion in the economy of an area provided with natural resources which could be converted into fluorine compounds, plastics, and a host of other commercial items.

Louisiana Resources and Development

Louisiana is particularly fortunate in having within its borders all of the requirements for the development of modern industry. It has a rich and diversified supply of important industrial raw materials, an ample labor supply, good power facilities, adequate transportation systems, a good supply of investment capital, and a home market of 3 million customers. The three M's of modern industry—Men, Markets and Materials—are well represented. With a background of diversified agriculture, it has an assured industrial future.

The state's industrial revolution began in the early days of World War II with the rapid construction of a number of important manufacturing facilities. Industrial expansion continued at an accelerated rate after the war, with the result that the value of manufactured products increased from \$565 million in 1939 to \$3 billion in 1954. The state has 3800 manufacturing establishments employing 158,000 workers.

One of the prime attractions for industry is the excellent supply of intelligent, stable, and capable workers. Absenteeism and turnover are exceptionally low, and the stability of Louisiana labor is reflected in the excellent labor management relations of its industrial firms. The people are traditionally well-balanced and contented, and 95 per cent of the population is native born. The Louisiana birth rate is higher than the United States average, and its death rate is lower than the rest of the country. The state will have no trouble keeping pace with the ever-increasing manpower demands of its industry.

The mild climate of the state also is an asset to industry, both from the standpoint of lower building and maintenance costs and the comfort of the worker and his family. The normal high temperature of Louisiana is 82 degrees, as compared to the national average of 75, while the normal low is 52 degrees, which is 20 degrees above the normal low for the country.

Markets are growing at a rapid rate. The state has a population of 3 million people and an income of nearly \$3½ billion.

A. Raw Materials

Louisiana is a vast storehouse of raw materials. It is a land rich in oil, gas, sulfur, timber, and furs. The soil produces a variety of agricultural products, and the rivers, bayous, and costal waters of the state yield a rich harvest of marine products.

The state has almost unlimited water resources. Of the 64 parishes in the state, 57 have at least one navigable stream within its boundaries. This assures a plentiful supply of water for industrial and domestic purposes. The Mississippi river alone has an annual mean flow of 300 billion gallons daily, sufficient to sup-

ply every person in the United States with 2000 gallons each day. The water is chemically suited for industrial use and, after purification, of fine quality. Next to its people, the most important resource of the state is its excellent water supply.

Louisiana is the second largest producer of natural gas, and the third largest oil producing state in the country. The production of natural gas probably is the country's most rapidly growing industry, and at present is the nation's sixth ranking business. One-fifth of the nation's oil reserves are in the Sabine Uplift around Shreveport. Fifty-eight of the parishes in the state produce natural gas, and fifty-nine of the sixty-four parishes produce oil. Acre for acre, the state is America's greatest producer of oil. The total value of the state's petroleum production in 1954 was \$860 million, equivalent to 94 per cent of the total value of the state's mineral production.

Production of natural gas in Louisiana in 1953 reached a record high of 1.4 trillion cubic feet, while reserves increased by twice that amount. Proven reserves at the end of 1953 were 34.4 trillion cubic feet.

The offshore oil and gas production potential is confidently expected to greatly exceed the foreseeable total land production, thus insuring a continuing supply of these valuable energy and industrial raw material sources.

The lignite deposits in the northern part of the state undoubtedly will become economically important as the supply of petroleum and natural gas diminishes. Other minerals also are found in the state, some in deposits sufficiently large to warrant exploitation.

Salt is mined in Iberia, Winn, and St. Martin parishes. The state ranks fourth in salt production in the nation, with an annual production of 3 million tons valued at \$7 million.

Louisiana is the birth place of the American sulfur industry, and now ranks second in the nation in annual production. The Grand Ecaille mine at Port Sulfur, which represents the largest single sulfur deposit located in this country in the past quarter of a century, now produces a million tons of sulfur annually. The total state production is 1½ million tons.

The forests of Louisiana comprise the state's most important renewable resource. They cover 16 million acres, equivalent to 56 per cent of the total land area. However, only one-third of the total forest land is being utilized. Over a million and a half acres still lie barren across the longleaf belt of central and southwest Louisiana, and many millions of acres more are in limited production. The big job of reforestation and forest management is being at-

tacked at all levels with vigor. The state's two nurseries have supplied landowners with more than 300 million seedlings since 1947, and current plantings are at the rate of approximately 60 million trees a year.

In the field of agriculture, cotton, sugar cane, rice, and corn are the most important crops, but the fertile soil, favorable climate, and plentiful rainfall make it possible to raise almost every variety of crop in the western hemisphere. Cotton, the leading source of farm income, is grown primarily in the northern and central portions of the state.

In the southwestern part of the state, rice growers compete with those from Texas for national leadership in the production of this important crop.

Southern Louisiana leads the nation in the production of sugar cane. Louisiana also leads the nation in the production of sweet potatoes and strawberries. Cattle raising is a rapidly growing industry.

The value of the cotton and cottonseed crop in 1953 was \$150 million. Livestock is the second most important source of farm income, with an annual value of \$125 million. The value of the state's rice crop is \$54 million annually, while \$16 million worth of sweet potatoes are grown in the state each year.

Grains, other than rice, have a total annual value or more than \$3 million; hay, \$10 million; strawberries, \$7 million; truck crops, \$4 million; and pecans, \$2 million.

Fishing is a \$35 million a year industry, and the state leads the nation in the production of shrimp, blue crabs, and menhaden. It is also a major producer of oysters.

Louisiana also leads the nation in fur production, the number of pelts taken exceeding that of any other state, or of any province or territory of Canada. Its annual fur production is valued at \$15 million, and it leads in the production of muskrat, mink, and nutria.

B. Transportation and Power Facilities

Louisiana has one of the finest water transportation systems in the country. Only 9 of the 64 parishes in the state do not have a navigable stream within their boundaries. It also has six express water routes, comprising the major rivers in the state.

The Mississippi river, which is navigable to ocean-going vessels as far as Baton Rouge, has given the state two of its three deep-water ports. The port of New Orleans is second only to New York in the dollar volume of foreign commerce.

The Gulf Intercoastal Canal traverses south Louisiana, furnishing the state with ports from Lake Charles to the west of New Orleans. The Calcasieu River and Lake has established Lake

Charles as one of Louisiana's deep-water ports. The Atchafalaya river provides a port for Morgan City, while Shreveport and Alexandria are served by the Red river and Monroe by the Ouachita river.

The Intercoastal Waterway and the Mississippi river and its tributaries combine to form the most complete inland water transportation system in the nation. Louisiana is at the cross roads of these two waterways. The state has 7300 miles of waterways, and in 1953 these waterways accounted for a total of 7.3 billion ton miles of traffic.

The South's proportion of the nation's foreign trade is 32 per cent, and Louisiana accounts for 31 per cent of this amount. New Orleans, with 95 per cent of the state's total, is easily the leader.

Louisiana is served by ten major railroad systems, having a total trackage of 6,104 miles. The state has 47,472 miles of roads and streets, and expenditures for highway purposes have been at the rate of \$100 million annually. Eight commercial airlines operate in the state.

The state is served by five important power companies having an installed capacity of approximately 1½ million kilowatts.

C. Business, Finance, and Taxes

Personal income payments in Louisiana totaled \$3.6 billion in 1953, an increase of 325 per cent since 1940. The increase in the country as a whole was 256 per cent during the same period.

Per capita income payments in Louisiana increased from \$357 in 1940 to \$1,249 in 1953.

The volume of sales in Louisiana in 1953 was \$2.3 billion, an increase of 275 per cent in retail sales for the nation.

Deposits in Louisiana banks now total \$2.2 billion, an increase of 298 per cent since 1940.

The number of firms in business has increased 41 per cent since 1939.

The Louisiana Industry Inducement Plan permits any political subdivision of the state to float bonds to help finance plant construction. New or expanding industries may apply for a 10 year exemption from ad valorem taxes on the value of the new construction. From 1946 to 1954, more than \$1 billion of new construction and equipment was approved for ad valorem tax exemption, creating 50,000 new jobs.

D. Manufacturing

Capitalizing on its efficient labor market, abundant water supplies, excellent transportation facilities, desirable sites for industrial location, and an excellent supply of raw materials, Louisiana is one of the fastest growing industrial states.

Although employment in manufacturing in Louisiana increased from 88,000 in 1939 to 135,000 in 1952, an increase of 52 per cent, the national increase in manufacturing employment was at an even greater rate. A more accurate picture of industrial expansion is given by the average value added by manufacture per worker, which increased 450 per cent in Louisiana between 1939 and 1952, compared with the national increase of 340 per cent.

Since 1939, the industries which have expanded at the most rapid rate are those having the highest productivity per worker, which include the petroleum, chemical, and paper industries. Industries declining, or expanding slowly, are those having a relatively low value added by manufacturing, such as the textile, lumbering, and food processing industries. These shifts explain the enormous increase in manufacturing output in the state, which has been accompanied by a relatively small increase in manufacturing employment.

The production of petrochemicals is a large and rapidly growing industry in Louisiana, and most of the industrial expansion in the state during the past few years has been based on the conversion of oil and gas to chemicals. As a result, Louisiana is second only to Texas in the production of petrochemicals, and 85 per cent of the country's total production capacity for these valuable products is located in an area extending from Baton Rouge to Brownsville, Texas.

Twelve new or expanded chemical plants valued at \$150 million were completed in the state in 1954, and 14 others valued at \$90 million were under construction. In many of these plants, natural gas is used as a basic raw material as well as a fuel.

The Esso Standard Oil refinery at Baton Rouge is the largest in the country, with a daily capacity of 300,000 barrels and the production of more than 700 oil and petrochemical products. Other large oil and petrochemical operations include Shell Oil at Norco, Pan-American Southern at Destrehan, Cities Service at Lake Charles, American Cyanamid at New Orleans, Lion Oil Co. at Luling, Ethyl at Baton Rouge, and Commercial Solvents at Sterlington. Synthetic rubber is manufactured by Esso and Copolymer at Baton Rouge, and by Firestone at Lake Charles.

The Kaiser aluminum reduction plant at New Orleans is the largest in the country, producing 400 billion pounds of aluminum a year. An expansion in Kaiser's alumina plant at Baton Rouge will produce enough alumina annually to supply all Kaiser's primary aluminum plants.

Louisiana now produces 14 per cent of the nation's supply of carbon black, and the state is the second ranking producer in the nation.

Sulfur is used in the production of sulfuric acid, which is utilized in a variety of operations in the state's petrochemical industries. It is widely used in other industrial processes also.

The wood-using industry employs 32 per cent of all workers engaged in manufacturing in Louisiana, a total of 52,000 persons. Excluding furniture, income from payrolls and profits in the wood-using industries in 1952 amounted to \$212 million, compared with \$207 million in the petroleum industry and \$109 million in the chemical industry. Wood-using industries include pulp and paper mills, naval stores industries, wood treating plants, and sawmills. The production of pulp and paper, in particular, is a large and rapidly growing industry.

Louisiana ranks first in the nation in the production of paperboard and containerboard, and ranks high in the production of hardwood lumber and wood pulp.

An important by-product of the production of sugar and molasses in bagasse, which is used as a raw material for the chemical and construction industries.

Rice is processed for food, and its by-products are used in a variety of industries.

Fisheries also supply raw materials for industry, such as in the production of scrap, meal, and oil valued at \$6 million annually from menhaden. Louisiana ranks fifth in the canned fish industry, with a total industrial value of \$17 million.

Future Developments

Louisiana industry will continue to grow at an accelerated rate compared with the normal growth of the nation.

The availability of petroleum and natural gas will enable the state to maintain its commanding position in the production of petrochemicals. The production of plastics and synthetic rubber will increase rapidly.

There will be a rapid expansion in the production of paper, pulp, and allied products. As petroleum and natural gas reserves decline, the petrochemical industry will shift to wood by-products for its basic raw materials. Lignin, now largely wasted in paper and pulp manufacturing operations, will become a basic raw material for many manufacturing operations, and lignite (fossil lignin) also will be used for this purpose.

Sulfur, salt, and sea water will become increasingly important raw materials for the chemical industry.

Agricultural products and by-products will be used as a basis for manufacturing operations on an increasing scale. Bagasse, for example, can be used for the production of newsprint and furfural, a basic raw material for nylon.

OBITUARY OF CONRAD OSCAR BOSTROM

The Louisiana Engineering Society and the Engineering Profession lost one of its young and most promising members by the death, on September 12, 1955, of Conrad O. Bostrom.

Mr. Bostrom was born in Atlanta, Georgia, on 9 June 1925, the son of Mr. and Mrs. Oscar Bostrom.

His high school education was completed at Alcee Fortier in New Orleans, after which he matriculated to Louisiana State University and began studies in the Civil Engineering curriculum. In 1943 he transferred to Tulane University where he received the degree of Bachelor of Engineering in Civil Engineering in 1945. While at Tulane, he participated in the Naval Reserve Officers Training Program and, on graduation, attended Reserve Officers Midshipman School and was commissioned as Ensign, Civil Engineer Corps, U. S. Naval Reserve.

He was then assigned to the Naval Construction Forces (Seabees) on the Island of Okinawa in the Far Eastern Theater of Operations. Later he participated in the first post war atomic explosion exercised at Eniwetok Atoll in the summer of 1946. He was released to inactive duty early in the fall of 1946.

Following this, he re-entered Louisiana State University and initiated studies toward a Masters Degree in Civil Engineering and served as instructor in surveying.

From the middle of 1947 to early 1948, he was employed by the George J. Glover Construction Company as an engineer on the Raymond Exchange addition for the Telephone Company. Following this, Mr. Bostrom was employed as a Civil Engineer with the Orleans Levee Board. In this endeavor, he worked on the planning and design of many of the current lakeshore developments in New Orleans as well as many other Levee Board responsibilities in the surrounding area.

In 1949 he became affiliated with the firm of Bartley and Binnings—General Contractors as a project engineer and superintendent. Except for a period during 1951 when he was recalled to military duty as a Lieutenant, Civil Engineer Corps, U. S. Naval Reserve, Mr. Bostrom continued with this firm until March of 1954. During this employ, he was responsible for a large number of projects handled by the firm, in the New Orleans and South Louisiana area. His employees and their clients attest to his conscientious, energetic and talented approach to his work.

When recalled to military duty in 1951, he served as the Assistant Public Works Officer at the U. S. Naval Air Station at Atlantic City, New Jersey.

In March of 1954 he initiated a small general contracting business of his own, concentrating in residential construction. At the time of his death this business had reached a point of development to which success was assured. In addition to being a member of this Society, Conrad was a member of the American Society of Civil Engineers and participated in Naval Reserve and Masonic Activities in the area.

He is survived by his widow, the former Aileen Moore, his parents, and one sister, Mrs. Barbara Bostrom Carlin.

While Conrad has departed to serve in the hands of the Supreme Engineer and Architect, his conscientiousness and energies in pursuing his work, his ideals and devotion toward his country, his professional and his fellowman, coupled with a keen sense of humor and sympathy toward the problems of every day living, will serve as an ever present inspiration to his professional associates and friends and more particularly his younger contemporaries.

Be it therefore resolved that this obituary be read at a meeting of the Louisiana Engineering Society, entered into the minutes and published in the Proceedings of the Society, and that copies be sent to members of the family.

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**MINUTES OF MEETING OF THE BOARD OF DIRECTION
HELD ON MONDAY, DECEMBER 5, 1955**

The meeting was called to order by President Seago in Room 422 St. Charles Hotel, with Messrs. Drawe, Edwards, Macdonald, McLellan, Nelson, Taylor, Wallace and Fernandez present. Mr. Nelson moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Edwards and carried.

Dr. Macdonald, Chairman of the committee, submitted his committee's recommendations for 1956 officer and director nominees as follows:

For President	Wayne P. Wallace
For First Vice-President	Waldemar S. Nelson
For Second Vice-President	Ernest M. Freeman
For Secretary-Treasurer	John P. Fernandez
For Director for 2 Years	Ben T. Bogard
For Director for 2 Years	Charles E. Cassagne, Jr.

Mr. Edwards moved that the Board accept the committee's recommendations, seconded by Mr. McLellan and carried.

The secretary read a letter from Mr. Cary B. Gamble, Chairman, Professional, Civic and Industrial Affairs Committee, in which he recommended that the society take no action in endorsing a resolution urging the establishment of a state college in the greater New Orleans Metropolitan area for the reason that L.E.S. is a statewide organization and therefore should not express itself in behalf of any particular locality for a state college. Mr. McLellan moved that the report be accepted and that the chairman be asked to write to Little Farms Civic Association, sponsors of the resolution, explaining the society's position. Motion seconded by Mr. Wallace and carried.

A letter from Mr. W. R. Blackburn, New Activities Committeeman of the American Chemical Society, Louisiana Section, was read, in which he proposed the publication of a calendar of events sponsored by all of the local technical societies. The secretary was instructed to reply to Mr. Blackburn stating that the Publications Committee of L.E.S. was planning to print something similar on a slightly smaller scale in its new publication.

Letters from the St. Charles Hotel and the Engineers' Club regarding relocation of society headquarters was read. Mr. Nelson moved that the proposal of the Engineers Club be accepted and that the secretary be authorized to purchase a lock-file cabinet to be kept at the Engineers' Club. Motion was seconded by Dr. Wallace and carried.

President Seago then appointed a committee consisting of James M. Todd, Chairman, Ole K. Olsen and Chas. M. Kerr to write a resolution thanking the St. Charles Hotel for its hospitality extended to the society over the past years.

Mr. Edwards moved that the following members be dropped at their own request:

A. C. Matthies (Mbr.)—New Jersey, formerly Baton Rouge
R. P. Childress (Jr)—Texas
A. J. Etie, Jr. (Jr.)—Texas
T. H. Keen (Mbr.)—Texas, formerly Lafayette.

The motion was seconded by Mr. Drawe and carried.

A letter addressed to all members of the Louisiana Council of Engineers by President Seago was read. Mr. Edwards moved that the board approve the action take by President Seago, seconded by Mr. Nelson and carried.

Dr. Macdonald expressed the board's appreciation of the excellent work done by President Seago during the year, and this was followed by a rising vote of thanks to the President.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the L. E. S. Held jointly with the Louisiana Section,
American Institute of Electrical Engineers Monday, December 5, 1955**

The meeting was called to order by President Seago with approximately 150 members and guests present. President Seago welcomed members and guests of the A.I.E.E. and announced that, since the telephone meeting would start promptly at 8:30, the reading of minutes should be dispensed with. Mr. Knost moved that this be done, seconded by Mr. Babin and carried.

Mr. Malcolm Stumpf, chairman of the local A.I.E.E., announced that the next meeting of his organization would be held on June 12 at the Engineers Club and that members of L.E.S. were cordially invited to attend.

Dr. Wayne Wallace then asked all former presidents of the society to come forward and stand before the rostrum. He then thanked them as a unit for their splendid work in the past and stated that the society was indeed grateful for having had such leaders. A moment of silence then was observed in memory of former presidents who have passed away.

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Former President F. N. Billingsley was presented with the silver bowl that formerly served as the Presidents' Golf Trophy, now completely filled with the engraved names of annual winners. This is to be kept by Mr. Billingsley as a permanent trophy, since his name appears most frequently as its winner.

Dr. Frank W. Macdonald was presented with a Certificate of Appreciation for his service as President of the Society in 1954, after which he presented the report of the Nomination Committee, as follows:

For President	Wayne P. Wallace
For 1st Vice-President	Waldemar S. Nelson
For 2nd Vice-President	Ernest M. Freeman
For Secretary-Treasurer	John P. Fernandez
For Board Member for 2 Years	Ben T. Bogard
For Board Member for 2 Years	Chas. E. Cassagne, Jr.

Dr. Macdonald then moved that the slate be accepted and placed on the ballot. The motion was seconded by Dr. Lassalle and carried. President Seago then called for nominations from the floor but none were forthcoming, whereupon Mr. Porter moved that the nominations be closed. The motion was seconded by Mr. Godat and carried.

Mr. Porter then read an obituary in honor of the late Dr. Herbert M. Shilstone, after which a moment of silence was observed in his memory.

President Seago then read biographical sketches of the evening's speakers and announced that Dr. Donald Derickson would not be able to speak from New Orleans because of ill health, but that his paper would be read by Mr. Rombach, Chairman of the Technical Papers Committee. A most instructive discussion of the Engineering License Law followed, with Dr. Macdonald serving as moderator. Dr. Derickson's paper covered the history of the Louisiana License Law and its administration to date. Dean Ben T. Bogard of the Louisiana Polytechnic Institute, speaking from Monroe, gave a comparison of the Louisiana law with those of other states, and Mr. Calvin T. Watts, in Baton Rouge, discussed the proposed changes in the Louisiana law.

After a question period in which all sections participated, the telephone hook-up terminated.

Mr. Cucullu then stated that it will be difficult to win the approval of legislators in changing the present law and told of his experience with the Engineer-in-Training clause. He urged those who would attend the committee hearings to be well prepared. President Seago then thanked Mr. Cucullu and announced that the Annual Meeting would be held in Baton Rouge on January 19, 20, 21 and urged all to attend.

The meeting then adjourned with a round of applause for all of those who participated in the program.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the Louisiana Council of Engineers Held on Wednesday, December 21, 1955 at the Engineers' Club, New Orleans

The meeting was called to order by Chairman Seago with the following delegates in attendance:

W. E. McWhirter and C. H. Russell, Jr., AICHe; Waldemar S. Nelson, LES; John F. Vogt, Jr., ASME; B. M. Dornblatt, Gulf Inst. of Consulting Engrs., SAME; Chas. E. Cassagne, Jr. and Robt. H. Grehan, APWA; Roy T. Sessums and L. M. Buja, ASCE; John J. McDow and A. J. Rhodes, La. Agricultural Engrs. Assn.; H. C. Swan and H. C. Schaeffer, Jr., AIEE; Walter Cooke, ASH and AE, ASRE, and John P. Fernandez, Secretary of the Council.

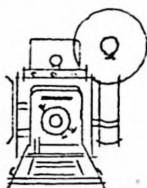
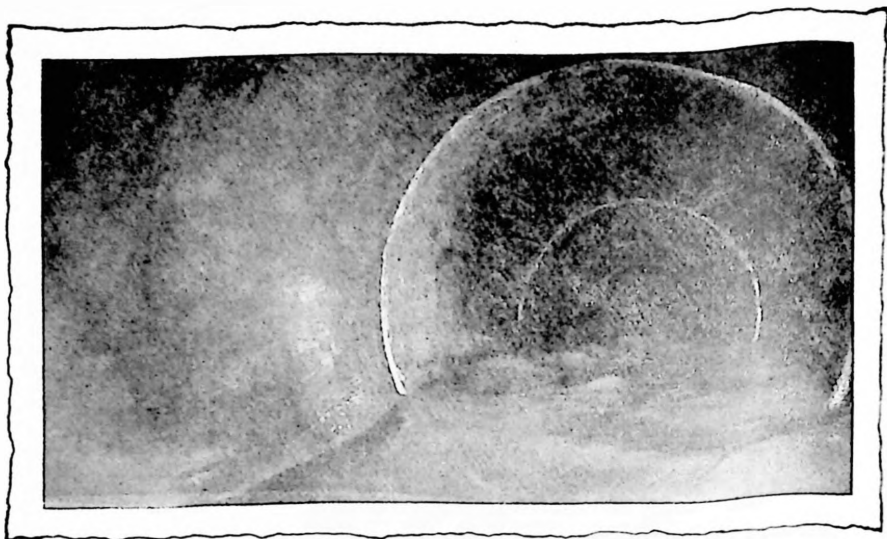
Mr. Seago distributed copies of the notice dated November 18 that was mailed to all members of the Council and read same to refresh the memories of those present. He then gave a brief history of events leading up to the need for an injunction proceedings clause in the present engineering registration law.

Mr. Dornblatt moved that an amendment be inserted following Paragraph C of Section 23 entitled "Violations and Penalties" in the present registration act, said Paragraph D to read as follows:

"The Board, through its proper officer, may cause to issue in any competent court a writ of injunction enjoining any person from practicing professional engineering or land surveying in any of its departments until such person has been duly registered as provided in this part. This injunction shall not be subject to be released on bond. The trial of the proceedings by injunction shall be summary and by the judge without jury. The right to proceed by injunction shall be in addition to all other provisions for penalty or disciplinary action otherwise provided in this part."

"All laws or parts of laws in contravention of or in conflict with this statute be and they are hereby repealed."

The motion was seconded by Mr. Sessums and carried unanimously.



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Modifications to the present mode of operation of the Louisiana Council of Engineers then were read and this was followed by a number of specific questions and minor objections. Before ironing out details of wording, the Chair inquired whether the modifications were acceptable in general. Mr. Nelson moved that the modifications to the present mode of operation of the council be approved in principle, seconded by Mr. Grehan and carried unanimously.

The first codification then was discussed and Mr. Dornblatt objected to the selection of the Council's chairman by the Board of Direction of another society. Mr. Buja inquired how many votes the Louisiana Engineering Society would have and believed the modifications were not clear on this matter. After discussing these two points, Mr. Nelson moved that the Chairman and Vice-Chairman of the Louisiana Council of Engineers be the President and the First Vice-President of the Louisiana Engineering Society respectively, without vote. The motion was seconded by Mr. Cassagne and carried unanimously.

Mr. Vogt moved that the Secretary of the Louisiana Council of Engineers be the Secretary-Treasurer of the Louisiana Engineering Society, without vote. The motion was seconded by Mr. Cooke and carried unanimously.

Mr. Dornblatt moved that regular scheduled meetings of the Louisiana Council of Engineers be held in April and October of each year, and that additional meetings may be called at the discretion of the chairman or upon request of any participating organization, the regular meeting place to be the Engineers' club of New Orleans. The motion was seconded by Mr. Grehan.

Mr. Buja then inquired what constituted a participating organization and wished this term to be defined. After some discussion, Mr. Buja waived his question for the time being and the motion passed unanimously.

Mr. Nelson moved that each participating organization provide two regular representatives on the Council, appointment to be for a term of two years and terms to overlap in order to provide the necessary experience and continuity; the names of appointees to be registered with the secretary of the Council and voting privileges to be limited to them only. In the matter of representation the Louisiana Engineering Society shall be considered a participating organization. The motion was seconded by Mr. Dornblatt and carried unanimously.

Mr. Sessums moved that a procedure be instituted whereby the Council Charman would submit agenda items to all participating organizations at least two months prior to each regular council meeting so that appropriate board action may be taken by each organization. All regular representatives should then be prepared to discuss and vote upon all agenda items. The motion was seconded by Mr. Cooke and carried unanimously.

Discussion then followed on the term "participating organizations" and there appeared to be two points of view: one, that each organization, whether having one or more sections in the state, would be limited to two votes on the council; the other, that if a national society has granted more than one charter in the State of Louisiana, each section having been granted a separate charter would have two votes on the Council. After some discussion it was decided to defer the matter until the next meeting of the Council, after which a motion was made to appoint a committee to study and make recommendations on the mission of the Louisiana Council of Engineers. After further discussion in which it was pointed out that the wording of the Council's objectives should be most carefully stated so as not to conflict with the constitutions of other societies or to exceed the limitations of tax-exempt organizations as provided in the Internal Revenue Law, the motion was withdrawn.

The secretary then distributed copies of the proposed amendments to the registration law that were approved by the Council on October 12, 1954, after which Mr. Buja inquired whether the State Civil Service Department had been approached in connection with the "Engineer-in-Training" feature of the amendments. He was informed that the Director of State Civil Service was agreeable and anticipated no difficulty in making the necessary changes.

President Seago then read a letter from Colonel Jack T. Knight, delegate of ASRE, who stated that his board had approved both the amendment to the constitution and the modifications to the Council's operation. He also urged delegates to inform their organizations that the JET program is very much in need of engineers to work with high school students, and to attempt to recruit men from their organizations. Mr. Knight's appeal was followed by Mr. Walter Cooke's explanation of the excellent work being done by the JET sub-committee of the Louisiana Engineering Society's Vocational Guidance program.

The meeting then adjourned and refreshments were enjoyed through the courtesy of the Chairman.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of Annual Meeting of the Society Held on Thursday, January 19, 1956

The meeting was called to order by President Seago in the Caribbean Room of the Bellemont Motor Hotel, Baton Rouge, with approximately 60 members and guests present. Rt. Rev. Msgr. H. P. Lohmann, Pastor, St. Joseph's Catholic Church, gave the invocation. Mr. Opie Shelton, Executive Vice-President, Baton Rouge Chamber of Commerce, welcomed the Louisiana Engineering Society to Baton Rouge.

Mr. E. M. Freeman moved that minutes of the preceding meeting be dispensed with, seconded by Mr. H. L. Landry and carried. President Seago then introduced the presidents of state sections who were present, and announced that the newly elected state section presidents were as follows:

Mr. Tom C. David, President, Alexandria Section
Mr. Franklyn G. Hornsby, President, Baton Rouge Section
Dr. Z. L. Loflin, President, Lafayette Section
Mr. Gordon B. Wooster, President, Lake Charles Section
Mr. Richard A. Smith, President, Monroe Section
Mr. Wendell C. Sorensen, President, Shreveport Section.

The secretary-treasurer presented his annual report, a copy of which is attached to these minutes.

President Seago then gave his annual report, outlining the highlights of his administration.

Dr. W. P. Wallace then introduced resolutions, copies of which are attached to these minutes. Mr. W. S. Nelson moved that the resolutions be accepted and that copies be sent to the addresses. The motion was seconded by Mr. Abraham and carried.

The president then announced that certificates of Life Membership would be forwarded to the following members who had completed thirty years of active membership during 1955: Walter J. Amoss, Edward S. Bres, Mayer Godchaux, Patrick H. Quinlan, Stewart Ticknor.

Dr. Ben T. Bogard, substituting for Mr. W. Stone Leake who was absent because of illness, read the latter's prepared statement presenting to Mr. Clayton L. Nairne a Certificate of Appreciation for his faithful and devoted service to the society.

Dr. Frank W. Macdonald presented to Mr. Frederic N. Billingsley a certificate of Honorary Membership in recognition of the eminent position he has attained as a Civil Engineer of Louisiana.

Mr. John Riess likewise presented to Mr. Ole K. Oleson a Certificate of Honorary Membership in recognition of his continuous enthusiastic support of all endeavors to advance the engineering profession throughout the 50 years of his career as a Civil Engineer.

Dr. Macdonald, Chairman of the Nominating Committee, announced that the officers' election votes had been cast, and requested that the following persons be escorted to the rostrum:

Dr. Francis M. Taylor, Incumbent Board Member
Mr. Wm. J. Drawe, Jr., Incumbent Board Member
Mr. Ben T. Bogard, Newly Elected Board Member
Mr. Chas. E. Cassagne, Jr., Newly Elected Board Member
Mr. John P. Fernandez, Secretary-Treasurer
Mr. Ernest M. Freeman, Second Vice-President
Mr. Waldemar S. Nelson, First Vice-President
Dr. Wayne P. Wallace, President.

He then announced that these gentlemen would constitute the society's administrative body for 1956.

Mr. Seago thanked Dr. Macdonald and requested all to be seated with the exception of Dr. Wallace. The retiring president then handed the gavel to the president-elect, who accepted the office with a few words of appreciation.

Mr. T. J. Innes, Jr., General Chairman of the Annual Meeting, announced the highlights of the meeting and presented Mr. Seago with a token of appreciation for his outstanding leadership of the society during 1955.

Mr. M. C. Abraham inquired whether any effort was being made to create more society interest in the Lake Charles area. President Seago announced that the matter was on the agenda for the conference between board members and state section officers to be held that evening.

Mr. Nelson then moved for adjournment, seconded by Mr. Edwards and carried.

JOHN P. FERNANDEZ, Secretary-Treasurer

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RESOLUTIONS

WHEREAS, the Bellemont Motor Hotel, through its President, Mr. A. C. Lewis, has so graciously placed at the disposal of this Society its services and facilities for the first Annual Meeting of the Louisiana Engineering Society in Baton Rouge,

BE IT RESOLVED, that the Louisiana Engineering Society extend to its hosts sincere thanks and appreciation for these services and courtesies, and

BE IT FURTHER RESOLVED, that this resolution be incorporated in the minutes of the Society and a copy be sent to Mr. Lewis.

. . .

WHEREAS, the Esso Standard Oil Company, in a spirit of fine cooperation, has so kindly invited the members and guests of the Louisiana Engineering Society to inspect its Baton Rouge Refinery during this Annual Meeting, and

WHEREAS, this inspection tour will afford an opportunity both pleasurable and profitable,

BE IT RESOLVED, that the Louisiana Engineering Society extend to the Esso Standard Oil Company its sincere thanks and appreciation for this courtesy and privilege, and

BE IT FURTHER RESOLVED, that this resolution be incorporated in the minutes of this Society and a copy be sent to Mr. Henry J. Voorhies, Vice-President and General Manager, Esso Standard Oil Company, Baton Rouge Refinery.

. . .

WHEREAS, the Ethyl Corporation, in a spirit of fine cooperation, has so kindly invited the members and guests of the Louisiana Engineering Society to inspect its Baton Rouge Plant during this Annual Meeting, and

WHEREAS, this inspection tour will afford an opportunity both pleasurable and profitable,

BE IT RESOLVED, that the Louisiana Engineering Society extend to the Ethyl Corporation its sincere thanks and appreciation for this courtesy and privilege, and

BE IT FURTHER RESOLVED, that this resolution be incorporated in the minutes of this Society and a copy be sent to Mr. C. W. Bond, General Manager, Ethyl Corporation, Baton Rouge Plant.

. . .

WHEREAS, the Gulf States Utilities Company, in a spirit of fine cooperation, has so kindly invited the members and guests of the Louisiana Engineering Society to inspect its Louisiana Station during this Annual Meeting, and

WHEREAS, this inspection tour will afford an opportunity both pleasurable and profitable,

BE IT RESOLVED, that the Louisiana Engineering Society extend to the Gulf States Utilities Company its sincere thanks and appreciation for this courtesy and privilege, and

BE IT FURTHER RESOLVED, that this resolution be incorporated in the minutes of this Society and a copy be sent to Mr. H. C. Leonard, Vice-President and General Manager, Louisiana Operations.

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FINANCIAL REPORT OF THE SECRETARY TREASURER FOR 1955

Income:

Advertising	\$ 959.73	
Annual Meeting	3,010.05	
Annual Outing	1,174.14	
Certificates, Profit from Sale of	10.00	
Dividends and Interest	255.47*	
Dues	8,970.55	\$14,379.94

Expenditures:

Annual Board Dinner	\$ 81.07	
Annual Meeting	2,921.68	
Annual Outing	1,053.25	
Auditor's Fee	140.00	

Dues to Other Organizations:

Chamber of Commerce	\$ 50.00	
Engineers Club, 1955-56	24.00	
Bldg. Code Committee	10.00	84.00

Dues Rebates to State Sections:

Baton Rouge	\$774.25	
Lake Charles	195.25	
Shreveport	263.25	
Monroe	182.75	
Lafayette	169.75	
Alexandria	131.50	1,716.75
Engineers Week, Cost for	125.14	
Floral Offerings	82.40	

Gifts and Trophies:

Retiring President's Gift	60.00	
Golf Trophy Engraving	12.26	72.26

Headquarters, Cost of	59.00
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Miscellaneous:

Bank Charges	\$ 4.63	
President's Travel Expense	3.57	
Secretary's Bond	10.00	
Transferring Headquarters	20.60	
Vocational Guidance	9.81	
Other	23.72	72.33

Monthly Meetings	556.45	
Office Supplies	113.95	
Postage	360.65	
Proceedings, Cost of	2,272.51	
Salaries	3,000.00	
Stationery and Printing	1,144.96	
Taxes	65.00	13,921.40

Operating Income for 1955	\$ 458.54
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Capital Expenditures:

Cost of Office Equipment	687.09
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Net Decrease in Liquid Assets	\$ 228.55
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*Includes \$132.00 increase in cash value of Savings Bonds and \$60.47 increase in homestead pass books.

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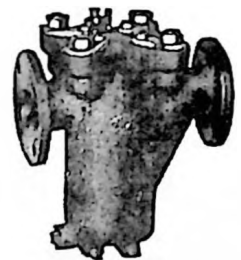


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STATEMENT OF LIQUID ASSETS

December 31, 1955

Cash, Whitney National Bank		\$ 4,384.76
U. S. Savings Bonds:		
May, 1945, Series F	\$ 945.00	
March, 1945, Series F	914.00	
June, 1950, Series F	1,618.00	
March, 1955, Series J	724.00	
April, 1955, Series J	724.00	4,925.00
Homestead Investments:		
Columbia Homestead Ass'n.	\$ 379.18	
Commonwealth Bldg. & Loan Ass'n.	307.12	
Greater N. O. Homestead Ass'n.	1,975.47	
Security Bldg. & Loan Ass'n.	500.00	
Sixth District Bldg. & Loan Ass'n.	500.00	
Union Savings & Loan Ass'n.	500.00	4,161.77
Value of Emblems on Hand		504.09
Total Liquid Assets December 31, 1955		\$13,975.62
Total Liquid Assets January 1, 1955		14,204.17
Decrease in Liquid Assets during the Year		\$ 228.55

1955 MEMBERSHIP REPORT

GAINS:

Elected:			
Members	86		
Affiliates	5		
Juniors	16		
Students	16	123	
Reinstatements:			
Members	1		
Juniors	2	3	
Total Gains			126

LOSSES:

Life Members Deceased		4	
Members:			
Deceased	3		
Resigned	18		
Dropped	21	42	
Affiliates:			
Deceased	1		
Resigned	1		
Dropped	2	4	
Juniors:			
Deceased	1		
Resigned	5		
Dropped	31	37	
Total Losses			87
Net Gains			39

TRANSFERS:

Member to Honorary Member	2
Member to Life Member	4
Junior to Member	71
Junior to Affiliate	1
Student to Junior	7

SUMMARY:

Charter Member	1
Honorary Members	11
Life Members	69
Members	1,145
Affiliates	72
Juniors	306
Students	25
	1,629

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**Minutes of Meeting of the Board of Direction and State Section Officers
Held on Thursday, January 19, 1956**

After a most enjoyable dinner in the Mirror Room of the Bellemont Motor Hotel, Baton Rouge, President Wallace called the meeting to order. Those present were Messrs. Andrews, Bogard, Drawe, Edwards, Freeman, Hornsby, Innes, Loflin, Nelson, Olsen, Poole, Seago, Sorenson, Sutton, Taylor, Wallace and Fernandez.

President Wallace introduced those in attendance and stated that the object of the meeting was to create closer coordination among the sections and if possible to mutually solve any problems that may exist. Minutes of the 1955 meeting were read, as were minutes of a meeting of the Louisiana Council of Engineers held on December 21, 1955. As a member of the State Board of Registration, Dean Bogard was asked the board's reaction to the proposed modifications in the engineering registration law. It was stated that the board's opinion is that these amendments are most desirable. Mr. Edwards stated that the members of the new legislature should be contacted before submitting the amendments. He then moved that the Legislative Committee investigate the attitude of incoming members of the state legislature prior to submitting the amendments. The motion was seconded by Dr. Loflin and carried.

The secretary then read a report of the Publications Committee. After some discussion Mr. Freeman moved that the committee be reappointed and directed to carry out its recommendations. The motion was seconded by Mr. Sorenson. Mr. Nelson offered a modified motion that the committee be commended for its excellent work and be requested to make specific proposals. After some discussion and withdrawal of the two motions above mentioned, a third motion was made by Mr. Freeman that the Publications Committee be commended for its excellent report and be requested to implement its recommendations at a cost to L.E.S. not to exceed \$3,000.00. The motion was seconded by Mr. Loflin and carried.

Mr. Nelson moved that the size of the publication be limited to 8½ x 11" and that the cost of printing the publication outside of the City of New Orleans be investigated. Motion seconded by Mr. Poole and carried.

Mr. Poole inquired whether future state-wide telephone meetings could be handled with microphones rather than telephones. He was informed that the committee in charge of the 1955 telephone meeting was under the impression that microphones would be used, since they had been used the previous year. Mr. Andrews stated that in his area it was very difficult to hear.

Mr. Edwards stated that the ladies should be encouraged to attend the society's meetings, particularly the annual meeting.

Dr. Loflin stated that he was happy to remind the board that the Lafayette Section is on record as willing to be hosts for a future annual meeting.

Mr. Andrews expressed the regrets of Mr. Smith, newly elected President, of the Monroe Section, who could not be present, and announced that the outgoing administration had recommended the abolition of local dues.

Discussion followed on the Lake Charles Section and Dr. Loflin promised to attend a Lake Charles meeting and offer the assistance of the Lafayette Section.

President Wallace appointed a Finance Committee consisting of Messrs. Nelson, Chairman, Seago and Fernandez.

Dr. Loflin moved that the President and the Secretary-Treasurer be authorized to sign checks of the society, seconded by Mr. Sorenson and carried. Dr. Taylor moved that the President or the Secretary-Treasurer be authorized to have access to the society's safety deposit box, seconded by Mr. Nelson and carried.

Mr. Poole moved that the following be reinstated to the grades indicated:

Earl B. Gaines, New Orleans, (Member); George B. McGuire, New Jersey (Member); Dean C. McKee, Baton Rouge (Junior); Richard E. Ruckstuhl, New Orleans (Junior).

Mr. Freeman moved that the following resignations be accepted with regret, seconded by Mr. Edwards and carried:

Chas. A. Bell, Lafayette (Member); John A. Brown, Baton Rouge (Member); A. L. Cooper, New York (Junior); R. L. Davis, New Orleans (Member); Fletcher G. Downs, Baton Rouge (Member); Jesse D. Drake, Mississippi (Member); J. J. Friedler, Jr., Illinois (Member); Fenton Harding, Lafayette (Member); Frederick Kring, Jr., Italy, fr. B. R. (Member); Charles F. Lack, Shreveport (Member); Earle A. Landry, Baton Rouge (Member); Wm. M. Marlin, Florida, fr. L.C. (Junior); Cyril K. Moresi, Lafayette (Member); John D. Murry, Jr., Shreveport (Member); Walton E. Owens, Baton Rouge (Member); Sam A. Phillips, Nebraska (Member); Harry D. Richardson, Baton



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Rouge (Member); Harry Schafer, New Orleans (Affiliate); Herbert E. Butler, Baton Rouge (Member).

Mr. Drawe moved that George A. Price, New Orleans, be dropped at his own request, seconded by Mr. Innes and carried.

The secretary read a citation by the New Orleans Chamber of Commerce, signed by the Mayor and the Governor, honoring R. A. Steinhilber, the society's representative at the Chamber of Commerce.

Discussion followed on Engineers' Week and Mr. Nelson moved that the society underwrite up to \$50.00 for each section for aids in conducting publicity for Engineers' Week. The motion was seconded by Dr. Loflin and carried.

Mr. Seago moved that the society pay the secretary-treasurer's expenses incurred during the annual meeting, seconded by Mr. Freeman and carried.

President Wallace urged all sections to participate in civic affairs, building code committees, Engineers' Week observance and Vocational Guidance programs. Mr. Drawe urged that the work of vocational guidance should not slow up because of the JET program. He was assured that this would not happen. Mr. Poole announced that Baton Rouge had a very active Vocational Guidance Committee during 1955. Mr. Edwards stated that Bolton High School in Alexandria was very much interested in starting a JET program.

After some discussion it was decided to hold the next meeting of the Board of Direction on Wednesday, February 1 at 7:30 p.m. at the Engineers' Club in New Orleans.

Dean Bogard then moved to adjourn, seconded by Mr. Freeman and carried.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of Louisiana Engineering Society, Alexandria Section
October 27, 1955**

Mr. Edwards, presiding, opened the meeting. He commented on remarks of visitors at the previous meeting, on the fine attendance and cooperation of the ladies auxiliary. The minutes of the previous meeting were read. The date of December 7 has been set aside as a joint meeting with the ladies auxiliary who will serve refreshments. This will be a state-wide telephone network hookup. The date of Wednesday, December 14th has been reserved for our annual Christmas party at the Country Club. Mr. Levy made a motion which was seconded and carried that the Christmas party be held on this date at the Country Club as scheduled. The November meeting, regularly scheduled for November 24th was moved up to November 17th due to Thanksgiving. Mr. Charles Dupree of Southern Bell Company will speak. Mr. O. E. Barron, T. C. David, D. V. Cresap, Oren Baker and E. Levy were appointed as a nominating committee to report on November 17th. Mr. Edwards read a letter from Mr. Knost with regard to the JETS program replying to Mr. Taylor at Bolton for information. This was referred to Mr. Cresap. Better representation for central and North Louisiana Sections on the State Board of Registration was discussed. It was moved, seconded and passed that the next meeting on November 17th be made a dinner meeting at Herbie K's. As there was no other business, the meeting was adjourned.

C. W. COOK, Secretary-Treasurer

**Minutes of Meeting of Louisiana Engineering Society, Alexandria Section
December 5, 1955, 7:30 p.m.**

As Mr. Edwards, President, was not able to attend due to business out of town, Mr. Melancon, Vice-President presided. Mr. Melancon opened the meeting with an announcement that ballots would be opened and appointed election tellers to count the ballots. The minutes of the previous meeting were read and adopted. The program for the annual Christmas party was discussed. It was moved and seconded that the committee endeavour to get contributions from the membership as a Christmas gift to Soule Butler and that \$50.00 additional be contributed from the Treasury. This was passed. It was recommended that a committee be appointed to study and make recommendations for changes in the by laws. It was moved and seconded that the executive board make interpretations of the by-laws in cases of questions. This was carried. After a recess for refreshments a report of the tellers was read as follows:

President—Tom David, Secretary and Treasurer—D. D. Sandefur, Vice-President—Eugene Levy.

Mr. Melancon read sketches of principal speakers for the state wide joint telephone conference after which a panel discussion on "The Louisiana Registration Law" was given. The discussion was interesting and was well received. Mr. David and Mr. Sandefur made very brief speeches. Mr. Melancon expressed thanks to the ladies auxiliary for the refreshments. As there was no further business the meeting was adjourned.

C. W. COOK, Secretary-Treasurer

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Minutes of Meeting, Baton Rouge Section, Louisiana Engineering Society

Date: November 6, 1955; Place: Capital Room, Heidelberg Hotel; Officers Present: Wiley D. Poole, president; F. G. Hornsby, first vice-president; Randall Meyer, second vice-president; W. L. Sutton, secretary-treasurer.

The meeting was called to order by President Wiley D. Poole and a report was asked for from the Nominating Committee. Past President T. J. Innes submitted the Nominating Committee's recommendation that F. G. Hornsby be nominated for President, Randall Meyer for 1st Vice-President, W. L. Sutton for 2nd Vice-President, and Tom Alexander for Secretary-Treasurer. A motion was made and carried that nominations be closed. The foregoing persons were elected by unanimous vote.

We joined the telephone net work at 8:30. Participation was made from Baton Rouge by Mr. Calvin T. Watts. The discussion on engineers registration was thoroughly enjoyed by 59 members and guests. After the telephone hookup, cocktails and refreshments were served.

W. L. SUTTON, Secretary-Treasurer

**Minutes of Meeting, Baton Rouge Section, Louisiana Engineering Society
February 23, 1956**

There was a meeting of the Baton Rouge Section of the Louisiana Engineering Society on February 23rd, at the Agricultural Engineering Building at L.S.U. Officers present were: Mr. F. G. Hornsby, Mr. Tod Sutton, Mr. Tom Alexander. There were 46 members present.

There was a general discussion by Mr. Hornsby on Engineers' Week and the role that the Engineer played.

The various Committee Chairmen for the year 1956 were introduced.

It was requested that all Junior Members over 32 years of age make application to change to full members.

A poll of the members was taken to decide whether they would like a joint dinner meeting with the American Society of Heating and Air Conditioning Engineers. It was decided that our membership was not in favor of the dinner meeting.

After the business at hand, Col. W. H. Lewis, District Engineer Corps of Engineers, New Orleans District, gave a very interesting talk on the "Old River Control Project". His talk was complete with illustrated slides. A rising vote of thanks was given to Col. Lewis.

TOM E. ALEXANDER, Secretary-Treasurer

**Minutes of Meeting of the Lafayette Section, Louisiana Engineering Society,
November 22, 1955**

The November meeting of the Lafayette Section of the Louisiana Engineering Society was a dinner meeting and was held Tuesday, November 22, 1955 at Poor Boy's Riverside Inn.

The meeting was called to order by President Loflin with approximately 32 members present.

President Loflin called upon members to introduce their guests.

Plans and arrangements for the forthcoming statewide telephone meeting were discussed and it was announced that the usual dinner and business meeting would precede the statewide telephone meeting.

Motion was made by Mr. J. R. Gaugler, seconded by Mr. Russell, that the student chapter at Southwestern Louisiana Institute be invited to meet jointly with the Lafayette Chapter. This motion was carried, however, no date for this meeting was decided upon.

Mr. J. R. Gaugler introduced the guest speaker for the evening, Mr. Kenneth Roberts, Assistant Chief Engineer for Design, with the firm of Palmer and Baker, Inc., who gave a very interesting talk on the "Construction of the Lake Pontchartrain Causeway."

The usual question and answer period followed the talk.

President Loflin then thanked the speaker on behalf of the section.

There being no further business the meeting adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

**Minutes of Meeting of the Lafayette Section, Louisiana Engineering Society,
December 5, 1955**

The December meeting of the Lafayette Section—Louisiana Engineering Society was a dinner meeting and was held Monday, December 5, 1955 at Poor Boy's Riverside Inn.

The meeting was called to order by President Loflin with approximately 24 members present.

President Loflin called upon members to introduce their guests.

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It was announced that the annual meeting of the Louisiana Engineering Society would be held on January 19, 20, 21, 1956 at the Bellemont Motor Hotel in Baton Rouge. President Loflin urged members to make plans to attend.

President Loflin explained the program for the panel discussion on "The Louisiana Engineering Registration Law" and gave a brief descriptive biography of each speaker.

At 8:30 p.m. the Lafayette Section joined the various state sections via telephone hook-up for the scheduled state-wide conference.

There being no further business the meeting was adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

**Minutes of Meeting of the Lafayette Section, Louisiana Engineering Society,
January 24, 1956**

The January meeting of the Lafayette Section—Louisiana Engineering Society—was a dinner meeting and was held Tuesday, January 24, 1956 at Don's Seafood and Steak House.

The meeting was called to order by President Loflin, who asked the members to introduce their guests.

It was announced that National Engineer's Week would be February 19-25 and the following committee was appointed by the President to handle publicity and other related activities: Mr. Emery Domingue, Chairman; Mr. D. J. O'Rourke, Mr. E. E. Guillot, Mr. T. A. Bonnet.

The President reported on the annual meeting recently held in Baton Rouge and also on the recent meeting of the Board of Direction, particularly with respect to emphasis on the Vocational Guidance program and the JETS program.

President Loflin then turned the meeting over to Mr. J. R. Gaugler, who introduced the guest speaker for the evening, Mr. Sidney I. Daigle. Mr. Daigle of the Uni-Strut Corporation gave a very interesting talk and showed a film illustrating construction methods and varied uses of Uni-Strut.

The President thanked the speaker on behalf of the section and the meeting was adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

**Minutes of Meeting of Monroe Section, Louisiana Engineering Society
December 5, 1955**

The last meeting of the Monroe Section of the Louisiana Engineering Society was held December 5, 1955, in the Virginia Hotel, Monroe, La.

The meeting was called to order at 7:30 p.m. Guests and new members were introduced. A total of forty-five members and guests were present.

Minutes of the September 13, 1955 meeting were read and approved.

A letter from Mr. John J. McDow, Chairman of the Louisiana Agricultural Engineering Society, to Mr. Andrews was read in which it was stated that a member of the Agricultural Society had been assigned to each section of the Louisiana Engineering Society to render any service they could in connection with National Engineers Week. Also since Mr. McDow was in our area he was offering his help in any way that would be of service.

The secretary read a brief financial statement to the effect that as of December 1, 1955, cash on hand and in bank totaled \$271.90, and that a full statement would be prepared at the end of the year after all bills had been taken care of.

The suggestion was made that since the state dues had been raised from \$6.00 to \$10.00 and that the additional refund from the state would be the amount of the present section dues, the collection of section dues be discontinued. This matter was referred to the incoming executive committee which under the Constitution, Article VI has the power to fix the amount of annual dues.

Mr. Sidney Gill made the report for the nominating committee with the following slate of officers: President, R. A. Smith; 1st Vice-President, D. X. Ellett; 2nd Vice-President, M. M. Funderburk; Secretary-Treasurer, A. C. Thigpen.

There being no nominations from the floor motion was made by Mr. Mullins, seconded and carried that these nominations be accepted and the officers be elected by acclamation. The above men were elected to serve for the coming year.

Since the Monroe Section was participating in the annual telephone discussion, the secretary read brief biographical sketches of the following speakers: Dr. Donald Derickson, Dean Ben T. Bogard, Mr. Calvin T. Watts, Dr. Frank W. Macdonald.

After the interesting discussion on "The Louisiana Engineering Registration Law," the meeting was turned over to the new president, Mr. R. A. Smith.

Meeting was adjourned at 9:30 p.m. for refreshments.

C. L. DENSON, Secretary-Treasurer

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Minutes of the Regular Meeting of the Shreveport Section Held Jointly with the American Society of Civil Engineers 20, Sept., 1955

The meeting was called to order by President O. J. Dykes, Jr., at 7:00 in the Dining Room of the Magnolia Hotel. Forty members and guests were present.

President Dykes announced the tentative arrangements of the telephone meeting to be held on the 5 December, 1955 in the Garden Room of the Capt. Shreve Hotel. President Dykes then appointed the following committee to arrange for a Beer Party to be held on the evening of October 13. Val H. Lyons, Jr., Chairman; Charles Foster and W. C. Sorenson.

In the absence of Program Chairman, Robin Hood, W. E. Fitzgerald acted as Program Chairman and introduced Mr. Robert K. Butcher, Advertising Executive with Robert K. Butcher and Associates. Mr. Butcher gave an interesting discussion on the possibilities and benefits of publicizing the roll of the Engineers in our present day Society.

There being no further business, the meeting was adjourned.

WM. E. FITZGERALD, Secretary-Treasurer

Minutes of the Regular Meeting of the Shreveport Section held in the Garden Room of the Capt. Shreve Hotel on 5th December 1955

The meeting was called to order by the President O. J. Dykes, Jr. at 7:30 p.m. following the social hour and dinner. Twenty seven members and guests were present.

President Dykes then called for a report from the nominating committee. Chairman Robin Hood then presented the following report on the committee's recommendations for officers for the year 1956.

W. C. Sorenson, President; Charles Foster, 1st. Vice-President; Lane Mitchell, 2nd Vice-President; John S. Malahy, Jr., Secretary-Treasurer.

President Dykes asked for nominations from the floor and Mr. J. H. Ellis moved that nominations be closed and that the officers recommended by the nominating committee be elected by acclamation. This motion was seconded by Mr. Chris Demopoulos and so moved.

President Dykes acted as Program Chairman for the State-Wide Telephone Meeting. The discussion covered very adequately the history, operation, and proposed changes of the State Law for registration of Professional Engineers and Land Surveyors.

There being no further business, the meeting was adjourned.

WM. E. FITZGERALD, Secretary-Treasurer

Minutes of the 19 January Meeting of the Shreveport Section held in the Hostess Room of the Continental Baking Company

The meeting was called to order by vice-president Foster at 6:55 p.m. Minutes of the last meeting were read and approved. Mr. Foster read the committee assignments for the coming year, which assignments were: Charter and Rules Committee, Mr. Bill Stanke; Entertainment and Program, Mr. Jeff Stewart; Publicity, Mr. Ed Jolley; Membership and Attendance, Mr. James Allen.

The committee chairman noted above were instructed to obtain society members to assist them in completing their duties.

Discussion was held to get the overall views from the members present, of many points to improve the meetings. Some discussion covered the possibility of integrating society meetings with other technical organizations for improvement of meetings and adding field trips to bolster attendance. Further discussion covered the possibility of the society taking the initiative and working toward the engineers council for such coordinated joint efforts to improve attendance. Emphasis was placed on the desires for dinner meetings with social gathering preceding the meeting and a prominent speaker to discuss some pertinent topic following the dinner. Prominent among the ideas for improving the society was the desire for a more frequent meeting to hold the society together. This being based upon the fact that not always can a person attend a meeting, and should he miss a meeting, the time between meetings then becomes six months, which prevents him from being aware of the business of the society.

General discussion of the fish fry was held. The general feeling seemed to be that all members were happy with the fish fry but that at the last one, there was an insufficient amount of food.

Further discussion was held for the possibility of holding a joint meeting with the ladies auxiliary. The possibility of this meeting being a summer dinner dance was discussed, and the general consensus of opinion was that this should be done.

Meeting was adjourned at 7:45 p.m. there being no further business

JOHN S. MALAHY, Secretary-Treasurer

THE PROCEEDINGS ISSUE

OF

THE LOUISIANA ENGINEER

MARCH, 1956

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HISTORY AND ADMINISTRATION OF THE LOUISIANA LICENSING LAW*

by Donald Derickson, president of the Louisiana State Board of
Registration for Professional Engineers and Land Surveyors

Ten years after its formation the Louisiana Engineering Society was successful in securing the passage of Act 308 of 1908, which regulated the practice of Civil Engineering and Land Surveying in Louisiana. This followed by a year Wyoming which was the first State to enact an engineering registration law. It seemed odd that such legislation did not originate in some State of greater industrialization and larger population.

The first Board was composed of five members: the late Ira W. Sylvester of Alexandria, the late Hampton Reynolds and the late Frank W. Waddell of New Orleans, Professor B. W. Pegues of Baton Rouge, now Emeritus Professor of Civil Engineering at our State University, and Colonel Marcel Garsaud of this City, now Engineering Consultant to the Board of Commissioners of the Port of New Orleans. Their names are given as they were pioneers in a movement which is of general application throughout the 48 States, three territories and the District of Columbia, as well as the Provinces of Canada.

* Presented at the Annual Meeting, Louisiana Engineering Society January 21, 1956 in Baton Rouge.

This Board met once a year; it was not charged with seeing that the Act was enforced so its activities were limited to preparing and administering the requirements of registration, investigations, and referring seeming violations to the proper law enforcement agencies. In the beginning, after the registration of those then engaged in practice, known as "Grandfathers", as required by law (in conformity with the 14th amendment of the Constitution), the registration was by written examination except for those applicants possessing the advanced degree of Civil Engineer from L.S.U. or Tulane.

The Act was amended three times, in 1914, 1920 and 1946. In 1920 it was liberalized to the extent of granting registration to applicants who were graduates of a college engineering curriculum approved by the Board. As this was before the days of the E.C.P.D. list the Board set up its own criteria to which it adhered much to the displeasure of some well known State and private colleges, but, who later conformed to the requirements.

Engineering registration in its early days was not greeted with enthusiasm. In discussing the subject in 1921 at a meeting in Washington of the American Engineering Council I was impressed with the dim view taken by some of our National Engineering Societies who later supported the movement.

In 1920 Member Garsaud went to Chicago and assisted in the formation of the National Council of State Boards of Engineering Examiners of which he became the first president. Colonel Garsaud rendered distinguished service as a Board Member until his resignation to become Manager of the Port of New Orleans.

In 1932 the Engineers' Council for Professional Development was formed and later commenced the inspection for accrediting of engineering curricula. It is said to be the greatest research into engineering education ever undertaken. Its list of accredited curricula is accepted as a standard by the State Boards of Registration.

In 1941 the Louisiana State Board of Engineering Examiners was incorporated into the State Department of Occupational Standards and moved to the Capitol in Baton Rouge. It was well treated there and enjoyed certain facilities not then otherwise available. However, the Professional Engineers disliked the idea of its Board of Examiners being grouped with the trades and crafts. So after a stay of 19 months it was returned to New Orleans where through the kindness of President Harris, Dean Robert and Dean Johnson of Tulane it has had, rent free, office space and enjoys the facilities of the University.

As vacancies occurred they were filled; among those who have served were the late B. H. Grehan, the late Frank Muth, the late John Klorer, also J. T. Bullen, Frederick N. Billingsley, Frederick F. Pillet, and John J. Munding.

In 1950 with the new law in effect the State Board of Engineering Examiners turned over its affairs along with 1130 Registered Civil Engineers and 146 Registered Land Surveyors to the new Board and thus was terminated.

After several attempts our Society, during the administration of President Cucullu, was successful in securing the passage of Act 73 of 1950 which created the State Board for the Registration of Professional Engineers and Land Surveyors; it became law on June 30, 1950. It was the result of the sustained and well directed effort of the Louisiana Council of Engineers. Note that the title includes the adjective *Professional*; after interviewing many applicants for registration I am of the opinion that the meaning of the word is none too well understood, accordingly, I quote the definition of the Supreme Court—

“A vocation involving relations to the affairs of others of such a nature as to require for its proper conduct an equipment of learning or skill, or both, and to warrant the community in making restrictions as to its exercise.”

Might we not advantageously include a Code of Ethics?

The new law differs from the former law in many respects, among the more important are included the following: It embraces eight divisions of engineering—Agricultural, Chemical, Civil, Electrical, Mechanical, Metallurgical, Mining, and Petroleum Engineering. Provision is made for registration without examination, on the basis of long experience. Persons employed in duties requiring the practice of Civil Engineering by the State of Louisiana or any of its political subdivisions at the time the Act became effective were also permitted, for a period of one year, to apply for registration as Public Employees. Registration was granted to 419 persons in this classification. The Board is charged with seeing that the Act is enforced. The Board is composed of seven members. Presently, six, Dean Ben T. Bogard, Dr. Jesse Coates, Mr. A. D. Jackson, Mr. E. E. Taylor, Mr. L. M. Odom and Dr. F. W. zur Burg come from various sections of the State and I, the New Orleans member, count myself fortunate to be associated with these gentlemen, all experience engineers.

Civil Engineers and Land Surveyors previously registered were automatically given new registration. The sifting and screening of the large number of applications filed required most careful con-

sideration involving time and effort. From the date of its first meeting on November 7th, 1950 to that of the most recent on November 9th of this year the Board has registered in all classifications 4953 as Professional Engineers of which 25 are Agricultural Engineers, 293 are Chemical Engineers, 1,524 are Civil Engineers, 692 are Electrical Engineers, 1,063 are Mechanical Engineers, 5 are Metallurgical Engineers, 14 are Mining Engineers, 240 are Petroleum Engineers and 193 as Land Surveyors, the number of individuals registered being 3,326.

The Board has been diligent in the matter of violations; in the five year period previously mentioned 395 case have been investigated, of these 311 have been settled to the satisfaction of the Board, 84 are pending and two cases are in the hands of the District Attorney. The Board is assisted by its able legal advisor, Mr. Wood Brown, and in addition retains local legal services as required.

The fields of professional activity overlap. Possibly, it is in this respect that those who advocate registration as a Professional Engineer without limitation as to the divisions have a strong argument.

The legislature is not interested in the more abundant life for the Professional Engineer but it is much interested in the safety of the public. Such enforcement of the registration law as the Board has effected has increased the respect for engineering registration and has added to the public safety. As a by-product the professional standing of the Engineer is enhanced—Gasoline was once a by-product of the manufacture of Kerosene.

ENGINEERING BRIEFS

Latest in Power and Light Wiring. The electrical facilities installed in New York City's new Coliseum, which opened last month, feature a combination of the latest technological developments in power, light and signal wiring.

It is one of the first commercial buildings in New York to feature 460/265-volt service, distribution and utilization equipment, including major lighting facilities. Fluorescent rapid-start lighting operating on 265-volt ballasts is used generally with supplemental incandescent spot lighting of special areas.

One of the unique features of the electrical planning is the fact that facilities for power, light and signal wiring are built directly into the building columns, within convenient reach of all exhibitors. Multiple-outlet assemblies are available from the building management for plugging into these receptacles should additional outlets be required. Panels containing sound, television, and telephone circuits are also built into the columns. A small access door in the side of each column permits antenna connection to TV receivers, telephone extensions, or to television cameras for closed-circuit telecasting. Outlets to accommodate microphones are included at the base of columns containing the signal panels. *Electrical Construction and Maintenance.*

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Frustrating Barnacles. A new idea to discourage barnacles from settling on ships' hulls has recently been tried out successfully. Ultrasonic vibrations, induced through a transducer into the ship's plates, have been found to make the hull an uncomfortable place for barnacles to settle. Nickel plates used in the transducer are primarily responsible for creating ultrasonic vibrations due to the fact that nickel changes in dimensions when magnetized and reverts to its original size when demagnetized. When this is done at high frequency, vibrations are produced from the nickel plates. These vibrations do not affect passengers, crew or sensitive instrument aboard the ship, nor are they injurious to the barnacles. *White Metal News Letter.*

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Built-in Booby Traps. Built-in booby traps for plant-devouring insects are capturing the attention of cotton growers and pesticide makers. A new insecticide can be applied to the cotton seed before planting to reproduce a plant that will kill early season insects. The systemic insecticide thus gets into the growing plant and is carried in the sap stream in sufficient quantities to kill feeding insects. *Chemical Week.*

Music to Ride By. Passengers of an Arkansas bus line will have the chance to listen to recorded music as they roll across the country side. The new \$100,000 music system consists of a tape recorder unit which plays eight hours of continuous music without repeating, and carries enough music for 400 miles. However, if a passenger is in a non-musical mood he doesn't have to listen, since the music is piped into individual speakers which can be turned off or on as desired. *Bus Transportation.*

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Check On 'Accident Prones'. Highway officials in Alberta, Canada, have advanced a plan for keeping a record on all truck and passenger car drivers who are habitually involved in road mishaps. An individual file system will be set up on all drivers using Alberta highways so that a constant check will be in progress as to what individuals continually have accidents. The plan was formulated after surveys showed that 90 per cent of all accidents in the area were caused by only ten-to-15 per cent of all drivers. Ninety per cent of these accidents happened to cars in good condition on dry, well-built roads.—*Fleet Owner.*

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Nylon Propeller. A nylon boat propeller is a recent development in Denmark. The experimental engine screw is reversible, has three blades with rounded fore-edges and has been found to be lighter and stronger than metal screws. In tests, heavy logs and boxes struck the blades in water with no ill effects, and only minor dents resulted when a boat was sent at full speed against a stony beach. A set of blades will be sent to Greenland to be tested on a tugboat to determine the reaction when used in ice.—*Product Engineering.*

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Prefab Service Stations. Prefabricated service stations are popping up in increasing numbers. It's expected that at least 700 will be put up in 1956. They cost around \$12,000 and can be assembled in about 14 days, thus giving them a head start on sales at a new outlet.—*Petroleum Week.*

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Ministry For Automation. Russia has set up a new ministry—this time for automation—to work closely with the Ministry of Machine Building in designing new machinery to speed mechanization of production processes. Large-scale automation, the Russians say, will increase productivity and contribute to easier working conditions.—*American Machinist.*

Natural Deep Freeze. Rear Admiral Richard E. Byrd proposes that surplus foods be stored in nature's great Antarctic deep freezer. The trouble is, even frozen foods are perishable in time but then they may as well deteriorate under free refrigeration.—*Food Engineering*.

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Portable Car Radios. Soon to appear are transistorized car radios working on their own batteries which can be readily removed from instrument panels or glove compartments for use as portables.—*Electronics*.

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Truckers Beware. An infra-red "cateye" by which spotters 30 feet off the highway can identify truck license plates is now operating on the Pennsylvania Turnpike as a means of curbing truckers who violate the speed limit. Instrumentation is adapted from navy signal equipment. The "trap" in this case is a form of self-policing because it is operated by the state's motor truck association.—*Engineering News-Record*.

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Airbased Office. Finding that most of its business visitors travel by plane and taxi, and that they spend more time taxiing from the airport than in the business conferences themselves, a Kansas chemical company has moved its headquarters out to the city's airport.—*Chemical Week*.

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Hot Contest For Cold Combustion. The race to get electric power via "cold combustion"—without intermediate boilers, turbines or generators—is as hot a contest as the competition in the nuclear energy field. Newest developments center in West Germany where there are now workable models of a cell that combines hydrogen and oxygen to produce electricity directly. Researchers in England, the Soviet Union, Belgium, Switzerland and the United States are known to be working on similar projects. Enthusiasts claim "cold combustion" is safer and will prove cheaper than nuclear fission as an energy source.—*Chemical Engineering*.

Dam Built By Hand. A total of 20,000 Indian construction workers placed enough masonry, by hand, to make a dam 160 feet high and 6,000 feet long. They worked two eight-hour shifts a day for the past five years with 1,200,000 cubic yards of masonry to complete Tungabhadra Dam, joint project of two Southern Indian states.—*Engineering News-Record*.

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Salty Sand. Sand from the ocean can carry enough salt into a concrete mix to rust steel reinforcements.—*Electrical World*.

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Ghost Motor. A motor that doesn't run has been developed by one company to solve costly problems in testing switches and relays. The "ghost" motor can't wear out because it has no moving parts. Real motors—some costing \$200 each—were used formerly and wore out faster than the equipment being tested.—*American Machinist*.

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Food From Coal. All man's essential food requirements might someday be produced from coal and petroleum. A top organic chemist estimates one million pounds of a synthetic protein—as nutritious as lean meat, milk and eggs—could be produced each month from fossil fuels at a cost of less than four dollars a pound. For the average family this adds up to 40 cents a day for proteins.—*Coal Age*.

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Plastic Telephone Poles. Plastic telephone poles, to come into use in 1956, may someday be commonplace. Made of glass-reinforced resin, the laminated, hollow pole weighs only about 125 pounds and promises many advantages to offset a relatively high initial cost.—*Chemical Week*.

* * *

Strengthens Lead. The addition of a small percentage of the element tellurium to lead doubles its strength and increases its resistance to vibration, heat and corrosion.—*White Metal News Letter*.

Sunspot Bonanza. Sunspots, which improve the ability of the upper ionosphere to reflect signals, are due to reach their 11-year peak next winter. Already they are disrupting communications for certain industrial two-way radio users, who get far away stations instead, and are jamming some police radios for hours at a time. Communications operators are being urged to move out of the 25-to-50 megacycle region into the higher bands. Since it is impracticable to convert 50 megacycle equipment to 150 mc or higher, nature's freakishness may prove a business bonanza for new equipment, the magazine declares.—*Electronics Magazine*.

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Cheaper By The Kilowatt. Residential customers will pay less per kilowatt hour—an estimated average of 2.60 cents this year compared with 2.64 cents in 1955. The decrease reflects an estimated increase of 250 kwhr per residential customer over last year. This would bring average yearly use per customer up from 2,755 last year to 2,995 kwhr this year.—*Electrical World*.

AN ENGINEER LOOKS AHEAD AT AGRICULTURE*

By Dale Roeder, Chief Engineer, Tractor and Implement Division,
Ford Motor Company

To ask an engineer who is used to dealing with cold hard realities to lay aside his slide rule and pick up a crystal ball is at best a risky business. I must admit that what I have to offer is only in part my own ideas. Back in Birmingham, Michigan, our Division has a large staff of real experts at long-range forecasting. They give men an easy "out". If in twenty years, someone asks me: "Didn't you predict such and such . . ." I may wink and say that that particular information was supplied by our accredited crystal-ball gazers. I'm maintaining my amateur standing.

It doesn't take a big-league prophet, though, to predict that most of the changes which will take place in engineering for agriculture in the next two decades will be based on principles with which we are now relatively familiar. This prediction runs counter to some of the science-fiction type material I occasionally see. For example, one of the companies for which I have profound respect is carrying on an advertising campaign depicting an artist's conception of vehicles, appliances, and even farm tractors and implements for some indeterminate time in the effort-less, easy-living future. This artist sees the man we now call a farmer donning his space helmet, taking his position in his astro-dome equipped soil-conditioning machine and roaring off with rocket tubes ablaze for an air-conditioned day in the bean field.

Too many changes come along in the farm equipment industry to disparage the possibilities of atomic or solar powered equipment, rooting up the soil by means of ultra-sonic shock waves. I have learned, sometimes the hard way, that it is not wise to say "That's impossible." Some smart competitor may make a liar out of me tomorrow. I do think, however, that you want me to take as realistic and level-headed approach as I can to this giddy subject of engineering for agriculture in 1976.

And as a starting point I would like to say that the consensus among people who make a business of watching the development of trends in our field is that as much progress in agricultural engineering and equipment can be expected in the next twenty years as has occurred in the past forty years. Consider for a minute what this means. By 1976, the agricultural methods of today will probably look as antiquated as the methods of 1916 look to us right now. At that time there were rudimentary tractors in limited use

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and crude forms of several major soil preparation, planting and harvesting machines were being employed. But men, almost for the first time, were thinking about the application of power to jobs which were being done entirely by hand or with mule or horse assistance. Forty years ago, what has been called the birthday of power farming was still a couple of years in the future. And even when it arrived, each farm worker was able only to provide food enough for himself and nine other persons. A more impressive comparison of the effect of the changes in agricultural equipment and methods which occurred between World War I and World War II is contained in the estimate that nine billion more man-hours and the efforts of four and one-half million more farm workers would have had to be expended to produce with 1917 methods the crops actually produced in 1944.

Statistics may help show what has happened in agriculture, but they do not give a very clear picture of how it has happened. To understand what has happened and what has been learned in the process, some look backwards at important developments in the farm equipment industry must, of necessity, be a part of this look ahead. I have chosen to take you back only twenty years to show you the kind of progress which has taken place. If new developments come along at twice the past rate, as some predict, then equivalent progress can be expected in the next ten year not twenty. As this nation came out of the economic depression of the early 30's, farmers seized on the opportunity to replace many types of obsolete and uneconomical farm equipment which had been in general use. Road-ruining steel-wheeled tractors were superseded by roadable units which had low-pressure, ground-gripping rubber tires. Field operations could be done more speedily with these units, and at a considerable saving of fuel. Drawn implements controlled by remote hydraulic means were introduced, and were a boon to farmers, who wanted convenient and easy-to-operate equipment. A line of farm tractors equipped with a hydraulic lift and depth control system came on the market. This particular development is one on which I could dwell for a long time, but I think it will probably suffice merely say that this development is so important that now—more than 15 years after its introduction—some tractor makers are adopting it and calling it a revolutionary advance in farm equipment engineering. This development made possible the direct mounting of many agricultural tools for a marked increase in efficiency, maneuverability, saving of labor, and convenience for the operator.

The live power take-off which increased the performance of power take-off operated combines, corn pickers and other implements made its appearance about ten years ago. High compression

engines taking advantage of improved leaded gasolines became available as did liquified petroleum gas operated tractors, to bring further economy to the farmers of this country. The Diesel, too, came into its own as a friend to the farmer's pocketbook. In this period, a power unit, designed to permit the mounting on it of a variety of major implements, came into being. With the hydraulically controlled three-point hitch already on the agricultural scene, another approach to the same goal of making the tractor something more than a mechanical mule was inevitable.

While these developments in motive power were under way, new and improved tillage implements and practices were also aborning. Seed beds could be prepared better and faster. Improved planting and cultivating tools gave more accurate seed and fertilizer placement and better weed control. Better timing of these important operations was also made possible.

Important as these improvements were, it is after the crop is grown and ready for harvest that we see the greatest mechanical advances of implements, and the commercial introduction of some entirely new machines and concepts. The low-cost, small, rubber-tired power take off combine was introduced about 1935. Up to that time combines were expensive and cumbersome machines and were largely limited in their operation and market to the large wheat acreages of the Pacific Northwest and the high plains states. With the availability of a low-priced unit suitable to individual ownership and made to order for the family-size farm, harvesting by combine methods spread rapidly into every state. Such machines were adapted to a wide variety of crops—grass and legume seeds, beans and grain sorghums, to name a few. Here in Louisiana where you have these and oats and rice, you know, at least by observation, the usefulness of the small combine. These machines made available seeds in quantity at economical prices without which soil conservation would not have reached its present importance to agriculture, and the economies of combining also made soybean and sorghum the major crops they are today.

The modern self-propelled combine, a far cry from its creaky ancestor, came into wide usage during World War II and helped substantially in the liberation of an army of manpower from the farms of this country. The tractor-mounted corn picker is another newcomer to the farm scene. We may miss the rhythmic thump, thump, thump of corn hitting the backboard of a wagon as a champion hand-picker threads his way down the rows but we dare say that there are far fewer tired and sore arms and backs on the farms of this nation than there were two decades ago. Self-propelled corn pickers came into the field about ten years ago.

Harvesting of forage crops got an earlier start, speaking in terms of mechanization, than many of the other implements. With the introduction of the pick-up baler in the early 30's, the self-tying pick-up baler in about 1940, and the development of field bale loaders, much hand labor in connection with these crops was eliminated. The forage harvester introduced in 1936 made it possible to chop either cured hay for the mow or green hay for grass silage direct from the windrow in the field. Coupled with tractor-pulled wagons and silo blowers, handling of this crop was mechanized to a high degree. Concurrent with these developments to remove the hard work and the back-break from haying were the introduction of the power take-off driven side delivery rake and the tractor mounted rake. After many years of experimentation and research, the mechanical picking of cotton has progressed to a point where it has considerable commercial acceptance today.

Successful potato harvesters were developed during this period as well as sugar beet harvesters and sugar cane harvesters. Many other interesting and ingenious machines have also appeared for harvesting such specialty crops as peanuts, lettuce, onions, carrots, walnuts, and others. The most unique to come to my attention in recent weeks was what might be called a mouse harvester. This device, let me explain, digs a furrow through the orchard and carries a worker who places traps at suitable intervals. Yes, mechanization of the harvest has seen many changes in 20 years.

In the realm of mechanization on the farm I would be remiss if I did not at least mention the development of more effective insecticides, herbicides, and fertilizers and the variety of machines which have developed for their application.

Irrigation equipment, likewise, has made great strides with the availability of pumps, sprinkler systems, and the tractor-powered bulldozers, ditches, land levelers and other implements. Without this equipment efficient irrigating systems could not be established or function for long.

Electrification of the farm is another area of which much could be said when charting the progress toward mechanization. It is mentioned merely to recall some of the major developments which 20 years have seen.

A few minutes ago I pointed out that the changes which we anticipate in engineering for agriculture will take place within the framework of basic engineering principles with which we now are relatively familiar. This, of course, does not rule out new concepts with respect to the way farmers prepare their soil, plant and harvest their crops, nor does it preclude new equipment with which they will do these jobs. Quite the contrary. The principles

with which we have made so much progress in the past 20 years are a building foundation upon which future developments can be piled easily and securely.

Of more importance from an engineering standpoint than any of the separate agricultural developments of the last two decades, and probably of greater significance than all of them lumped together, is the rise of the scientific approach to the entire field of implement design. Just as the automotive, aircraft and other industries went through their periods of "cut-and-try" and "by-guess-and-by-gosh" engineering, so the agricultural industry has, only very recently, emerged from the state of designing the farmers' tools on the basis primarily of expediciencies. The point has not been reached where complete units can be designed successfully on the basis of entirely theoretical considerations, but more and more work is being done with this aim in mind. Lest you think I am starting to indulge in the "science-fiction" area that I said I would avoid, it may be pertinent to remind you that the atomic bomb was developed almost entirely as a theory, and that this theoretical approach will undoubtedly be used to solve many practical engineering problems in the next 20 years.

At our disposal now are many tools which materially speed up engineering development work. In its infancy now is the use of computers for determining the best possible combination of many variables to give a desired result. Problems which can't possibly be given serious consideration because of the man-hours required by conventional means can be fed into computers and their solutions read off in a matter of minutes or hours. We also are beginning to use to advantage a product of the Atomic Age—radioactive isotopes. With them we can trace movement of fluids and materials in inaccessible locations and measure wear in very small amounts, to name two applications. Whole new avenues of approach to investigation in areas where we previously could only guess are being opened with this research tool. We have had considerably more experience with the technique of accelerated testing of materials and prototypes to give us predictable durability and enable us to select materials which will best fit a particular requirement. Without going into detail on the types of equipment available for this kind of engineering work, I can say that these techniques enable us to spot areas in which improvements are desirable and then to make changes with a high degree of probability as to the benefits of the changes. Many of our new implements have one or more components which were selected on this basis; and our experience indicates that not only is much guesswork removed but engineering and testing time can be reduced materially.

Another of the tools available to us which simply did not exist when many of the important agricultural advances of the past twenty years were made are the precision recording instruments which enable us to know exactly what situations we are confronted with and the magnitude of these situations. I would like briefly to describe to you one program in developing a new implement where some of these new techniques came into play. This explanation, I hope, will show how engineering progress at an accelerating rate can be anticipated. The implement I have chosen is a rotating side delivery hay rake. We began this program by building a prototype which was deliberately on the light side as far as strength requirements were concerned. Our approach was to determine, through various means of strength analysis, not only the kinds of strains to which the components of this implement would be subjected, but also the magnitude of these strains. This is a different type of approach from the old one of making an implement, putting it out to work in the field for a while and then "beefing up" the parts which failed under operating conditions. Strength analysis, as we conduct it, requires three kinds of tests: stress-coating with a brittle lacquer to determine areas of high concentrations of stress; use of extremely sensitive strain gages to measure the intensity of the stress where the stress-coat has shown they appear; and finally tests to evaluate the properties of the structural materials themselves. These tests are conducted under controlled laboratory conditions, but this does not mean they are limited to an indoor environment, which would certainly be a disadvantage in the case of farm equipment development. But to get back to the side delivery hay rake—One of the first tests was to drop the stress-coated prototype to the floor from various heights. Stresses at holes, welds and other critical points showed up as cracks in the brittle lacquer. Another series of tests required dropping the rake until its tines deflected. Next the rake was pulled at relatively high speed with the tines scraping the ground; then it was pulled over obstacles to simulate clods and rocks and put stress on the entire implement. Having determined from the pattern of the cracks in the stress coating where the critical areas were, we then attached strain gages to those areas to give a precise measurement of the loads to which the implement and its components had been subjected. One of the valuable tools we use in connection with these strain-gage tests is a traveling laboratory which accompanies the implement outdoors and houses the recording equipment. With this equipment, we can simultaneously capture the momentary loading stresses from 18 locations on the implement.

Our next step was to translate the actual measured stresses into material specifications for the components of the production implement. As I told you earlier, our prototype was deliberately designed understrength, but when our test results were worked into the design of the new implement, the far-stronger unit was actually 80 pounds lighter than the prototype, proof in itself that "beef" can be added successfully without adding to the mass of the implement, a statement that engineers in the farm equipment industry are more and more coming to accept. The net result of this type of program is a savings in time for new product development, an easier choice of materials, a reduction in service failures, and most important, a better product. Although many ways have been found to simulate field conditions, and thereby accelerate our testing, the final functional value of a product can only be determined in the field under actual operating conditions. We are now able, however, to put our prototypes out into the field with many of the structural problems already solved. Consequently during the limited time available for field testing, we can concentrate on the functional aspects which can only be investigated with real crops or real soil. These new techniques—and equally successful ones are being developed with increasing regularity in all fields of engineering—will inevitably result in better products.

Most of the trends in agriculture are not new, and in fact have been increasingly perceptible in the past 20 years. The engineering developments have accelerated some of the trends, and conversely some of the trends have affected the engineering work required by the agricultural industry and will continue to do so in the future. By 1976, according to the best estimates, there will have been an increase in the United States population to over 212 million persons, a 29 percent increase. Farm population will decline to about 15.6 million persons, a decrease of 29 percent. This means, obviously, if we are to continue to be well fed, that the productivity per farm worker will have to go up substantially.

Farms will grow in size and decline in number.

Farm labor rates will go up.

Mechanization of all phases of farming activity will be intensified to conserve time and labor.

With larger farms and greater capital investment, farming will become more specialized, more scientific, and more businesslike.

Farmers will be better educated and more receptive to changes, both in methods and equipment.

Farming will continue as a family enterprise.

Against the backdrop of these trends, research by agricultural scientists is being focused on many areas, and from the fields under intensive investigation it may be possible to make a few shrewd inferences as to the effects these will have on engineering. This following listing is at best scanty and of a scatter-shot nature, but it may serve to provoke your imagination:

Soil and water management.

Control of plant and animal diseases.

Changes in human nutrition—with emphasis on special dietary needs for older people.

New synthetic fibers from farm products.

Prolonged storage life of perishable foods.

Mechanization of livestock farming.

Relative to some other areas in our economy, less funds are being plowed back into research in agriculture, but there is a growing awareness that research money must be spent on an increasing scale to solve some of the agricultural problems which will loom in the foreseeable future.

A tremendous amount of money currently is being spent on research facilities and programs by the part of the agricultural industry which I represent, and it is reasonable to suppose that as the benefits of these investments become better appreciated the tempo will pick up throughout all the industries connected with agriculture.

Now I would like to tell you what kind of changes we believe can be looked for in farm machinery and corollary equipment. These developments should increase the productivity of the farmer and place him on a more equitable level with his urban cousin with respect to working conditions and hours of employment. It would be folly at this point to attempt to be specific about the appearance of the equipment. The farmer's preconceived notions of how an implement should look to do a job properly do not go very deep so it is possible to imagine that our implements of 20 years hence will bear little physical resemblance to their ancestors of today. New structural materials will be used in the farm equipment field, just as they will in other industries which make up our economy. We don't have the high temperature problems which now plague gas turbine engine researchers, and we don't need the extreme lightness which airframe engineers must strive for, but we do have our own materials problems, dealing as we often do with highly corrosive substances, with exposure under adverse weather con-

ditions, with maintenance at the hands of the original do-it-yourselfers. And I am sure that many changes in materials can be safely predicted to give the farmer more durable, more efficient and more convenient tools for his trade.

Immediately ahead, I see an increased emphasis on operator comfort, convenience and safety of farm equipment. With power steering, radios for tractors and makeshift cab enclosures already in evidence, refinements are certain to come. It is not illogical to envision cabs with summer and winter air-conditioning, two-way radios to link the farmer with the farmstead and telephone service from the tractor. Greatly improved seating will reduce fatigue. Controls on both tractors and implements will be simplified and made more automatic and improved design and materials will enable to produce mechanisms which will require adjustment less frequently.

More power in the hands of every farm worker will be one of the main factors in allowing fewer farmers to produce more food. Farm power of all kinds will see great increases in the next 20 years. Farm tractors will increase in power ratings, although not necessarily in physical size. Use of electrical power will increase and will undoubtedly operate many of the materials handling devices which will come in for heavy emphasis in the vicinity of the farmstead. Some limited use of solar and/or atomic power sources may appear on farms by 1976; experimental work in these directions undoubtedly will have taken place.

The next twenty years is expected to see an increasing trend toward reducing the time requirement of farm jobs by combining two or more jobs into one operation. The crude beginnings of this trend can be seen in the practice of pulling a harrow and grain drill behind the plow, or the practice of spraying pre-emergence weed control chemicals during the corn-planting operation, or the application of fertilizer as a side dressing during the cultivating operation.

The ultimate in combined operation will be a machine which will go over the field only once during the year, harvesting the crop, preparing the seedbed, distributing the fertilizer, and planting the seed for next year's crop. Improbable as such a device may seem at the present time, some advanced research work now under way leads me to believe that this is a possibility in the period under discussion. Any equipment designed to do several operations with one trip over the field will challenge the ingenuity of the engineers. Not the least of the problems there, will be that of soil compaction, so possibly some of the lighter materials will see their first use in the evolutionary approaches to this machine.

The trend toward higher capacity machines will continue. Faster operation will be an essential on the larger farms which are predicted. For many of his operations the farmer will always be dependent upon favorable weather—unless that too comes under control—but being able to cover more acres on a sunny day will help him reduce the weather gamble. Mechanical irrigation equipment will find far greater use during this period, and probably will be employed even in humid areas to even out the rainfall.

Much has been said and written on the expanding use of chemicals, and certainly agriculture will continue to be a growing market for them and will spur the development of many new ones. You can count on greatly increased use of chemical fertilizer, weed control chemicals and defoliants. And you can expect to see new chemicals for accelerating plant growth, inducing fruiting and otherwise increasing yield. Application equipment, of course, will have many innovations in this period ahead.

As has happened with startling rapidity in manufacturing industries in recent years, the field of mechanized handling of farm materials will undergo significant advances. Improved conveyors, elevators, forklift attachments, and specialized materials handling power units will certainly be in evidence at progressing farm enterprises. Automation will probably arrive on the farm in large measure in this area. In the field of tillage equipment two principles stand out which may affect engineering. First, the principle of minimum tillage. By working the soil as little as possible, costs, time and labor can be reduced. Second is the possibility of the application of power directly to the soil rather than through traction. One means by which this may be done is rotation of the soil-engaging parts of the implement, and there are undoubtedly others which will be explored. Even if principles do not change, as tractors become more powerful, a redesign of tillage implements will be necessary to maintain proper performance under the conditions of higher speed.

In equipment for delivering and applying fertilizer, some new concepts are likely. Under the concept of fertilizing the soil rather than the crop, it is believed that a reserve supply of fertility can be built up and will result in greater productivity for a particular farm over a period of years. Precision placement of fertilizer to stimulate rapid crop growth and discourage weed growth is fast coming, and better equipment to do this and other fertilizing jobs with liquid and dry chemicals will certainly appear. Planting equipment will incorporate improved fertilizer applicators and will operate at higher speeds. There is the possibility that planting will be in narrow strips of well-prepared soil, with rough strips left

between the rows, for a reduction in planting time. Sod seeding equipment, now used with some success in the South for lush winter pasture, will find increasing use and may be used in the North for pasture renovation in conjunction with chemical controls.

The importance of cultivating equipment will probably decrease as chemical weed control becomes established. Where power cultivation is needed, accurate means of controlling the cultivator right up to and even through the row will undoubtedly appear. Here electronic eyes or other sensing devices may take over to reduce the need for precise operation by the farmer. For "blocking" or thinning cotton plans, such mechanisms may find ready acceptance in this region.

Developments in harvesting equipment will stress reduction of labor and will aim at speedier operation. The forage harvester, for one, will be a much improved machine and will be widely accepted because of its multi-purpose application. Equipment to handle and feed chopped hay and silage will be developed, and it is possible that hay pelletizing, by field machine, may be used in place of balers on large farms.

Processing of farm crops will take to the field and will become a part of the harvesting operations. The field picker-sheller is a present-day forerunner of that trend. Certain conditioning operations such as drying or cleaning may be incorporated into harvesting equipment. Automatic feed metering and grinding equipment can be expected to improve and become part of the automated farmstead.

Airplanes and their successors will find increasing application to agricultural uses. Lower prices of helicopters will gain for these versatile machines some farm chores now handled by ground equipment.

To the engineer, the prospect of designing and testing the equipment of the future is a stimulating challenge—made more so because you can never just sit down and plot out that in "x" years you are going to come up with the new piece of equipment to do a given job. As all of you know, one thing leads to another in our profession and the work is one which seems to have no beginning and no end. Engineers in 1976 can be just as sure of this as we are today—that's one prediction I'll stand solidly behind.

Enlightened management, too, is seeing to it that more emphasis goes into the basic research for which no one at this time can hope to predict the results and benefits.

In the area of applied research, it is axiomatic that the work we do today will not show up until some future date, so our preparations at any time must be geared to what we think the future will be like.

You may be interested, therefore, in the kind of facilities we have to work with, and knowing a little something about our philosophy with respect to these facilities. In the middle of last year we, in the Tractor and Implement Division of Ford Motor Company, opened a Farm Machinery Research and Engineering Center at Birmingham, Michigan. Later last year we opened an adjacent four-acre outdoor Evaluation Center. In the Research Center, under one roof and in 112,000 square feet of floor space, we have a project which in my opinion is unique in our industry. In it we have coordinated the work of all types of farm machinery engineers and have given them the finest facilities and equipment with which to work. Our equipment and techniques have been drawn heavily from other industries to include what we believe are the best contributions of the entire engineering profession. We think that tractor engineers should not be removed by distance from the harvesting equipment engineers and the engineers who design the ground engaging implements. Because we think of our equipment in terms of a unit to do a particular job, we believe we can carry this philosophy into practice best by keeping our engineering staff together. Our research engineers, as differentiated from our product engineers, are also in the same location and their tests can be independently run but their findings very quickly relayed to the product men. Consultation between the different groups is easily arranged. We have at present nearly 500 engineers and technicians at work in this Center, and are adding qualified men as rapidly as we can. While some of the techniques we are using are designed to reduce and systematize our engineering man-power effort, it appears to us because of the rapidity of change which we expect in agricultural equipment that our engineering load will increase at an extremely rapid rate.

REPORTS FROM MONROE, ALEXANDRIA AND LAFAYETTE SECTIONS FOR 1955

MONROE SECTION

The Monroe Section of the Louisiana Engineering Society most actively engaged in the commemoration of Engineers' Week in February, 1955, coordinated by Mr. Arthur C. Thigpen, vice-chairman on the State Engineers' Week Committee. The Louisiana Tech faculty and the Monroe Section of the Louisiana Engineering Society worked diligently through posters, visitation, newspaper releases, television film releases, an Engineering Convocation, and a television forum to commemorate Engineers' Week.

The first quarterly meeting of March 2, 1955, was held on the Louisiana Tech campus in Ruston, Louisiana, following the annual shrimp and oyster supper of this meeting. The speaker of the evening was Mr. Grady Carlisle, assistant to the Director of Highways in Louisiana, who discussed "The Appraisal of Highway Needs in Louisiana."

The June meeting of the Monroe Section consisted of the annual barbecue held in Monroe, Louisiana. This is the annual outing of the Society and no formal business was conducted.

The third meeting of the Section was on September 13, 1955, and was held in the Cameo Room of the Virginia Hotel in Monroe, Louisiana. The speaker was Mr. Harry C. Martin who discussed "Some Aspects of the Paper Industry."

The final meeting of the Monroe Section during 1955 was held at the Virginia Hotel in Monroe, Louisiana, on December 5, 1955. This meeting consisted of the annual state-wide telephone discussion with Dean Ben T. Bogard of the School of Engineering at Louisiana Tech, Ruston, Louisiana, taking part in this discussion from Monroe, Louisiana. The nominating committee reported to the session their recommendations for the officers for the coming year at which time the Society elected by acclamation the following men to serve during 1956:

President	Mr. R. A. Smith
1st Vice-President	Mr. D. L. Ellett
2nd Vice-President	Mr. M. N. Funderburk
Secretary-Treasurer	Mr. Arthur C. Thigpen

ALEXANDRIA SECTION

Meeting of January 20, 1955, a regular meeting. Installation of officers—C. C. Edwards, President, Lolan Melancon—Vice President, C. W. Cook—Secretary Treasurer.

Meeting of February 23, 1955. A number of distinguished and out of town guests were introduced—Mr. Grady Carlisle Guest Speaker. Ladies Auxiliary welcomed. Refreshments served by Ladies Auxiliary.

Meeting of March 31, 1955. Mr. Edwards made report on New Orleans March meeting of the parent chapter for the reorganization of the State Society and revision of dues was discussed. Future programming was discussed.

Meeting of April 21, 1955. Joint meeting with the Ladies Auxiliary. Shrimp supper and dance enjoyed by all. Voted that \$50.00 be allotted to the Scholarship Fund of the Ladies Auxiliary.

Meeting of May 26, 1955. It was moved and seconded and voted on to hold meetings on the fourth instead of the third Thursdays. Committee activity was discussed. Honorary or Life Memberships for incapacitated members was discussed. Mr. Sandefur made an interesting talk on The History of Alexandria, Louisiana.

Meeting of June 25, 1955. The Louisiana Engineering Society had its annual outing which consisted of a barbecue at Mr. Eugene Levy's Camp at Fishville. One hundred members were served.

Meeting of September 22, 1955. Buffet supper was served by the Ladies Auxiliary. Mr. Seago and Mr. Nelson were presented. Mr. Seago spoke with regard to the Engineering registration law and changes needed. Mr. Hu B. Myers made a very interesting talk on the Overton Red River waterway, tracing the history of navigation on Red River, including the studies made by the La. Dept. of Public Works. Latest figures and data of costs and engineering were given.

Meeting of October 27, 1955. Mr. Knost read letter in regard to the JETS program. Made arrangements for Christmas party.

Meeting of November 17, 1955. Twenty-six members were present. A report of the nominating committee by Mr. Barron was given as follows: Mr. T. David, President, Mr. E. Levy, Vice-President, and Mr. D. Sandefur, Secretary-Treasurer. A resolution was made and seconded to send flowers to members who are in the hospital. Mr. Charles Dupree of the Bell Telephone Company made a very interesting talk.

Meeting of December 5, 1955. Mr. Melancon opened meeting and announced ballots would be counted and read as follows: Tom David, President, D. D. Sandefur, Secretary-Treasurer, Eugene Levy, Vice-President. Louisiana Engineering Registration Law was given. Mr. David and Mr. Sandefur made very brief speeches.

LAFAYETTE SECTION

During January the Lafayette Chapter was addressed by Dean Ben T. Bogard of Louisiana Polytechnic Institute on "The Essentiality of the Registration of Engineers". The Chapter also approved proposed changes in Act 73 of the 1950 Legislature pertaining to the Engineering Registration Law.

During February the Chapter participated in Engineers Week activities and at its monthly meeting had as guests Mr. R. Mallard Seago, President of LES, Mr. Wayne P. Wallace, 1st Vice President and Mr. Waldemar S. Nelson, 2nd Vice President. Mr. Grady Carlisle of the Louisiana Department of Highways gave an interesting talk entitled "Appraisal of Louisiana Highway Needs".

The student chapter from Southwestern Louisiana Institute were guests of the Lafayette Chapter at its regular March meeting. A member of the student chapter, Mr. Carl Oubre, presented a paper entitled "Titanium". Dr. P. A. Chieri, head of the Mechanical Engineering Department at Southwestern Louisiana Institute spoke to the Chapter at the April meeting on "Jet Propulsion and Rockets".

At the May meeting of the Chapter the annual Ladies Night was held and new officers of the Chapter were elected for the coming year.

No meetings were held during the summer months and the regular meeting schedule was resumed in October with a short business meeting and the appointment of standing committees for the coming year.

During November the Chapter heard a very interesting talk on "Design and Construction of the Lake Pontchartrain Causeway" by Kenneth Roberts, Assistant Chief Engineer for Design with the engineering firm of Palmer and Baker, Inc.

During December the Chapter, in cooperation with other State sections, participated in a panel discussion via state-wide telephone hook-up on the "Louisiana Engineering Registration Law."

LIABILITY INSURANCE FOR ENGINEERS*

Can a consulting engineer obtain liability insurance to cover any claims or suits brought against him as the result of probable faulty engineering work?

He can, under a somewhat restricted coverage, but this type of policy has a very limited insurance company acceptance. Oddly enough, aside from the State of Texas, there are no regular policy forms provided for such coverage. In Texas there is an "Architects' Professional Liability Policy" which will serve as engineering liability coverage by substituting the consulting engineer in place of the architect. A handful of the Eastern, Midwestern, and Northern casualty insurance companies also provide this specialized cover, with some limitations, under a regular "Manufacturers' and Contractor's Liability Policy."

This "Manufacturers' and Contractors' Liability Policy" is a common form of liability insurance, but its terms do not automatically provide the engineer with any protection covering bodily injury or property damage resulting from provable faulty design. When such coverage is authorized, a special endorsement is prepared and attached to the policy at increased rates. Such rate changes have not been exorbitant on policies issued to date.

On Request

Seven well known casualty insurance companies have been providing such a policy on request, but they have made no real attempt to sell this form of protection to engineers or architects in general. There is no harmonious meeting of minds among the casualty insurance underwriters regarding the profit opportunities of this coverage. Some prefer to back away from it entirely; others will write such insurance as an accommodation providing they have in their company practically all of the other casualty coverages required by the consulting engineering firm. Even in Texas, casualty companies are writing this risk only sparingly.

Contracts issued have been confined to claims and lawsuits that are the result of bodily injury and property damage. No provision is made for recovery in lawsuits that do not arise of bodily injuries or actual property damage. I have been unable to locate a single contract that would insure a consulting engineer if a suit were to be brought to provide financial comfort to the client as compensation for embarrassment from or dissatisfaction with the engineer's work.

* Reprinted from Consulting Engineer.

Design Problem

In the latter part of 1954, in the construction of one of the new, large Eastern hotels a cantilever balcony appeared faulty in design and strength. Fearing some later collapse, the building superintendent computed the stresses himself and discovered no factor of safety for any extra load beyond the normal. He could not get any satisfaction from the architect-engineers, and to check his own findings he had an outside consulting engineer make some computations. He came up with the same figures.

Bags of insulation and bronze interior decorative material were then piled on the balcony hoping that it would collapse. Instruments indicated a yield of a quarter of an inch only. The balcony did not give way. Finally, however, the contracting firm, the consulting engineer, and the architect-engineers came to an agreement with the hotel management to pull down the balcony and reconstruct it. Had this not been agreed to, and at some future date the balcony had collapsed injuring hotel patrons, very heavy claims and suits, along with a heavy property damage claims could have been brought against the architect-engineers. If the architect-engineers had insurance, these claims would have been covered.

A market for such protection probably could have been found among the half a dozen companies who have attempted to underwrite such liability. Of course, if they had known of the questionable structural design of the balcony, they would not have passed the risk, but with the voluntary correction and after a general inspection of the premises, the risk would have been acceptable because of the general reliability of the firms involved.

While this coverage can be of value to the consulting engineering profession, it is not welcomed with open arms by all engineers. There are many who feel that it is not wise to make such insurance available too freely, as it might encourage design engineers to take chances beyond those they would take if they were without insurance coverage.

Engineers well know that there is no longer the margin of safety in construction that there was 50 years ago when building materials and labor were cheap. Today, with high cost of construction, these safety factors are sometimes reduced to a thin margin, and the well-trained insurance engineers who review these risks are well aware of these circumstances.

This very year many insurance companies have suffered tremendous claims resulting from unknown faults that seem to have developed in some large generators, turbines, and special machines. There is so much new design today that all the stresses involved are not yet known. This seems to be true in civil, elec-

trical, and chemical work as well as in mechanical. Radical innovations in building design and materials of construction naturally make the insurance underwriter and his consulting engineer wary about future disasters.

Lloyds Is Different

It should be understood that the American insurance industry is not conducted on "chance taking" principles as Lloyds is. Most insurance undertakings are based on carefully assembled statistics. Most insurance falls into "classes," and in addition to what insurance companies might voluntarily care to do, the Insurance Commissioners of each state review these "classes" every five years and have the power to adjust the basic rate structure up or down, according to the five-year experience—good or bad.

To determine whether a line of insurance is to be reasonably profitable or not, an insurance carrier needs both volume and loss experience. Experimenting with a few risks proves little. Unfortunately, the insurance industry has no central research bureau to assemble or test statistics for new insurance ventures, though this has been in the talking stage for some time.

When a consulting engineer seeks protection from future possible claims and suits, the result of faulty design, an astute underwriter will reason in somewhat this manner:

"I don't know enough about the general experience of such suits or claims to promulgate a rate. I am not sufficiently well acquainted with the rapid changes in design to know what is possibly faulty or what is not. And most important to me—can we sell enough of this insurance to establish it as a "class" and take in enough premiums to meet the substantial losses that could develop?"

The underwriter has to ponder the subject beyond this point. Can he get any reinsurance? Being a little afraid of this line, he would like to reinsure the liability with two or three other companies, but he finds no takers. That discourages him from authorizing any substantial limits of liability.

Then, he also knows that this business will be a specialized line. The average agent or broker will not be competent or interested in going out to sell such coverages to consulting engineers. He would not be able to talk their language or to satisfy their inquiries, therefore, this business would never be a big seller, and the volume would be missing.

Of course, he could throw the liability into the "general liability class" and not cut it up as a separate class of insurance. But there is not too much encouragement for the agent here, either.

Liability insurance is not as profitable as it once was because of the extremely high awards being granted by courts. General liability rates have practically been doubled.

With Lloyds almost any kind of a coverage can be arranged, and a consulting engineer, if he is willing to pay a high rate, can probably get a Lloyds coverage drawn up exactly as desired. Lloyds are by no means wide open underwriters, but they can approach an insurance problem in a different way from American insurance underwriters. Lloyds is not an insurance company but a series of committees or groups, each with a head underwriter, and these groups bank on their Chief Underwriter to make them some profit. A group can go broke, as they have, and Lloyds would never be affected, as new groups are always available.

The American insurance underwriter usually represents a stock insurance company, and he is not permitted to put the assets of his company on the block. So he is not a gambler. There has been a constant, progressive expansion among American insurance underwriters to offer new, varied, and broader contracts, but these are still based on statistical principles.

There is a great deal of study being given at this time to the subject of "Engineers' Professional Liability Policy," and to liability policies for architects, authors, newspaper publishers, and all people subject to possible lawsuits from unintentional errors, but all underwriters agree that the writing of such insurance will be slow in coming.

Where such policies have been written, they do cover the engineer anywhere in the world for negligent acts errors, or omissions occurring during the policy period, or any claim or suit commenced in this country within two years after the policy has expired. Naturally, the policy does not cover any fraudulent or malicious acts, nor any injury or property destruction intentionally caused. It does not cover any employee of the engineer. The Texas type of policy specifically excluded "loss and expense for additions to remodeling, demolishing, or rebuilding of any structure as a result of error or omission in professional services, which error omission does not result in an accident." This does not mean that some underwriter will not waive this for additional premium consideration, but there is no tendency towards enlargement of this provision.

Even if insurance companies were to decide to offer engineering liability policies on a large scale, even if every local agent were encouraged to "go out and sell" such policies, there still remains the problem of professional engineering ethics. This problem of ethics and personal responsibility is for the professional engineers to decide.

WHAT'S NEW

Steel Shortage To Continue For Construction Industry

A new surge of demand and the strong possibility of a steel strike in July are dashing earlier hopes of engineers and contractors that the structural steel shortage would end by late fall of this year, Engineering News-Record reports in a late issue.

Contrary to recent optimistic reports, the shortage of heavy structural steel shapes, which ranks as one of the most serious in the last 25 years, probably will not end until some time in 1957.

* * * *

Egypt's Proposed Aswan High Dam On Nile Called Greatest Project Of Its Kind Ever Undertaken

Egypt's proposed Aswan High Dam on the Nile River—of current international concern—in many respects will be the greatest single dam project ever undertaken, according to Engineering News-Record.

To the Egyptians, Sadd el-Aali ("the high dam", and called Aswan High Dam) planned for the Nile above the existing Aswan Dam can mean an end to Nile River floods. At the same time it can provide over-year storage for enough irrigation water to add some 30 per cent to Egypt's total arable land. Its stored water will turn 16 turbines of 120,000-kw capacity, while also doubling the present power potential of Aswan Dam downstream. Economically, it will increase Egypt's national income by one billion dollars annually.

The project, to be constructed at a cost of \$1,300,000,000, will be so spectacular that it will sustain international engineering interest over the entire ten-year construction period, the magazine says.

The dam will be a 361-foot high rockfill structure, 3.1 miles long, with a volume of nearly 55,000,000 cubic yards. It will require 34,000 tons of steel and 22,200,000 cubic yards of excavation in rock to complete. Among its spectacular features will be seven 54.1-foot diameter diversion tunnels and four 46.6-foot diameter power tunnels—about 13 miles of tunnel in all. A reservoir over 300 miles and holding close to four times the water in Lake Mead (now the world's largest manmade lake) will store over 105,000,000 acre-feet of water behind the dam.

Protection Becoming Key Planning Factor In Buildings Using High Voltage Systems

The fast adoption of 460-volt electrical systems in large, modern commercial buildings is making protection against fire and power-equipment failure a key planning factor, according to *Power Magazine*.

As office buildings supplant 120 and 209 volt systems with 460 volt systems to power their heavy motor loads—air-conditioning compressors, fans, elevators, pumps—the higher voltage systems intensify dangers to people and building equipment in case of a short circuit. Power for operating any sizable commercial building is usually tapped off the low-voltage side of several transformers, which in turn are fed from high-voltage lines where it is possible for large currents to flow. A bolted short circuit at the service entrance to a building might pull more current than the circuit breakers are designed to interrupt.

Fuses which act fast to limit current are increasing in importance for supplementing the interrupting capacity of existing circuit breakers in 265 and 460 volt systems. The fuses must limit fault current to a value that will not damage the breakers, the magazine says. A breaker-fuse combination, with both units fitted into a common molded case, no wider or deeper, and a few inches longer, than standard comparable-size breakers, protects the main circuit breaker or a circuit breaker feeding a single load.

Coordination of the whole electrical distribution system must be considered—right from the incoming high voltage side of transformers to the final point of utilization, the magazine says.

* * * *

Revolutionary Ideas Tested In Building of Missouri Dam

Table Rock Dam in Missouri is fast becoming a proving ground of revolutionary ideas, according to *Construction Methods and Equipment*.

Workers on the \$70,000,000 project are pouring 7½-foot concrete lifts, a radical departure from the standard five-foot design, and are operating a closed-circuit television system to aid in dumping concrete buckets. Among other innovations that may set the pace for future dam building are remotely controlled bucket openers, and pre-cooling in silos of the aggregate needed for making the concrete.

The dam is only 25 per cent complete, but its giant monoliths already tower high above White River, where it cuts through the heart of the Ozarks. Pioneering the new methods is a joint-venture firm with a \$24,000,000 contract which calls for placing 1,300,000 yards of concrete in a 1,600-foot dam, and 3,300,000 yards of fill in a 4,800-foot embankment.

Top feature of the job, the 7½-foot concrete lift, virtually untried in this country, means a third less form handling, the magazine says. Rugged box-truss cantilever forms, developed especially to contain the high lifts, resist deflection, a critical factor on the sloping upstreams and downstream faces of the dam. The form is made in two identical sections: the lower panel is anchored to two lower lifts, and can be released without disturbing the upper section; top panel for downstream face hinges back to permit close concrete dumping.

OBITUARY OF JOHN WARNKE MONTGOMERY

John Warnke Montgomery, Life member in the Louisiana Engineering Society, born December 7, 1879, entered into eternal rest on February 23, 1956. Surviving are his wife, née Miss Alva Lozes, sons Edgar L. and John A., daughters Mrs. John Hall Toledano and Mrs. Arnold W. Kuss, and seven grandchildren.

He was educated in the public schools of New Orleans becoming a high school graduate in 1898. He aspired to be a structural designer but circumstances did not permit further schooling and technical training, so he entered the employ of Lukens Steel Company of New Orleans shortly after his graduation from high school. That position was purely clerical, and though Lukens was a large producer and distributor of structural and boiler steel plates, flanged heads and manholes, his position offered no prospect of ever leading to realization of his ambition to become a structural designer.

Nevertheless, he availed himself of the opportunity offered by Tulane University of that period for night courses in basic principles of structural design and their practical application, and later completed a course in Structural Engineering in the International Correspondence School of Scranton, Pennsylvania. Later Lukens Steel Company began receiving inquiries and orders for structural shapes in addition to their own products and established a structural steel fabricating shop.

When the shop was equipped Mr. Montgomery was advanced to the position of Fabricated Steel Sales Engineer. Under that title he designed structures, made, and supervised the making of shop details, and assisted in the management of the shop.

He was well known for cheerful cooperation and his zest for the solution of unusual and difficult structural problems from the foundation to the sky sign above the roof. When Lukens built its large modern warehouse and shop on the Industrial Canal in 1923-24 Mr. Montgomery operated that firm's City Fabricated Sales Office and, when Jones and Laughlin Steel Corporation purchased Lukens' New Orleans Plant in 1931, he was retained by that Corporation in his capacity of Fabricated Steel Sales Engineer, which position he continued to fill with distinction, until his retirement on January 1, 1947.

Mr. Montgomery was robust and athletic, and was well known in local semi-professional baseball circles, having played on the well remembered "Stickney and Williams", "Dave Bernhardt" and "O'Hara-Kerrign" teams.

The profession, and our society, has lost an outstanding member and it is in order that this Obituary be read at a meeting of the Louisiana Engineering Society, entered into the Minutes, and Published in the Proceedings; also that copies be sent to his family to whom the sympathies of our membership are extended.

A. R. WINGATE, JR., Chairman
LEAL C. H. McLEAN
JOHN H. F. WEBERT

OBITUARY OF HUBERT L. SMITH

The death on November 9, 1955, of Hubert L. Smith was regretted deeply by officers and members of the Louisiana Engineering Society and took from the organization one of its most co-operative and active members.

He was born on November 2, 1907, at Matagorda, Texas. He joined Freeport Sulphur Company on March 7, 1933, at Freeport, Texas.

He was transferred to the company's Grande Ecaille mine, near Port Sulphur, Louisiana, and in 1938 became assistant to the superintendent of shipping. In 1942 he became superintendent of shipping, which position he held at the time of his death.

In addition to the Louisiana Engineering Society, Hubert was a member of the National Defense Transportation Association.

In spite of his many company duties, he devoted much of his time to civic activities in Port Sulphur. He was regarded as a devoted husband and father.

He was sincerely cooperative with his fellow employees, and one of his outstanding characteristics was his regard for the welfare of those under his supervision. His wife preceded him in death and he is survived by one daughter, Mrs. J. L. Hingle, and two grandchildren.

K. T. PRICE

C. O. LEE

OBITUARY OF WILLIAM H. THOMAS

The death of William H. Thomas on November 19, 1955, removed from the ranks of the Louisiana Engineering Society one of its members and one of its very competent mechanical engineers.

Mr. Thomas, known to his many friends as Bill, was born in Norfolk, Virginia, on November 26, 1919, the son of Estelle F. and Edward Thomas who now reside at Roanoke, Virginia.

He received his education at Jefferson High School, Roanoke, Virginia, Lasalle Extension University, and Virginia Polytechnic Institute.

Bill is survived by his widow, Renee Alphonsine Casto and by his mother and father.

While in Philadelphia, Pa., he was injured in a fall down a flight of steps at a railroad terminal and later died at Philadelphia's Jefferson Hospital.

Bill had been a resident of Baton Rouge for the past six years. He was employed by the Esso Standard Oil Company as an engineer in the Maintenance and Construction Division and later as a Project Engineer in the Mechanical Engineering Department. In addition to his work at Esso, he served as an Apprentice Instructor at the Baton Rouge Trade School.

In 1949, he received his Bachelor of Science Degree in Mechanical Engineering from Virginia Polytechnic Institute and in 1951 received a Bachelor of Law Degree from Lasalle Extension University.

Between January, 1942 and February, 1946, Bill served in the United States Army Air Force as a Navigator and Instructor and attained the rank of Major. Part of this time was spent in North Africa and Europe where he flew numerous bombing missions. While on duty in World War II, he was awarded the Distinguished Flying Cross. After his discharge from the service, he served in the Air Force Reserve and held the rank of Lt. Col.

Bill was a member of the American Society of Mechanical Engineers, Young Men's Christian Association, Student Senate at Virginia Polytechnic Institute, Pi Tau Sigma, Tau Beta Pi, Phi Kappa Phi, and Louisiana Engineering Society. He was prominent in church affairs and was a member of his church choir.

At an early age, Bill demonstrated his desire to attain an education and to succeed in later life. Due to his early death, he did not fully realize his ambitions in his chosen field. Yet his passing is a distinct loss to the community, his family, members of the Louisiana Engineering Society, and his many friends and acquaintances. Bill was an individualist in whom there existed energy, drive, tenacity, and patience that combined to surmount obstacles that would have often dismayed or discouraged others. Like all men, he had his human faults. He was conscientious, however, in all his undertakings whether he was at work or at one of his hobbies.

While he is no longer among us, a little of Bill Thomas will live on forever in the hearts of all of us who were fortunate enough to have known him.

L. S. MAJOR

E. H. OWEN

O. D. JOHNSON, JR.

MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

Minutes of Meeting of the Board of Direction Held on Wednesday,
February 1, 1956

The meeting was called to order by President Wallace at the Engineers' Club, New Orleans, with Messrs. Cassagne, Drawe, Freeman, Hornsby, Nelson, Taylor and Fernandez present. Mr. Hornsby moved that minutes of the meeting held in Baton Rouge with State Section Officers be accepted as read, seconded by Mr. Freeman and carried. The president read a report of the Alexandria Section prepared by Mr. C. W. Cook, retiring secretary-treasurer of that section, which was received with much interest.

The treasurer presented a budget for 1956 prepared by the Finance Committee. Mr. Cassagne moved that the budget be accepted, seconded by Dr. Taylor and carried.

The secretary reported that all applicants for membership named in the December ballot had been elected to their respective grades. A copy of the ballot is attached to these minutes.

The resignation of Mr. A. J. Shoup of Shreveport was read, and action on same was deferred at the request of Mr. Freeman. The secretary was instructed to write and ask Mr. Shoup to reconsider his resignation.

Mr. Freeman moved that Dr. Taylor be appointed to represent the society at the Chamber of Commerce, seconded by Mr. Hornsby and carried.

An obituary of the late Conrad O. Bostrom, prepared by Messrs W. E. Douglas, Jr. and Roy E. Johnson, was presented and the secretary was instructed to have same printed in the Proceedings and to forward copies to the family of the deceased.

The secretary reported that several obituary committees had not prepared memorials and asked whether any steps could be taken to remember these deceased members. After some discussion Mr. Cassagne moved that the secretary be appointed to write a memorial listing the deceased members during the year, to be published in the Proceedings, and that the Publications Committee print death notices in each issue of the Proceedings as a news item. Motion seconded by Mr. Hornsby and carried.

The secretary presented an inventory of furnishings and office equipment being held for safekeeping at the residence, 522 Crystal Street, New Orleans. Mr. Freeman moved that said inventory be incorporated in the minutes of the society and that the secretary be authorized to purchase insurance on same, to be carried until further notice. Motion seconded by Mr. Cassagne and carried. The inventory list follows: 1 green plastic upholstered sofa, 2 matching green plastic chairs, 1 walnut conference table, 3½' x 8', 8 matching walnut chairs, 2 walnut end tables, 2 floor lamps, 6 metal folding chairs, 1 steel storage cabinet 6' x 3' x 2', 2 oak office tables, 2 sectional bookcases, 5 sections each, 1 Royal typewriter, 1 Addressograph plate cabinet, 18 drawers, 3 Four-drawer steel letter file cabinets, and Books, records and office supplies.

Mr. Freeman moved that the regular meetings of the society be held on the second Monday of the month and that the meeting notices indicate that the society is reverting to its former meeting date. Motion seconded by Mr. Drawe and carried.

Upon the recommendation of the board, President Wallace appointed Messrs. C. O. Lee and K. T. Price to prepare an obituary for the late Hubert L. Smith, Jr.

Discussion followed on the appointment of personnel for standing committees, during which Mr. Nelson moved that the duties of the Special Activities Committee be combined with those of the Professional, Civic & Industrial Affairs Committee and that the latter be so enlarged as to adequately handle the duties of the combined committees. Motion seconded by Mr. Freeman and carried. With the approval of the board, President Wallace then appointed the following standing committee chairmen and vice-chairmen:

Employment—Eugene L. Fithian, Chairman; Raymond P. Bassich, Vice-chairman. **Entertainment and Outing**—Warren M. Bankston, Chairman; Donald B. Schell, Vice-Chairman. **Membership**—Roy E. Johnson, Chairman; Daniel P. Mabel, Vice-Chairman. **Publications**—Robert P. Lockett, Jr., Chairman; George Elmer May, Vice-Chairman. **Professional, Civic and Industrial Affairs**—Clifford A. King, Chairman; Sargent F. Jones, Vice-Chairman. **Legislative**—Jack S. Burk, Chairman; F. N. Billingsley, Vice-Chairman. **Publicity**—

John S. Burke, Chairman; Milton L. Levy, Vice-Chairman. Honors and Awards—H. N. Ogden, Chairman; Michael C. Abraham, Vice-Chairman. Vocational Guidance—Joseph R. Mooney, Chairman; Henri J. Molaison, Vice-Chairman. Section Coordination—Henry L. Landry, Chairman; Z. L. Loflin, Vice-Chairman. Citizens Planning Committee Representatives—Allan T. Dusenbury, John L. Porter. N. O. Building Code Committee Representatives—Alvin M. Fromherz, John H. O'Neill. Technical Papers—Lee H. Johnson, Jr., Chairman; Edw. A. Gastrock, Vice-President.

He also appointed Mr. Frank Riess as General Chairman of the 1957 Annual Meeting and instructed the secretary to invite Mr. Riess to attend the next board meeting and make recommendation for dates on which to hold the meeting.

It was announced that representatives of L.E.S., the Louisiana Council of Engineers and the State Board of Registration would meet on Monday, February 6 with the latter's attorney to prepare in legal form the proposed amendments to the Engineering Registration Act.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Regular Meeting Held on Monday, February 20, 1956

The meeting was called to order by President Wallace in the Beauregard Room, St. Charles Hotel, with approximately 150 members and guests present.

The secretary read minutes of the Annual Meeting held in Baton Rouge on January 19, after which he read minutes of a meeting of the Board of Direction with State Section Officers held on the same date.

President Wallace announced that the Southwest District of the American Society for Testing Materials would hold a meeting on Thursday, March 1 and that all members of L.E.S. were cordially invited to attend.

Mr. Waldemar Nelson then informed the audience of the accomplishments of Engineers' Week and read Mayor Morrison's proclamation concerning same.

Mr. Joseph R. Mooney, Chairman of Arrangements for Engineers' Week, then introduced the principal speaker of the evening, Mr. Roy T. Sessums, Assistant to the Vice-President and Engineering Coordinator for Freeport Sulphur Company, who gave a most interesting talk on "The Engineer's Role in the Development of Louisiana". Following Mr. Sessums' lecture, the meeting adjourned and the regular social hour followed.

JOHN P. FERNANDEZ, Secretary-Treasurer

Meetings of Meeting of the Louisiana Engineering Society held Jointly with the New Orleans Section, A.S.M.E. Monday, March 12, 1956

The meeting was called to order by President Wallace in the Engineers' Club, Hotel DeSoto, with approximately 150 members and guests present. President Wallace welcomed the members and guests of A.S.M.E. Professor Dunlap moved that the reading of minutes be dispensed with, seconded by Mr. Ketchum and carried.

The secretary read an obituary of the late Hubert L. Smith. After a moment of silence was observed in honor of the deceased member, Mr. Cucullu moved that the obituary be spread upon the minutes of the society and copies forwarded to his surviving family. The motion was seconded by Mr. Grevemberg and carried.

Mr. W. S. Nelson then read an obituary of the late F. B. Blackstone, after which a moment of silence was observed in memory of the departed. Mr. Rombach then moved that the obituary be spread upon the minutes and that copies be forwarded to the family. Motion seconded by Mr. Grevemberg and carried.

The chair then was relinquished to Mr. Walter J. Verlander, Chairman of the local section of A.S.M.E., who introduced the speaker of the evening, Mr. John W. Landis, Assistant Manager, Atomic Energy Division, The Babcock & Wilcox Company, New York, who gave a most interesting and informative lecture on "The Consolidated Edison Nuclear Power Plant".

President Wallace then resumed the chair and thanked the A.S.M.E. for securing such an excellent speaker. The meeting then adjourned with a rising vote of thanks to Mr. Landis.

The usual social hour followed.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Board of Direction Held in the Acadian Room
Hotel ReSoto, March 15, 1956**

The meeting was called to order by First Vice-President Nelson with the following members present. Messrs. Cassagne, Drawe, Freeman, Hornsby, Nelson, Seago, Smith, Taylor and Fernandez present. President Wallace arrived after the reading of minutes. Mr. Alvin M. Fromherz, the society's representative on the Greater New Orleans Building Code Committee, also was present by invitation.

Mr. Freeman moved that minutes of the preceding meeting be accepted as read, seconded by Dr. Taylor and carried. Mr. Fromherz, Chairman of the Greater New Orleans Building Code Committee as well as L.E.S. representative on same, gave a report of the committee's activities in which much accomplishment was noted during his tenure of office, including adoption of a set of by-laws to govern the committee. In accordance with said by-laws Mr. Fromherz' term of office has been extended until May 1956, and he suggested that L. E. S. representatives on the committee be appointed to serve from May of each year through the following April. The board was greatly interested in the problems and workings of this committee and commended Mr. Fromherz, after which Mr. Nelson moved that the board thank Mr. Fromherz for his excellent work. The motion was seconded by Mr. Seago and carried unanimously.

Mr. Fromherz stated that he personally would like to see the L.E.S. be active in protecting Louisiana professional engineers in obtaining work in Louisiana. He advised that out-of-state engineering firms can acquire work in Louisiana while Louisiana engineers encounter many obstacles in securing work in other states.

Mr. Fromherz also stated that he would like to see the Louisiana Engineering Society promote the professional status of the engineer.

President Wallace thanked Mr. Fromherz and then read a report of the 1956 Annual Meeting prepared by Mr. T. J. Innes, Jr., General Chairman. Mr. Seago moved that Mr. Innes and his committee be commended for their excellent work, seconded by Mr. Nelson and carried.

The president then gave a resume of the status of the proposed amendments to the Engineering Registration Act and stated that, after speaking to Mr. Calvin Watts he believed that the floor leaders of the legislature should be contacted regarding their views on the proposed amendments, and concluded that if the administration leaders are receptive to the proposed amendments, they could be passed without the help of a professional lobbyist; and if they are not receptive a professional lobbyist would be of no help and the cost of lobbying would be wasted. Therefore, as soon as the administration leaders are appointed they will be contacted and their reactions will be reported to the Louisiana Council of Engineers.

Mr. Hornsby gave a report of Engineers Week activities in Baton Rouge and announced that the program was excellent in spite of the fact that preparations were late in getting under way. He advised that the Baton Rouge committee for observance of Engineers Week in 1957 had been appointed and advance planning would be done. He suggested that the secretary advise the other sections of this advance planning.

Mr. Smith gave an outline of the Engineers Week program carried out by the Monroe Section and stated that they were fortunate in having the faculty of Louisiana Polytechnic Institute to handle most of the work of this project.

President Wallace read a letter from Mr. H. B. Williams, Head of the Department of Chemistry of Louisiana State University, in which he solicited funds from individual firms to sponsor fellowships for high school science teachers during the summer months. The secretary was instructed to write to Professor Williams stating that the Board of Direction of L.E.S. fully concurs in the idea of providing such scholarships and considers it an excellent means of providing more scientific instruction for high school students.

A letter from Mr. H. C. Leonard, Vice-President of Gulf States Utilities Company, thanking the society for the resolution passed at the annual meeting was read.

A letter from the Director of Military Engineering School, Poona, India, requesting a copy of the Proceedings, was read. Mr. Freeman moved that the secretary be authorized to comply with his request, seconded by Dr. Taylor and carried.

Correspondence between the secretary and Messrs. Henry M. Messinger and Harold E. Ebner was read, and the board approved the secretary's handling of the two matters concerned.

Mr. Cassagne moved that action on the resignation of Mr. A. J. Shoup be deferred, seconded by Mr. Nelson and carried.

Mr. Freeman moved that Messrs. Robert D. Cosgrove and F. Robert Mendow be reinstated to their former grades of junior member in the society, seconded by Mr. Seago and carried.

Mr. Seago moved that the application of David R. Vondy be withdrawn in accordance with his request, seconded by Mr. Nelson and carried.

Resignations of the following were accepted with regret:

Henry M. Abbott, Elizabeth, N. J. (Member); H. Alden Deyo, Lafayette (Junior); Enoch J. French, Vivian, La. Shreveport, (Junior); Hiram R. Mason, Detroit, Mich. (Member); Chas. A. Mitchell, Chicago, Ill. (Member); Thomas L. Hodges, Mobile, Ala., (Member).

Mr. Nelson moved that the following members whose addresses are presently unknown be dropped for delinquency in payment of dues:

Joseph L. Balch (Junior); Malcolm L. Bienvenu (Junior); Carroll A. Clark (Junior); Luther D. McCorquodale (Member); Darrell L. Nepveux (Junior); William H. Rogers (Junior); Frederick Simonson, Jr., (Junior); Louis R. Velasco (Junior); James W. Woodruf (Junior).

The secretary reported that he had received a phone call from Tulane University advising that the School of Engineering had been billed by mistake for the scholarship usually donated by L.E.S. for the semester 1954-55 and 1955-56. Mr. Nelson moved that the Society pay this obligation and discontinue awarding the scholarship pending a study of the procedure of awarding same. It was pointed out that in recent years no recipient of the award had ever thanked the society for its assistance nor applied for membership. The motion was seconded by Mr. Hornsby and carried. President Wallace then appointed Mr. Drawe to investigate the matter.

At the suggestion of the board, President Wallace appointed Messrs. A. R. Wingate, Chairman, Leal C. H. McLean and J. H. F. Webert as a committee to prepare an obituary for the late Life Member, J. W. Montgomery.

Mr. Nelson moved that future board meetings be held on the same date as the society's regular monthly meetings, seconded by Mr. Smith and carried.

Mr. Smith then inquired about the board's view on possible affiliation of L.E.S. with the National Society of Professional Engineers, after which he distributed mimeographed information concerning N.S.P.E.

Mr. Hornsby announced that the date for the June outing to be held in Baton Rouge had been set for June 9. Discussion followed on the 1957 annual meeting and the board favored holding it at the St. Charles Hotel on January 10-11-12, 1957.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Regular Meeting of L.E.S. April 9, 1956

The meeting was called to order by President Wallace in the Engineers' Club, Hotel De Soto, with approximately 130 members and guests present.

Mr. Fransen moved that the reading of minutes of the previous meeting be dispensed with, seconded by Mr. Welch and carried. In the absence of the secretary, minutes of a meeting of the Board of Direction held on March 15 were read by Mr. Nelson.

An obituary of the late B. S. Nelson was read by Mr. McLellan, after which he moved that the obituary be spread upon the minutes of the society and a copy forwarded to the family of the deceased. Motion seconded by Mr. R. P. Lockett, Jr., and carried.

President Wallace read a letter from Louisiana State University extending an invitation to L.E.S. members to attend an Electronic Computer demonstration to be held under the joint sponsorship of the Colleges of Engineering and Commerce and the Louisiana Department of Highways.

The president then called on Mr. Walter Blessey, who introduced the principal speaker of the evening, Mr. J. E. Walters, Project Manager, Louisiana Bridge Company, and several of his associates who were guests at the meeting.

Mr. Walters gave a most interesting, illustrated lecture on "The Lake Pontchartrain Causeway". A very lively question period followed, after which the meeting adjourned with a rising vote of thanks to the speaker.

WALDEMAR S. NELSON, Acting Secretary

Minutes of Meeting of the Board of Direction Held on Wednesday, April 25, 1956 at the Engineers' Club

The meeting was called to order by President Wallace with Messrs. Freeman, Hornsby, Loflin, Nelson, Seago, Taylor and Fernandez present. Mr. Frank Riess, General Chairman of the 1957 Annual Meeting, also was present by invitation.

Mr. Nelson moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Loflin and carried.

Mr. Riess reported that rooms for the 1957 meeting had been reserved in the St. Charles Hotel for January 10-11-12 and that there were several matters he wished to clear with the Board: First, should the meeting include technical exhibits? After some discussion Mr. Freeman moved that the General Chairman investigate the hotel's attitude on technical exhibits and, if favorable, to study costs to the society and charges to exhibitors, and that he be empowered to include exhibits in the annual meeting if he deems it advisable. The motion was duly seconded and carried. Second, where should the General Interest Program be held? It was the consensus of opinion that it should be held at the Engineers' Club. Mr. Seago then moved that the following chairmen be appointed to head Annual Meeting committees:

Plant Visitation	Milton L. Levy
Technical Paper	J. Robert Rombach
Banquet	Roy E. Johnson
Program	Wendel Leibe
Publicity	Cliff Newlin
Registration	Leo Holzenthal
Student Conference	Dan Vliet
Woman's Auxiliary	Walter Blessey

The motion was seconded by Mr. Hornsby and carried. It was suggested that if Technical Exhibits were to be included, Dan P. Mabel would be asked to head this committee.

President Wallace reported on the meeting of the Louisiana Council of Engineers held on April 23, after which two letters from Mr. Ben Bogard were read in which he urged the society to step-up its efforts to strengthen the Engineering Registration Law at the coming session of the legislature, and indicated that the support of the state Rural Electrification Association group probably could be obtained through Mr. E. E. Taylor of Ferriday, La.

Mr. Freeman moved that the proposed amendment to the registration act be disseminated among the membership with a message soliciting their aid in securing passage of the bill. The motion was seconded by Mr. Hornsby and carried.

Mr. Nelson moved that the individual members of the legislative committee be acquainted with the action of the L.E.S. Board and the Louisiana Council of Engineers and urged to act at their discretion. The motion was seconded by Mr. Freeman and carried.

Mr. Nelson, Chairman of the Finance Committee, presented the Treasurer's quarterly report and moved that it be accepted. The motion was seconded by Mr. Loflin and carried. Discussion followed on the temporary surplus on hand and the Finance Committee was instructed to investigate the feasibility of investing this surplus on a short-term basis.

The secretary read a report of Mr. Wm. J. Drawe, Jr. on scholarship awards, after which one board member stated that he believed that scholarships of equal amount should be given to each of the four engineering

colleges in the state. A committee to investigate this matter then was appointed, consisting of Messrs. W. J. Drawe, Jr., Chairman, Ben Bogard, Z. L. Loflin and W. P. Wallace.

A letter from the Uniform Boiler & Pressure Vessel Laws Society was read and the action taken on same by the Louisiana Council of Engineers was reported.

A letter from Mr. H. B. Williams of Louisiana State University, thanking the society for its interest in the program of summer fellowships for high school science teachers was read.

A letter from the Institutul de Documentare Technica of Bucharest, requesting an exchange of publications with L.E.S. was read and the secretary was instructed to reply.

An invitation from the American Society of Safety Engineers to attend its meeting in June was read and the secretary was instructed to announce same at the next meeting of the society.

Mr. Loflin moved that the following persons be reinstated to their former grades of membership, seconded by Mr. Hornsby and carried:

Kenneth N. McIntosh (Member) New Orleans; David Vondy (Member) New Orleans; L. H. Hunsinger (Junior) Kaplan (Lafayette Section).

Mr. Season moved that the following resignations be accepted with regret; the motion was duly seconded and carried.

Mack Abraham, Lake Charles; Harold P. Rabalais, Baton Rouge; A. J. Shoup, Shreveport; George L. Yousko, Baton Rouge.

Mr. Freeman moved that the following members be dropped for delinquency in payment of dues; motion was duly seconded and carried:

Members—Wm. W. Ayers, Jr., Lake Charles; Miller H. Alexander, Lake Charles; Thomas M. Beamon, Baton Rouge; Andre J. Dubus, Lake Charles; Oliver M. Fletcher, Monroe; Joseph O. Hachet, Jr., Lafayette; Harvey J. Hall, Baton Rouge; John F. Mays, New Orleans; Robt. W. Maeser, Jr., Baton Rouge; K. C. P. Muller, New Orleans; George W. Rappleyea, South Carolina; Lloyd B. Smith, Baton Rouge.

Affiliates: L. E. Gunter, Alexandria; Harry F. McGowan, Shreveport.

Juniors—Lester H. Arbo, Jr., New Orleans; Austin P. Ardoin, Lake Charles; Truman A. Bourgeois, Baton Rouge; William A. Burford, Mississippi; L. M. Falconer, Texas; Kenneth R. Faulk, Lake Charles; Claude K. Elkins, Jr., New Orleans; Glenn D. Garber, Lake Charles; William E. Kidd, Jr., Texas; Robert C. McClure, New Orleans; Wm. P. Osterholt, New Orleans; Ernest C. Singletary, Baton Rouge; Gene Tye, Oklahoma; Joseph A. Yazbeck, Shreveport.

Discussion followed on the appointment of a new editor for the Proceedings but no action was taken.

It was announced that the Baton Rouge Section would have a joint meeting with the parent organization in Baton Rouge on June 9.

Upon motion by Mr. Loflin, seconded by Mr. Seago, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting, Baton Rouge Section, Louisiana Engineering Society, February 23, 1956

There was a meeting of the Baton Rouge Section of the Louisiana Engineering Society on February 23rd, at the Agricultural Engineering Building at L.S.U. Officers present were: Mr. F. G. Hornsby, Mr. Tod Sutton, Mr. Tom Alexander. There were 46 members present.

There was a general discussion by Mr. Hornsby on Engineers' Week and the role that the Engineer played.

The various Committee Chairmen for the year 1956 were introduced.

It was requested that all Junior Members over 32 years of age make application to change to full members.

A poll of the members was taken to decide whether they would like a joint dinner meeting with the American Society of Heating and Air Conditioning Engineers. It was decided that our membership was not in favor of the dinner meeting.

After the business at hand, Col. W. H. Lewis, District Engineer Corps of Engineers, New Orleans District, gave a very interesting talk on the "Old River Control Project". His talk was complete with illustrated slides. A rising vote of thanks was given to Col. Lewis.

TOM E. ALEXANDER, Secretary-Treasurer

Minutes of the Meeting, Lafayette Section, Louisiana Engineering Society,

Feb. 28, 1956

The February meeting of the Lafayette Section—Louisiana Engineering Society—was a dinner meeting and was held Tuesday, February 28, 1956 at Don's Seafood and Steak House.

The meeting was called to order by President Loflin with approximately 35 members present. Members were asked to introduce their guests.

Mr. T. A. Bonnet, Chairman of the Budget Committee, presented the proposed 1956-57 budget to the membership and offered a motion for its adoption. Motion was seconded by Mr. Russell and carried.

President Loflin introduced Mr. Waldemar S. Nelson, 1st Vice President of the Louisiana Engineering Society and Dr. Wayne P. Wallace, President of the Society, who spoke briefly about the Society's aims for the coming year. Dr. Wallace also gave an interesting and informative talk, illustrated by slide films, entitled "Foundation Engineering—Facts and Foibles".

The President thanked the speaker on behalf of the section and the meeting was adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

Minutes of the Meeting of the Lafayette Section, Louisiana Engineering Society, March 27, 1956

The March meeting of the Lafayette Section—Louisiana Engineering Society—was a dinner meeting and was held Tuesday, March 27, 1956 at Don's Seafood and Steak House.

The meeting was called to order by President Loflin with approximately 24 members present. Members were asked to introduce their guests.

After a brief business meeting, President Loflin turned the meeting over to Mr. E. E. Guillot, Jr. who introduced the guest speaker for the evening, Mr. T. S. Slack, Roadside Development Engineer, Louisiana Department of Highways. Mr. Slack gave an interesting and informative talk on soil erosion control and roadside improvement practices which he illustrated by use of color slides.

The President thanked the speaker on behalf of the section and the meeting was adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

Minutes of the Meeting of the Lake Charles Section of The Louisiana Engineering Society Held May 14, 1956

A dinner meeting of the Lake Charles Section of the Louisiana Engineering Society was held at Jay's Westerner on May 14, 1956. Thirty-five members and guests were present.

President G. B. Wooster called the meeting to order. Each member and guest were called upon to introduce themselves. A motion was made, seconded, and passed, that the reading of the minutes of the April 16 meeting be dispensed with.

President Wooster read a letter from Tom Alexander, Secretary-Treasurer of the Baton Rouge Section, which extended an invitation to members of this section to attend their joint meeting being held June 9, 1956.

Our guest speaker, Mr. H. G. Chalkley, president of the Lake Charles Harbor and Terminal District, gave a very interesting and informative talk on "The Legal Aspects of Expanding the Lake Charles Harbor and Terminal District". He explained the functions of the organization. He also outlined the present and proposed boundaries and other aspects of the bill to be introduced in the 1956 session of the State Legislature.

The next meeting was scheduled for June 11, 1956. Adjournment followed this announcement.

Minutes of the Meeting of the Lake Charles Section of the Louisiana Engineering Society Held April 16, 1956

The April meeting of the Lake Charles Section of the Louisiana Engineering Society was held Monday night, April 16, 1956, at Sammy's Restaurant.

The meeting was begun with a dinner at 7:00 p.m., after which the meeting was called to order by President Gordon B. Wooster. Forty-two members and guests were present.

President Wooster expressed his appreciation for such a good turnout. He then informally introduced our State President, Dr. Wayne B. Wallace; our State First Vice-President, Mr. Waldemar S. Nelson; the local Vice-President, Mr. R. R. L. Ward and the local Secretary-Treasurer, Mr. G. L. Smith. The other members and guests were called upon to introduce themselves.

After this introductory period, the poll of members wishes for the type and spacing of meetings was reviewed. The poll showed a mixed opinion, but the majority favored dinner meetings spaced at about one month to six weeks apart.

Mr. W. M. Davis moved that we dispense with the reading of the minutes of our last meeting. The motion was seconded by Mr. R. L. L. Ward and carried.

There being no old business to discuss, President Wooster then formally introduced the guest speaker, Dr. Wayne B. Wallace, State President of the Louisiana Engineering Society and Professor of Engineering at Louisiana State University.

Dr. Wallace gave a very informative and comprehensive talk on "The Objectives of the Louisiana Engineering Society". He discussed among many other subjects, the history of the organization and the present activities and functions of the various state committees. He urged us to contact our State Senators and Representatives, and solicit their support of the bill to revise the Louisiana Engineering Licensing law. This bill will be introduced this next session of the legislature. He stated that Louisiana now ranks forty-seventh out of the forty-eighth states in licensing prerequisites. This bill will require four years experience in addition to present requirements.

After the talk, President Wooster announced that the next meeting would be on or about May 14 or May 21, 1956.

GLENDON L. SMITH, Secretary-Treasurer

Minutes of March Meeting of the Monroe Section of the Louisiana Engineering Society, March 8, 1956

The March meeting of the Monroe Section of the Louisiana Engineering Society was held in Ruston, Louisiana, on the Louisiana Tech campus on Tuesday, March 6, 1956. The regular meeting was preceded by the annual shrimp and oyster supper held at 6:30 p.m. in the basement of Bogard Hall, engineering building, Louisiana Tech campus. Upon completion of the evening meal, the group moved to the Little Theater in the Dramatic Arts Building on the Louisiana Tech campus and the meeting was called to order at 7:45 p.m. by Mr. R. A. Smith, president, presiding. Upon motion of Dean Ben T. Bogard, duly seconded, dispensing with the reading of the minutes of the previous meeting was approved by the group. Many Monroe Section guests were introduced by Mr. R. A. Smith, president. Guests of individual members were introduced by Mr. Arthur C. Thigpen, secretary-treasurer.

The speaker for the evening, Mr. Calvin T. Watts, director, Department of Public Works, State of Louisiana, was introduced by Mr. R. A. Smith, president. Mr. Watts gave a most interesting and informative discussion on the background and purpose of the State Department of Public Works and of the proposed D'Arbonne dam and lake project in Union Parish, Louisiana. At the request of Mr. Watts, Mr. A. F. Rabun of the Department of Wildlife and Fisheries discussed the part of the local people in promoting the D'Arbonne dam and lake project. A discussion on the project from the group as a whole ended the program.

The door prize, consisting of a pocket slide rule, was won by Mr. T. R. Henry of Columbian Carbon Company, Monroe, Louisiana. The door prize was donated by the Keuffel & Esser Company through Mr. Wayne F. Spath, assistant manager, St. Louis, Mo.

At this meeting there were 48 members and 41 guests in attendance. On proper motion and second, the group adjourned.

ARTHUR C. THIGPEN, Secretary-Treasurer

**Minutes of the Meeting, Shreveport Section, Louisiana Engineering Society
March 13, 1956**

The meeting was called to order by president Sorensen at 8:00 p.m. Minutes of the past meeting were read and approved.

Discussion in general was held concerning two points of interest in the previous minutes of the earlier meeting. These points were the frequency of the meetings and whether the dinner dance with the ladies auxiliary should be held. The chapter voted to have the dinner-dance this summer.

President Sorensen introduced the program chairman Mr. Jeff Stewart, who in turn introduced a well known local personage, Mr. Charlie Rollins, of the local Assoc. General Contractors Chapter. Mr. Rollins discussed the acute shortage of Engineering personnel.

Mr. Rollins concluded his talk at 8:25. A general discussion of the "J.E.T." program was held and the emphasis needed for this program.

Meeting was adjourned at 8:35 p.m., there being no further business.

JOHN S. MALAHY, JR., Secretary-Treasurer

1956

MEMBERSHIP LIST

C. M.—Charter Member
H. M.—Honorary Member
L. M.—Life Member
A.—Affiliate Member
J.—Junior Member

C. E.—Civil Engineer
Ch. E.—Chemical Engineer
E. E.—Electrical Engineer
M. E.—Mechanical Engineer
R.—Registered, La.

A

- ALFRED E. ABAUNZA, (1938), C. E., R., Ajax Machine Works, 3133 Tchoupitoulas St., New Orleans 15.
- CARL E. ABRAHAMSON, (1940), C. E., A., La. Dept. of Hwys., 1644 Carl Ave., Baton Rouge, La.
- NILS C. ABRAHAMSON, (1944), C. E., R., Department of Hwys., 1644 Carl Ave., Baton Rouge, La.
- MICHAEL C. ABRAHAM, (1936), M. E., E. E., R., New Orleans Public Service Inc., 317 Baronne St., New Orleans 9.
- AARON ABRAMSON, (1946), M. E., Ch. E., R., Petrolane Gas Co., Inc., P. O. Box 4067, Sta. F., New Orleans 18.
- FARRELL W. ADAMS, (1948) M. E., R., United Gas Corp., Box 2867, Monroe, La.
- FRED R. ADAMS, (1940), E. E., R., Southern Bell Tel. and Tel. Co. 304 Iris St., Lake Charles.
- GEORGE C. ADAMS (J), (1953), M. E., R., R. J. Jones & Sons. 2236 Paris St., Alexandria, La.
- SAMUEL L. ADAMS, (1954), E. E., R., Texas Gulf States Utilities Co., 2804 Zeeland Ave., Baton Rouge, La.
- JERRY W. AFFOLTER, JR., (1952), Ch. E., Esso Standard Oil Co., 745 Parlange Drive, Baton Rouge 6.
- FELIX L. ALCUS, (1922), (L. M.), M. E., E. E., R., La., Miss., self employed. 511 Pan American Bldg., New Orleans 12.
- LEWIS SCHERCK ALCUS (L. M.), (1923), M. E., R., 474 Audubon St., New Orleans 18.
- ALBERT M. ALEXANDER, (1944), C. E., R., La., Miss., Fla., Consulting Engineer, 1831 Marengo St., New Orleans 15.
- TOM E. ALEXANDER, (1946), M. E., E. E., R. Crane Packing Co., 334 W. Ardenwood Drive, Baton Rouge.
- JOHN W. ALEE, (1948), C. E., B. M. Dornblatt & Associates, 119 Elvis Court, Metairie, La.
- HUNTER S. ALLEN, (A), (1948), C. E., R. Black Rogers & Co., 525 Commerce Bldg., Baton Rouge.
- JACK W. ALLEN, (1949), M. E., E. E., R., The Celotex Corp., 236 Ridgewood Drive, Metairie, La.
- JAMES E. ALLEN, (J), (1949), C. E., R., The Allen Const. Co., Box 3044, Shreveport, La.
- ROBERT D. ALLEN, (1947), M. E., R., Gulf Engineering Co., 1000 S. Peters St., New Orleans 13.
- WINFIELD W. ALSUP, (1949), C. E., R., J. B. Beaird Co., P. O. Box 1115, Shreveport, La.
- ROBERT W. AMMON, (1951), M. E., Esso Standard Oil Co., 732 Nelson Drive, Baton Rouge, La.
- WALTER J. AMOSS, (L. M.), (1924), C. E., Bd. of Comm., Port of New Orleans, 1571 Henry Clay Ave., New Orleans 18.
- NATHAN L. ANDERSON, (J), (1951), M. E., Kaiser Aluminum & Chemical Corp., Rt. 1, Box 374 Chalmette, La.
- HERMAN M. ANDREAS, (1951), Texas-Bitulithic Co. Box 8044, New Orleans 22.
- ALVIN P. ANDREWS, (1947), C. E., R., La. Dept. of Public Works. P. O. Box 1206, Monroe, La.
- PHILIP P. ANGIER, (1942), C. E. R., La. Dept. of Highways, Rt. 5, Box 286, Shreveport, La.
- JULIUS B. ARBOUR, (J), (1947), M. E., Esso Standard Oil Co. of N. J., La. Div. 2952 Belmont Ave., Baton Rouge, La.

- ROBERT L. ARGUS, (1938), M. E., R., Pan-Am Southern Corp., Destrehan, La.
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- A. F. FRITCHIE, (1945), M. E., E. E., R. Standard Oil Co. of N. J. Box 466, Rt. 3, Highland Road, Baton Rouge 1.
- JACOB C. FRITZ, JR., (J), (1952), Ch. E. Shell Chemical Corp. P. O. Box 2633, Houston 1, Tex.
- ALVIN M. FROMHERZ, (L. M.), (1915), C. E., R., La., Miss., Ala. Fromherz Engineers. 816 Howard Ave., New Orleans 12.
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- FORNEY FULLER, (1953), M. E., R. La., Ala. Combustion Engineering, Inc. 255 Lee Circle Bldg., New Orleans 13.
- MINOR M. FUNDERBURK, (1949), E. E. Louisiana Power & Light Co., Box 304, Sterlington, La.
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- CARY B. GAMBLE, (1941), M. and E. E., R. Tex., Miss., Ala., Tenn., Ga., Ky., Ind., N. C., S. C., La., Carey B. Gamble & Associates. 635 Commercial Place. New Orleans 12.
- VERGIL S. GARNETT, (1949), C. E., R. Olin Gas Transmission Corp. P. O. Box 1482, Monroe, La.
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- CHARLES H. GREEN, (1937), C. E. William F. Surgi Euipment Co. P. O. Box 1309, New Orleans 10, La.

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- N. L. HAWKINS, (1943), C.E. Orleans Materials & Equipment Co. P. O. Box 87, New Orleans 6.
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- S. E. HOTTINGER, JR., (1932), M. E., E. E., R., La. Rating and Fire Prevention Bureau. 70 Hawk St., New Orleans 24.
- FRANK S. HOUGHTON, (1946), M. E., Standard Oil Co. of La. 430 Westmoreland Drive, Baton Rouge.
- DAVID H. HOVEY, (1954), E. E., R. La., Miss. Consulting Engineer. 3170 Florida St., Baton Rouge.
- HENRY G. HOWARD, (1952), C. E., R., La., Me., Vt. Bedell & Nelson. 611 Hyman Drive, New Orleans 21.

- LEWIS B. HOWE, (J), (1951), C. E., R., La. Dept. of Highways, P. O. Box 126, Minden, La.
- WILLIAM M. HOWE, (J), (1950), E. E., Container Corp. of America. 2410 N.W. 25th, Fort Worth 6, Texas.
- ROBERT E. HOWSON, JR., (1953), C. E., 218 Fairfax Drive, New Orleans 14.
- CHARLES P. HOYT, (1945), M. E., R. Esso Standard Oil Co., P. O. Box 864, Baton Rouge 1.
- RICHARD H. HUDSON, JR., (1950), M. E., Esso Standard Oil Co., 4723 Sweetbriar St., Baton Rouge 15.
- GEORGE O. HUET, (1949), Naval Architect, Marine E., 5635 Milne St., New Orleans 24.
- JAMES T. HUEY, (1939), C. E., M. E., R., La. Dept. of Highways. 678 North 5th St., Baton Rouge.
- STANTON ENNES HUEY, (1937), C. E., R., S. E. Huey & Co. Henninger Bldg., Monroe, La.
- JOHN G. HUFFMAN, (1949), Surveyor, R. E. M. Freeman & Associates. 822 Kirby Place, Shreveport.
- JOHN H. HUFFMAN, (A), (1952), Petroleum E., R., United Gas Corp. Rt. 3, Lakeshore Drive, Monroe.
- EDMUND F. HUGHES, (1933), C. E., R., Sewerage and Water Board, 526 Carondelet St., New Orleans 12.
- GEORGE GRIFFIN HUGHES, (1948), M. E., C. E., R., College of Engineering. Southwestern La. Institute. Box 51, S.L.I., Lafayette, La.
- WILLIAM J. HUGHES, (1943), C. E., R. La. Dept. of Highways. 2265 Ferndale Ave., Baton Rouge 15.
- CHARLES H. HUNDEMER, (1947), M. E., R. Gaylord Container Corp., 806 N. Border Drive, Bogalusa, La.
- LAWRENCE N. HUNSINGER, JR., (J), (1956), C. E. La. Dept. of Highways. 1100 W. First St., Kaplan, La.
- DONALD G. HUNTER, (1951), E. E., R. City of Alexandria. 3407 Halsey St., Alexandria, La.
- JOHN H. HUNTER, (1950), C. E., P.O. Box 525, Clemson, S. C.
- MALCOLM L. HURSTELL, (J), (1950), E. E., R., N. O. Public Service Inc. 4900 Kendall Drive, New Orleans 22.
- A. E. HUTCHINSON, (1947), C. E., M. E., Ethyl Corp. Rt. 2, 8255 Old Hammond Hwy. Baton Rouge 1.
- MILES B. HUTSON, (1949), E. E., R. Industrial Electric, Inc. 321 Hillary St., New Orleans 18.
- HENRY I. HUTTO, (1954), E. E., R. American Cyanamid Corp. 4075 River Road, Westwego, La.
- CARL J. HUVEL, (J), (1955), C. E., Rt. 2, Box 630, Breau Bridge, La.
- OLLIE L. HYDE, (A), (1950), E. E., R., Central La. Electric Co. 123 Fairmount St., Pineville, La.

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- CLARENCE A. IBACH, (1944), M. E., Gulf States Utilities. P. O. Box 111, Baton Rouge.
- ORVILLE T. ICE, JR., (1949), Petroleum E., R., Rosett Engineering Service. 522 Egan St., Shreveport.
- JOHN L. ILES, (A), (1951), La. Metal Culvert Co., P. O. Box 4281, Centenary Station, Shreveport.
- JAMES F. ILGENFRITZ, (1949), M. E., R., Boyce-Harvey Machinery, Inc., 137 Diane Ave., New Orleans 23.
- THEODORE J. INNES, JR., (1949), M. E., Esso Standard Oil Co. 5608 Castile Ave., Baton Rouge 6.
- FRANK W. IRLAND, (1955), M. E., R. Mo. Libbey-Owens-Ford Glass Co., 809 Cardinal St., Shreveport.
- IRWIN ISAACSON, JR., (J), (1947), M. E., E. E., R. Leo S. Weil & Walter B. Moses. 600 Audubon Bldg., New Orleans 16.
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- CLARENCE A. JACKSON, (1949), M.E., Jackson Const. Co. Box 623 Sulphur, La.
- O. D. JACKSON, (1951), M.E., R. United Gas Pipe Line Co. Box 1407, Shreveport.
- ERNEST LEE JAHNCKE, (L.M.), (Jan. 1, 1900). Retired. 726 West Beach, Pass Christian, Miss.
- PAUL F. JAHNCKE, (L.M.), (Jan. 1, 1908), C.E., R. Jahncke Service, Inc. 814 Howard Ave., New Orleans 4.
- JAY M. JALENAK, (1955), M.E., R. Jalenak Engineering Co., 2124 Magazine St., New Orleans 13.
- E. JOE JAMES, (1942), C.E., R. La. Dept. of Highways. Box 4245, Capitol Sta. Baton Rouge 2.
- HARDY M. JAMES, (1950), M.E., R. James Machine Works, P. O. Box 1296, Monroe, La.
- ROBERT B. JAMES, (1953), M.E., E.E., R. New Orleans Public Service Inc., 2838 Iberville St., New Orleans.
- JAMES S. JANSSEN, (1933), C.E., M.E., R. New Orleans Public Service Inc. 317 Baronne St., New Orleans 9.
- JOSEPH EDMUND JARMAN, (1942), C.E., R. La. Department of Highways. 134 Memory Lane, Lafayette, La.
- NEILL P. JEFFREY, JR., (1943), C.E., R., A. W. Thompson & Associates. 6306 Beauregard Ave., New Orleans 24.
- RAYMOND E. JENKINS, (1948), E.E., M.E., R. Southwestern La. Institute. P. O. Box 64, S.L.I. Lafayette
- JOHN M. JENNY, JR., (1954), M.E., R. Edwards Engineering Corp., 996 Filmore St., New Orleans 12.
- ALLEN H. JENSEN, (1947), M.E., R. La., Ill. N. O. Public Service Inc. 1600 S. Peters St., New Orleans 13.
- D. W. JESSEN, (1953), C.E., R. Private practice. Room 18, Kaufman Bldg., Lake Charles
- GEORGE T. JOHNS, (J), (1953), C.E., R. La. Dept. of Public Works. P. O. Box 701, Tallulah, La.
- CLIFFORD E. JOHNSON, (1953), C.E., R. La. Dept. of Highways. P. O. Box 226, New Iberia, La.
- EVERETT K. JOHNSON, JR., (J), (1953), C.E. Sewerage & Water Board. 1944 Dublin St., New Orleans 18.
- FRANK E. JOHNSON, JR., (1937), E.E., R., New Orleans Public Service Inc., 317 Baronne St., New Orleans 9.
- LEE H. JOHNSON, (1950), C.E., R., Tulane University, P. O. Station 20, New Orleans 18.
- LESLIE M. JOHNSON, (1955), M.E., Esso Standard Oil Co. 8847 Airline Highway, Baton Rouge 6.
- MILTON R. JOHNSON, JR., (1948), E.E., R. La. Polytechnic Institute. 810 Robert St., Ruston, La.
- O. D. JOHNSON, JR., (1951), E.E., M.E., R., Esso Standard Oil Co. 4312 Shelley St., Baton Rouge 5.
- RICHARD L. JOHNSON, (J), (1950), M.E. P. O. Box 304, Shreveport.
- ROY E. JOHNSON, (1943), C.E., R. H. H. Robertson Co., 1020 Maritime Bldg., New Orleans 12.
- WILLIAM J. JOHNSON, JR., (1947), C.E. U.S. Corps of Engineers, New Orleans District. 536 North Market St., Opelousas, La.
- SAMUEL R. JOHNSTON III, (J), (1952), Surveyor. J. C. McLemore. 3962 Sumner St., Shreveport.
- WILLIAM H. JOHNSTON, (1945), M.E., R., F. N. Johnston, Inc., 236 Humble Bldg., New Orleans 25.
- EDWARD M. JOLLY, (1950), M.E., R., E. M. Freeman and Associates. 3052 Gorton Road, Shreveport, La.
- C. LEONARD JONES, (L.M.), (1923), C.E., R., Board of Commissioners Port of N. O. 27 Maryland Drive, New Orleans 20.

- C. PALMER JONES, (1954), M. E., R. McLellan Equipment Co. 7915 Belfast St., New Orleans 18.
- E. ROGER JONES, JR., (1955), M. E., R. Louisiana State University. 1836 Steele Blvd., Baton Rouge, La.
- FRANK W. JONES, (1953), E. E., R. La., Tex. Gulf States Utilities Co. 1665 Euclid St., Beaumont, Tex.
- JOHN PAUL JONES, (J), (1952), M. E., R., Ogden, Woodruff & Dyer, 956 Francis Harriet Drive, Baton Rouge.
- SARGENT F. JONES, (1940), C. E., R. 5422 Prytanla St., New Orleans 15.
- JOHN CHARLES JORDY, (1952), (A), Acoustical & Insulation Contractor, Lauren, Burt, Inc., 3254 Walnut St., Denver, Colo.
- HOWARD W. JUDSON, (1956), M. E., R. New York. Shell Oil Co. 1478 Granada Drive, New Orleans.
- E. M. JULIAN, (1951), C. E., Standard Dredging Corp., Box 8092, Gentilly Sta., New Orleans 22.
- RALPH W. JUNIUS, (J), (1952), Architect, Boh Bros. Const. Co., P. O. Box 7248, New Orleans 19.

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- TED H. KALENCKI, (1952), M. E., E. E., R., Kaiser Aluminum & Chemical Co., Inc. Rt. 2, Jackson, La.
- JAMES B. KALMBACH, (J), (1955), M. E., R. Texas Eastern Transmission Corp. 808 Ontario St., Shreveport.
- KARL P. KAMMER, (1931), M. E., R. New Orleans Uublic Service Inc. 317 Baronne St., New Orleans 9.
- NOEL P. KAMMER, (1936), Architectural E., General Earthwork Service. 3527 Carondelet St., New Orleans 15.
- W. J. KEATING, (A), (1946), E. E., E. Levy & Co. P. O. Box 1845, Alexandria.
- HAROLD L. KEATON, (1951), Ch. E., R. Gaylord Container Corp. 906 Florida Ave., Bogalusa, La.
- ARTHUR R. KEILER, (1940), Chief Inspector, Hartford Steam Boiler Inspection and Insurance Co. 519 Hibernia Bank Bldg., New Orleans 12.
- MIKE KELLEHER, (1954), M. E., E. E., R. Kelleher Engineering Corp., 4707 Elysian Fields Ave., New Orleans 22.
- CHARLES KELLER, JR., (1946), M. E., R. Keller Construction Corp. P. O. Box 439, New Orleans 1.
- G. HARVEY KELLERMAN, (1954), E. E. General Electric Company. 837 Gravier St., New Orleans 12.
- CLAUDE J. KELLY, (1936), C. E., N. O. Cement Products Co., Inc. 4139 Walmsley Ave., New Orleans 25.
- CLAUDE KELLY, JR., (J), (1953), C. E., R. N. O. Cement Products Co., Inc. 4139 Walmsley Ave., New Orleans 25.
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- CHARLES MACDONALD KERR, (L. M.), (1913), C. E., R. 5831 S. Robertson St., New Orleans 15.
- GERALD C. KERR, (1937), Acoustical E., Johns-Mansville Co., P. O. Box 7072, Mid-City Sta., New Orleans.
- JAMES F. KERR, (1953), C. E., R., Tex., Missouri Pacific Lines. 404 W. Alabama Ave. Houston 6, Tex.
- ROY C. KETCHUM, (1950), C. E., 8th Naval Dist., U.S. Navy. 106 Finland Place, New Orleans 14.
- BERNARD L. KIERNAN, JR., (1944), M. E., E. E., R., National Gypsum Co. Box 5257-B, New Orleans 15.
- BERNARD L. KIERNAN, SR., (1944), M. E., E. E., R. Jackson Brewing Co. & Kay Engineering Co. 1622 Mirabeau Ave., New Orleans 22.
- ELLIS M. KILLGORE, (1954), M. E., R. La. Polytechnic Institute. Box 12, Tech Station, Ruston, La.
- JAMES L. KILPATRICK, (J), (1953), Pet. E. U.S. Navy. 7773 E. National, Millington, Tenn.
- MARVIN R. KIMBRELL, JR., (1952), E. E., General Electric Co., 1004 Richards Bldg., New Orleans 12.
- BOLDEN M. KINCHEN, JR., (1956), M. E., Esso Standard Oil Co. Rt. 2, Box 303-A, Denham Springs, La.

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- HERBERT M. KING, JR., (J), E. E., Brown-Roberts Electric Co., 307 Carl St., Rt. 21, Alexandria, La.
- WILLIAM F. KING, (J), (1951), M. E., E. E., R. James M. Todd & Associates. 2120 Audubon St., New Orleans 18.
- KENNETH LEE KINNEY, (1951), M. E., R. Esso Standard Oil Co. 3121 Eugene St. Baton Rouge 6.
- DICK R. KINSER (A), (1956), Southern Equipment & Tractor Co. 1234 Leighton Drive, Baton Rouge.
- O. G. KIRBY, (1940), C. E., R. W. R. Aldrich & Co., P. O. Box 1751, Baton Rouge, La.
- THOMAS W. KIRBY, (1947), Chemist, Cities Service Refining Corp. 1704 Bryant Court Drive, Lake Charles.
- MILTON E. KIRKPATRICK, JR., (1948), M. E., R., La., Ala. E. I. Dupont deNemours Co., 638 Hutchinson Dr., North Augusta, S. C.
- LEONARD R. KIRST, (1929), C. E., M. E., R., La. State Dept. of Public Works. 317 East Drive, Baton Rouge 6.
- JOHN T. KNIGHT, JR., (1950), M. E., R. La., Miss., Ala., Equitable Equipment Company, 410 Camp St., New Orleans 12.
- NATHANIEL B. KNIGHT, JR., (A), (1944), E. E., 916 Fourth St., Gretna, La.
- CHARLES P. KNOT, (1944), E. E., R. Moloney Electric Company. 4018 Thalia St., New Orleans 25.
- MARION F. KNOT, (1946), M. E., Gulf Refining Co. P.O. Box 400, New Orleans, La.
- RICHARD B. KOHNKE, (L. M.), (1911), C. E., R. City of New Orleans. 932 Picheloup Place, New Orleans 19.
- STANLEY P. KOLTUN, (J), (1952), Ch. E., R., Southern Research Laboratory. 1710 S. Carrollton Ave., Apt. U, New Orleans 18.
- LOUIS I. KORN, (1933), M. E., E. E., R. U.S. Navy. Algiers Naval Station, 2201 Octavia St., New Orleans 15.
- J. I. KOTTER, (J), (1951), M. E., 2916-49th St., Metairie, La. Ave., Baton Rouge.
- HAROLD F. KRAUS, (1950), E. E., R. ,U.S. Navy. 4700 Pontchartrain Blvd. New Orleans 18.
- S. HENRY KRONTHAL, (1950), Architectural E., Rust Eng. Co. 6007 Beldart St., Houston 21, Tex.
- EMILE S. KROUSE, JR., (J), (1952), Agri. E., R., Gulf States Utilities Co. 340 Florida St., Baton Rouge.
- PAUL P. KRUTAK, (1935), E. E., Westinghouse Electric Corp. 1226 Whitney Bldg., New Orleans.
- COLEMAN KUHN, (1956), C. E., R., Private practice, 1401 National Bank of Commerce Bldg., New Orleans 12.
- ROBERT J. KUHN, (L.M.), (1925), E. E., M. E., R., La., Ky., Tenn., Miss., Ind., Ark. 1643 Octavia St., New Orleans 15.
- MARSHALL F. KULL, (1954), M. E., R. Private Practice. 1017 Audubon Ave., West Monroe.
- A. R. KUZEL, (1950), M. E., R., La. Dept. of Highways. 5836 Fairfield Ave., Baton Rouge.

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- EDWIN A. LAFAYE, (1943), M. E., R., Murray-Baker-Frederic, Inc. 234 Humble Bldg. New Orleans 25.
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- THEODORE J. LALA, (J), (1951), M. E., R., Hepinstall Steel Works. P. O. Box 1422 New Orleans.
- GEORGE B. LAMBERT, JR., (1939), Engineer, M. T. Reed Construction Co. Mississippi City, Miss.
- ALBERT F. LANDERS, (1953), M. E., E. E., Alco Products Inc. 128 W. Henfer Park, New Orleans 23.
- HENRY LOUIS LANDRY, (1942), E. E., R. Gulf States Utilities Co., 2222 Cedardale Ave., Baton Rouge.
- LOUIS C. LANDRY, JR., (1950), E. E., M. E., R., United Gas Corp., New Iberia, La.

- WALTER A. LANDRY, JR., (1950), M. E., R., National Gypsum Co., 109 Forest Ave., Berkley Hts., N. J.
- HERRICK J. LANE, (L.M.), (1921), C. E., W. Horace Williams Co. 833 Howard Ave., New Orleans 12.
- HERRICK J. LANE, JR., (1946), C. E., W. Horace Williams Co., 1206 Nashville Ave., New Orleans 15.
- EDMOND J. LANGHETEE, JR., (J), (1951), Petroleum E., R. La. Land & Exploration Co., 1325 Mendez St., New Orleans 22.
- JOHN E. LANGLEY, (1951), M. E., R., Esso Standard Oil Co. 1812 Ingleside Dr., Baton Rouge, La.
- CHARLES K. LANGLINAIS, (1955), Surveyor, R. Private practice. P. O. Box 184, Broussard, La.
- WILLIAM J. LANK, (1949), C. E., R. Kansas City Southern Ry. Co. (Retired) 171 Albert St., Shreveport.
- N. E. LANT, (H.M.), (1937), C. E., R. 4780 Newcomb Drive, Baton Rouge, La.
- FERNAND S. LAPEYRE, (1948), M. E., E. E., R., The Peelers Co., P. O. Box 1102, New Orleans 4.
- WILLIAM M. LARKIN, (1944), E. E., Gulf States Utilities, Lake Charles.
- FERDINAND L. LARUE, JR., (1954), Ch. E., Southwestern Louisiana Institute. 435 N. Sterling St., Lafayette.
- LEO J. LASSALLE, (1936), (H.M.), C. E., M. E., R., La. State University and A & M College, University Station, Baton Rouge 3.
- DOUGLAS F. LATIMER, (1946), M. E., C. E., Gulf States Utilities Co., P. O. Box 2431, Baton Rouge.
- ROBERT D. LAW, JR., (J), (1950), C. E., R. La. Dept. of Highways, 980 Carrollton Ave., Baton Rouge.
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- WHITMEL E. LAZARUS, (J), (1951), E. E., Westinghouse Electric Corp., 21400 Jean Ave., Matteson, Ill.
- MAXWELL A. LEA, (1948), M. E., R. Ethyl Corp., 3970 100-Oaks Ave., Baton Rouge 6.
- HARRISON C. LEAK, JR., (1956), C. E., R. Esso Standard Oil Co. 9566 Donna Drive, Baton Rouge.
- W. STONE LEAKE, (1934), E. E., R., General Electric Co. 1004 Richard Bldg., New Orleans 12.
- JOE E. LEAVINES, (1955), E. E., R., Kaiser Aluminum & Chemical Corp., 2920 Main St., Baton Rouge.
- H. A. LeBLANC, JR., (1947), Ch. E., Shell Oil Co., Inc., Norco, La.
- OWEN V. LEBLANC, (1944), C. E., R., W. Horace Williams Co., 6480 Argonne St., New Orleans 24.
- RUSSELL T. LeBLANC, (1956), M. E., R., Jahncke Service Inc., 814 Howard Ave., New Orleans 13.
- WHARTON A. LEBLANC, (1948), Agricultural E., M. E., R., General Gas Corp. 2226 Pickett Ave., Baton Rouge.
- WENDEL J. LECHTENBERG, (J), (1944), E. E., Mathieson Chemical Corp. 3721 Vanderbilt St., Lake Charles.
- STANLEY M. LECOURT, (1933), C. E., M. E., R., Mississippi Shipping Co., Inc. 920 Picheloup Place, New Orleans 19.
- CHARLES J. LeDOUX, (1955), M. E., R., La., Tenn., Gulf Refining Corp., P. O. Box 400, New Orleans 1.
- J. McLEAN LEDOUX, (1945), E. E., R., National Electric Products Corp., 500 Magazine St., New Orleans 3.
- CLARENCE O. LEE, (1944), Mining E., R., Freeport Sulphur Co. P. O. Box 1520, New Orleans 5.
- ROBERT E. LEE, JR., (1951), M. E., Esso Standard Oil Co. 3124 Tyrone Dr., Baton Rouge 6.
- BENJAMIN F. LEEPER, (1955), M. E., E. E., R., Sperry-Rand Corp., 1457 Country Club Drive, Baton Rouge.
- PERSHNG J. LEFORT, (J), (1952), M. E. The Texas Company. P. O. Box 66, Galliano, La.
- RANDALL F. LEGEAI, (L.M.), (1923), E. E., R., New Orleans Public Service Inc. 3824 Nashville Ave., New Orleans 15.
- WALTER C. LEHIGH, (A), (1950), Shell Oil Co., P.O. Box 673, New Orleans 7.

- A. J. LEHMAN, (1948), E. E., R., La., Texas, Freeport Sulphur Co., Box 187. Port Sulphur, La.
- H. L. LEHMANN, (1937), C. E., R. La. Dept. of Highways, Baton Rouge, La.
- WALTER LEMANN, JR., (1955), Ch. E., R. Private practice. P. O. Box 4712. Audubon Station, Baton Rouge 6.
- WENDEL G. LEIBE, (1948), M. E., R., City of N. O., Dept. of Mech. Inspection. 426 S. Jefferson Davis Parkway, New Orleans 19.
- HAROLD F. LEIENDECKER, (J), (1955), C. E., Esso Standard Oil Co. 657 Carol Marie Drive, Baton Rouge.
- HENRY F. LEMIEUX, (J), (1951), C. E., R. Raymond Concrete Pile Co. 201 Pere Marquette Bldg., New Orleans 12.
- GEORGE P. LEMOINE, (1950), Ch. E. Lemoine Bros. P. O. Box 298, Bunkie, La.
- JAMES A. LEMOINE, (1952), M. E., Lemoine Bros., Box 298, Bunkie, La.
- LEON C. LEONARD, (J), (1953), M. E., R., A. M. Lockett & Co., Ltd. 2613 Palmer Ave., New Orleans 18.
- FRED E. LESHE, (1950), C. E., Cities Service Refining Corp. 214 Rio Hondo, Maplewood, La.
- HAROLD A. LEVEY, SR., (1936), Ch. E., M. E., E. E., R. La., Texas. American Products Mfg. Co., Inc. 8127-33 Oleander St., New Orleans 18.
- DAVID J. LEVINE, (J), (1952), M. E., R., Equitable Equipment Co. Inc. 410 Camp St., New Orleans 12.
- ERNEST LEE LEVINGSTON, (1954), C. E., Cities Service Refining Corp. 2005 Fourth St., Lake Charles.
- ALLISON M. LEVY, (1944), M. E., de Laureal & Moses, 7 W. Intendencia St., Pensacola, Fla.
- DAVID P. LEVY, (1950), M. E., E. E., R., Equitable Equipment Co. 410 Camp St., New Orleans 12.
- EUGENE LEVY, (A), (1946), E. Levy & Co., Electrical Contractors. 530 Murray St., Alexandria.
- MILTON L. LEVY, (1946), E. E., R. Higgins Inc., 5673 West End Blvd., New Orleans 24.
- NEVILLE LEVY, (1929), M. E., E. E., R. Equitable Equipment Co., Inc. 410 Camp St., New Orleans 12.
- WILLIAM L. LEWIS, (J), (1954), M. E., R. Esso Standard Oil Co. 1767 Ormandy St., Baton Rouge.
- HOWARD B. L'HEUREUX, (1951), C. E., R., F. P. Joseph Assoc. Engrs. 720 Murray St., Alexandria.
- HUGH A. LILES, (1954), M. E., R. Allied Sales & Service Co. 4376 State Street Drive, New Orleans 25.
- RALPH E. LIND, (1930), C. E., R. 6624 Louis XIV St., New Orleans 24.
- ARCHIE C. LINDSAY, JR., (A), (1950), C. E., R. City of Shreveport. 2515 James St., Shreveport.
- R. P. LINFIELD, (1930), C. E., R. 7715 Burthe St., New Orleans 18.
- G. MORGAN LIPSCOMB, (1955), E. E., R. Tex., Kaiser Aluminum & Chemical Corp. Box 1031, Baton Rouge.
- WILLIAM A. LOCHTE, (1945), M. E., American-South African Steamship Co., 7935 S. Claiborne, New Orleans 18.
- ROBERT P. LOCKETT, (A), (1931), M. E., R. A. M. Lockett & Co. 308 Whitney Bldg., New Orleans 7.
- ROBERT P. LOCKETT, JR., (1947), M. E., R. A. M. Lockett & Co., 308 Whitney Bldg., New Orleans 7.
- T. BENBURY LOCKETT, (1949), M. E., R., Service Supply & Eng. Co. 2130 Palmer Ave., New Orleans 18.
- Z. L. LOFLIN, (1952), M. E., Ch. E., R., Southwestern Louisiana Institute. Box 353, S.L.I. Station, Lafayette.
- GEORGE L. LOGAN, (1948), Petroleum E., R., Lyons & Logan. 1500 Beck Bldg., Shreveport.
- JOHN S. LOGAN, (1949), Highway E., U.S. Bureau of Public Roads. 416 East Drive, Baton Rouge 6.
- ADRIAN L. LONG, (J), (1954), C. E., Gulf Refining Co., Southern Pipe Line Div., Box 1731, Shreveport.
- JAMES C. LORIO, (J), (1954), E. E., R. La. Dept. of Highways. 2304 Hiawatha St., Baton Rouge.
- JULES A. LORIO, (L.M.), (1921), M. E., Dibert, Bancroft & Ross Co., Ltd. 7420 Benjamin St., New Orleans 18.

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- ALFRED J. LOUP, JR., (1949), C. E., R. Dunham Wilson Co. 2349 Edgewood Drive, Baton Rouge.
- L. A. LOUSTALOT, (L.M.), (1913), C. E. Guaranty Bank & Trust Co., Hammond, La.
- BERNARD LOUVIERE, (1949), M. E., R., Creole Engineering Co. P. O. Box 12115, New Orleans 24.
- ELIHU R. LUCAS, JR., (1955), C. E., R. David W. Godat & Associates. 4644 Kendall Drive, New Orleans.
- M. CONWAY LUSK, (J), (1954), C. E., R. La. State Highway Dept. 8065 Owen St., Baton Rouge 2.
- EMILE W. LUSTED, (1955), M. E., R. Delta Bank Mfg. Co. 2955 Pochontas St., Baton Rouge 5.
- KENNETH E. LUTZ, (1954), M. E., R. Esso Standard Oil Co. 2320 Nicholson Drive, Baton Rouge.
- JAMES W. LYON, (J), (1955), C. E., R. La. Dept. of Highways. 2071 Cloverdale St., Baton Rouge.
- A. A. LYONS, (1949), C. E., R., City of Shreveport. 659 Rutherford St., Shreveport.
- BYRON PHELPS LYONS, (1949)(C. E., R., La. Dept. Public Works, 614 Drehr Ave., Baton Rouge.
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- DANIEL P. MABEL, (1945), E. E., Anaconda Wire & Cable Co. 601 Hibernia Bldg., New Orleans 12.
- AUBON L. MABRY, (1947), C. E., U.S. Navy Dist. Public Works Office. 101 Larchmont Place, New Orleans 14.
- FRANK W. MACDONALD, (1933), C. E., R., Tulane University, New Orleans 18.
- KENNETH W. MACKENZIE, (1939), Testing Engineer, Construction Materials Laboratory, 624 Atchley St., Knoxville, Tenn.
- RAYMOND P. MADDUX, (J), (1953), M. E., Combustion Engineering, Inc. 2705 Alisdale Drive, Toledo 6, Ohio.
- LEONARD F. MAGEE, (1951), E. E., R. City of Alexandria. 2425 Elliot St., Alexandria.
- CLAYTON R. MAHAFFEY, SR., (1956), M. E. Naugatuck Chemicals Div., U.S. Rubber Co., Rt. 2, Box 47, Port Allen, La.
- CARROLL J. MAHAFFEY, (J), (1955), Ceramic Engr. Johns-Manville Sales Corp. Room 401, 2400 Canal St., New Orleans, La.
- LELAND S. MAJOR, (1953), M. E., Esso Standard Oil Co. 4511 Highland Road, Baton Rouge.
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- JOHN J. MALARKEY (A), (1952), Draftsman. Matheison Chemical Corp. 1606 Sixth St., Lake Charles.
- JOHN F. MALLETT, (1943), C. E., R., La. Dept. of Highways. Rt. 2, Box 293 Monroe, La.
- JOHN D. MALONE. JR., (1937), E. E., New Orleans Public Service, Inc. 317 Baronne St., New Orleans 9.
- LAWRENCE MANN, JR., (J), (1952), M. E., R., Esso Standard Oil Co. 4051 Churchill Ave., Baton Rouge.
- LOUIS B. MANN, (J), (1952), M. E., Louisiana Motors, Box 354, Lafayette.
- H. H. MANNER, JR., (1947), Architectural E., La. Metal Culvert Co. Box 2427, Baton Rouge 2.
- JOHN F. MANSON, (1951), C. E., R. P. Farnsworth Co., Inc. Box 850, New Orleans.
- S. KENAN MANSON, JR., (1942), C. E., R., King & Co., Inc. 401 Park Road, Metairie, La.
- MICHAEL J. MARCHESE, (1948), E. E., R. U.S. Navy. 1716 St. Roch Ave., New Orleans 17.
- WARREN E. MARCUM, (A), (1952), C. E., R., La. Dept. of Highways. 2045 North 17th St., Baton Rouge.

- GODFREY L. MARINE, (1951), E. E., R., Marine Electric Co., 114 E. Congress St., Lafayette.
- HAROLD O. MARQUART, (1943), C. E., Gaylord Container Corp., Mill Div. 330 N. Border Drive, Bogalusa, La.
- GORDON A. MARSALIS, (1951), C. E., R. Industrial Steel Products Co., Inc., P.O. Box 1814, Shreveport.
- HARRY C. MARTIN, (1955), Ch. E., R. Forest Products Div., Olin Mathieson Chemical Corp. Box 488, West Monroe, La.
- HARVEY J. MARTIN, (J), (1954), E. E., R. N. O. Public Service Inc. 3911 Franklin Ave., New Orleans 13.
- PAUL G. MARTIN, (1954), C. E., R. La., Kan. Burgwin & Martin. 406 W. 7th St., Topeka, Kansas.
- WM. O. MARTIN, (1955), C. E., R., La. Dept. of Highways, P.O. Box 43, Leesville, La.
- JOHN L. MARTINEZ, (1947), M. E., R., Tulane University. Patents, Inc., 2420 Pine St., New Orleans 25.
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- WILLIAM A. MASSIMINI, (J), (1950), M. E., R. Gulf Engineering Co., 1000 S. Peters St., New Orleans 13.
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- EMMETT LEE MATHEWS, JR., (1949), C. E., R. City of Alexandria, Route 2, Box 21, Alexandria.
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- GEORGE ELMER MAY, (1940), M. and E. E., N. O. Public Service Inc. 2031 Short St., New Orleans 18.
- DAN L. MAYER, (A), (1955), Sales Engr., Southern States Equipment Co., Inc. 3358 Roger Williams St., New Orleans 19.
- JOHN K. MAYER, (1933), M. E., C. E., E. E., R. College of Engineering, Tulane University. 2419 Audubon St., New Orleans 25.
- WILLIAM G. MAYER, (1950), C. E., R. La. Dept. of Highways. 301 Westerfield, Bossier City, La.
- CHARLES J. MAYEUX, JR., (1947), C. E., R. Gaylord Container Corp. 505 North Border Drive, Bogalusa, La.
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- JOHN E. McADAM, (1949), E. E., Dixie Electric Membership Corp. 381 Finchley Drive, Baton Rouge.
- SAMUEL H. McAFEE, JR., (1950), M. E., New Orleans Public Service Inc. 2838 Iberville St., New Orleans 19.
- CHARLES R. McBRIDE, JR., (1950), M. and E. E., Firestone Tire & Rubber Co. 3429 Polk St., Lake Charles.
- ROBERT R. McBRIDE, JR., (J), (1954), C. E. Bonded Roofing & Specialty Co. 955 Azalea, Lafayette.
- JOHN I. McCAIN, C. E., R. McCain & Associates. 8200 Florida St., Baton Rouge.
- JOHN C. McCAMPBELL, (1952), Geologist. Southwestern La. Institute. Box 326, SLI, Lafayette.
- A. HEWS McCANN, (1946), Architect, C. E., R., Ia., Ill. Partner, McCann, Prout & Associates. 410 Howes Bldg., Clinton, Iowa.
- DANIEL B. McCARTY, (1951), C. E., Surveyor, R. La. Dept. of Highways. 1618 Louisiana St., Covington, La.
- MARVIN R. McCARTY, (1954), M. E., Johns-Manville Sales Corp. P. O. Box 3277, Istrouma Station, Baton Rouge.
- R. A. McCLENAGHAN, (1949), C. E., R. La., Tex. Self employed. P. O. Box 4326, Shreveport.
- RALPH H. McCOLLISTER, (1954), C. E., R., Esso Standard Oil Co., 3175 Conley St., Baton Rouge.
- S. LOGAN McCONNELL, (1947), C. E., M. E., E. E., R. La. City of New Orleans. 1219 First St., New Orleans 13.
- STRUBBE McCONNELL, JR., (1955), E. E. Esso Stand Oil Co. 2284 Hillsdale St., Baton Rouge 16.

- WILLIAM R. McCOY, (1953), C.E., R. Weaks Supply Co. 1101 S. 8th St., Monroe.
- JAMES P. McCULLOUGH, (1938), Ch. E., United Gas Pipe Co. P. O. Box 1407, Shreveport, La.
- THOMAS J. McDANIEL, (1951), E. E., Gaylord Container Corp. Route 3, Box 67, Bogalusa, La.
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- WILLIAM E. McFARLAND, (1953), Ch. E., M. E., R. Henderson Sugar Refinery, Inc., 1136 Washington Avenue, New Orleans 13.
- J. LUCIUS McGEHEE, (1949), M. E., E. E., R. Delta Bag Co. Inc., 218 Pine St., New Orleans 18.
- WILLIE E. McGOUGH, (1955), M. E., R. Alin Matheison Chemical Corp., Forest Products Div. 1712 Emerson St., Monroe, La.
- GEORGE B. McGUIRE, (1947), C. E., 867 Bradford Ave., Westfield, N. J.
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- CHARLES M. McKAY, (1955), Ch. E., Copolymer Corp. 2503 Spain St., Baton Rouge.
- DEAN C. McKEE, (J), (1952), C. E., R., Bodman, Murrell & Smith. 3624 Geronimo St., Baton Rouge.
- PAUL A. McKIM, (1944), Ch. E., Ethyl Corp. 630 Delgado Drive, Baton Rouge 2.
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- EDWARD A. McLELLAN, (1938), M. E., R. McLellan Equipment Co. 2375 Tchoupitoulas St., New Orleans 13.
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- EDWARD J. McNAMARA, (1937), C. E., R. Freeport Sulphur Co., 308 Dunboyne Place, Thibodaux, La.
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- JOHN E. McNAMARA, (1950), Radio E. General Electronic & Engineering Service Corp. 601 South Crocker St., Sulphur, La.
- ERNEST W. McNEIL, JR., (1948), E. E., Esso Standard Oil Co. 1449 Rosemont Drive, Baton Rouge 6.
- NEIL McNELIS, (1949), C. E., R., The Carter Oil Co., 755 Huron St., Shreveport.
- E. S. McROBERTS, (1949), M. E., R. The J. B. Beaird Co., Inc. 6114 Henderson St., Shreveport 41.
- WILLIAM E. McWHIRTER, JR., (J), (1951), Ch. E., R., Pan Am Southern Corp. 23 Santa Ana Ave., New Orleans 21.
- GEORGE P. MEADE, (1936), Ch. E., Colonial Sugars Co., Gramercy, La.
- ALFRED MARION MELANCON, (1942), E. E., R., Tex. Gulf States Utilities Co., 645 East Drive, Beaumont, Texas.
- CHARLES L. MELANCON, JR., (J), (1951), M. E. Dow Chemical Co. 807 Magnolia Lake Jackson, Texas.
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- HAROLD MELVILLE, JR., (1950), Petroleum E., R. F. A. Callery Inc. Rt. 2, Box 198 GG, Lafayette.
- OSKAR R. MENTON, (1948), E. E., Esso Standard Oil Co. 2855 Morning Glory Ave., Baton Rouge.
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- HENRY M. MESSINGER, (1950), Surveyor, R., Private Practice. 401 Jackson St., Bastrop, La.
- CHARLES E. METRAILER, (1955), E. E., R. Metrailer-Ingram Consulting Engrs., 2932 Government St., Baton Rouge.
- EDWARD R. METZ, JR., (1951), M. E., R., Cal-Metal Pipe Corp. of La. 6648 Sheffield Ave., Baton Rouge.
- HIRSCH C. MEYER, JR., (1955), C. E., R., La. Dept. of Highways, 3361 Iowa St., Baton Rouge.
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- ALBERT J. MEYERS, (1933), C. E., M. E., R. Shell Oil Co., Norco, La.
- GEORGE F. MEYN, (1951), C. E., U.S. Corps of Engrs., N. O. District. 4737 Venus St., New Orleans 22.
- FRANK J. MIANO, (1952), M. E., J. H. Rutter-Rex Mfg. Co. 3725 Dauphine St., New Orleans.
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- OSWALD A. MINIERIS, (1953), M. E., Esso Standard Oil Co. Box 551, Baton Rouge.
- ERNEST L. MIRE, (1938), C. E., R. New Orleans Public Belt Railroad. P. O. Box 1240, New Orleans 10.
- EDWARD C. MISHOU, (1949), M. E., Pet. E., R. La. Minnesota Pipe Line Co. 1062 W. First National Bank Bldg., St. Paul 1, Minn.
- H. LANE MITCHELL, (1944), C. E., R. City of Shreveport. City Hall, Shreveport, La.
- H. C. MOFFITT, JR., (1948), C. E., R. U.S. Engineer Corps, Galveston District. 6055 Patton St., New Orleans 18.
- HENRI J. MOLAISON, (1934), Ch. E., R., Tex., La. U.S. Southern Regional Laboratory, 5531 Marshal Foch St., New Orleans 24.
- RALPH R. MONGEAU, (J), (1952), E. E., R. Ruckstuhl & Fick, Inc., 3032 Napoleon Ave., New Orleans 15.
- JOHN EDWARD MONROE, JR., (1944), Ch. E., R. Freeport Sulphur Co. P. O. Box 657, Port Sulphur, La.
- JOSEPH T. MONTGOMERY, III, (1946), C. E., R. Consulting Engineer. 319 W. William David Parkway, Metairie, La.
- DAVID MOODIE, (1933), M. E., R. N. O. Public Service Inc. 1600 So. Peters St., New Orleans 13.
- JOSEPH R. MOONEY, (1951), M. E., C. E., R., Mooney Equipment Co. 5117 Louisa Drive, New Orleans 22.
- ANDREW M. MOORE, (1950), E. E., R. Central Louisiana Electric Co., Inc. 1423 Donohue Ferry Rd., Pineville, La.
- CHARLES B. MOORE (1955), Ch. E. Esso Standard Oil Co. 2208 Cherrydale St., Baton Rouge.
- EDWARD C. MOORE (1956), M. E., R. Sewerage & Water Board of N. O. 4709 Banks St., New Orleans 18.

- MARION MOORE, (1954), Ch.E., R. State of Louisiana, 1302 Peniston St., New Orleans 15.
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- JAMES S. MORGAN, (1951), Ch.E., Barrow-Agee Laboratories Inc. 4355 Bayliss Ave., Memphis, Tenn.
- KEITH HAL MORGAN, (1950), E.E., R. Southern Bell Tel. & Tel. Co., Inc. 7204 Willow St., New Orleans 18.
- LELAND E. MORGAN, (1948), Agricultural E., R., Ford Motor Co., Tractor Div. 2509 E. Maple, Birmingham, Mich.
- R. DOUGLAS MORGAN, (1949), C.E., R. La., Tex. T. L. James & Co. Inc. 1060 Green Acres Road, Metairie, La.
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- MAGEE J. MOSS, (1952), C.E., R. La. Dept. of Highways. Rt. 2, Box 270-A. Abbeville, La.
- F. PRESTON MOTTRAM, (1948), M.E., R. Red Star Yeast Products Co. P.O. Box 6218, New Orleans 14.
- ALFRED G. MULLER, (1950), M.E., Louisiana Power & Light Co. 54 53th St., Gulfport, Miss.
- JACOB F. MULLER, JR., (1932), M.E., Muller Furniture Mfg., Co. 3 Fairview Court, Metairie, La.
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- ADAM G. MUNDINGER, (1943), C.E., R. Mundinger, Dupree & Cooper. 4559 Highland Road, Baton Rouge.
- JOHN J. MUNDNGER, (1947), C.E., 901 Boyd Ave., Baton Rouge.
- ROBERT S. MUNSELL, (1944), Mining E., Bechtel Corp. 6267 California Ave., Long Beach 5, Calif.
- E. LANDRY MURPHY, (1956), M.E., Allan J. Harris Co. 148 Elaine Ave., Harahan, La.
- STENNING C. MURPHY, (1944), Ch.E., R. Blue Plate Foods, Inc. 15 Rosa Park, New Orleans 15.
- HOWARD D. MUSE, (1955), C.E., R., Kaiser Aluminum & Chemical Corp., 6223 Goodwood Ave., Baton Rouge 6.
- WESTON W. MUSE, JR., (1945), C.E., R., Department of Highways. 2617 Madison Ave., Baton Rouge.
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- LAWRENCE K. NELSON, (1940), M. and E. E., R. La., Miss. 7428 Benjamin St., New Orleans 18.
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- LEO A. NIXON, (1942), C. E., The Texas & Pacific Ry., Co. Box 1526, Alexandria.
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- THOMAS H. NOLAN, (J), (1951), M. E., R. A. M. Lockett & Co. 5622 Canal Blvd., New Orleans 24.
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- FRANCIS J. ORY, (1941), C. E., R. Gervais Favrot Const. Co. 312 Millaudon St., New Orleans 18.
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- PAUL F. OSWALD, (1945), M. E. R., Thomson Machinery Co. 3031 Coliseum St., New Orleans 15.
- LOUIS R. OTTO, JR., (1950), E. E., R., Daniel, Mann, Johnson & Mendelhall, A.P.O. 125, New York, N. Y.
- ROBERT C. OVERALL, (1954), C. E., R. Coastal Contractors Inc., Box 911, Baton Rouge.
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- FRANK RIESS, (1944), C. E., M. E., E. E., R. 1322 State St., New Orleans 18.
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- FRANK M. RITCHIE, (1943), Surveyor, R. The Louisiana Land & Exploration Co. 225 Bayou Black Drive, Houma, La.
- CHARLES L. RITTENBERG, (1937), C. E., R., Meyers, Whitty & Hodge. 429 Lowerline St., New Orleans 18.
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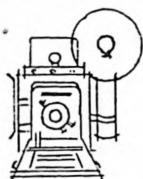
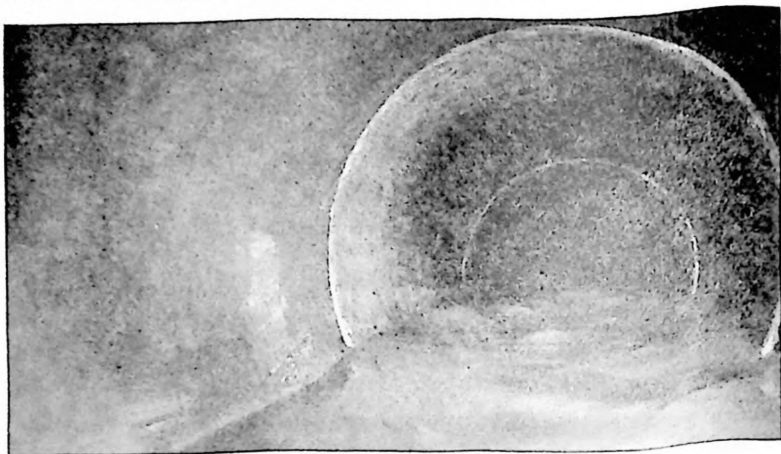
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Z

- MARIO G. ZERVIGON, (1943), E. E., R. La., Pa. Private Practice. 504 Audubon Bldg., New Orleans 16.
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Vol. 42

SEPTEMBER, 1956

No. 3

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YOUR PRESIDENT REPORTS

The amendments to the Engineering Registration Act were introduced in the House of Representatives as HB 553 by Representative Wayne Gaudin and A. T. Sanders, Jr., of East Baton Rouge.

The bill enjoyed an early success, receiving a favorable vote from Judiciary B Committee and on June 15, passed on the floor of the House 64-0. It was then ordered to the Senate where it was in the charge of Senator J. D. DeBlieux of District 20. It received a favorable vote from Judiciary A Committee and was referred to the Legislative Bureau from which it was reported with amendments.

The bill then met opposition on the floor of the Senate and was returned to the Calendar, subject to call. On July 8 it was called and failed to pass, 10 yeas, 15 nays, 14 absent or not voting. The record shows the following:

Voting Yea, Senators Ackal, Cole, DeBlieux, Folse, Gaspard, Jones, McCollough, Sevier, Sockrider, and Stewart.

Voting Nay, Senators Ainsworth, Blanchard, Crothers, Deichmann, Downs, Fink, Folkes, Friedman, King, Long, Nelson, Rappelet, Rayburn, Rogers, and Sims.

Absent or Not Voting, Senators Cleveland, Davis, Edwards, Eustis, Fruge, Hickey, Howard, Larcade, O'Conner, Patton, Petre, Rainach, Sparks, and Stumpf.

The leaders of the opposition were contacted but they were firm in their beliefs that this was a hardship on college graduates and that they should be allowed to practice immediately upon graduation.

The total operation was tedious and time-consuming and required constant vigilance on the part of several members, but was not without value in experience gained.

I would like to take this opportunity to thank Mr. Jack Burk, Chairman of the Legislative Committee, and the members of his committee for their fine work. Mr. Burk arranged for the introduction of the bill and at considerable personal expense retained an attorney to watch it. He duplicated the telegrams from the Deans of Engineering of the four Louisiana schools and much other pertinent information, which he placed in the hands of each Senator. In addition he spent much time on the floor.

To all of the members and non-members that gave so freely and enthusiastically of their time in this cause, please accept my most sincere thanks.

I should like to take the liberty of recommending that the next time that the bill is introduced that it be the full, strong, National Model Law and that a considerable fund be raised for legal help in this important part of the Law of Louisiana.

W. P. WALLACE
President

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* * * *

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Sun Warmed Homes. By 1975, 13,000,000 U. S. homes will be heated by the sun. Many others will supplement this heat with such electrical units as the heat pump which may utilize not only hot air from the roof but also waste heat in the septic tank and from wash water heated by the household water heater.—*Electrical World*.

* * * *

Average Engineer. The typical project engineer in the chemical and petroleum industries is in his late thirties, has a background of five to ten years in design or construction work, and now earns about \$10,000 a year.—*Chemical Engineering*.

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Corrosion Problem. Air conditioning can start corrosion, if it cause moisture to collect on susceptible metallic surfaces.—*Electrical World*.

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'Flat-Tube' TV Is Developed By Englishman. A scientist at London University has developed a television picture tube without the usual funnel-shaped stalk protruding at the rear end.

He claims his flat tube differs radically from those demonstrated recently in the United States; his type, he says, doesn't require as much auxiliary circuitry as the versions being developed here.

Flat TV picture tube systems are considered forerunners of mural TV where screens only a few inches thick, and with dimensions that might run to 5 x 7 feet, will hang from walls.

Owners Say Cooling Units Do All This. Here's why air conditioning is growing in popularity, according to a recent survey of thousands of home owners conducted by Worthington Corporation:

63 per cent reported improved family appetites.

75 per cent served more hot meals during summer months.

58 per cent reported improved dispositions among family members.

43 per cent reported more—and more enjoyable—recreation time.

65 per cent reported generally improved family health.

40 per cent said they suffered fewer colds.

48 per cent reported relief from allergies, asthma and sinus.

48 per cent reported they now spend vacations at home.

* * * *

Information on Storms. The National Board of Fire Underwriters has just issued a new 40-page technical publication on how to prevent windstorm damage and help save lives and property. It provides a timely source of information on tornadoes, hurricanes and other severe storms that in recent years have caused untold property damage and resulted in the loss of thousands of lives.

The booklet points out that windstorm losses occur in a variety of ways ranging in extent from damaging paint by windblown debris to complete collapse of a structure. But by attention to details of design and construction, when erecting new buildings or making repairs to old ones, much can be done to reduce losses from hurricanes and even tornadoes. Single copies of the booklet may be obtained without charge from the National Board of Fire Underwriters, 85 John Street, New York 38, N. Y.

* * * *

Eighteen States Now License Contractors. A total of 18 states now require some sort of licensing for contractors doing business within their borders, notes *Engineering News-Record*, McGraw-Hill publication. Newest member of this group is Louisiana where licenses are required for contractors bidding on jobs in excess of \$30,000.

As enacted, Louisiana's new law reestablishes a board that was abolished in 1950. Seven board members—each of whom must have had at least ten years of contracting experience—will administer the law. Specifically exempted are private residential buildings; architects and civil engineers; contractors bidding on federal-aid work (who must obtain licenses, however, before starting work); and public utilities.

FEDERAL AID HIGHWAY ACT OF 1956 AS IT WILL AFFECT LOUISIANA

By R. B. Richardson

Highway construction has not kept pace with the increase in vehicle usage. As fast as we build, additional traffic jams are created. The crisis has been developing for a long time. Up to now, our highways and roads have been in the domain of State and local governments, with the Federal Government appropriating a modest annual sum to subsidize the work. Last year, finally, we arrived at a stage when it was obvious that local resources and local programs could no longer meet what is now considered a National emergency. This is why President Eisenhower had previously asked a group of five distinguished citizens, headed by General Lucius D. Clay to devise an accelerated Federal program to meet the crisis head on.

The Clay report, later renamed the President's Program, was delivered to Congress for action last year. Nothing much happened except debate in that session. However, during the session of this year Congress finally passed a compromise version of a House Bill and a Senate Bill known as the Federal Highway Act of 1956.

Before taking up the details of the new Federal Aid Highway Act let us discuss briefly the overall highway problem in Louisiana.

At present there are 47,561 miles of roads and streets in this State which are being administered at the various levels of government. The State Maintained System under the jurisdiction of the Highway Department is composed of 15,158 miles, 14,215 miles of rural roads and 943 miles of highway extensions into municipalities. Of this total 6091.82 miles are gravel, 6487.28 miles are asphalt surfaced and 2579.14 miles are concrete.

The various municipalities have jurisdiction over 4,803 miles of city streets and the parishes have 27,600 miles under their jurisdiction.

To give you an idea of the magnitude of the problem from the Highway Department's standpoint it was estimated by the Automotive Safety Foundation that an annual construction program of 80 million dollars would be required over the next 10 years to bring the State System up to adequate standards.

From funds available to the Department from dedicated sources and by selling bonds authorized by Constitutional Amendment passed last year a maximum annual construction program (exclusive of Interstate) possible would be approximately \$50 million.

If we do not sell bonds a maximum program of \$35 million will be possible.

Assuming a \$50 million program we would expect to spend the money as follows:

Secondary and Farm to Market	15,000,000.00
Primary Roads	\$22,500,000.00
Urban Highways	12,500,000.00
Total	\$50,000,000.00

Interstate Highway System

Before taking up the discussion on the recently enacted Federal Aid Highway Act which provides for the most massive peacetime public works project ever approved by Congress; in fact, the biggest national capitol investment in world's history, I would like to give you a brief history of the Interstate System.

The system was authorized by Congress in 1944 and was limited to 40,000 miles. Initially, only 37,600 miles were designated. Last year the remaining 2400 miles were designated. The system comprises only 1.2 per cent of the total road and street mileage in the United States, yet it carries more than 1/7th of all vehicular traffic. Of the total urban population in the United States in all incorporated places, 65% reside in urban places connected by the designated system. Included in these places are all cities with 250,000 or more population, 49 of the 55 cities with population of 100,000 to 250,000, 69 of the 107 cities falling in the 50,000-100,000 population group and 2538 smaller cities and towns.

The rural segments of the system traverse for some distance 1160 of the 3076 counties in the U. S. The population of these traversed counties represent 50% of the total rural population in the Country.

While the system was authorized in 1944, it was not until 1954 that Congress provided any funds to be used exclusively on the System. The first federal appropriation was for \$25,000,000 per year for the period of 1954-55. In 1956 the appropriation was stepped up to \$175 million. Obviously, little progress was made on developing the system with these small appropriations.

Federal-Aid Highway Act of 1956

The act provides for a Federal investment of approximately \$25 billion in 13 years for completion of the construction of the Interstate System of Highways, a 40,000 mile route, designated as strategically essential for national defense.

The Federal Government's investment will represent about 90 percent of the estimated total cost; the States will contribute the additional \$2 billion, making it, in all, a \$27 billion program

Primary responsibility for the interstate construction, as well as the other programs continued and expanded by the Act, is to be vested in the states.

Under the Act, Federal Aid to be matched 50-50 by the states for the Primary and Secondary Systems, including urban extensions, will be increased \$25 million each year beginning this July on a progressively accelerated basis. While actually the \$25 million per year increases are only authorized through the fiscal year 1959, Congressional intent is expressed that this per annum increase be continued through 1969.

Taxes

To finance the programs on the "pay-as-you-build" principle a 16-year schedule of new and increased road user tax levies has been adopted. The taxes are calculated to yield \$38 billion in the 16-year period.

Federal tax on gasoline, diesel and special fuels are increased from 2 to 3 cents per gallon. Additional taxes are levied on tires and tubes and a new tax has been imposed on Camelback rubber. Increases have been imposed on excise taxes on trucks, buses and tractors with a special tax on vehicles over 26,000 pounds in weight.

Authorizations

The Act authorizes for Federal-Aid Primary and Secondary Systems and extensions thereof within urban areas: \$825 million for 1957 (including \$700 million already authorized and apportioned); \$850 million for 1958, and \$875 million for 1959. Congress expressed the intent to continue boosting funds for these systems by \$25 million annually through 1969.

Such funds are to be expended as now on the traditional 50-50 Federal-State matching basis.

The authorizations for the Interstate System are provided for over a 13-year period; \$1.175 billion for 1957; \$1.70 billion for 1958; \$2.0 billion for 1959 and \$2.2 billion annually through 1967 and \$1.5 billion for 1968 and \$1.025 billion for 1969.

These funds are to be apportioned among the various states on present federal aid formulas for the period of 1957-1959. Apportionments for 1960 to 1969 inclusive will be based on the ratio which the revised estimated cost of completing the Interstate System in each state bears to the sum of the revised estimated cost of completing the Interstate System in all of the states.

Louisiana's Apportionments

(Millions of dollars)

Year	Primary	Secondary	Urban	Sub-total	Interstate	Total
1957	5.8	4.2	3.0	13.0	19.3	32.3
1958	6.0	4.4	3.1	13.5	28.1	41.6
1959	6.2	4.5	3.2	13.9	33.0	46.9
	18.0	13.1	9.3	40.4	80.4	120.8

Beyond 1959 we can only estimate the amount of funds that will be available for Louisiana. If the intent of Congress is followed by increasing the regular federal aid by \$25 million per annum then Louisiana's share for these systems will increase in proportion as is indicated for the years of 1957-1959. We can expect a substantial increase in our Interstate apportionment when the needs formula is used, beginning in 1960, because we have some large metropolitan areas that will be traversed making our average cost per mile greater than some southern and western states. It has been estimated that approximately \$500 million would be required to complete the Interstate System in Louisiana.

The Interstate System In Louisiana

The designated Interstate System in Louisiana is as follows: A trans-state routing from Mississippi State Line to the Texas State Line along the general routing of U.S. 80. A transtate routing from the Mississippi State Line to Texas through New Orleans, Baton Rouge, Opelousas, Lafayette and Lake Charles along the general routing of U.S. 90 to New Orleans, over U.S. 61 and U.S. 190 to the area of Opelousas, then to a connection to U.S. 90 to Lake Charles and on to the Texas Line.

U.S. 51 from LaPlace north to the Mississippi State Line and a routing over U.S. 11 from a junction with the Interstate Route along U.S. 90 to the Mississippi Line.

The total miles of Interstate System in Louisiana is slightly in excess of 600 miles.

Design

The Interstate System will be constructed to a standard that will permit uninterrupted flow of traffic. There will be no cross movements at grade or left turns, no signal lights or movable type bridges. Ultimately, all railroad grade crossings will be eliminated. Highway separations will be provided for all important intersecting roads and minor roads will be terminated with access to a separation provided by use of service roads.

Access will be controlled throughout the length of the system. It may be controlled by the purchase of access rights or by the use of service roads.

The location will be determined by economic studies to determine whether it is feasible to utilize the existing road location or if a relocation is required. Generally the Interstate routing will be a new location. The right of way requirements and the controlled access features will be such that in most places a relocation will be preferable. The existing routes are serving a dual purpose of handling through traffic and providing land service. The need will remain for service to adjacent properties that have been built up along the existing routes, which service will not be practicable to provide in many instances with the Interstate System. Furthermore, the intensive reconstruction that would be required to develop most existing routes to Interstate standards will make it very difficult to serve existing traffic while the route is being reconstructed.

Impact of the Highway Program

No matter on what terms the highway program is described, it is the greatest public works project ever undertaken by a nation in recorded history.

It involves more area, more people, more materials, and more money.

As appropriations are translated into roads a marked effect on the economy of the country will be evident. The savings in time and the safety and convenience afforded by a high type system of highways will result in a vast saving to the people and will be invaluable to the military and civil defense in the event of war.

The system will provide several cross-continental routes, but its greatest value to many motorists will be in and round our cities, where congestion has been slowly cutting down on the mobility of the automobile.

Raw Materials Needed

The Federal Highway Program will require 5,200,000 tons of steel in a single year of construction. It will require 112,000,000 barrels of cement in its third year.

It will require 908,000 traffic signs and at least 5,000,000 gallons of paint per year.

In human needs it is estimated that the labor force actually at work on the roads will rise to 350,000 by 1958 and by 1961 this figure will have grown to 500,000.

These are all "on the highway" jobs. There are no available statistics as to the number of added workers that will be needed in steel and cement plants, earth-moving machinery plants, quarries, and other materials supplying facilities.

The asphalt industry can expand readily and it will have to.

The aggregate industry—the suppliers of stone, sand, gravel, clay and other products—provided 357,000,000 tons of materials for highway construction in 1954. It is estimated an additional 560 portable plants or their equivalent will be needed when the program hits its peak.

There are many other industries that will benefit from highway construction and the same story can be told about everything that goes into road building.

So far the economic benefits described have all accrued to those businesses and industries directly concerned with highway construction. The economic impact is to be felt by others. A motorist who drives on roads planned under the program will save an average of \$90 a year in car operating costs. A saving of a cent per mile is realized when operating a car over an adequate road. Thus a motorist who drives 9,000 miles per year will save \$90.

This is not all clear profit, however, because the added taxes on gasoline and tires to pay for the roads will cost him about \$7 per year. His profit then would be only \$83 per year. But this leaves out other factors which are even more important. Last year the death toll on our nations highways and streets reached 38,300. About 1,350,000 people were injured, including 100,000 persons who were permanently impaired physically. It has been estimated that construction of the Interstate System to modern standards will save 3,500 lives per year, and the personal injury and property damage accidents will be reduced by the thousands.

When this occurs, it is reasonable to expect automobile insurance rates to fall. If the annual premiums are reduced by only \$7 the motorist will have saved the entire cost to him of the added taxes needed to pay for the program.

Cost of Poor Roads

It has been said that we pay for roads whether we get them or not. The one-cent-per-mile added cost of driving on inadequate roads are costing the motorist of this nation approximately \$5.3 billions per year.

It is difficult to put a cost figure on the death or injury of an American man, woman or child killed in traffic. One figure that

is used puts the average economic loss per fatality at \$85,000. Thus if we are able to reduce traffic deaths a mere 10 per cent we could avoid an economic drain of \$323 million.

Another factor difficult to evaluate in money is time. The time you will save is worth something. Each can make his own evaluation. If it means anything, add that to the economic gains attributable to better roads.

Thus the roads you will buy with your \$7 per year will return you a saving many times over your cost.

Progress has begun even before actual construction is under-way. The knowledge that money is available is stimulating preparations by the state governments and private industry.

The full benefits of the new program, obviously, can not be realized over night. However, as the program progresses its impact will be felt by every individual in this country.

If we want to prosper, we must have better roads and with this program we are going to get them, and soon.

LAKE PONTCHARTRAIN CAUSEWAY

Jefferson and St. Tammany Parishes

J. E. Walters, Project Manager, Louisiana Bridge Co.

Lake Pontchartrain Causeway design envisioned the use of roadway slabs, caps, and foundation piling, precast on shore and moved by barge to their permanent position in the bridge.

Louisiana Bridge Co. was low bidder on this project June 23, 1954. The specifications provided that the work order could not be issued until the bonds for financing the job were sold. As a consequence the work order was not issued until January 20, 1955.

This seven months period of delay allowed us time to design the special plant and equipment required for the job. Due to the fact, there were approximately 2,240 similar spans required, it was all important to eliminate as many mistakes possible in our planning.

Our bid was based on furnishing precast, prestressed, concrete roadway slabs, using $\frac{3}{8}$ " stress-relieved, annealed strand cable for primary reinforcement. 2,237 units were required with the following dimensions: roadway width between curbs 28', overall width including parapet walls 33', overall length 56', approximate weight 185 tons.

The caps are precast in our yard upside down with the reinforcing steel in place to reinforce the concrete plug that is placed in the top $4\frac{1}{2}$ ' of each foundation piling. Holes are cored through the precast section to allow the placement of the poured-in-place-concrete in the piles and underneath the caps after they are accurately positioned on the piles. Standard caps are 3'6" x 3'0" x 34' and weigh approximately 25 tons. 2,240 caps are required for the job.

Hollow, cylindrical, reinforced concrete piles 54" O.D. with wall thickness of 4" are used for foundation piling.

We are manufacturing them under a license agreement with Raymond Concrete Piling Co. designers of this particular pile, and the Cen-Vi-Ro Pipe Corp. who hold certain patents on the process we use.

Sections are cast in 16' lengths with some 8' sections to provide flexibility in assembled lengths. They are joined together in the required lengths as indicated by advance borings.

Twelve equally spaced holes, $1\frac{3}{8}$ " diameter are cored in the wall when the section is manufactured, and twelve .192 oil-tempered wires are pushed through each of these holes, tensioned

to 160,000 #P.S.I. and the hole filled with grout pumped at 150 #P.S.I. Prior to tensioning the O.T. wire, the joints between sections are treated with a plastic cement and after the grout and plastic has set up, the joints are stronger than the adjoining concrete.

An extra-high strength concrete mix is used in the manufacture of the piling and a combination of the external vibration, internal compaction, and centrifugal action that takes place in the spinning operation results in concrete strength in the piling varying from 9,000 to 12,000 #P.S.I.

When assembled the piles weigh approximately 700# per lineal foot. We have driven lengths varying from 72' to 104' to date. The completed piles weighing from 25 to 36 tons. Approximately 4,750 piles are required for the job—total estimated length is 435,000 lineal feet.

Our precasting plant is located on the North Shore of Lake Pontchartrain between Mandeville and Lewisburg. It covers 40 acres and the major items of construction of the plant are as follows:

Dredge an entrance canal from the lake to our plant 12' deep, 150' wide and 1,200' long. The 200,000 C.Y. excavated from the canal was placed in the swampy areas in our plant to raise the level to + 6½' M.S.L.

Drive approximately 7,500 wood foundation piles under foundations for the roadway slabs, caps, pile spinning area, mixing plant and the 200-ton yard crane runways.

Place approximately 30,000 C.Y. reinforced concrete in above foundations.

Install roadway slab forms, cap forms, pile spinning equipment, mixing plant and other special yard equipment.

Plant construction was started Jan. 29, 1955 and completed June 1, 1955.

Piling manufacture started May 1, 1955.

Pile driving started May 25, 1955.

Cap manufacture started June 1, 1955.

Cap setting started June 10, 1955.

Roadway slab manufacture started June 24, 1955.

Roadway slab setting started July 8, 1955.

Overall length of water crossing 23.8 miles and will be longest vehicular bridge in the world when complete.

The job compares favorably with any other in handling heavy sections. The main units to be set in place on the bridge weigh approximately 700,000 tons and most of the material and sections have to be handled three and four times. Heavy sections weigh from 25 to 200 tons each so the weight handling plant is all important for a safe operation. We actually handle approximately 10,000 tons of heavy lifts every day.

The major items to be used in the permanent work are recapped as follows:

- Place 326,000 C.Y. reinforced concrete.

- Produce 500,000 tons of sand and gravel.

- Handle 675,000 bbls. cement.

- Place 21,000 tons reinforced steel.

- Place 6,300 tons prestressing wire and strand.

- Place 2,237 roadway slabs—weight 185 tons each.

- Place 2,240 caps—weight 25 tons each.

- Manufacture and drive 4,750 — 54" concrete piles — average weight 30 tons each.

- Install 258,000 L.F. aluminum handrail.

- Place 6,000,000 lbs. misc. metals in structure.

- Construct 2 Bascule Bridges.

- Construct Turnaround and 3 Hump Spans.

- Construct toll plazas at North and South Terminus.

One of the unusual features of the job was the penalty for late completion. We will be assessed a penalty of \$6,000.00 per day starting December 20th this year for every day the bridge is unfinished. We cannot afford this penalty and expect to be finished by that time.

CONSULTING ENGINEER COUNCIL FORMED*

An organization known as the Consulting Engineers Council was officially brought into being at a convention held in Tulsa, July 6-7. This new federation, made up of associations of consulting engineers, is an outgrowth of a preliminary meeting held in St. Louis, last October. The ten founders are associations of independent consulting engineers in California, Chicago, Colorado, Louisiana, Minnesota, Missouri, New York City, Upstate New York, Oklahoma, and Utah.

The convention selected the name, Consulting Engineers Council, adopted a constitution and by-laws, and elected officers. The board of directors, as provided in the constitution, consists of one delegate from each of the member associations.

John K. M. Pryke, New York City, was elected president of the new organization. Other officers elected are Charles C. Pate, Tulsa, Okla., first vice president; Bernard Dornblatt, New Orleans, La., second vice president; Edward J. Wolff, Chicago, Ill., secretary; and William C. E. Becker, St. Louis, Mo., treasurer.

The Board of Directors, in addition to the officers includes George W. Poulsen, Jr., Salt Lake City, Utah; K. J. Murray, Denver, Colo.; Ralph M. Westcott, Los Angeles, Calif.; Howard F. Eckerlin, Syracuse, N. Y.; T. E. Roche, Minneapolis, Minn.; George T. Toman, Mandan, N. D.; and R. Berl Elder, Macon Ga. North Dakota and Georgia were admitted as charter members following the adoption of the constitution and by-laws.

The first session of the convention, on July 6, was devoted primarily to discussion of the proposed constitution and by-laws and their adoption in revised form. The draft of the constitution and by-laws had been prepared by an Interim Steering Committee headed by John K. M. Pryke. Other members of the committee were Pecos Calahan, California; Tom Roche, Minnesota; and Bernard Dornblatt, Louisiana.

In essence, the constitution and by-laws provide for a federation of associations of independent consulting engineers. These documents are so written as to permit the Council to work toward its objectives without interfering with local autonomy.

Permanent Officers

The Council intends to set up permanent offices and employ an executive secretary to carry out its directives. Temporarily, the Council will operate through the offices of the New York Associa-

* Reprinted from "Consulting Engineer" with permission.

tion of Consulting Engineers, at 220 E. 42nd St., New York. It is hoped that within three months the Council can have its own permanent offices and employ a staff.

Financing of the Council will be through dues levied on the member associations. The plans are to adopt a budget and then assess each member association on the basis of the number of members each association has in its local organization. This involves difficulties in that some of the associations have individuals as members while others have firm memberships. A committee has been appointed to determine some equitable method of levying dues and determining voting power.

Following the adoption of the constitution and by-laws, the president appointed standing committees. These committees reported upon their objectives in a later session.

Hueston Smith, chairman of the Membership Committee, reported that his group will establish zones of operation for Membership Committee members and that it will be the objective of this committee to encourage organization of state associations qualified for membership in the Council.

The Publicity Committee, with C. C. Pate of Oklahoma as chairman, reported that the constitution and by-laws will be printed and mailed to all members as well as other interested consulting engineers. The committee also plans to send regular news releases to newspapers, news magazines, and technical publications telling of the activities of the Council and its members. Mr. Pate's committee will prepare a general technical handbook with a Code of Ethics and a publication telling clients how to hire a consulting engineer. The Publicity Committee also plans to send out a monthly news sheet to members and design a suitable emblem.

The Fees and Contract Committee, under George Heft, of Louisiana, intends to undertake a program to educate the Defense Department; the Bureau of Public Roads, and other Federal agencies in proper fee levels for engineers. No effort will be made to deal with local fees. This committee plans to work with AIA on standard fees for engineers.

Bernard Dornblatt, chairman of the Professional Conduct Committee, stated that his group is going to give all possible aid to local groups concerning legal matters, legislation, and other such aspects of consulting work. He plans to get out a regular news letter, and is going to arrange for Consulting Engineers Council representation on joint committees with architects, contractors, and other engineers associations.

An Ethical Practice Committee, under George Poulsen, Utah, will begin work immediately on a Code of Ethics.

These delegates from the ten founder associations accomplished a great deal in the two-day convention. There now seems to be only the hurdle of selling the individual members of the various associations on the value of the Council so that each association will agree to payment of the assessed dues. If the member associations indicate their support of the Council by paying their initiation fees and dues promptly, the Council will have solved its major current problem.

The constitution provides that the Board of Directors will meet quarterly, and the next meeting should see this financial question answered.

Objectives of the Council

To protect the public, promote harmony, cooperation and mutual understanding among independent consulting engineers engaged in private practice.

To cooperate with other organizations, public bodies, etc. in all matters of common interest as may arise from time to time.

To insure that the high ethical professional standards required of an independent consulting engineer are maintained in accordance with the "Code of Ethics" of the Council.

To promote the professional and economic welfare of the members comprising the Council.

To act as a clearing house and information center as between such members on all matters of mutual interest and as between the members and the general public.

Incidental to the accomplishment of the foregoing purposes, to advise and recommend the enactment of legislation on a national basis in the interest of the public and the independent consulting engineer, to oppose all legislation that is discriminatory or inimical thereto, and to assist the members comprising the Council in state or local matters that may have a bearing on the general interest of the Council.

WITH THE COLLEGES

The School of Engineering, Louisiana Polytechnic Institute, Ruston, Louisiana, announces the Fifth Annual Instrumentation Conference to be held on the campus on November 1-2, 1956.

An interesting program has been arranged which includes the following papers to be presented at the technical sessions:

1. "Radioactive Density and Level Measurements," by Mr. Philip E. Ohmart, President, The Ohmart Corporation, Cincinnati, Ohio.
2. "Organization of Instrument Departments for Processing Plants," by Mr. G. C. Carroll, Principal Instrument Engineer, Mathieson Chemical Corporation, Morgantown, West Virginia.
3. "Graphic Panels and Data Reduction Instruments, Present and Future," by Mr. M. D. Shriver, General Sales Manager, Panellit, Inc., Skokie, Illinois.
4. "New Methods in Gas Measurement," The Foxboro Company, Foxboro, Massachusetts.
5. "Automatic Operation in Oil and Gas Production," by Mr. R. N. Crossman, Jr., Garrett Oil Tools, Inc., Longview, Texas.
6. "Automatic Controls on a Continuous Digester," by Mr. Pascal Law, Southern Kraft Division, International Paper Company, Camden, Arkansas.

Exhibits of new equipment in instrumentation and process control will be displayed by representatives of the leading manufacturers of such equipment.

* * * *

Walter E. Blessey, associate professor of civil engineering in the Tulane University School of Engineering, has been promoted to professor of engineering, effective July 1.

A member of the Tulane engineering faculty since 1942, Professor Blessey is the author of numerous articles on pre-stressed concrete and structural design and has designed a large number of building in the New Orleans area which utilize his techniques of pre-stressing beams, girders, floor systems and pile supports. He serves also as consultant to a number of construction firms in the New Orleans area.

* * * *

Chester A. Peyronnin, Jr., assistant professor of mechanical engineering at Tulane, has been promoted to Associate Professor. Professor Peyronnin is co-editor of this issue of The Louisiana Engineer and will be editor in succeeding issues.

MEMOIRS OF COLONEL VICTOR J. BEDELL
UNITED STATES ARMY—RETIRED
1884 - 1955

Colonel Victor J. Bedell, born in the City of Woodstock, New Brunswick, Canada, on August 23, 1884, was the son of John Jarvis Bedell and Marie Moore Carman. He died on August 29, 1955, after a short illness, in New Orleans, Louisiana.

Colonel Bedell graduated from the University of New Brunswick, Canada, with a degree of Bachelor of Engineering in 1905, and that same year he came to the United States where he was naturalized.

In 1932, Colonel Bedell was awarded the degree of Civil Engineer at Tulane University.

At the time of his death, Colonel Bedell was a member of the firm of Bedell & Nelson, Consulting Engineers of New Orleans, Louisiana, and his passing away culminated some 50 years of active participation in the field of his chosen profession.

Colonel Bedell's earlier experiences were with various American Railroads, where he had charge of many duties: Valuation Engineer, Location Engineer and Construction and Maintenance Engineer. The scope of his field of activities identified him with the Bangor and Arostock Railroad; the Chicago, Milwaukee and St. Paul Railroad; the Kansas City Southern Railroad; the Southern Pacific Railroad; and the New Orleans Public Belt Railroad—from which he was retired in 1941 while serving as General Manager.

In 1907 and 1910, Colonel Bedell served as Assistant City Engineer of Fort Smith, Arkansas, and in 1910 and 1911 he held the same position in Arkansas City, Kansas. In 1912 and 1913, he was Assistant Engineer of Kansas City, Missouri, and from 1913 to 1915 he was City Engineer of the City of Marshall, Missouri. Colonel Bedell then became associated as Assistant Engineer with the Interstate Commerce Commission, and Inventory of Railroad Properties.

In 1916 he was Field and Construction Engineer of the Southern Pacific Lines of the Austin Division.

In World War I, Colonel Bedell was a Lieutenant of Engineers in the American Expeditionary Forces, and at the cessation of hostilities he reentered the employment of the Southern Pacific Railroad as Cost Engineer in the Valuation Department.

In 1941, during World War II, Colonel Bedell served as Colonel of Engineers; he was Operations Officer of the New Orleans Port

of Embarkation from 1941 to 1943; and Commanding Officer of the Mobile Port of Embarkation from 1943 to 1944.

The latter years of his life were devoted to the practice of Consulting Engineering as a member of V. J. Bedell Company and later Bedell & Nelson, Engineers.

Colonel Bedell took an active interest in the civic affairs of the city in which he made his home.

Colonel Bedell was actively engaged in activities of the Boy Scouts of America from 1912 and served on the Executive Board for many years. In 1933 he was awarded the Silver Beaver for distinguished service to boyhood. In 1944 he received the 25-Year Veterans Pin. Colonel Bedell was very active on several committees of the Executive Board, particularly the Camping and Activities Committee, and received many commendations for his work and interest.

Colonel Bedell was active in many fraternal, patriotic, professional, social and business organizations, being member of the following:

Ancient Free and Accepted Masons, Park Place Lodge,
Houston, Texas—Senior Deacon.

American Legion Callender-Fleming Post, New Orleans, La.
National Sojourners, Chapter 33, New Orleans.

Boy Scouts of America, New Orleans.

American Society of Civil Engineers—Past President of the
Louisiana Section.

National Society of Professional Engineers.

American Railway Engineering Association, Chicago, Illinois.
Army and Navy Club of New Orleans.

New Orleans Officers Club of Camp Leroy Johnson—Past
President.

New Orleans Chamber of Commerce.

Engineers Club of New Orleans.

Reserve Officers' Association.

Colonel Bedell took great interest in all social and professional activities; and actively answered any calls made upon him for advice and council. His loss will be keenly felt by his former business associates and personal friends.

Colonel Bedell is survived by his wife, the former Janette Van Vleck, and his son and daughter-in-law (John G. Bedell) and three grandchildren.

C. C. BARNARD
ERNEST L. MIRE
CHARLES M. KERR

MEMOIRS OF FRANCIS BIGELOW BLACKSTONE

1907 - 1955

The Louisiana Engineering Society lost one of its most conscientious and valuable members through the death on August 8, 1955, of Francis Bigelow Blackstone.

Mr. Blackstone was born on May 21, 1907, in Sac City, Iowa, and attended high school in Houston, Texas. He joined Freeport Sulphur Company in June, 1928, as a draftsman at its Hoskins Mound, Texas, sulphur mine. Later in the same year he resigned that position to return to Rice Institute, which he had previously attended, to complete work toward his degree. He was graduated from Rice in 1929 as a Mechanical Engineer.

He returned to Freeport Sulphur and worked in its Engineering Department at its Texas mines until 1933, at which time he was transferred to the firm's Grande Ecaille mine near Port Sulphur, Louisiana. He became an Efficiency Engineer there in 1934, and in 1944 was appointed as Superintendent of its power plant and as Technical Advisor.

In 1952 he became Superintendent of Freeport's power plants in its Louisiana operations and was assigned to the Vice-President's Staff, which position he held at the time of his death.

It is indicative of Mr. Blackstone that the event which lead to his death occurred during his work. He was driving to the Bay Ste. Elaine sulphur mine on July 6, 1955, when his car overturned on a shell road about nine miles south of Houma, Louisiana, causing serious injuries.

He is dearly remembered as a man of simple, quiet tastes, an unassuming individual who was ever ready to work when needed. Within the ranks of the Society he was ever willing to shoulder a large part of any work on which he was asked to help.

His constant and unfailing good humor endeared him to his family and a wide circle of friends. He gave generously of his time to church and civic work, because the leaders of these groups knew that he would complete any task assigned to him in his cheerful, steadfast manner.

Mr. Blackstone was a member of the Society, the American Society of Mechanical Engineers and the Engineers Club of New Orleans.

He is survived by his wife, the former Dorothy McMillen, and four children: Robert, Mary Ann, Sally and William Blackstone. Also surviving him are three brothers: Lloyd and Theodore Blackstone of Houston, Texas, and Melvin Blackstone of Dallas, Texas.

IRVEN HANSON
WALDEMAR S. NELSON
R. P. LOCKETT, JR.

OBITUARY OF WALLACE RAY MACK

It is with deepest regret that this Society has learned of the death, on March 31, 1956, of one of its most respected members, Wallace Ray Mack. He is survived by his wife, nee Miss Erma Scott and son, Wallace Ray, Jr., aged 10. Also surviving are five brothers and two sisters.

He was born on July 15, 1902 at Plaquemine, Louisiana, the eldest son of John C. and Ella Dixon Mack.

About 1905 the family moved to Denham Springs, Louisiana where Ray received his early schooling, graduating from the Denham Springs High School. In pursuit of higher education he attended Louisiana State University.

In 1924 Ray began working for the Louisiana Department of Highways, where over a period of twenty-seven and one-half years, by his devotion to his work, his zeal for accuracy and workmanship on all projects under his direction, and his considerate and helpful attitude toward the personnel under him and all those with whom he came in contact, made Ray Mack one of the most honored of the "old guard". He was a member of the Highway Engineers Association.

In his spiritual and civic life he was guided by the same virtues which controlled his professional life. He was a member of the First Presbyterian Church of Oakdale. He was a member of the Masonic Order, having served in such capacities as Past Master of Oberlin Lodge No. 274; Senior Warden of Yellow Pine Lodge No. 282; member of the Oakdale Chapter of Royal Arch Masons; member of the Oakdale Council No. 25 R. & S. M. and at one time served as Illustrious Master. In addition to these activities he also has been a member of the Lion's Club in Oberlin and Oakdale; Secretary-Treasurer of the Sportsmen's Club and serving on the Board of Directors, Oakdale Athletic Association.

In view of the character of Ray Mack, it is indeed with a deep sense of gratitude that we remember that we were associated with him and an equally deep sense of sorrow at his passing.

In memoriam, be it therefore resolved, that this obituary be read at a meeting of the Louisiana Engineers' Society, entered into the minutes and published in the Proceedings of the Society, and that copies be sent to the members of the family.

Signed:

H. L. LEHMANN

J. C. WATSON

E. H. GOODLOE

OBITUARY OF BERNARD STANLEY NELSON

It is indeed with a heavy heart and a great sense of personal loss that all of us, who were privileged to know Stanley Nelson during his full and productive lifetime, join here together again to record and mourn at his passing on October 19, 1955. At the age of 67, Stanley had hardly begun a semi-retirement from which he could contemplate many future years among us to enjoy the countless rewards so richly deserved by his lifetime of devotion to his work, his family, and his fellow man. It is a further great loss to us, his friends and fellow members, that we cannot continue to share these future years together.

Stanley was born and reared here in New Orleans. He played an active and guiding part in much of the tremendous cultural and industrial development which occurred here and throughout the entire South during his lifetime. The continued development of many projects benefited by his kindly association, keen insight, and engineering skill will serve as an added and eternal monument to this beloved man.

Stanley was graduated with highest honors in 1907, from the Engineering School of Tulane University with a B.E. in Mechanical and Electrical Engineering. Typical of him throughout his whole lifetime was his loyalty for his Alma Mater, and the countless beneficial but unheralded services he performed for the University.

One of his first post-graduation activities was to conduct a series of tests of various types of irrigation plants for the U.S. Department of Agriculture. These were done in collaboration with the late Prof. W. B. Gregory, and have had an enduring effect on this phase of an important agricultural activity, although the work itself required but a few months time.

In October of 1907, he was employed by A. M. Lockett and Company, Ltd., as an engineer, and his initial two years service were devoted primarily to study and test work on power-plant type boiler installations. Completing this initial phase of his association with the Company, Stanley became one of the key figures, along with the late Andrew M. Lockett, in the development of the Lockett Company's rapidly expanding engineering business. He also engaged in the design of numerous and various types of plants in the awakening industrial development of this era.

In 1919, he was appointed Chief Engineer of A. M. Lockett and Company, Ltd., and continued in that position until 1952, when he was elected Vice-President in Charge of Engineering.

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As Chief Engineer of the Lockett Company, Stanley became a recognized authority on irrigation and drainage pumping plants, particularly in the field of rice irrigation. He supervised the design and construction of numerous plants of this type located throughout Louisiana, Texas, and our neighboring Republic of Mexico. He also designed and built some of the earliest large oil and gas engine electric generating plants in the southwest. During the 1920s he was engaged in the design of numerous gas compressor stations used in conjunction with the first long distance gas transmission lines, including plants in Louisiana, Mississippi, Alabama, Texas and Indiana.

He became interested in the wood treating industry as it affected the economy of the Gulf states, and became an authority on the design of creosoting plants, developing many new processes and special equipment for their operation, some of these being patented.

He was instrumental in the development of the Lockett Fuel Oil Heating sets, used throughout the world for the past 40 years, and invented and patented equipment in this connection.

He invented a vapor thermo compressor for use in sugar mills and a high pressure grease gun, now universally used for heavy greasing operations.

He assisted in the development and made the first industrial application of heat reclaimers used in sulphur mining plants for recovery of waste heat from flue gases.

Mr. Nelson, a member of the Louisiana Engineering Society since 1911, was appointed to the Board of Direction of the L.E.S. for two-year terms in 1921-22 and again in 1938-39. He was First Vice-President of the Society in 1940, and during his membership had served on many of its committees and other activities. He was a member of the American Society of Mechanical Engineers and has contributed numerous papers to its publications. He was the author of numerous articles in various technical journals, engineering handbooks and other reference works. He will be generally missed in the technical councils of the Louisiana Engineering Society.

J. M. TODD

GEO. HAMMETT

ALLAN J. HARRIS, *Chairman*

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MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

**Minutes of Meeting of the Board of Direction held on Monday, May 13, 1956
in the Acadian Room, Hotel De Soto**

The meeting was called to order by President Wallace with the following board members present: Messrs. Drawe, Nelson, Taylor, Seago and Fernandez. Mr. Warren K. Bankston, Chairman of the 1956 Outing Committee also was present by invitation. Mr. Nelson moved that the reading of minutes of the preceding meeting be accepted as read, seconded by Mr. Seago and carried.

Mr. Bankston gave an outline of plans for the outing and golf tournament to be held on Thursday, July 12, 1956 at the Colonial Country Club. He also gave an outline of expected income and expenditures and stated that, weather permitting, he believed the outing would pay for itself. He asked, however, that \$150.00 be budgeted in case of bad weather. Mr. Drawe moved that the board approve the recommendations of Mr. Bankston and that the society underwrite the outing costs to the extent of \$150.00. Motion was seconded by Mr. Nelson and carried.

President Wallace then informed the board of the activity of the Legislative Committee with regard to the proposed amendment to the Registration Act.

Mr. Drawe, Chairman of the special committee on scholarships, announced that he had not received reports from his entire committee and moved that the matter be tabled until the next meeting. Motion seconded by Mr. Nelson and carried.

Mr. Seago moved that the resignations of the following be accepted with regret, seconded by Mr. Nelson and carried:

L. H. Heirs (New Orleans)

E. L. Patton (Baton Rouge)

Mr. Nelson moved that the appointment of personnel for the 1957 Annual Meeting committees be tabled until the next meeting, seconded by Mr. Drawe and carried.

Mr. Nelson, Chairman of the Finance Committee, reported that it was not feasible to invest the society's temporary surplus on a short-term basis and moved that no action be taken on this matter, seconded by Mr. Seago and carried.

Discussion followed on the editorship of the Proceedings but no action was taken.

The meeting then adjourned so that the society's regular meeting could begin on time.

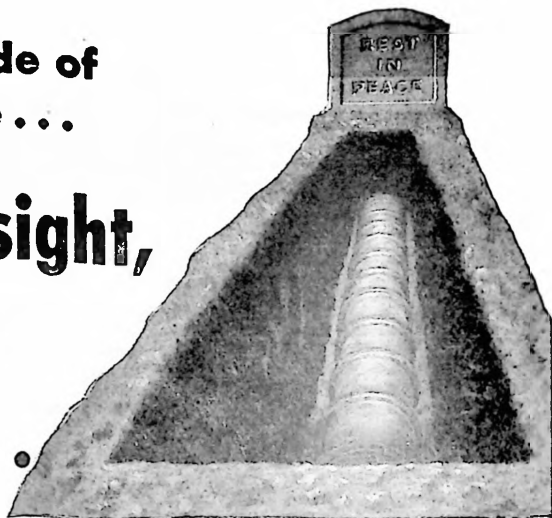
JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Louisiana Engineering Society held on Monday,
May 13, 1956 at the Engineers Club, Hotel De Soto**

The meeting was called to order by President Wallace with approximately 100 members and guests present. President Wallace welcomed members and guests and the Junior Engineer Training students who were present. Mr. Knost moved to dispense with reading of the minutes of the proceeding meeting, seconded by Mr. Richard Graham and carried. The secretary then read minutes of the Board of Direction's April meeting.

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President Wallace announced the Legislative Committee's plans to introduce the proposed changes in the Engineering Registration Act at the coming session of the state legislature, and urged members to contact their legislators and request their support of the bill.

Mr. Joseph R. Mooney, Chairman, Vocational Guidance Committee, introduced Colonel Jack Knight, Chairman of the JET sub-committee, who presented plaques to the JET organizations of De La Salle and Fortier high schools for being the first JET groups established in Louisiana. He also presented the members of both groups with JET lapel emblems which were supplied through the courtesy of Mr. Raymond Bassich of New Orleans Blue Print Supply Company.

The secretary read an obituary of the late John W. Montgomery, after which a moment of silence was observed in memory of the deceased.

The secretary read a letter from the New Orleans Chapter of the American Society of Safety Engineers extending an invitation to attend their meeting on "Hazards of Static Electricity" to be held on June 6.

Mr. Horace A. Thompson, Jr. then introduced the principal speaker of the evening, Mr. Donald M. Cox, Head, Petroleum Products Division, Esso Standard Oil Company Baton Rouge Refinery, who gave a most interesting and informative, illustrated lecture on "Engineers in Petroleum Refining".

After the customary question period the meeting adjourned with a rising vote of thanks to the speaker.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Board of Direction held on Saturday, June 9, 1956
at the UCT Camp, Baton Rouge**

The meeting was called to order by President Wallace with Messrs. Cassagne, Drawe, Hornsby, Nelson, Seago, Taylor and Fernandez present. Mr. Nelson moved that the minutes of the preceding meeting be accepted as read, seconded by Mr. Hornsby and carried.

President Wallace reported on the status of House Resolutions 553 and 1503. After considerable discussion it was decided that an all-out effort should be made to defeat Bill 1503 in the Senate Committee and that no attempt would be made to defeat it on the floor of the House for the reason that such action might prevent favorable committee action on Bill 553, since both bills have been referred to Judiciary Committee B of the House of Representatives.

The matter of calling a meeting of the Louisiana Council of Engineers was discussed and it was decided that no meeting would be called and that the recommendations of the Legislative Committee would be followed.

A letter from Mr. James M. Todd concerning revision of the Louisiana Engineering Registration Act as recommended by the Committee on Engineering Laws, New York, was read by the secretary. It was decided to refer the matter to the Legislative Committee following the current session of the state legislature, since it is now too late to submit any further revisions at this time.

Mr. Nelson reported that he had attended a meeting with reference to a National Science Forum to be held in New Orleans October 11-13 to spotlight attention on ways and means of educating more and better engineers and scientists. Dr. Taylor moved that the matter be brought to the attention of the local sections of L.E.S., seconded by Mr. Nelson and carried.

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The secretary read a letter from the Building Officials Conference of America after which, upon motion by Mr. Nelson, seconded by Dr. Taylor, he was instructed to advise that organization that the L.E.S. will not hold a meeting during the period May 6-9, 1957 and will cooperate in advertising the convention of their association to be held in New Orleans on those dates.

Mr. Seago moved that the secretary advise Mr. Harold Ebner that the society has been unable to complete his application for membership and therefore his name is being dropped from the list of prospective members. Motion seconded by Dr. Taylor and carried.

Mr. Drawe, reporting on the matter of scholarships, advised that his committee recommended the following:

- (1) A scholarship should be established at each of the four engineering schools in the state, namely, Tulane, Louisiana State University, Louisiana Polytechnic Institute and South-western Louisiana Institute.
- (2) Said scholarships should be known as the Louisiana Engineering Society scholarships and should be for \$100.00 each.
- (3) Said scholarships should be awarded by a committee at each engineering college appointed by the dean.
- (4) The recipient in each case should be a deserving student and a member of the senior class.

Mr. Nelson moved that the recommendations of the Scholarship Committee be accepted and put into operation on a yearly basis and that the secretary advise the deans of the availability of the scholarships for the 1956-57 school year and that future boards shall review the policy at the time of preparation of the budget and notify the deans whether or not the scholarships shall be in effect for the current year. Motion seconded by Dr. Taylor and carried.

A bill from the Greater New Orleans Building Code Committee covering membership dues for the Louisiana Council of Engineers was presented and the secretary was instructed to pay same and to notify Mr. Sargent F. Jones of his reappointment as the Council's representative on said committee.

Mr. Nelson moved that the following be dropped for non-payment of dues, seconded by Dr. Taylor and carried:

M. J. Tuohy, New Orleans (Member)
Gene V. Dietz, Lake Charles (Junior)
James M. Kidd, Baton Rouge (Member)

The meeting then adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Board of Direction held on Tuesday, July 17, 1956
at the Engineer's Club, Hotel De Soto, New Orleans**

The meeting was called to order by President Wallace with Messrs. Cassagne, Drawe, Hornsby, Nelson, Seago, Taylor and Fernandez present. Mr. Henry L. Landry, former president of the Baton Rouge Section, also was in attendance. Mr. Cassagne moved that the minutes of the preceding meeting be accepted as read, seconded by Mr. Seago and carried.

President Wallace then announced that the proposed amendment to the Engineering Registration Act had been defeated. He advised that it passed

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the House of Representatives of the Louisiana State Legislature without a dissenting vote but was defeated in the Senate by a vote of 10 yeas, 15 nays and 14 absent or not voting. Discussion followed on the best method of securing passage of engineering legislation in the future, but no decision was reached.

Mr. Nelson, Chairman of the Finance Committee, presented a semi-annual statement of receipts and disbursements. Dr. Taylor moved that the financial report be accepted, seconded by Mr. Hornsby and carried.

The secretary reported that the annual outing had broken several records: the prize committee collected an all-time high in cash donations, there were more participants in golf and horseshoe pitching, and the attendance at dinner was the largest on record. The official count was as follows: Golf, 117; Horseshoes, 48; Dinner, 307.

The secretary reported that 367 ballots had been cast in the June membership election and that no applicant had received more than one blackball, therefore all applicants named in the ballot were elected to their respective grades.

A letter from Dr. Z. L. Loflin announcing the election of his successor as President of the Lafayette Section was read. Dr. Loflin expressed his pleasure and appreciation at having been privileged to serve on the board, and the secretary was instructed to thank him for his valuable service to the society as a member thereof.

Letters from Deans L. J. Lassalle of L. S. U., Ben T. Bogard of L. P. I., and Lee H. Johnson of Tulane were read, expressing appreciation for the L.E.S. scholarships to be given each school for the 1956-57 year. With reference to Dean Bogard's letter, Mr. Nelson moved that the check covering the L. P. I. scholarship be drawn to "Louisiana Tech L.E.S. Scholarship Fund". Motion seconded by Mr. Cassagne and carried.

Dr. Taylor inquired whether the scholarships could be cumulative if not awarded in a given year. It was the opinion of the board that they could not.

Discussion followed on the selection of Vice-Chairmen for the 1957 Annual Meeting Committees, after which Mr. Nelson moved that the following Vice-Chairmen be appointed:

General Vice-Chairman	Edward A. McLellan
Technical Papers	J. Bres Eustis
Program	Owen V. LeBlanc
Publicity	James P. Ewin, Jr.
Registration	C. B. Spencer
Contact with Woman's Auxillary	C. E. Cassagne, Jr.
Plant Visitation	John T. Knight, Jr.
Banquet	Robert P. Lockett, Jr.

The motion was seconded by Mr. Seago and carried.

A letter of resignation from Dean Emeritus G. G. Hughes of Southwestern Louisiana Institute was read. Mr. Nelson moved that the resignation be accepted with regret, effective at the end of the current year, and that the Board thank Dean Hughes for his cooperation and valuable service to the society. Motion seconded by Mr. Seago and carried.

Mr. Hornsby moved that the following be dropped from the membership roll, seconded by Dr. Taylor and carried:

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J. C. Hoge

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Upon the advice of the Board, President Wallace appointed Messrs. C. C. Barnard, Chairman and William K. Becnel to prepare an obituary for the late John G. Bedell. In like manner Mr. H. L. Lehmann was appointed to select a committee of his own choice to prepare the obituary of the late Wallace Ray Mack.

Mr. Hornsby inquired whether the society had ever considered handling group insurance for its members. The secretary reported that the matter had been brought to the board's attention in 1948 and it was decided not to undertake the project at that time. It was the opinion of the present board that the matter should be reconsidered when detailed information is available.

The secretary announced that nominations were open for the society's two medal awards which are usually presented at the annual meeting.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of the Meeting of the Lafayette Section, Louisiana Engineering Society, April 24, 1956

The April meeting of the Lafayette Section—Louisiana Engineering Society—was a dinner meeting and was held Tuesday, April 24, 1956 at Poor Boy's Riverside Inn.

The meeting was called to order by President Loflin who called upon members to introduce their guests. President Loflin reminded members that the election of officers for the coming year would take place at the May meeting and appointed the following committee to handle nominations:

C. J. Russell, Chairman
T. A. Bonnet
R. E. Jenkins

An invitation to attend the outdoor meeting of the Baton Rouge Chapter on June 9th was extended to all members.

President Loflin reported that the meeting of the Board of Direction had been postponed to April 25th and that he was planning to attend and will report to members at the next meeting.

Mr. B. W. Boxx introduced the guest speaker for the evening, Mr. T. J. Borgman, District Engineer for Southern Bell Telephone and Telegraph Co. Mr. Borgman gave an interesting talk on inter-toll dialing or "Dialing for Distance".

The President thanked the speaker on behalf of the section and the meeting was adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

Minutes of the Meeting of the Lafayette Section, Louisiana Engineering Society, May 22, 1956

The May meeting of the Lafayette Section—Louisiana Engineering Society—was a dinner meeting and was held Tuesday, May 22, 1956 at Don's Seafood and Steak House.

The meeting was called to order by President Loflin who welcomed all guests at this annual "Ladies Night" meeting, and then reported to the

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membership on various subjects discussed at the recent meeting of the Board of Directors.

The invitation of the Baton Rouge section to their annual outing on June 9th was repeated for those members who had not been present at the previous meeting.

Mr. C. J. Russell, Chairman of Nominating Committee, reported that the following members had been nominated as officers of the Chapter for the coming year:

Mr. R. M. Hetherwick, President
Mr. F. A. Consterdine, 1st Vice-President
Mr. M. G. Arnett, 2nd Vice-President
Mr. J. Briant Fournet, Secretary-Treasurer

Mr. J. R. Gaugler moved that nominations be closed. Motion was seconded by Mr. Guillot and carried.

After a brief acceptance speech by the newly elected President, a short program of entertainment was presented and the meeting was adjourned.

WARREN R. HOLLIER, Secretary-Treasurer

Minutes of the Meeting of the Lake Charles Section, Louisiana Engineering Society held June 11, 1956

The meeting was called to order by President Wooster at 7:40 p.m. at the Gulf States Utilities Company office. There were thirty-five members and guests present.

The minutes of the last meeting were read and approved.

After an introductory period of members and guests, President Wooster introduced the guest speaker, Mr. Floyd T. Langlois. Mr. Langlois, who is a Results Engineer in the Gulf States' Production Department, gave a very interesting talk on their newest power plant installation, a 110,000 Kilowatt turbo-generator, located at their Neches Station near Beaumont, Texas. An exact scale model, approximately 3' x 8', was used to illuminate points of the talk.

A question and answer period followed.

The meeting was then adjourned for refreshments.

GLENDON L. SMITH, Secretary-Treasurer

Minutes of the July Meeting of the Lake Charles Section, Louisiana Engineering Society, July 9, 1956

A dinner meeting of the Lake Charles section of the Louisiana Engineering Society was held at Sammy's Restaurant on July 9, 1956. Thirty-four members and guests were present.

The meeting was called to order by President Wooster. After a short informal introductory period, the minutes of the last meeting were read and approved.

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Mr. G. H. Hill, Program Chairman, polled the members' wishes as to a time change on the August meeting at the Lake Charles Air Force Base. It was voted to meet at 6:00 p.m.

President Wooster then introduced the guest speaker, Mr. Carl E. Newman, Louisiana Plant Extension Engineer, for the Southern Bell Telephone and Telegraph Company.

Mr. Newman gave a very interesting talk on "Customer Direct Long Distance Dialing". A question and answer period followed the talk.

The meeting was adjourned at 10:10 p.m.

GLENDON L. SMITH, Secretary-Treasurer

Minutes of the Meeting of the Lake Charles Section, Louisiana Engineering Society held August 13, 1956

The August meeting of the Lake Charles section of the Louisiana Engineering Society was held on the evening of August 13, 1956, at the Lake Charles Army Air Force Base. There were sixty-one members and guests present.

At 5:50 p.m. the group was transported by bus to the flight line for a most interesting static display of the B-47 Bomber and the KC-97 Refueling Tanker. The escorts for this explanation and inspection tour were Colonel George Pfeiffer, Director of Material, 806th Air Division, and Captain George W. Spotswood, Information Services Officer.

The group returned to the Officers' Club at 7:15 p.m. for a short cocktail and social period followed by a buffet dinner.

After dinner, President Wooster called the meeting to order. A motion was made by Mr. Fred Adams, seconded by Mr. Ray Burgess, and was carried that the reading of the minutes of the last meeting be dispensed with. A short introductory period of members and guests followed.

President Wooster formally introduced our guest speaker, Colonel George Pfeiffer, who gave a very interesting and informative talk on "The Application of Strategic Air Power". This talk was followed by two films. The film "Effects of Strategic Air Attacks Against Japan" showed the devastating effect of conventional and atomic bombs used in the war against Japan.

The second film, "Target Nevada" showed a series of earlier atomic tests in Nevada.

A question and answer period followed the films.

President Wooster announced that our next meeting would be held at Sammy's Restaurant on September 10, 1956. Adjournment at 10:30 p.m. followed this announcement.

GLENDON L. SMITH, Secretary-Treasurer



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Minutes of the June Meeting of the Monroe Section of the Louisiana Engineering Society

The June, 1956, meeting of the Monroe Section of the Louisiana Engineering Society was held at Bernstein Park, Thomas Avenue, Monroe, Louisiana, on Tuesday, June 5, 1956. This is the annual outdoor meeting.

The meeting itself was preceded by a barbecued chicken dinner arranged by Mr. J. R. McKinley, chairman, and the members of his program committee. The meeting was called to order at 7:30 p.m. by the president, Mr. R. A. Smith. There were some sixty-two members and guests in attendance, the guests being introduced by Mr. Arthur C. Thigpen, Secretary-Treasurer. The program consisted of a most interesting film showing some aspects of the technical growth of our country.

Following the film, the drawing for the door prize presented by the United Gas Corporation was held. The prize, consisting of an ice crusher and accessories, was won by Mr. J. C. Crawford.

The meeting was adjourned at approximately 9:00 p.m.

ARTHUR C. THIGPEN, Secretary-Treasurer

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FINANCIAL REPORT

CARLOS J. GRIMADER
Certified Public Accountant
Audubon Building
New Orleans, La.

May 31, 1956

Board of Direction,
Louisiana Engineering Society
New Orleans, Louisiana.

Dear Sirs:

I have audited the accounts of the Louisiana Engineering Society for the year ended December 31, 1955 and submit the following:

Balance Sheet, December 31, 1955 (Cash receipts and disbursements basis) (Exhibit "A")

Statement of Income and Surplus for the Year Ended December 31, 1955 (Cash receipts and disbursements basis) (Exhibit "B")

The cash on deposit at December 31, 1955 in the regular checking account and in the various homesteads was verified by certification obtained from the depositories and the U. S. Savings Bonds were inspected by me in the Society's bank box.

My examination was made in accordance with generally accepted auditing standards and included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the accompanying balance sheet and statement of income and surplus fairly present, respectively, your financial condition at December 31, 1955, and the results of your operations for the year then ended.

Yours very truly,

CARLS J. GRIMADER
Certified Public Accountant.

Encls.

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EXHIBIT A

LOUISIANA ENGINEERING SOCIETY

BALANCE SHEET, DECEMBER 31, 1955

(CASH RECEIPTS AND DISBURSEMENTS BASIS)

ASSETS

CASH:

Checking account—Whitney National Bank of New Orleans	\$ 4,384.76
--	-------------

UNITED STATES SAVINGS BONDS, SERIES F

(Maturity value—\$6,000.00)—redemption value	<u>4,925.00</u>
--	-----------------

INVESTMENTS—HOMESTEADS: (At cost)

Columbia Homestead Association	\$ 379.18
Commonwealth Homestead Association	307.12
Greater New Orleans Homestead Association	1,975.47
Security Building and Loan Association	500.00
Sixth District Building and Loan Association	500.00
Union Savings and Loan Association	<u>500.00</u>

Total investments—homesteads	\$ 4,161.77
------------------------------------	-------------

PROPERTY:

Lapel emblems on hand	\$ 504.09
Furniture, fixtures, equipment and books— nominal value	<u>\$ 1.00</u>

Total property	<u>\$ 505.09</u>
----------------------	------------------

TOTAL ASSETS	\$13,976.62
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LIABILITIES

SURPLUS (Per Exhibit "B")	\$13,976.62
---------------------------------	-------------

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LOUISIANA ENGINEERING SOCIETY

STATEMENT OF INCOME AND SURPLUS (ON CASH RECEIPTS
AND DISBURSEMENTS BASIS) FOR THE YEAR ENDED
DECEMBER 31, 1955

INCOME

Dues Collected (Less rebates to Sections, \$1,716.76)	\$ 7,253.80
Advertising revenue	959.73
Income from investments and savings accounts	255.47
Miscellaneous—net profit sale of certificates	10.00
Annual meeting—excess of receipts over disbursements ..	88.37
Annual outing—excess of receipts over disbursements ..	120.89
Total income	<u>\$ 8,688.26</u>

EXPENSES

Salary—secretary-treasurer	\$ 3,000.00
Cost of publishing proceedings	2,272.51
Refreshments, etc. at meetings (Less pro rata receipts from joint meetings held)	556.45
Printing, stationery, and supplies	1,258.91
Postage	360.65
Present to retiring president	60.00
Floral offerings	82.40
Library expense — porter, etc.	59.00
Social security tax	65.00
Auditing	140.00
General expenses	246.09
President's traveling expenses	3.57
Cost of Engineer's Week	125.14
Total expenses	<u>\$ 8,229.72</u>

NET INCOME FOR THE YEAR \$ 458.54

DEDUCT—capital expenditure—purchase of addresso-
graph, etc. 687.09

SURPLUS (DEFICIT) FOR THE YEAR \$(228.55)

SURPLUS AT BEGINNING OF YEAR 14,205.17

SURPLUS AT THE END OF YEAR \$13,976.62

THE LOUISIANA ENGINEER

SEPTEMBER, 1956

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This Journal reaches the officials with whom rests the responsibility for the bulk of the municipal, state and industrial works in Louisiana and the surrounding territory. Its advertising pages afford you an effective and dignified means of cultivating a wider acquaintance among prospective buyers.

THE LOUISIANA ENGINEER

Vol. 42

DECEMBER, 1956

No. 4

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THE EDITOR SPEAKS

With this issue the Louisiana Engineer changes editors. Due to business commitments John Martinez had to resign after a short term. He started several changes which the Publications Committee of the Society had recommended. I plan to continue his work and complete these changes. Your proposed magazine will possibly be a different size in the near future. It will have more attractive headings and illustrations to accompany the articles.

This magazine will become what the members want it to become. You will note that there were no papers presented in the last three months that were available for printing. I hope that in the future the sections will request their speakers to prepare their talks for publication so that all members may read them.

Important things are happening all over the State of Louisiana, but unless they are reported to me I can't print them. School news is of interest to the alumni of our schools. Our Engineers are accomplishing great projects here in the state and should be recognized for such activity. Members of the society should realize that an editor can only give them what they want if he hears from them. I would appreciate hearing from you as your likes and dislikes in this magazine. Why not drop a line to me from time to time? This publication will grow as you feed it.

CHESTER A. PEYRONNIN, JR.

NEW MEMBERS

The following have been elected to membership in our Society:

FOR MEMBER

PAUL K. ANDERSEN, Baton Rouge; age 30. Endorsed: C. H. Hall, C. A. Petty, T. L. Wilson. Iowa State College, B.S.E.E., 1950. Associate Member AIEE. Esso Standard Oil Co., Mech. Eng. Dept., Engineer, E.E. Group, 1950-53; Project Group, 1953-54; Equipment Group, 1954-56; Mechanical Technical Service Group, Feb. 1956-date.

JEWEL H. BREWER, Baton Rouge; age 34. Endorsed: L. Duclos, A. R. Kuzel, S. A. Nasca. La. State University, B.S.M.E. 1949. Registered M.E., La. U.S. Gypsum Co., Greenville, Miss., in charge acoustical tile operation, 1949-50. Yaun Mfg. Co., Baton Rouge, Asst. Chief Engineer, Aug.-Oct. 1950 and Mar.-June 1951. La. Dept. of Highways, Bridge Design Section, designing and detailing machinery for movable span bridges, Nov. 1950-Mar. 1951 and June 1951-date.

MICHAEL J. CADE, New Orleans; age 40. Endorsed: M. C. Abrahm, B. H. Bell, F. K. Harrison. Tulane University, B.S.E.E. 1938. Associate Member AIEE. N. O. Public Service Inc., 1938-date. Present position, Electrical Engineer in General Eng. Dept., electrical design of generating stations, substations and transmission lines.

JOE C. COLVIN, Shreveport; age 47. Endorsed: H. T. Barr, W. D. Poole, C. H. Thomas. La. Polytechnic Institute, B.S.M.&E.E. 1934. Member LAEA. U.S. Dept. of Agriculture, Soil Conservation Service, 1934-date. Present position, Engineering Specialist. Plan, design and construct drainage irrigation systems, farm ponds, lakes, etc. on agricultural lands in Louisiana.

THOMAS B. CROWELL, Baton Rouge; age 48. Endorsed: W. G. Stewart, H. L. Landry, T. E. Alexander. Clarkson College of Technology, Potsdam, N. Y., B.S.Ch.E. 1929. American Cyanamid Co., Linden, N. J., Cadet, Shift Foreman, Asst. Dept. Supt., Dept. Supt., Production Supt., Laboratory, production and development work in industrial chemicals, 1929-42. Chemical Construction Co., Texas & Arkansas, in charge of training of supervision for operation of ammonia plant. Engineer on construction of ammonia plants, 1942-43. Copolymer Rubber & Chemical Corp., Baton Rouge, Shift Supt., Asst. Chief Engineer, Production Supt., Production Mgr. in charge of mfg. operations in production of synthetic rubber and butadiene, 1943-date.

FRANK J. DALIA, New Orleans; age 27. Endorsed: W. E. Blessey, F. H. Fox, F. W. Macdonald. Tulane University, B.S.C.E. 1949, M.S.C.E. 1952. U. S. Navy Civil Engineering School, 1952. Registered C.E., La. Junior Member ASCE. Military Engineer Member, SAME. F. C. Gandolfo, Jr., Civil Engineer, 1950-52. U.S. Navy District Public Works Office, Green Cove Springs, Fla., Design Officer, Asst. Officer in charge construction, Assistant Public Works Officer, 1954-55. Tulane University, Asst. Professor C. E. Dept., Sept. 1955 to date.

SALVADOR V. DISTEFANO, Baton Rouge; age 32. Endorsed: T. H. Kalencki, D. A. Stadler, Jr., M. A. Steele. La. State University, B.S.M.E. June 1948. Registered M.E., La. Stone & Webster Eng. Corp., Junior Engineer, 1948-49. McDonnell Aircraft Corp., Class "B" Designer, 1950-52. Higgins, Inc., Design & Drafting, 1952-53. J. F. Pritchard & Co., Mechanical & Piping Layout and Design, 1953-54. Kaiser Aluminum & Chemical Corp., Special Design Draftsman, Dec. 1954 to date.

KIRK FUQUA, Lake Charles; age 46. Endorsed: R. E. Burgess, W. M. Davis, V. E. Sicks. Tulane University, Mechanical Engineering, 1928-30. Shell Oil Co., Construction Engineer, Operating Engineer, 1933-40. Cities Service Defense Plant, Operating Foreman, 1940-43. Cities Service Refining Corp., Zone Engineer, 1943-1956.

ROBERT J. GOSS, Baton Rouge; age 45. Endorsed: T. H. Kalencki, G. H. Pope, W. M. Robbins. New York University College of Engineering, B.S.M.E. 1934. Stevens Institute of Technology, M.S.Ch.E. 1949. Member ASME, Ohio Society of Prof. Engineers, Registered P.E., New York,

(Continued on page 258)

ENGINEERING BRIEFS

Reversed Construction Technique. Reversing the usual sequence of first excavating, then building, the contractor of a new dome-roofed civic auditorium in Albuquerque, New Mexico, rounded off a natural mound of earth on the site and cast a 218-foot thin-shell concrete roof on the convex surface. He then dug away the earth beneath, leaving the dome standing clear on a ring of columns which had been built and backfilled earlier.

—*Engineering News Record.*

* * *

Pan-Am Highway Gets New Link. A new steel bridge at Quevedo in the mountainous interior of Ecuador has been hailed as an important extension that will carry the Pan-American Highway to the country's Pacific port cities of Manta and Guayaquil. The bridge eliminated a ferry system that could be used only during high water. Vehicles had to ford the stream during low water.

—*Engineering News Record.*

* * *

Engineers Sitting Pretty. Young engineers today live better, make more money, and can find the work of their choosing in comparison with the way their 1936 engineering brethren started out. Engineers in the class of '36 of Manhattan College, New York, went to work, if they could find jobs, at \$1300 to \$1500 per year. Manhattan's engineering graduates of last June found, without much difficulty, jobs with annual starting salaries of \$4500 to \$5700.—*Engineering News Record.*

* * *

More Research In U. S. Total expenditure for research in the U. S. last year has been estimated at about \$5-billion, compared with about \$700-million in Great Britain. Total number of people engaged in research in Great Britain is only 60,000 compared to about 500,000 in this country. Government supported engineering research in American universities is 100 times that in Britain.

—*Product Engineering.*

* * *

Air-Conditioned Factories. A recent survey indicated that 75 per cent of new factories—and 50 per cent of all factories—in the South will be air-conditioned by 1960. A similar trend is under way in the North.—*American Machinist.*

* * *

'Hidden' Taxes. A third of the average family's income goes out in taxes. Tax experts report there are 151 taxes on a loaf of

bread, 100 on an egg, 116 on a man's suit, 150 on a woman's hat and 600 on a house.—*American Machinist*.

* * *

Underwater Pipeline Record. A world's record for installation of a pipeline underwater was set by the Collins Construction Company, of Port Lavaca, Tex. Twelve miles of 10¾-inch-diameter concrete-coated steel pipe was laid in 80 hours across Corpus Christi Bay, Tex. The previous record was established in 1953 by J. Ray McDermott Company when it placed 10½ miles of 10¾-inch pipe in 14 days in Louisiana. The Collins Company assembled 4,000-foot sections of pipe on the shore and winched the line across the bay, welding on each new section at the shoreline.

—*Construction Methods and Equipment*.

* * *

Engineer-Typists Wanted. A British editor, noting the increased use of electronic computing machines in government offices, still thinks it will be a long time before he will see want-ads for "engineer-typists" or "shorthand-electricians".

—*Electrical World*.

* * *

Food for Thought. A recent survey reveals that every sixth manufacturing plant of 20-or-more employees in the United States is a food plant; Americans spent almost \$70-billion for food last year, today spend 25 per cent of their income to eat; food factories account for 50 per cent of the \$10-billion spent for packaging, using two-thirds of the nation's containers and over 80 per cent of the cans.—*Foods Engineering*.

* * *

Cool Cars. The current prediction in Detroit is that in less than five years air conditioning will be as prevalent as auto radios are today—and they're in four out of five cars.

—*American Machinist*.

* * *

Nuclear Warning System. A low-cost electronic system that detects and protects underground facilities against an atomic attack has been developed by the Army Signal Corps. When it detects an atomic bomb explosion that would endanger an installation, the system trips relays that instantly sound warning horns, closes blast doors, turns off gas lines, starts radiologically-filtered ventilation systems and triggers a series of other protective measures. The system is already at work at one large military headquarters, and further installations are planned at U. S. Air Force bases, in strategic locations throughout the country.—*Electronics*.

ERRORS AND OMISSIONS INSURANCE FOR CONSULTING ENGINEERS*

C. S. Carstens, H. C. Hauth Company, Inc.

A contracting firm installed an iron railing around the balcony of a building constructed by them. Two years later, a resident of the building was killed when it collapsed. The contractor was sued for a large sum on the contention that the rail supports were anchored insecurely. When the suit came up in court, the designing engineer was involved in the case when it was proven that the installation of the railing was done according to plans drawn by the engineer and furnished by him to the contractor. As the design was held to be faulty, the engineering firm was found negligent, and a large judgment was obtained against them while the case against the contractor was dropped. Had the firm of engineers been carrying sufficient "Errors and Omissions" insurance covering their operations, they would have been covered for the amount of the judgment, including court costs.

Malpractice Insurance

Many years ago the medical and dental professions discovered that their practices subjected them to claims and law suits alleging malpractice or breach of their professional duties in other respects. While many claims were proven groundless, the professional man could be brought into court and compelled to defend himself at his own expense even though blameless. Occasionally, he was found negligent by a court of law and judgment obtained against him. Malpractice insurance became a necessity in these professions. Insurance companies soon responded by issuing liability policies that paid the cost of legal defense and judgments.

Before long, however, this class of insurance became unprofitable and most companies discontinued writing policies altogether. A few companies, by careful screening of risks, continued to issue policies but at a constantly increasing premium. Doctors and dentists, therefore, were faced with the alternative of paying high surcharges for their insurance or dropping it.

Medical and dental societies and organizations then became interested in the problem, and finally, through concerted action, worked out an insurance program that produced results found satisfactory both to the professional man and to the underwriting companies. Today, under a group insurance arrangement sponsored by regional medical societies, any medical doctor in good standing can buy the liability protection he needs at a cost he can afford.

* Reprinted from "Consulting Engineer" with permission.

Accident at N. Y. World's Fair

Engineers and architects for many years were singularly free from claims alleging damages caused by errors or breach of professional duties. When mistakes were made, the matter usually was adjusted amicably by the owner, architect or engineer, and contractor. Resort to law was rare.

However, at the end of the New York World's Fair, in 1940, a serious accident occurred that brought about far-reaching changes in the field. A prominent New York architect who had designed one of the larger buildings at the Fair, the firm engaged to do the structural engineering work, the contractor, and the owner all were sued for a large sum. The ceiling of the building had collapsed suddenly while the structure was being demolished, killing and injuring several employees of the demolition contractor. A very large judgment was obtained against the defendants, excepting the architect who was held blameless. His firm, however, incurred heavy expenses for defense.

The decision of the courts in this case caused a stir among professional men in New York, and a number of prominent architects and engineers met to discuss the situation. As insurance protection appeared essential, it was decided to commission Mr. Herbert C. Hauth, who had been active for many years in the construction insurance field in New York, to make a study of the matter. There followed two years of effort to interest American underwriters in issuing comprehensive, unrestricted form of policy to insure architects and engineers for "any negligent act, error, or omission committed in the conduct of their professional duties." Without any background in the field and with no loss experience as a guide, conservative American companies were found unwilling to accept the entire risk. The line of insurance was so specialized and had such a limited market that many restrictions were felt to be necessary, and the insurance offered proved of little value.

First Unrestricted Policy

Lloyds Underwriters, in London, then were approached, and after many months of work on the form, policy conditions, and rate structure, the first unrestricted Errors and Omissions policy in the United States was prepared and offered to New York architects, in 1945, under the sponsorship of the New York Chapter of the American Institute of Architects.

About a year later, the contract of insurance also was made available to consulting engineering firms in the New York area. The policy offered was extremely broad, the only exclusions being claims arising from libel and slander, dishonesty of the firm or any of its employees, and fraud. A warranty was added providing

that the policy should be free of claims arising from negligent acts, errors, or omissions committed prior to the effective date of the first policy. A deductible clause of \$250.00 was applied to any loss in order to eliminate small claims which, presumably, could be adjusted by the principal with his client.

The experiment was like sailing in an unchartered sea. After two years of experience, it was found that the rates charged were producing inadequate premium income to pay losses. The policy also was found to be so broad that it could be called upon to pay losses due to circumstances or happenings far removed from the original intent to indemnify the assured for errors committed in the conduct of their professional duties.

New Rates

An application form then was devised to make it possible to tailor the policy to the exact requirements of each assured, and a schedule of rates was put into effect which, for the first time, endeavored to measure the hazards involved in the operations of each firm and to charge a premium commensurate with the various exposures found to exist. Experience rating also was introduced into the rate structure. Thus, those risks reporting no losses during a five-year period were granted a discount in rates, while those suffering losses were then charged a nominal increase upon renewal. To the best of our knowledge, no policies have been cancelled on account of unfavorable experience.

Thus, after ten years of experience in the field, Lloyds Underwriters and a number of other strong London companies today offer a contract of insurance to any consultant who wishes to insure his common-law liability for "Errors and Omissions."

Full Coverage

It is important to understand that these policies of insurance cover errors whether an accidental occurrence causes bodily injury and property damage or not. Far more important, the insurance covers the engineer's liability if he is found negligent for committing an error in design that requires structural changes after construction is under way or completed and, as is likely, he is called upon to defray the cost of the change.

In addition, should the engineer supervise the work of the contractor, even greater responsibility may be thrown upon him should an accident occur injuring persons or damaging property. Should the instructions of the field engineer be held to have contributed to faulty construction or to failure of the work of the contractor to meet the standards of construction demanded by the owner, the policy may be extended to cover this additional liability.

These policies offer another important feature of protection

which should be emphasized. Many engineering firms find it necessary to employ other firms to handle certain engineering or designing phases of a project. If such firms commit errors, the principal engineer, in all probability, will be held responsible under his contract. If he is found responsible, the policy will indemnify him for the errors committed by other firms he employs.

An outline of The Errors and Omissions policy now offered, with explanatory notes, is shown below. This policy has been purchased widely by the engineering firms in the New York territory during the past few years. Just over a year ago, however, the principles of group insurance were applied to the coverage because of the underwriting economies that could be realized when The New York Association of Consulting Engineers arranged for a group Errors and Omissions policy to cover their members. After the first year a substantial reduction in policy premium has been made for subscribing firms. It is confidently expected that even greater savings will be possible during ensuing years. With this experience as a guide, a similar group policy now has been arranged for members of the American Institute of Consulting Engineers with headquarters in New York City.

To secure the data on errors and omissions insurance, write to Consulting Engineers Council, 220 E. 42nd St., New York, N. Y.

Outline of Policy

A. INSURING CLAUSES

I. This policy is to indemnify the Assured against any claim or claims for breach of professional duty as _____
(Consulting Engineers) which may be made against the Assured by reason of any negligent acts, errors, or omissions which are committed by the Assured and/or the staff of the Assured in the professional conduct of their business as _____
(Consulting Engineers) which may be made against the Assured claims are made against the Assured during the currency of this policy.

If a claim is made for an error committed during the term of the policy but discovered after expiration, the loss, if any, is payable under the policy in force on the discovery date. If, for any reason, the insurance policy is not renewed or cancelled by either party, a period of twelve months for the discovery of any claim is granted without charge. If a longer discovery period is desired by the assured, there is a nominal additional premium. This provision is contained in Clause 8 of the policy as described hereafter.

II. This policy is also to indemnify the Assured against any claim or claims for breach of professional duty which may be made against the Assured during the currency of this policy arising from any negligent acts, errors, or omissions committed by any engineer and/or firm of engineers and architect and/or firm of architects

employed by the Assured arising out of work carried out on behalf of the Assured and for which the Assured may be legally liable.

B. CONDITIONS

III. The liability, in all, of Underwriters during the period of this policy shall not exceed the sum specified in the schedule of this policy.

The maximum liability that can be written on a given risk is \$1,000,000 and the minimum \$50,000.

IV. The Assured shall bear the first \$_____ of each and every loss.

The deductible amounts vary from a minimum of \$500 for small firms to \$25,000 for the largest firms. The amount desired is indicated by the assured in his application. Premiums are discounted according to the amount of deductible.

V. The measure of loss shall be such amounts as may be assessed against the Assured either by arbitration, adjudication, or as the result of a law suit, together with all expenses incurred in connection therewith.

Expenses incurred in investigation and defense of claims are paid in full by the underwriters without application of the deductible amount if no damages are assessed against the assured.

VI. The Assured shall, as a condition precedent to their right to be indemnified under this policy, give to the Underwriters immediate notice in writing of any claim made upon them or intimidation of a possible claim, and shall give to the Underwriters such information as the Underwriters may reasonably require in respect thereto, and any actual claim which may subsequently be made against the Assured as a result of the negligent acts, errors, or omissions which gave rise to the said intimation as to a possible claim shall, for the purpose of this policy, be treated as a claim during the currency thereof.

The underwriters require reasonably prompt notice of written or verbal claims or demands made upon the assured; they also request reports of any complaints which may reasonably be expected to result in claims subsequently.

VII. This policy is in excess of any other insurance or indemnity contracts and shall not be called upon in contribution but is only to pay any loss hereon if and so far as not recovered under any other policy of insurance or indemnity contract. Underwriters' liability shall not be increased by reason of the inability of the Assured to collect from any other Insurers any amount which may have become due from them whether inability arises from insolvency of such other insurer or not.

VIII. It is warranted by the Assured that this policy shall be free of all claims not made against the Assured during the currency of this policy and for claims arising out of any negligent acts, errors, or omissions committed prior to the _____ day of _____ provided, however, that in the event of cancellation or non-renewal, the indemnity granted by this policy shall be extended to cover the Assured in respect of any claim or claims which may be made

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against it during the period of 12 calendar months after the date of such cancellation or non-renewal but only in respect of any negligent acts, errors, or omissions committed prior to the date of such cancellation and/or non-renewal and subsequent to the _____ day of _____.

Errors committed prior to the effective date of insurance are not covered, regardless of when such errors are discovered or the claims arising from such error asserted against the insured.

C. EXCLUSIONS

IX. The Underwriters shall not be liable in respect of any claim made against the Assured:

A. which is based on or is attributable to any failure on the part of the Assured to effect or maintain insurance.

This coverage is granted only to insurance brokers and agents.

B. in respect of or arising from:

1. Activities in connection with Fair or Exhibit Grounds.

2. The making of the following:
Surveys of sub-surface condition
Boundary surveys
Ground testing

3. Any supervision of the actual construction

C. in respect of or arising from activities in connection with tunnels and/or bridges and other similar work.

The exclusions under 9B and 9C may be deleted, if such coverage is required, by payment of an additional premium.

D. for any dishonest, fraudulent, criminal or malicious act or omissions or for libel, slander, assault or battery.

E. for bodily injury to, sickness, disease or death of any employee of the Assured while engaged in the employment of the Assured or for any obligation for which the insured may be held liable under any Workmen's Compensation Law.

Such insurance is available under separate Workmen's Compensation policies.

F. in connection with the ownership, maintenance, use or repair of any property, or the conduct of any business enterprise (excepting the business set forth in the proposal form attached hereto) that is wholly or partly owned, operated or managed by the Assured.

Such insurance is available under separate Public Liability policies.

G. for bodily injury, sickness, disease or death, injury to or destruction of property resulting from physical acts by the named Assured, his agents, or employees.

Such insurance also is afforded under separate Public Liability policies.

H. in respect of the ownership, maintenance, operation or use of any aircraft, boats, automobiles or vehicles or any kind by or in the interest of the insured.

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Such insurance also is afforded under the appropriate forms of Liability policies.

I. in respect to the liability of others assumed by the Assured under any hold harmless contract or agreement.

Such agreements are occasionally found today in contracts with municipalities and other governmental bodies and obligate the assured to assume responsibilities for which otherwise the assured would not be legally liable. If such indemnity contracts are undertaken, the agreements should be submitted to the underwriters and endorsed upon the policy. An additional premium charge may be necessary.

X. This policy shall be cancelled at any time at the request of the request of the Assured, or by the Underwriters, by giving ten day's notice of such cancellation.

If this policy shall be cancelled as hereinbefore provided, or become void or cease, the premium having been actually paid, the unearned portion shall be returned on surrender of this policy, the Underwriters retaining the customary short rate, except when this policy is cancelled by the Underwriters giving notice, they shall retain only pro rata premium. Notice of cancellation by the Underwriters shall be effective even though underwriters make no payment or tender of return premium.

XI. It is further understood and agreed that the proposal form (a signed copy of which is attached herto) completed and signed by the Assured and dated _____ shall be considered as being incorporated in the policy and the statements and answers therein shall form the basis of the Contract.

An application form is required each year in order that the underwriters may be furnished full information regarding the operations of the assured, the number and types of employees, the volume or value of work done during the preceding year and the amount of insurance (indemnity) desired. With this underwriting information as a basis, the policy is tailored to fit the requirements of each firm and proper premium determined. There is no increase or reduction in premium made during a given policy year regardless of changes occurring in the risk during that period.

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The 1957 Conference on High-Speed Computers will be held at Louisiana State University, Baton Rouge, Louisiana, from March 5 through March 8, 1957. This conference is open to businessmen, office managers, accountants, engineers, chemists, physicists, economists, statisticians and other potential users from all sections of the country. Topics scheduled for discussion by nationally recognized speakers included office procedures statistical operations and numerical methods designed for the adaptation of problems to machine solution. Several manufacturers of computing equipment will be represented through exhibits or demonstrations of computers in operation.

Inquiries concerning the conference may be directed to: Dr. J. W. Brouillette, Director, General Extension Division, Louisiana State University, Baton Rouge 3, Louisiana.

* * *

A leading research executive called on American industry to throw its weight behind the engineering and science schools of the nation.

"I can state with firm conviction and clear conscience that such support of engineering and science education is less of a gamble with stockholders' money than is the support of research," said Dr. Joseph W. Barker, outgoing president of The American Society of Mechanical Engineers at the organization's annual meeting here.

He pointed out that education grants are tax-deductible within the five per cent allowable in Federal corporate income taxes, so that "you start off with odds of 100 to 48, or better than two to one, since every dollar of educational grant costs the company stockholders only 48 cents net after taxes."

Dr. Barker urged that salaries of engineering and science teachers be brought to levels reasonably comparable with industrial salaries for persons of equivalent capabilities and attainments.

"Then," he said, "there would be no need for a ban on raiding, for raiding could go on with equal vigor on both sides—and probably with advantages to both industry and education."

To bring this about, he said, engineering and science schools must have real and substantial financial help over and above what is needed to provide increased industrial plant.

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He concluded:

"Industry spends, and very properly so, many millions of dollars annually in support of applied research and development aimed at the possibility of capturing the lead for tomorrow's new products. Why should not industry generally follow the lead of some enlightened companies and support also the schools which are producing tomorrow's engineers and scientists?"

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GLEANINGS FROM OTHER SOCIETIES

Ultrasonics, vibrations and sound waves too high to be detected by the human ear, can be used to find flaws in metal, which might lead to disastrous failures and explosions. What is needed now is a flaw-limit standard or "Code" to make this new tool effective and extend its usefulness to industry.

The application of ultrasonics to the field of thickness measurement and flaw detection indicates either visually or audibly whether the metal has the proper thickness, or whether flaws such as cracks or internal holes exist.

A complete history of the use of this new method of inspecting mechanical equipment and welds was described for engineers attending the annual meeting of The American Society of Mechanical Engineers.

Numerous examples presented by the speaker Frank C. Parker indicated that ultrasonics is a dependable inspection tool, but the lack of actual acceptance standards causes difficulties for both the manufacturer and purchasers of mechanical equipment. He urged that studies be directed toward the formation of acceptance standards because ultrasonics is of great economical importance to the steel producer as well as the final user. Ultrasonics can contribute information beyond that obtainable by other non-destructive methods of testing.

—ASME Paper 56-A-185

* * *

New adhesives, proper laminating techniques and more efficient mechanical fastenings are bringing engineered timber construction back into American building practice. This includes structural framing for commercial, industrial, military, educational, recreational buildings, and bridges, towers, wharves and other types of structures.

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Wood in any solid form is hard to ignite. In order to do so, there must be sufficient heat to drive out moisture and vaporize the gums and some parts of the fiber. The vapors will then burn. Sufficient heat will oxidize the resulting surface charcoal but this

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—Frank J. Hanrahan, ASME Paper 56-A-137

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OBITUARY OF SAMUEL LOUIS BALENTINE, JR.

The people of Central Louisiana, the engineering profession in general and the Louisiana Engineering Society suffered a great loss in the untimely passing of Samuel Louis Balentine, Jr. on August 28, 1956. His death, just after having reached his 28th birthday is deeply mourned by all of us who were privileged to know and work with him in the society.

Sam was born on August 14, 1928 in Sterlington, Louisiana. The family moved to Alexandria in 1943 where Sam attended and was graduated, at the head of his class, from the Tioga High School. His higher education was attained from Louisiana College. He was too young for service during World War II but did serve in the United States Navy, as a radio technician, from 1946 to 1948. He joined the Consulting Engineering firm of L'Heureux and Harris in 1950 and remained with them until his passing.

Sam was a devout christian and church worker. He was a lover of the out-of-doors participating in hunting and fishing whenever possible. He was very active in civil affairs giving much of his time and efforts to civil defense and boy scout work. He was a constant booster for his chosen profession and worked energetically and untiringly on society committee assignments to which, due to his enthusiastic interest, he was frequently appointed. One of his last public appearances after being stricken with the fatal disease was a radio address as a representative of the Louisiana Engineering Society eulogizing the engineering profession.

Sam never saw his only child, a fine healthy baby boy, named Samuel Louis, III, born two weeks after his death.

In addition to his wife and child, unborn at his death, Sam is survived by his mother, father, one brother and three sisters.

The number of his friends who attended the funeral was one of the largest of any funeral ever held in Central Louisiana which is significant of his standing in the community. He is dearly remembered.

In memoriam, be it therefore resolved, that this obituary be read at a meeting of the Louisiana Engineering Society, entered into the minutes and published in the proceedings of the Society, and that copies be sent to the members of the family.

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MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

Minutes of Meeting of the Board of Direction, Monday, August 13, 1956

The meeting was called to order by President Wallace with Messrs. Cassagne, Drawe, Seago, Smith, Taylor and Fernandez present. Dr. Taylor moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Cassagne and carried.

The Treasurer presented a financial statement on the 1956 Outing, showing a net surplus of \$120.00. Mr. Cassagne moved that Mr. Warren Bankston, Chairman of the outing, and his entire committee be commended for their excellent work in making the outing such a fine success. Motion seconded by Mr. Taylor and carried.

Letters of acceptance from appointees as vice-chairman of the 1957 Annual Meeting committees were read. One letter of regret of the appointee's inability to accept also was read, and it was decided that a new appointment to this vice-chairmanship be tabled until the General Chairman and the Committee Chairman could be contacted.

Mr. Seago moved that Professor R. E. Jenkins be appointed Vice-Chairman of the Student Conference Committee, seconded by Mr. Smith and carried.

A letter from the Speakers' Bureau of the United Fund for Greater N. O. Area requesting permission to speak at one of the society's meetings was read. Mr. Drawe moved that the request be granted for a five-minute talk at the September meeting. Motion seconded by Mr. Seago and carried.

The secretary read a letter describing a group insurance proposal that was presented to the Board of Direction in 1948. He also read a recent letter addressed to Vice-President Waldemar Nelson by Mr. Robert L. Bowers outlining a similar group insurance proposal for L.E.S. members. In the absence of Mr. Hornsby, President of the Baton Rouge Section, who had made inquiry on the possibility of group insurance for the society and who is now gathering further information on the subject, the matter was tabled for a future meeting of the board.

Mr. Smith moved that the following be reinstated to the grades indicated, seconded by Mr. Drawe and carried.

George B. Walther, Lake Charles (Member)
Glenn D. Garber, Lake Charles (Junior)

Mr. Smith moved that President Reinhart of the National Society of Professional Engineers be invited to meet with the Board of Direction on October 22. Motion seconded by Mr. Seago and carried.

Mr. Drawe moved that Messrs. Seago and Fernandez be appointed to investigate the possibility of obtaining draft beer for L.E.S. meetings, seconded by Mr. Cassagne and carried.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the Louisiana Engineering Society held jointly with the Louisiana Section, A.S.C.E., Monday, August 13, 1956 — Engineers' Club, N. O.

The meeting was called to order by President Wallace with 150 members and guests present. President Wallace welcomed members and guests of A.S.C.E., after which Mr. David Godat moved that the reading of minutes of the preceding meeting be dispensed with, seconded by Mr. George Stephenson and carried. The secretary then read minutes of a meeting of the Board of Direction held on July 17, after which the president gave a report on the proposed revision of the present engineering registration act known as House Resolution 553, introduced into the Louisiana State Legislature by Messrs. Gaudin and Sanders and defeated in the Senate by a vote of 10 yeas, 15 nays, and 14 absent or not voting.

The chair then was relinquished to Dr. Lee H. Johnson, Jr., Chairman of the Louisiana Section, A.S.C.E., who called on Mr. Norman Lant to introduce the principal speaker of the evening, Mr. R. B. Richardson, Director, Louisiana Department of Highways, who gave a most interesting talk on "National Interstate Highway Systems in Louisiana". Following his address, Mr. Lant as moderator and a panel consisting of Messrs. T. L. James and Grady Carlisle answered numerous questions from the audience.

The meeting then was turned over to Dr. Wallace, who adjourned it with a rising vote of thanks to Messrs. Richardson, James and Carlisle.

JOHN P. FERNANDEZ, Secretary-Treasurer

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**Minutes of Meeting of the Board of Direction held on Monday,
September 10, 1956**

The meeting was called to order by President Wallace with Messrs. Cassagne, Drawe, Nelson, Seago, Taylor and Fernandez present. Mr. Chester A. Peyronnin also was present by invitation. Mr. Seago moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Nelson and carried.

Mr. Peyronnin was introduced to the board members as the new editor of the society's publication. Discussion followed on plans for improvement of the publication and it was decided to invite Mr. Peyronnin to the next board meeting.

The secretary read a report on the 1956 Annual Outing submitted by Mr. Warren K. Bankston, Chairman, which was received with great interest by the board.

A note of thanks for floral offering received from the Bedell family was read.

A letter from the secretary to the President of National Society of Professional Engineers was read, stating that Mr. Rhinehart probably would not be able to attend the proposed meeting with L.E.S. board members scheduled for October 22.

The board decided to delay action on the matter of group insurance until Mr. Hornsby could gather additional information.

A letter from the State Board of Registration advising the society that Dean Ben T. Bogard's term of office as a member of said board will expire on November 16, 1956 was read. In accordance with precedent, a committee composed of Messrs. R. M. Seago, immediate past president, W. S. Nelson and E. M. Freeman, vice-presidents of the society, was appointed to prepare a list of professional engineers from which the board will make its selection of nominees to fill this vacancy.

A letter from the Honors and Awards Committee was read, in which Mr. H. N. Ogden, Chairman, advised that his report would be ready for the October meeting.

Discussion followed on the scholarships offered to the four Louisiana engineering colleges by the society and it was suggested that the secretary write to remind the deans of same.

The secretary announced that the Nominating Committee to select candidates for the 1957 slate of officers would be appointed at the October meeting, also that names of nominees for the Certificate of Appreciation and Honorary Memberships should be brought up at the October meeting. Board members were urged to give these matters careful consideration.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Louisiana Engineering Society held on Monday,
September 10, 1956 at the Engineers' Club.**

The meeting was called to order by President Wallace with approximately 90 members and guests present. Mr. Ellis moved that reading of minutes of the preceding meeting be dispensed with, seconded by Mr. Abraham and carried. The secretary then read minutes of the board meeting of August 13.

The president called on Mr. H. L. Lehmann, who read an obituary of the late Wallace Ray Mack. Mr. Lehmann then moved that the memorial be incorporated in the society's minutes, published in the proceedings and copies forwarded to the family of the deceased. The motion was seconded by Mr. Grevemberg and carried, after which a moment of silence was observed in memory of the deceased.

Mr. Hercules Bergeron gave a brief address in behalf of the United Fund for the Greater New Orleans Area.

Mr. R. M. Seago read an obituary honoring the late Colonel Victor J. Bedell. He then moved that this be spread upon the minutes, printed in the society's publication, and copies forwarded to the family of the deceased.

The president then called on Mr. Malcolm Stumpf, who introduced the principal speaker of the evening, Mr. Arthur K. Smith, Assistant System Planning Engineer, New Orleans Public Service Inc., who addressed the meeting on the subject "Factors Involved in the Selection of Nuclear Reactors for Power Generation".

After a very lively question period the meeting adjourned with a rising vote of thanks to Mr. Smith.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of the Meeting of the Lafayette Section, Louisiana Engineering Society, October 23, 1956

The October meeting of the Lafayette section—Louisiana Engineering Society—was a dinner meeting and was held Tuesday, October 23, 1956, at Poor Boy's Restaurant.

The meeting was called to order by President R. M. Hetherwick, who welcomed all the members back to the first meeting of the season. The President then reported on the various subjects discussed at the recent meeting of the Board of Direction.

President Hetherwick also discussed the possibility of the society becoming affiliated with the National Society of Professional Engineers. This was accepted by this section as beneficial to the organization and it was suggested that the matter be investigated.

Temporary committees were established until the next regular meeting.

Mr. H. W. Burgin of the Louisiana Metal Pipe Co. was introduced by Mr. F. W. Consterdine and presented a film on the construction, use, and durability of corrugated metal pipe. Following the film Mr. Burgin answered questions pertaining to the film.

After the program, the meeting was adjourned.

J. BRIANT FOURNET, Secretary-Treasurer

Minutes of the Meeting of the Lake Charles Section of the Louisiana Engineering Society held September 10, 1956

A dinner meeting of the Lake Charles Section of the Louisiana Engineering Society was held on September 10, 1956, at Sammy's Restaurant. There were twenty-nine members and guests present.

After dinner, which began about 7:15, the meeting was called to order by President Wooster.

The reading of the minutes of the last meeting was dispensed with. President Wooster then announced that the next meeting would be held at Sammy's Restaurant on October 8, 1956, and urged all members to attend.

Following this announcement, there was a short introductory period of members and guests.

Our guest speaker, Mr. Alfred H. Harder, a geologist with the U. S. Geological Survey, Ground-Water Branch, gave a very interesting and informative talk on "The Effect of Subterranean Salt Water on the Availability of Fresh Water in Calcasieu Parish".

A question and answer period followed the talk.

The meeting was adjourned at 9:30 P. M.

GLENDON L. SMITH, Secretary-Treasurer

Minutes of the Meeting of the Lake Charles Section of the Louisiana Engineering Society held October 8, 1956

The October meeting of the Lake Charles Section of the Louisiana Engineering Society was held at Sammy's Restaurant on October 8, 1956.

The meeting was preceded by a dinner which began about 7:15 P. M. There were thirty-six members and guests present.

President Wooster called the meeting to order at about 7:50 P. M. A short informal introductory period of members and guests followed.

The reading of the minutes of the last meeting was dispensed with. President Wooster then announced that the next meeting would be held on November 12. He urged all members to attend to hear a talk on the "Generation of Static Electricity". It was voted to make the next meeting a dinner meeting at Sammy's.

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256 *Minutes of the Meetings and Business of the Society*

President Wooster read a bulletin from the State Licensing Board for contractors in regard to provisions of Act 233 enacted at the regular session of the Legislature of Louisiana for the year of 1956. He then appointed the following members to serve on the Annual Meeting Committee: Messrs. R. E. Burgess, Chairman; G. H. Hill, Vice Chairman; W. M. Larkin, W. M. Davis, B. H. Wade, J. M. Stewart, Jr., and D. W. Jessen.

Our guest speaker, Mr. Jackson E. O'Connell, Nuclear Systems Specialist, Atomic Energy Division, Babcock and Wilcox Company, Chicago, Illinois, was then introduced. He gave a very interesting talk on "Economics of Fuel Cycles in Power Reactors".

A question and answer period followed the talk.

The meeting was adjourned at 10:00 P. M.

GLENDON L. SMITH, Secretary-Treasurer

Minutes of the Meeting of the Lake Charles Section of the Louisiana Engineering Society held November 12, 1956

The November meeting of the Lake Charles Section of the Louisiana Engineering Society was held in the lecture auditorium of the McNeese State College Science Building on November 12, 1956.

There were one hundred and forty-eight members and guests present. The general public was invited.

President Wooster called the meeting to order at 7:35 P. M. He thanked the program committee for the good turnout, and expressed his appreciation to Mr. M. B. Clarkson of McNeese State College for permission to use the lecture room for this meeting.

Mr. W. M. Davis gave a report from the nominating committee on the nomination of officers for 1957. Those nominated were:

For President: Richard R. L. Ward

For Vice President: Glendon L. Smith

For Secretary-Treasurer: Fred R. Adams

No nominations were made from the floor and a motion was made, seconded and passed that the nominations be closed; however, President Wooster said that on the ballots to be mailed out, space would be provided for write-in candidates.

Our guest speakers, Mr. G. M. Kintz, District Supervisor; and Mr. H. F. Browne, Safety Engineer of the Health and Safety, District G, Bureau of Mines, Department of the Interior, Dallas, Texas, were introduced.

The guest speakers gave a very interesting talk and demonstration on "Static Electricity". They gave a scientific demonstration to explain and show the nature of Static Electricity and produced it to show some of its common manifestations in everyday life. Methods and materials used to prevent accumulation of static electrical charges were demonstrated to show their effectiveness.

The meeting was adjourned at 9:15 P. M.

GLENDON L. SMITH, Secretary-Treasurer

Minutes of the September Meeting of the Monroe Section of the Louisiana Engineering Society, September 12, 1956

The September, 1956 meeting of the Monroe Section of the Louisiana Engineering Society was held at the Rendezvous, Louisville Avenue, Monroe, Louisiana, on Tuesday, September 4, 1956. This was a dinner meeting arranged by Mr. J. R. McKinley, chairman, and the members of his committee.

The meeting was called to order at 7:30 P. M. by Mr. R. A. Smith, president of the Monroe Section. There were some sixty-eight members and guests in attendance, the guests being introduced to the group by the secretary. Mr. J. R. McKinley introduced the speaker of the evening, Mr. R. B. Richardson, director of the Department of Highways of the State of Louisiana. He gave a most interesting and informative presentation on "Interstate Highway System Programs and Their Effect on Louisiana." After the presentation there was a brief question-and-answer period in which Mr. Richardson and Mr. R. H. Vaughan, also of the Highway Department, answered numerous questions concerning the federal program.

Following this discussion a drawing for the door prize was held. The prize, a K&E pocket slide rule, was won by Mr. H. H. Mullins of Olin-Mathieson Chemical Corporation, West Monroe, Louisiana.

The meeting adjourned at approximately 9:00 P. M.

ARTHUR C. THIGPEN, Secretary-Treasurer

NEW MEMBERS

(Continued from page 228)

Ohio, New Jersey. Kaiser Aluminum & Chemical Corp., Supt. of Engineering & Development, March 1956 to date. Previous employment, Warren Foundry & Machine Co., American Cyanamid Corp.

EUGENE H. HARLOW, New Orleans; age 43. Endorsed: C. Glenn Cappel, L. H. Johnson, Jr., F. M. Taylor. Harvard University, A.B. Eng. Science, 1935; S. M. Civil Eng., 1936. Member Harvard Eng. Society, ASCE, AICE, Am. Geophysical Union, N.S.P.E., SAME. Registered C.E. N. Y., N.J., Mass., Conn., Pa., La. Frederic R. Harris, Inc., New York, Draftsman & Designer, 1936-37. Portland Cement Ass'n, Chicago, Soils Engineer, 1937-39. Frederic R. Harris, Inc., New York, Structural & Foundation Engineer, Resident Engr., Project Engr., Vice-President, 1939 to date; present assignment, design of offshore drilling rigs, New Orleans.

NORWOOD F. HYMEL, New Orleans; age 30. Endorsed: A. M. Fromherz, J. R. Pezold, M. J. Ruck, J. P. Fernandez. Tulane University, B.S.C.E. June 1949; M.S.C.E., Aug. 1952. Junior Member ASCE, Member SAME. Registered C.E., La. Fromherz Engineers, Associate Design Engineer, 1949 to date. In charge of design of over and underpasses, commercial and industrial buildings, water treatment plants, sewerage treatment plants, water distribution systems, sewage collection systems, drainage systems, pumping stations, etc.

JAMES N. KAYSER, Baton Rouge; age 42. Endorsed: B. E. Crawford, C. H. Hall, Paul Wamsley. McGill University, B.S.M.E. 1938. U.S. Air Force, Bomb Group Engineering Officer, 1940-45. Esso Standard Oil Co., Equipment inspection, mechanical engineering, 1945 to date.

PAUL C. KOONS, JR., Baton Rouge; age 30. Endorsed: L. J. Lassalle, W. P. Wallace, E. J. Dantin, W. A. Wintz. La. State University, B.S.M.E. 1949. Member ASEE. Registered M.E., La. La. Dept. of Highways, Earthwork Computer, 1949-50. Offshore Navigation Co., Shoran Operator, 1950-51. La. State University, Asst. Acting Director, Eng. Experiment Station, 1952-54. Delta Tank Mfg. Co., Pressure Vessel Draftsman, Checker of Fabrication drawings, Feb. 1955 to date.

HENRY C. LALUMANDIER, Baton Rouge; age 30. Endorsed: R. H. Hudson, O. D. Johnson, D. A. Stadler. La. State University, B.S.M.E. May 1955. Associate Member ASME. Registered M.E., La. Esso Standard Oil Co. of La., Design Engineer, Pressure Vessel, Structural Steel, Foundation and Piping Design, Estimating, some Mechanical Crafts Coordination work.

JAMES R. McLEAN, Baton Rouge; age 32. Endorsed: R. R. Dennis, F. G. Stewart, B. J. Swindler. La. State University, B.S.M.E. June 1949. Southern Coach Mfg. Co., Inc., Evergreen, Ala., Supervisory work in Eng. Dept., Bus & Trailer frame design, installation of gas and diesel engines, 1950-55. Copolymer Rubber and Chemical Corp., Baton Rouge, Mechanical Engineer, piping installations, concrete foundation design, Nov. 1955 to date.

EDMUND F. METZ, Baton Rouge; age 42. Endorsed: C. M. McKay, D. T. Norwood, W. G. Stewart, Jr. La. State University, B.S.Ch.E. 1949. U.C.L.A., 8 mos. 1943, Meteorology. University of San Juan, P.R., 2 mos. 1944, Tropical Meteorology. Lone Star Cement Corp., Mix Chemist, 1938-41. U.S. Engineer Corps, N. O. Dist., Eng. Aide, 1941-42. U.S.A.A.F. Meteorologist, 1942-47. U.S. Engineer Corps, Office Engineer, 1949-50. Copolymer Rubber & Chemical Corp., Production Foreman, 1950-55; Safety Director, 1955-date.

ELMER E. PRESCOTT, Baton Rouge, age 27. Endorsed: C. M. McKay, L. C. Schilling, W. G. Stewart, Jr. La. State University, B.S.M.E. 1950. U.S. Army, 2nd Lt., 1950-52. Feliciana Industries (Machine Shop), St. Francisville, La., Engineer, job estimating and layout, assist in construction supervision, 1952-54. Transcontinental Gas Pipe Line Corp., Houston, Jr. Engineer, steam compressor plant operation, compressor station design, pipeline operation and design, 1954-56. Copolymer Corp., Baton Rouge, March 1956 to date.

KENNETH A. PRESTON, Pineville; age 30. Endorsed: O. E. Barron, D. V. Cresap, T. C. David. University of Kansas, B.S.C.E. Feb. 1946. Member ASCE 1946. Registered C.E., La. Clarence Preston & Son, Gen. Contractors, Marshall, Tex., partner, estimating, supervision of labor, 1946-52. Universal Match Corp., Karnack, Texas, Senior Draftsman, estimating, designing, 1952-53. Trunkline Gas Co., Houston, Texas, Pollock, La. Cathodic Protection, surveying, fathometer surveys, general engineering duties on 400 miles pipeline, Aug. 1953-date.

RONALD E. SHRADER, Greenwell Springs; age 33. Endorsed: J. V. Roy, W. G. Stewart, Jr., B. J. Swindler. La. State University, B.S.M.E. 1949. Dunham-Wilson Co., Night Supervisor in charge steel fabrication, 1949-50. Ethyl Corp., Outside Machinist Helper, 1950-52. Delta Tank Mfg. Co., Inc., Mechanical Engineer, design of pressure vessels and L. P. gas transports, tool and dye design, jigs and fixtures, plant layouts, piping and building details, 1952-56. Copolymer Rubber & Chemical Corp., Piping, steel details, March 1956 to date.

WILLIAM E. SNOW, JR., Baton Rouge; age 33. Endorsed: T. E. Alexander, C. M. McKay, W. G. Stewart, Jr. Purdue University, B.S.M.E., Feb. 1948. U.S. Army Air Force, Pilot & Flight Engineer, 1943-45. Ingersoll Rand Co., Sales Engineer, sales and maintenance of process equipment, March 1948 to date.

GASTON J. THERIOT, New Orleans; age 60. Endorsed: A. R. Rodriguez, H. C. Swan, J. P. Fernandez. Carnegie Tech, Electrical Engineering, 1916-17. La. State University, B.S.E.E. 1923. U.S. Army Signal Corps, 1917-19. General Electric X-Ray Corp., Chicago, research, development of techniques, 1923-28. N.O. Public Service Inc., 1928-33. Standardizing Lab., Meters, Office Engineer. Self-employed, 1933-35. Works Progress Admin. Parish Engineer, Supt. of Construction, street paving, civic improvements, 1935-40. Sales, building materials, etc., 1940-41. U.S. Government, Electrical Engineer, 1945-49. Self-employed, 1949-50. U.S. Government, Electrical Engineer, Maritime Commission, Sept. 1950 to date.

EDWIN B. THOMPSON, Lake Arthur; age 31. Endorsed: E. L. Levingston, C. W. Stokes, S. D. Nolan. McNeese Jr. College, 1941-43. Iowa Wesleyan Univ., 1944. Aeronautical Univ. of Chicago, 1947-49, B.S. Aero. Eng. Cities Service Refining Corp., General Engineering Dept., Oct. 1952 to date.

FOR TRANSFER FROM JUNIOR TO MEMBER

LESLIE M. DYSON, Baton Rouge; age 32. Louisiana Polytechnic Institute, B.S.E.E. 1948. Stanford University, M.S.E.E. 1952. Registered E.E., La. Louisiana Polytechnic Institute, Instructor, 1948-51; Sab. leave, 1951-52; Asst. Professor and Head, Dept. Eng. Research, 1953-55. State of Louisiana Dept. of Public Works, Engineer, June 1955 to date. Member AIEE, NSPE.

RICHARD E. PHILLIPS, Baton Rouge; age 31. University of Cincinnati, M.E. 1951; La. State University, M.S.M.E., 1956. Registered M.E., La., Ohio. Ethyl Corp., Baton Rouge, 1951 to date; Junior Engineer, Mechanical Development, Administrative; Asst. Engineer, Project Group; Project Engineer, Development Engineer, Group Leader.

FOR AFFILIATE MEMBER

HENRY S. FINKE, New Orleans; age 43. Endorsed: M. B. Hutson, L. K. Nelson, W. S. Nelson. Education in Business Administration. Member National Sales Executives, Associated Equipment Distributors, Construction Industry Association, Louisiana Equipment Engineers. Jahncke Service Inc., ready-mix concrete dept., 1933-41. W. Horace Williams Co., Chief Concrete Inspector, designing mixes, 1941-45. H. S. Finke Corp., sales and rental of steel scaffolds, concrete forms and shoring systems, other small equipment, 1946 to date.

FOR JUNIOR MEMBER

DALLAS C. ROBERTS, Pollock; age 30. Endorsed: O. E. Barron, W. H. McElroy, L. J. Melancon. Texas Christian University, 1948-51. Southwestern Bell Tel & Tel. Co., Ft. Worth, 1950-55, Plant Assigner, Field Man. Facility Engineer Southern Bell Tel. Co., Alexandria, Engineer in charge of providing facilities for general telephone company use, including outside plant equipment and buildings, Sept. 1955 to date.

CORLEY P. SENYARD, Baton Rouge; age 26. Endorsed: D. A. Donald, R. E. Lee, J. H. Simpson. University of Arkansas, B.S.M.E. 1951. Registered M.E., La. N.O. Public Service Inc., Trainee Engineer, June-July 1951. Esso Standard Oil Co., Project Engineer, Coordination and planning of Construction projects, Dec. 1954 to date.

OLIVER I. SNAPP, JR., Baton Rouge; age 23. Endorsed: A. N. Gordon, T. J. Innes, Jr., C. R. Neff, Jr., R. E. Ruckstuhl. Clemson A & M College, B.C.E. 1956. Student Member ASCE, SAE; junior memberships applied for. Professional licenses applied for in La. and S.C. Esso Standard Oil Co., Project Engineer, manage, coordinate and engineer new projects, June 1956 to date.

NORMAN DALE WESLEY, Baton Rouge; age 26. Endorsed: W. E. Aicklen, W. M. Robbins, W. C. Randall. La. State University, B.S.E.E. 1955. Registered E.E., La. Tennessee Coal & Iron Div., U. S. Steel, Electrical Engineer Trainee, 1955-56. Barnard & Burk, Electrical Draftsman, Feb.-April 1956. Kaiser Aluminum & Chemical Corp., Special Design Draftsman, May 1956 to date.

RICHARD O. WILSON, Harvey; age 26. Endorsed: R. N. Crews, R. E. Howson, C. L. Graves. The Rice Institute, B.A. 1952; B.S.C.E. 1956. Student Member, ASCE, AWS. Associate Member, Sigma Xi. Lockwood & Andrews, Houston, Civil Engineer, prepared earthwork and drainage plans, June-Sept. 1955. J. Ray McDermott & Co., Inc., Harvey, Asst. Design Engineer, design of offshore platforms and other structures, June 1956-date.

JUNIOR MEMBERSHIP AWARDS

COURTNEY C. BUSCH, graduate of Tulane University in Mechanical Engineering.

CHARLES K. CAPDEPON, graduate of Tulane University in Mechanical Engineering.

SAMMY LEE FONTENOT, graduate of Southwestern Louisiana Institute in Electrical Engineering.

SAMUEL P. LANDRY, JR., graduate of Tulane University in Civil Engineering.

RONALD W. LAURENT, graduate of Louisiana State University in Civil Engineering.

GUY F. LeMIEUX, graduate of Tulane University in Civil Engineering.

DAVID L. MIZELL, graduate of Southwestern Louisiana Institute in Mechanical Engineering.

ANTHONY P. MOROVICH, graduate of Tulane University in Civil Engineering.

WALTER H. PACE (SCHOLASTIC AWARD WINNER), graduate of Tulane University in Electrical Engineering.

LARRY J. ROUSSEAU, graduate of Tulane University in Civil Engineering.

GUY J. SEGHERS, JR., graduate of Tulane University in Civil Engineering.

MADISON J. WILLIAMS, JR., graduate of Louisiana Polytechnic Institute in Civil Engineering.

To scratch a name, place an X opposite it and state your reason for blackballing the applicant.

Please place this ballot, scratched or unscratched, in the smaller envelope, which is to be placed in the envelope addressed to the secretary. Sign your name on the back of the large envelope. Ballot must be returned by September 30 in order to count.

JOHN P. FERNANDEZ, Secretary-Treasurer

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DECEMBER, 1956

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