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Vol. 55 No. 1, February, 1969

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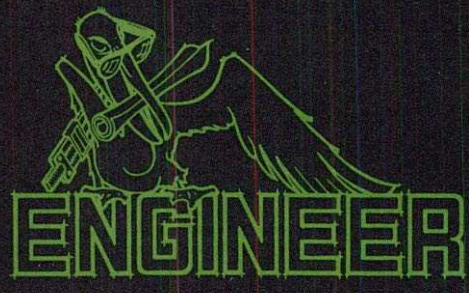

LOUISIANA ENGINEER

AN INVITATION TO EXHIBIT AT THE 1969 CONVENTION LOUISIANA ENGINEERING SOCIETY

April 23, 24 and 25, 1969 Jung Hotel New Orleans

The Louisiana Engineering Society will hold its annual convention on the dates shown and is now soliciting exhibitors.

GENERAL INFORMATION

The Louisiana Engineering Society has over 2,300 members, representing professional engineers in all branches of practice. The membership is composed of engineers in private practice, industry, government and education. Our members are responsible for purchases of more than $500 million annually in engineering equipment and related services. Members and other engineers from throughout Louisiana will attend and participate in this convention.

BOOTH INFORMATION

All booths are modern, standard 8′ x 10′ exhibit booths, draped with flameproof cloth. Booth package includes a six-foot table, table cover, padded chair, one electrical outlet up to 300 watts, a 9-inch x 44-inch two-line sign and one ashtray.

Cost of booth is $150. A second booth can be obtained for $100. Booth rental must be submitted with the space contract.

Booth assignments will be made on a first come, first served basis.

MUSICAL NOTE

To add interest and increase attendance, LES will have a strolling trio, playing music during a special Po Boy and Beer Luncheon to be held in the exhibit hall at noon on Thursday, April 24. In addition, we have contracted for a six-piece Dixieland band to play during the Exhibitors' Cocktail Party in the exhibit hall the same night. See Program on Page 18.

EXHIBITORS SCHEDULE

Installation: Wednesday, April 23, starting at 9:30 a.m., ready before 5 p.m. opening.

Show Dates: April 23, 24 and 25, 1969.

Dismantling: April 25, starting at 1:00 p.m.

FOR ADDITIONAL INFORMATION

If any additional information is needed, please contact:

WARREN A. CHIGOY
1600 S. Peters Street
New Orleans, La. 70130
Phone 529-4545, Ext. 667

or

NORMAN C. FERACHI
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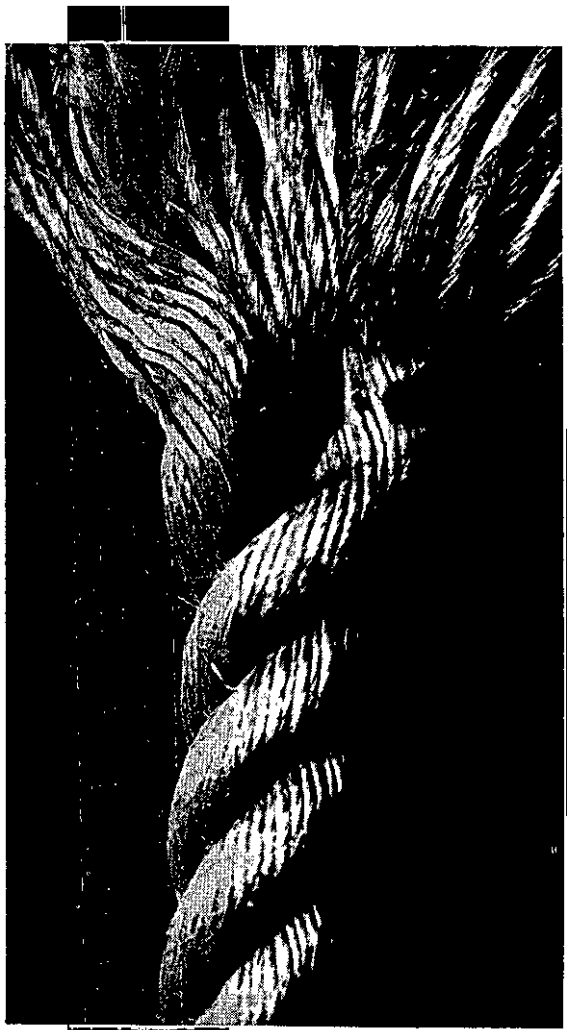

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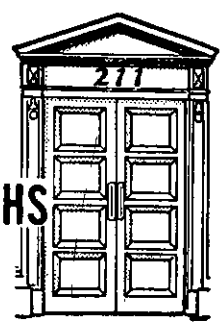

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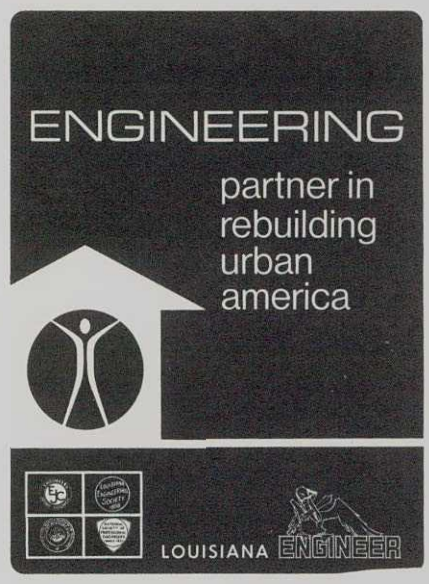

Cover: ENGINEERING: Partner in Rebuilding Urban America, the theme of National Engineers Week, is featured on our cover this month.

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LOUISIANA ENGINEER

TABLE OF CONTENTS

Presidential Privilege 6
Letter from President Nixon 7
The Engineer as Citizen 8
Code of Ethics for Engineers 10
Engineering Achievements of 1968 13
How to Become a Professional Engineer 15
Ford, Bacon & Davis 16
Convention Preview 18
Professional Ethics 20
EngiNEWS 22

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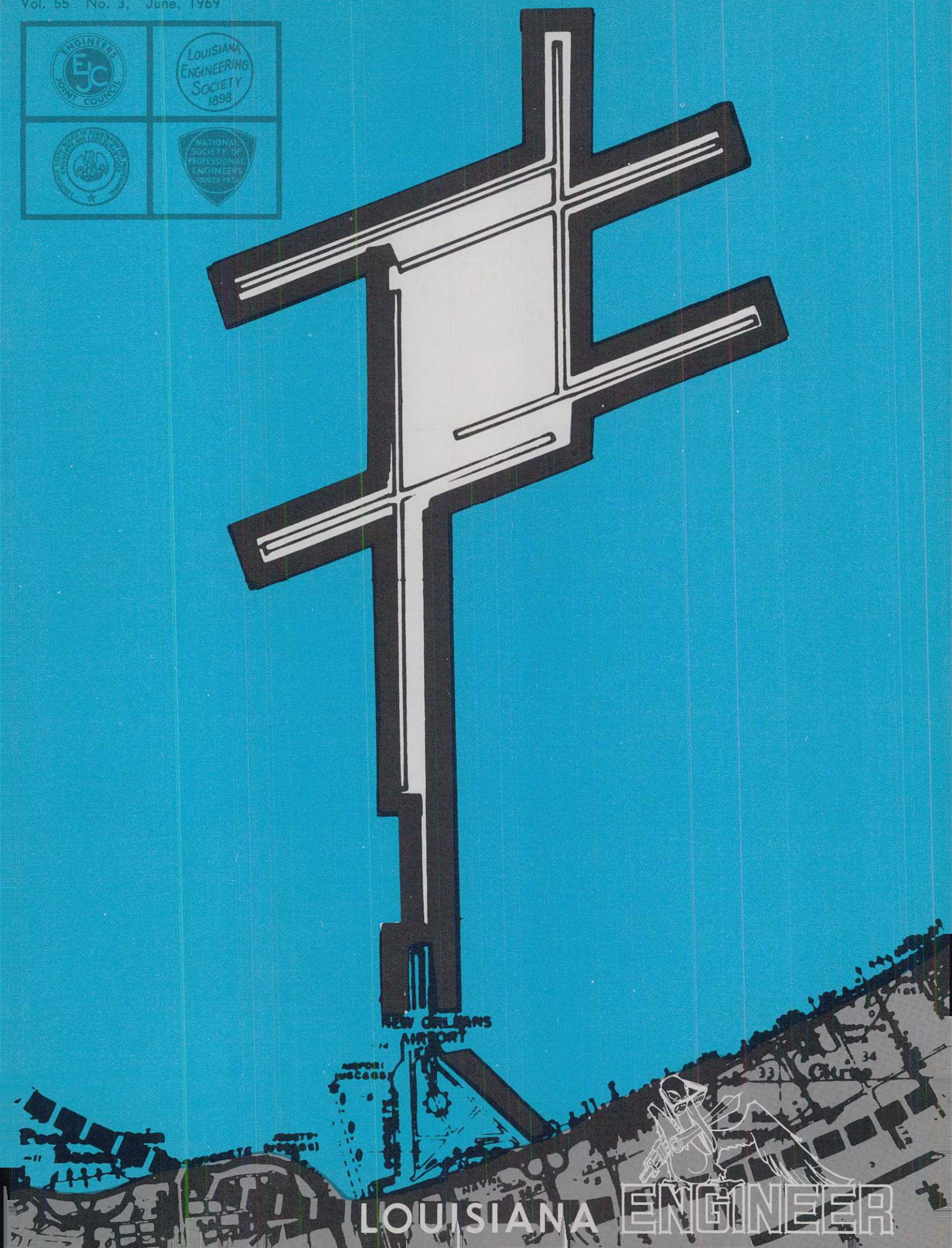
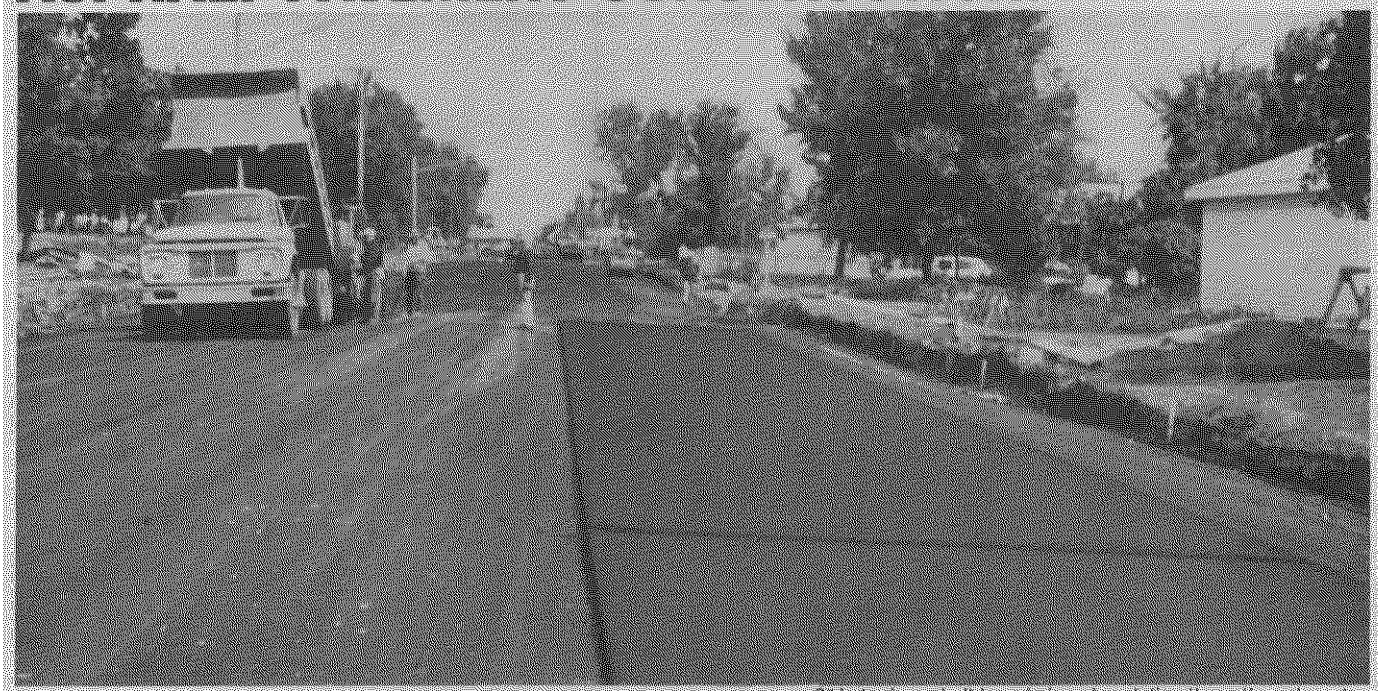
Vol. 55 No. 3, June, 1969



LOUISIANA ENGINEER

WAHPETON, NORTH DAKOTA, TRAFFIC KEEPS MOVING DURING FULL-DEPTH® DEEP-STRENGTH ASPHALT PAVEMENT CONSTRUCTION.



3" hot mix asphalt base being placed directly on the subgrade.

Heavy-duty pavement that could be put down quickly on a problem soil was an important consideration in the decision by Richland County Engineer Adolph Tryba to specify new Full-Depth Asphalt construction. Result? The Full-Depth Asphalt pavement, laid directly on Wahpeton's difficult silty clay and clay subgrade, lived up to its reputation—and then some! Traffic never stopped rolling, and businesses closed their doors for no more than 2 hours during the entire construction, which was completed in record time. A special feature of this joint county-city project: *Curbs and gutters were laid on a 3-in. layer of asphalt base before the final base and wearing courses were added. This helped retain the grade line of curb, improving drainage.* Lower initial cost and long-term maintenance economies, coupled with Full-Depth Asphalt pavement's quieter, smoother riding characteristics, insure its continued use in Richland County's ambitious rural and municipal highway improvement program.

TYPE: Full-Depth, Asphalt-paved, light-industrial street. Asphalt concrete surface on Asphalt concrete base over silty clay subgrade.

TERRAIN: Extremely flat.

CLIMATE: Temperature range: 111°F. Summer; —44°F. Winter. Average annual precipitation: 20.6".

TRAFFIC: 2000 VPD.

PAVEMENT SECTION: Subgrade: Silty clay with CBR of 2.5. **Base:** 7" hot mix asphalt concrete, laid in three lifts. 3" of base course placed under curbs and gutters to retain grade line of street. Mix aggregate was ¾" maximum size, meeting North Dakota Division of Highways specifications. **Surface:** 3" hot-mix asphalt concrete. Aggregate size same as base.

ASPHALT: Base: 120-150 pen. **Surface:** 85-100 pen.

DRAINAGE: Sub-surface: No underdrains used. **Surface:** Gutters, curbs and catch basins.

COMPACTION: Sub-grade: None required, wet conditions. **Asphalt Base:** Ordinary compaction as specified in N. Dakota Highway Standard Specifications for Road and Bridge Construction. **Asphalt Surface:** Same as base. Compaction criteria achieved with 25-ton pneumatic, 10-12 ton steel-wheel tandem rollers.

CONTRACTOR: Superior Construction Co., Bismarck, N. D.

In specifying Full-Depth ® Deep-Strength Asphalt pavements, Richland County and Wanpeton join a growing number of towns, cities and counties across the country that are providing their citizens with the most economical, durable and safe pavement available anywhere today. For information about this new way to design and build roads and streets, contact your local Asphalt Institute Engineer. Or write us direct.

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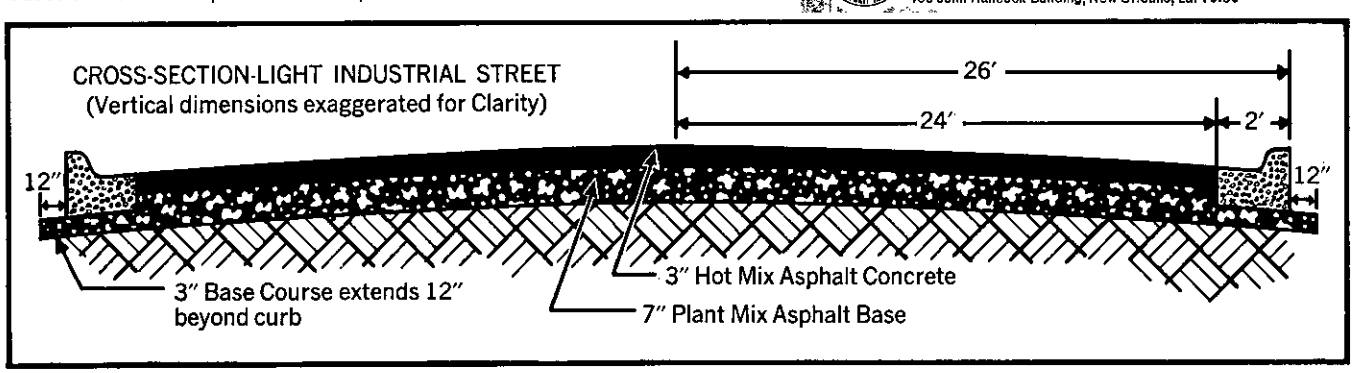

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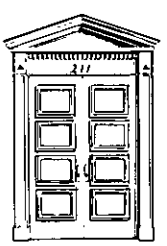

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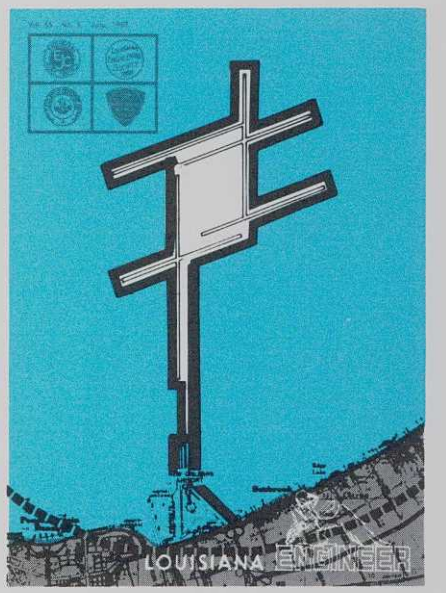

Cover: The proposed new supersonic regional airport to be located in Lake Pontchartrain at New Orleans is featured in this issue. For the details, see the story on Page 6.

LOUISIANA ENGINEER

TABLE OF CONTENTS

Presidential Privilege	5
Proposed New Orleans Regional Airport	6
Assignment: Israel	10
Appointments to State Board of Registration	13
Young Engineer of the Year	15
Convention Camera	16
Silver Bridge Catastrophe—Why?	18
Engineering Management Course	21
Education—Key to Future of Chemical Industry	24
EngiNEWS	26

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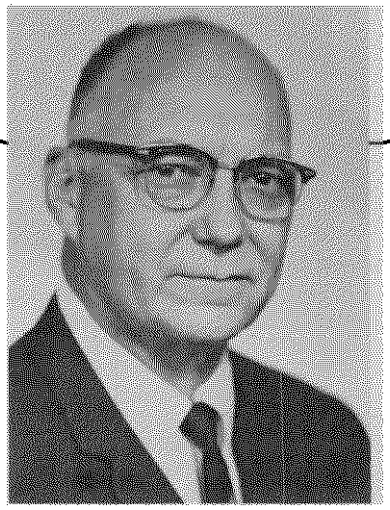


PRESIDENTIAL PRIVILEGE

By LES President Leo M. Odom

On this page each president of your Society in his turn is given the opportunity of expressing opinions on various subjects that he feels are of interest to the membership. I have enjoyed this prerogative and have exercised it fully. The personal bias has, of course, been very apparent since, taking advantage of the latitude traditionally accorded, I have made no effort to adjust my opinions to those of any other individuals or groups. A surprising number of you have commented on these pieces—favorably and otherwise—which is always pleasing to a writer. With this my last opportunity to use this page to get things off my chest, however, I must, in the line of duty, forego it and give a brief resumé of the major accomplishments of the Society's current administration.

It has been a very active year and a great many hard working members deserve thanks for which there is not enough space to give them here. We moved our headquarters to Baton Rouge and made a lot of progress in listing and cataloging personal data, and handling the mail labels by computerizing the information on membership. Publication of a new roster of the membership as of April 1 has been authorized and it should be ready by June 30. These projects were either begun before or were unfinished at the end of our administration.

We have been very busy, however, and quite a few projects were both started and completed during the current year. These are as follows:

1. "Perspective," the Society's newsletter addressed to members only, was initiated and published on a bi-monthly basis alternating with the dates of the "Louisiana Engineer." It fills a long felt need for wider dissemination of information about the Society's activities to the membership and we hope that it will continue and become an ever-increasingly important medium.
2. The Bayou Chapter in the Thibodaux-Houma-Morgan City area was established with Carl Heck as President. This will permit the Society to better serve members in that rapidly growing area. It has already resulted in welcome additions to the membership.
3. A practice section for Engineers-in-Education was formed and seems to be getting off to a good start.
4. A "Privileged Member" grade was established providing that retired members can continue their Society membership with a substantial reduction in the expense for dues.
5. Several new standing committees were created, viz. Committees on Inter-Society Relations, Young Engineers, Liaison with State Board of Registration and Engineering Technicians. The Liaison Committee has been especially active. The Engineering Technicians group is also active and succeeded in organizing the first chapter of the American Society of Certified Engineering Technicians in the state at Delgado in New Orleans. Others have had a little trouble getting off the ground, but we think will prove to fill long felt needs.
6. Working with LSU in Baton Rouge LES was instrumental in having a curriculum of engineering management courses, designed for graduate engineers in industry, offered in New Orleans.
7. The application forms for LES membership were greatly simplified. The previous requirement that applicants furnish the names of three references was dropped if the applicant is a registered Engineer or Land Surveyor or an EIT. In these cases the name of only one member who is designated as sponsor for the applicant is required to be submitted with an application.
8. The Woman's Auxiliary of the Monroe Chapter was organized and received their charter.
9. The membership was increased significantly. The total of new members is about 300.
10. A revised Manual of Practice prepared in cooperation with CEC was tentatively adopted for use by members in Private Practice and copies were sent out to engineering firms in the state which have officials who are members to be tried out for one year before final adoption and publication.

I've had a grand time and thank you very much for the opportunity but I'm very ready to pass on my baton to Johnny Vogt who will make us a great president.

FOREWORD

The April, 1969 issue of the "Consultant," the newsletter of the firm of Waldemar S. Nelson & Company, contained an enthralling proposal for a supersonic airport. The proposal is unique in that it calls for the airport to be built in Lake Pontchartrain on hydraulic fill. I felt that readers of LOUISIANA ENGINEER would be interested in this farsighted proposal and requested, and obtained, Mr. Nelson's permission to reprint the article.

Leo M. Odom, P.E.
L.E.S. President

The New Orleans firm of Waldemar S. Nelson & Company, Engineers and Architects, has submitted a plan for the proposed new supersonic regional airport to be located in Lake Pontchartrain. This airport would be connected to the present Lakefront Airport by an approach expressway and would extend out five miles from the shoreline at that point.

The New Orleans Metropolitan Area, having a population of more than 1,100,000 persons out of the state's estimated total population of more than 3,500,000, is the logical location for a major airport to serve the interstate and international commercial aviation requirements of the state.

Existing airport facilities are rapidly reaching a saturation point at both civil airports in the area with New Orleans International Airport enplaning about 2,000,000 passengers per year and New Orleans Lakefront handling approximately 250,000 aircraft operations per year.

The Federal Aviation Agency forecast predicts that by 1980 the New Orleans air hub will be enplaning 6,515,000 passengers per year and handling 132,000 tons of air cargo annually involving 1,186,000 total aircraft operations per year.

Among the obvious advantages at an airport in Lake Pontchartrain the following are considered most pertinent.

1. Unlimited room for expansion, since the lake is part of the public domain and could not be fenced in by private property acquisition without the consent of the State.

2. No obstructions in the flight path due to the size of the lake and the reasons listed above and no conflict with flight operations at Moisant and Alvin Callender Fields.

3. No residential noise problem since the flight paths are at a sufficient distance from any residential property to negate any complaints. The only flight path over any land area would be over the Industrial Canal, zoned for heavy industry, and occupied by industry which generates more noise than would be experienced from over-flying aircraft.

4. No land would be removed from the tax rolls as would be the case if the airport was situated on land.

5. Easily accessible to the central city where most passengers originate or terminate and to all adjacent areas of Louisiana and the Gulf Coast by the interstate highway with an existing interchange only one-half mile from the entrace to the airport. Secondary roads from all parts of the city are available for access to the various residential and industrial areas of the metropolitan complex. The Southern Railway has an existing spur at the Lakefront Airport and should rail-coach prove economical and feasible in the future, the downtown Union Passenger Terminal would be only a few minutes away.

6. The runway configuration will permit simultaneous take-offs and landings with a minimum amount of taxiing time and expense.

7. A connecting taxi-way parallel to the access road will permit the moving of aircraft from the new site to the existing airport for maintenance or storage.

8. The relatively shallow water in Lake Pontchartrain permits the use of hydraulic fill to create a land base at an economical cost and as much or as little land as required can be dredged at any time.

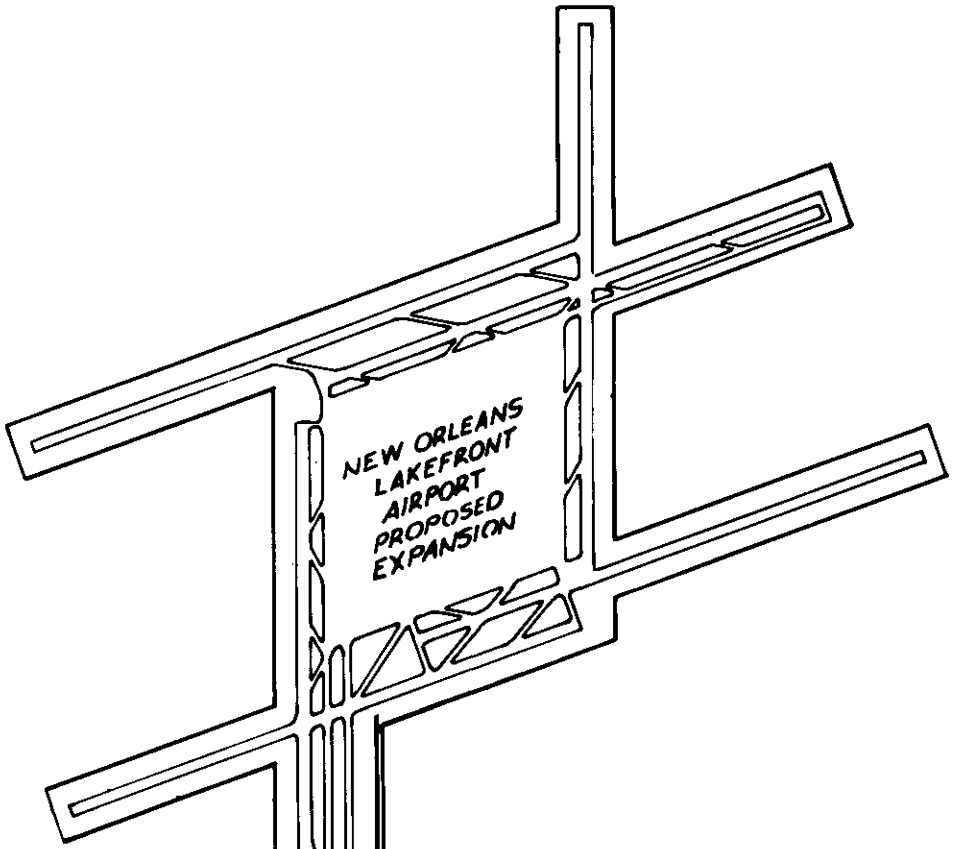
The knowledge gained in observing the stability of the hydraulic fill used in the construction of the present Lakefront Airport, the original portion of which was built almost forty years ago, and the more recent extensions designed by this firm, convinces us that this type of construction is feasible and economically sound.

It is interesting to note that other cities faced with many of the same problems facing New Orleans are considering lake sites to obtain similar advantages. Chicago is studying the feasibility of constructing an offshore airport in Lake Michigan and Cleveland has proposed an airport in Lake Erie.

At both locations the water is much deeper than in Lake Pontchartrain which gives the New Orleans site a considerable economic advantage.

As presently proposed the Chicago site would be constructed on the lake bottom protected by levees while the Cleveland site would be on hydraulic fill as planned for New Orleans. Los Angeles is considering a site in the Pacific Ocean.

Since the purpose of an airport is to move people and goods from ground transportation to



PROPOSED NEW ORLEANS REGIONAL AIRPORT

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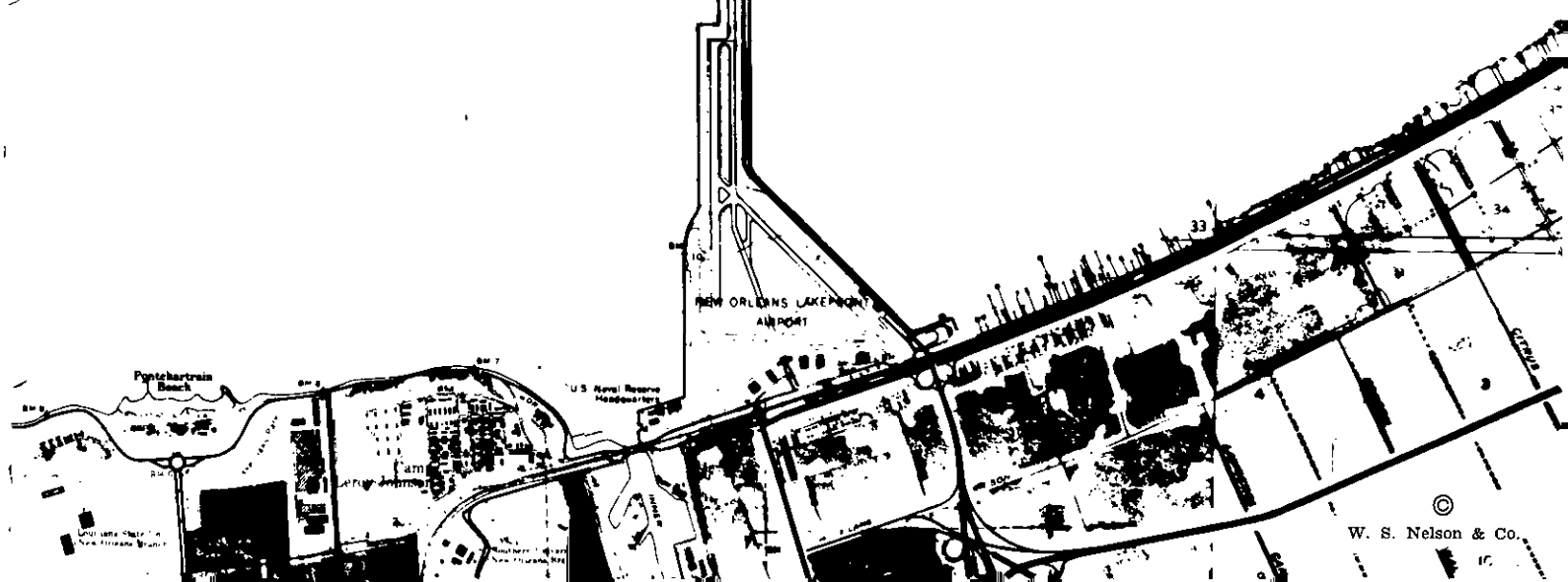

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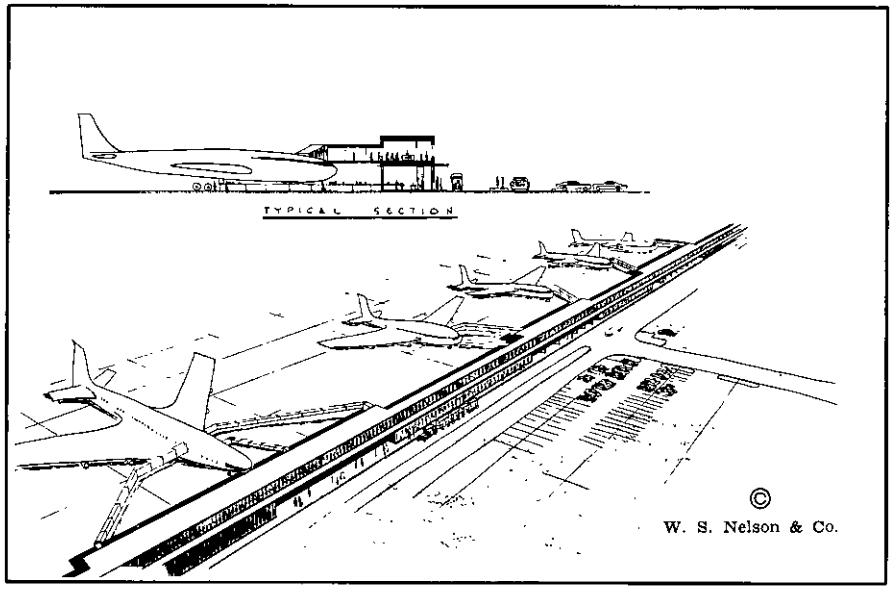
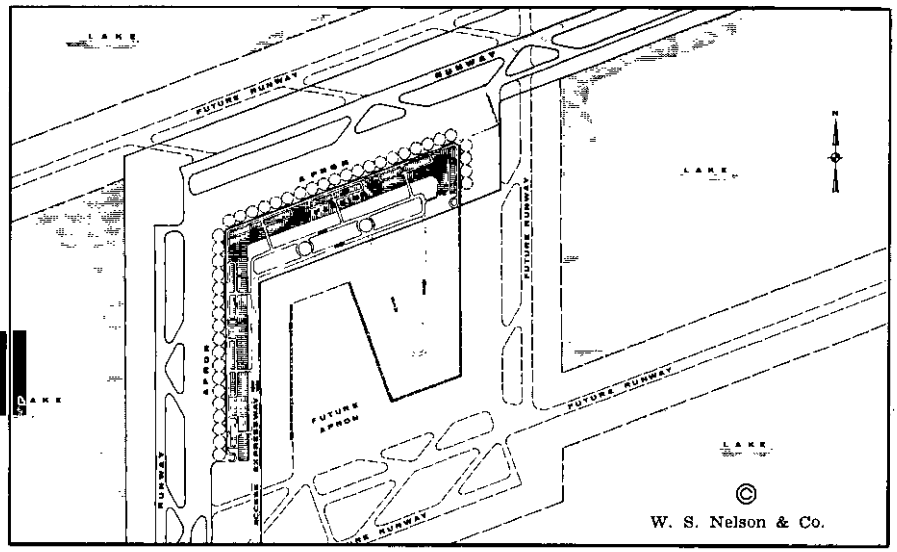
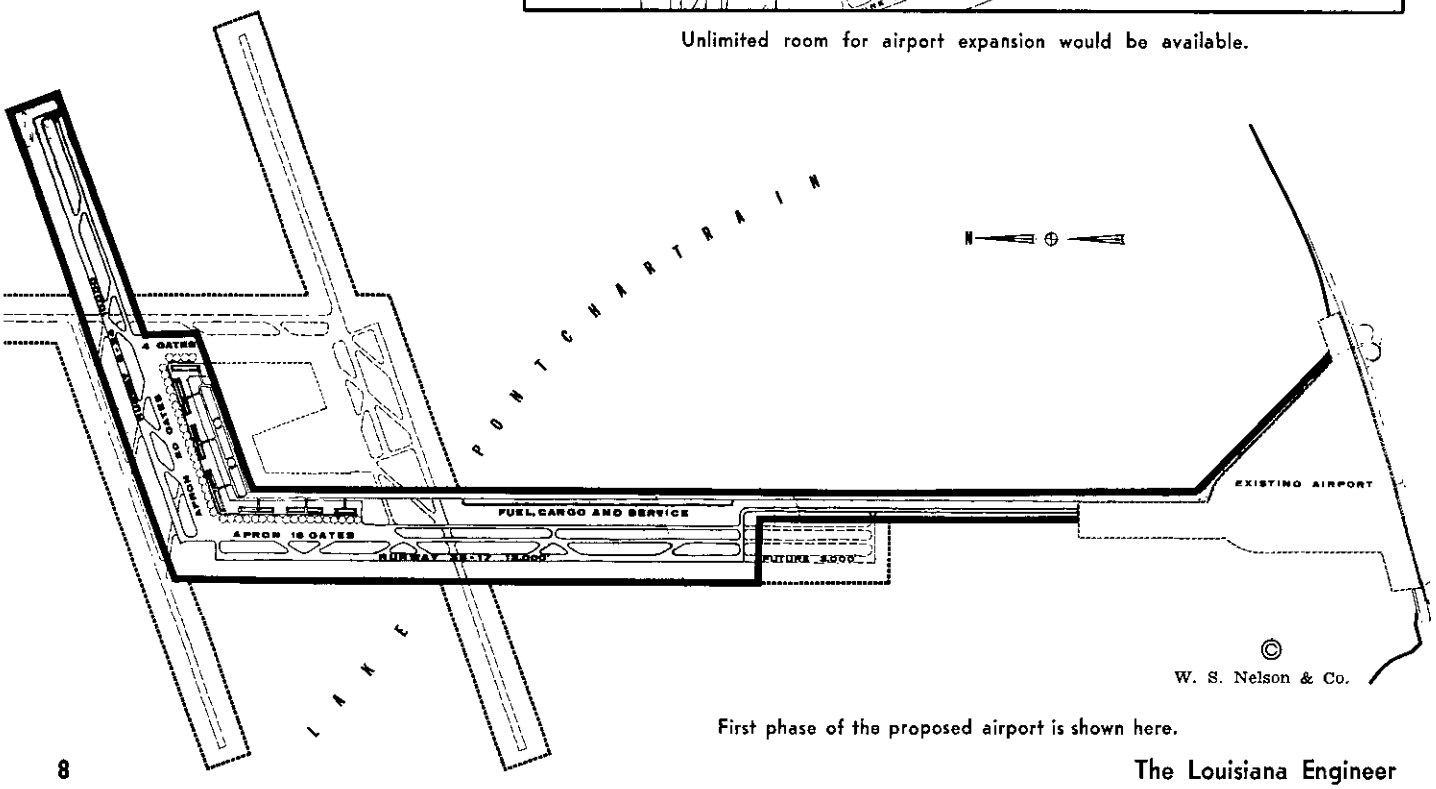


Linear module type of terminal would be used.

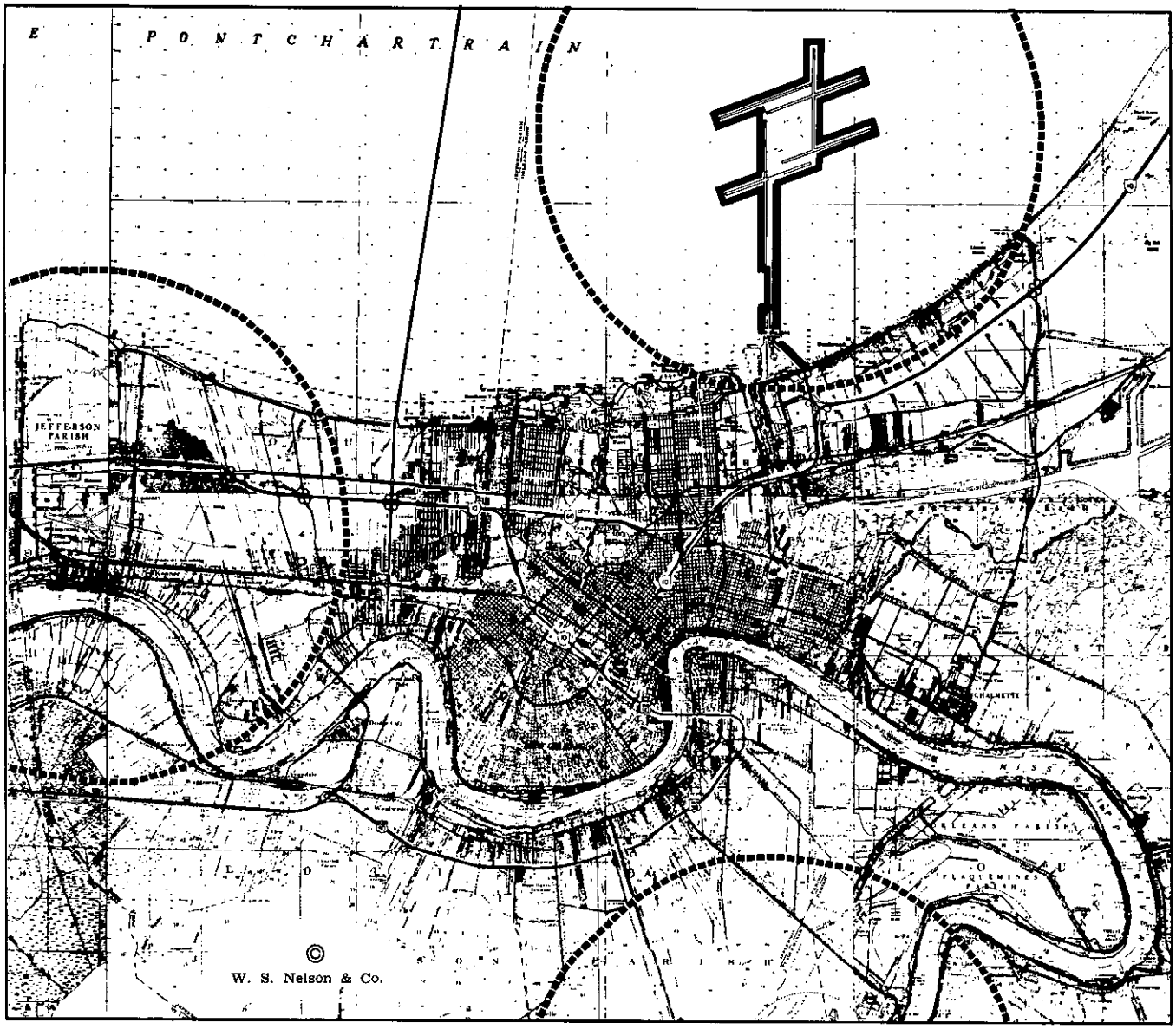
PROPOSED NEW ORLEANS AIRPORT CONT.



Unlimited room for airport expansion would be available.



First phase of the proposed airport is shown here.



This map depicts the proposed site in relation to the other two principal airports in the area, the existing and proposed interstate highway system, access to residential and commercial areas of the city. Adequate airspace separation between the three airports will permit simultaneous flight operations at each airport.

air transportation and vice versa, it is most desirable to have the shortest practicable distance between the two modes of transportation.

Module Terminal

We believe we have done this by the use of a linear module type of terminal whereby no one will have to walk more than fifty yards from an airplane to ground transportation. Each module will serve two aircraft of the DC-8/B707 type or one 747/SS type. Each will contain baggage handling and airline operations space on the ground level and waiting rooms, rest rooms, snack bar, ticketing, etc., on the second level connected by escalators.

It will not be necessary to go to a central terminal although a small one can be provided if desired for restaurant, barber shop and various auxiliary services.

Most passengers originate or terminate at New Orleans. For those who wish to transfer from one airline to another, a bus or tourist mover service such as used by the National Park Service in Washington, D.C. could be used.

Adequate parking space has been provided for public parking, car rental and public transportation at each module.

As a result of a presentation of the Nelson Plan to the Board of Directors of the Chamber of Commerce of the Metropolitan New Orleans Area on April 22, 1969 the Board passed a resolution ". . . to go on record as saying that the Plan has been studied by our Aviation Committee and appears to be a feasible plan, one that can be a reality within reasonable cost, and urging that the City Council hold hearings as early as it deems possible on this and any other plans for a general commercial air facility for the New Orleans Area and proceed with the planning and necessary steps for financing and building an international airport for this region."

Assignment Israel

Tel Aviv from the top of the 34 story Shaloam Towers. A very clean, very modern city of some 700,000 people, Tel Aviv is on a site that was bare Mediterranean beach in 1909.

ROGER P. GUISSINGER, P.E.
Chief Location and Design Engineer
Louisiana Department of Highways

Marshall McLuhan, the noted communication theorist and author, predicts that by the year 2000, the wheel and highway will be obsolete, having been displaced by hovercraft that will ride, and park, on air. In the meantime, and especially considering the possibility that this change-over could be delayed, man remains dependent on highway transportation for a substantial part of his mobility and for movement of his goods.

In the interest of coping with the demands of the interim, Israel, in early 1966, filed a request with the United Nations Office of Technical Co-operation for two engineers, one for highway design and one for bridge design and construction. Announcements went routinely to most of the United Nations member nations and to all of the fifty American states. Thus, in October, 1966, two engineers in Baton Rouge, who had long been friends and professional associates, received the announcements. Resumes and applications were filed, and each man subsequently flew to United Nations headquarters in New York for interviews. After much waiting and sweating, I received the bridge engineer appointment early in 1967. In April, Norman Cooper, the other engineer involved, was notified that he had been chosen for the position of highway design engineer. The coincidence of having two engineers from Baton Rouge accepted for the assignments still amazes the UN staff. Norman's assignment was immediate and by late May he was in Israel and became an unscheduled observer, along with the scant Israeli civilian population, of the Six Days War of June, 1967.

Two engineers from Louisiana heading to Israel with their wives and children possibly sounds crazy, and my wife, Gayle, was probably one of the first who thought so. But when she realized that I was serious about the thing, she started preparing for the trip. Earlier, Norman had gone ahead and his wife, Beth, and daughters had planned to follow, given a war and the red tape of two nations.

When our time came in January, 1968, Gayle packed all the available suitcases and duffle bags, and with our three daughters in tow, we were off.

The decade of the 1960's, that has been dubbed the "Development Decade," with its hope for the hungry and deprived nations, is passing into history as a decade of disappointment and disillusionment. The United Nations, having proven less than effective in its political and peacemaking efforts, however,

would appear to be taking giant steps toward self-justification in its many and extensive humanitarian roles. The Office of Technical Co-operation, the agency to which Norman and I were attached, is the engineering-scientific partner with WHO (World Health), ILO (International Labor), FAO (Food and Agriculture) and others in this co-operative work that has brought some scattered but very real flashes of light.

Arrival in Tel Aviv

One of the wisest decisions I felt I made during our stay in Israel was the choice to live in the heart of Tel Aviv, thus having a better opportunity to understand the Israeli people and sample their culture, rather than residing in the foreign (largely American) suburb.

Israel exists as an island, bordered on the west by the Mediterranean Sea and on all other sides by less-than-friendly Arab States. They are a small nation and frequently find themselves without anyone with whom to exchange experiences. Thus we see the phenomena of a nation loaded with professional talent, and themselves one of the leading per capital suppliers of foreign aid, but yet who are a major recipient of UN co-operative programs.

Norman Cooper's work in Israel dealt with highway design, with emphasis on freeway geometrics and improved highway safety. A valuable feature was his development of a proposed "National Policy on Location and Design of Freeways for the State of Israel.

In Israel we worked with the Israeli Department of Public Works in their Tel Aviv main office and occasionally in one of the district offices. Both Norman and I experienced the not unexpected necessity to convince our Israeli counterparts first of our competence and then of the desirability of their implementing our recommendations. The ultimate success of our missions in Israel was totally dependent on the effectiveness of this communications - sales work. Many early morning hours were spent in defining the approach with this all-important end in mind.

Life was busy. The Israeli work week is six days long, Since my work was almost totally dependent on having access to the Israeli counterpart personnel, I worked the full six days each week without exception. This required fairly routine take-home work at night if there was any hope of covering the ground in the three months term of the assignment.

The announcement of my job stressed work in a broad range of bridge and elevated freeway design problem, the manfacture of pre-fabricated, prestressed concrete bridge elements and general bridge and highway construction problems. It was less than a surprise to find out that I was working with a group of quite talented engineers with an exceptionally high education level. Predictably, my Israeli counterparts and I found it desirable to change the job emphasis somewhat; with the concurrence of the UN Resident Representative in Jerusalem, the work was revised at an early date to add certain aspects of planning, departmental organization and operation, and to include proposals for design and construction specifications.

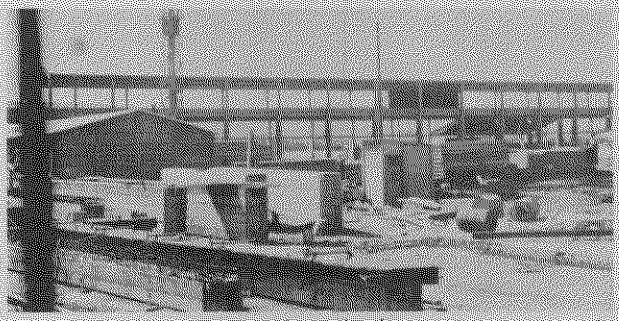
Reliving History

There were many invitations in the evenings with other UN personnel and with the many Israelis, Americans and other nationals that we met and with whom we became friends. And, except when one party conflicted with another, we never turned down an invitation.

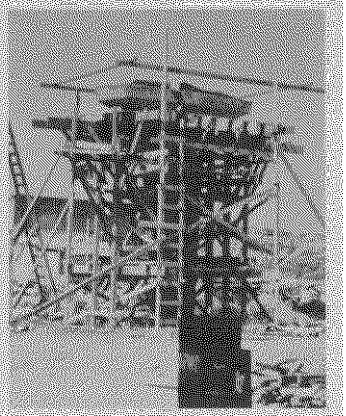
But Saturday is Sabbath. The economy appears to start to grind to a halt about mid-afternoon on Friday, and things are

The Roman aqueduct at Caesarea on the Mediterranean Coast of Israel. Built in the second century A.D., it brought a supply of fresh water from the springs of Mount Carmel. This aqueduct lay buried until 1961.

Assignment: Israel



A scene in the casting yard at the largest precast concrete products plant in Israel. This plant in Haifa has facilities for casting and curing under shelter.



A bridge under construction near Caesarea on the highway from Tel Aviv to Haifa.

The magnificent Damascus Gate in the wall of the Old City of Jerusalem. The name signifies that the ancient road leading from this gate went to the City of Damascus.

A bridge on the "Auto-strade," the four lane highway paralleling the Mediterranean coast from Tel Aviv to the primary port City of Haifa.

shut down tight by sundown Friday — the beginning of the Sabbath. Our rental car was ready by the time my office closed on Friday, and we used it fully through the Saturday holiday. Eilat at the southern tip is the only place of interest in the tiny nation that we could not reach in two or three hours from our home in Tel Aviv, and we reached every place we could on the free day.

A visit to Israel is a pilgrimage to a well-spring of our culture and the birthplace of the three principal religions of western man, Christianity, Judaism, and Islam. You can hardly push a shovel in the ground without turning up a page from our common heritage. It would follow that a responsible discharge of work dealing with the Israeli countryside should have some understanding of her history and the cultures she has nurtured. Many books, some thousands of pages, were crammed into that year before we finally went to Israel, and we felt as if we had reaped good returns for the hours spent. More than anything else, Israel is the Land of the Bible, and you are constantly reminded of that fact as you travel from Jerusalem to Jaffa, from Caesarea to Nazareth and on to Tiberias on the banks of the Sea of Galilee. At Jericho we stood on the sands that had protected it for thousands of years and looked down on a perfectly perserved 11,000 year old tower — over seven thousand years old when Joshua crossed the Jordan River nearby.

So we understood why the Ministry of Antiquities has overriding authority on all matters concerning known or suspected historical sites, known or suspected archaeological finds, and can stop any building or highway construction, or any project that will endanger one of its religious or historical treasures.

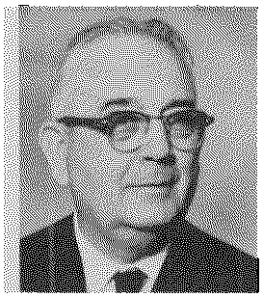
Hopes for Peace

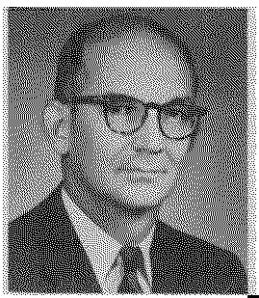
As representatives of the United Nations we are not permitted a public expression regarding the political-military situation in the Middle East. Norman and Beth Cooper and Gayle and I have found this to be to our liking, since we see elements of justice on both the Arab and the Israeli sides. And we have friends and a genuine interest with both Arab and Jew. For both families the brief service in Israel was an exciting adventure and satisfying experience. We would be most rewarded indeed if we could see a prospect for peace resulting from the combined efforts of many people. In the long run, it is not the lines that are drawn to divide up the earth's habitable real estate that counts, but the people who occupy it.

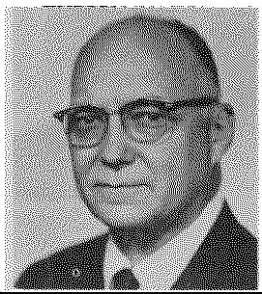
In my final report to the State of Israel, I recommended that at least one of my two principal counterparts come to the United States for the American Association of State Highway Officials Highway Management Institute at the University of Mississippi. It now appears likely that one or both will be here for the session in the Winter and Spring of 1970.

APPOINTMENTS TO STATE BOARD OF REGISTRATION

Roy T. Sessums, Chairman of the State Board of Registration for Professional Engineers and Land Surveyors, announced that Governor John J. McKeithen has appointed three men as members of the Board. Appointed by the governor were Dr. Jesse Coates, Baton Rouge; Waldemar S. Nelson, New Orleans; and Leo M. Odom, Baton Rouge.







Dr. Coates, professor of chemical engineering at Louisiana State University, received his B.S. degree from LSU and his M.S. and Ph.D. degrees from the University of Michigan.

He began his teaching career at LSU in 1936 in the Chemical Engineering Department and became head of that department in 1955. In 1967 at his request, he was relieved of these duties to return to research and teaching.

In 1958 Dr. Coates received the Technological Accomplishment Medal of the Louisiana Engineering Society.

Among his honors are: Listed in Who's Who in America and Who's Who in Engineering; also listed in American Men of Science; Charles E. Coates Memorrial Award (1958) presented jointly by the Baton Rouge Section of A.C.S. and A.I.Ch.E.; Named Man of the Month by Chemical Engineering Magazine, April (1958).

Dr. Coates' professional and honorary societies include: Alpha Chi Sigma; Phi Lambda Upsilon; Sigma Xi; Tau Beta Pi; American Chemical Society; American Institute of Chemical Engineers (Past Chairman, Baton Rouge Section); American Society of Engineering Education (Past President, Southeastern Section); Louisiana Engineering Society; Louisiana Academy of Sciences; Phi Kappa Phi; Omicron Delta Kappa.

Waldemar S. Nelson was graduated from Tulane University in 1936 with a Bachelor degree in Mechanical and Electrical Engineering.

He is a Civil, Electrical and Mechanical engineer registered in nineteen states and holds a Certificate of Qualification from the National Council of Engineering Examiners.

He has been active in engineering affairs, having been a past president of the Society of Tulane Engineers; a founder and past president of the Engineers' Club of New Orleans; an honorary member and past president of the Louisiana Engineering Society; a past chairman of the New Orleans Section of the American Society of Mechanical Engineers and Fellow of this Society; and has served as a member of the Professional Practice Committee of this organization.

He is presently a National Director from Louisiana, Vice-Chairman of the Southwest Region of the Professional Engineers in Private Practice Section, and Past-Chairman of the Board of Ethical Review of the National Society of Professional Engineers; a Fellow of the American Society of Civil Engineers, a member of the Institute of Electrical and Electronics Engineers, Society of American Military Engineers, American Public Works Association, and other technical societies.

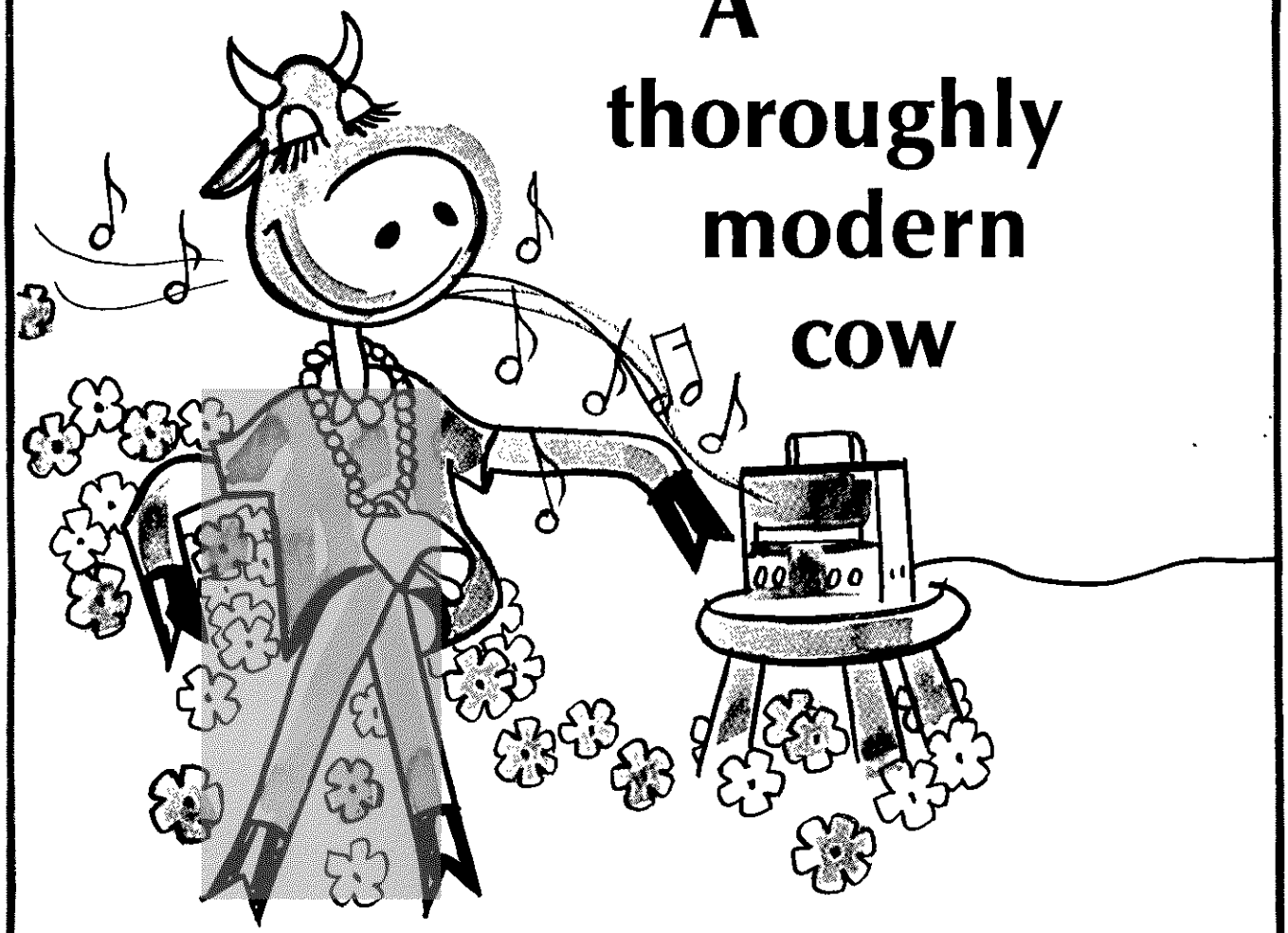
Leo M. Odom, president of the Louisiana Engineering Society, was originally appointed to the Board in 1944 and served continuously on the Board until 1968. He has held every office as a member of the Board. He has been active in the National Council of Engineering Examiners and was awarded a Distinguished Service Certificate by that organization in 1963.

Odom presently serves as chairman of the N.C.E.E. Committee on National Engineering Certification.

He received a B.I. (no longer issued) degree from Louisiana Polytechnic Institute and later graduated from LSU in civil engineering.

In February, 1941 he accepted an offer by DeWitt Pyburn, Director of the newly created Louisiana Department of Public Works to become its Chief Engineer. While in this capacity he set up the engineering organization of the Department which was launched by the Director on the greatly needed Statewide Drainage Program. He also worked with the Corps on the Mississippi Flood control project and prepared reports on a number of other programs such as Red River Flood Control and Red River Navigation which resulted in favorable recommendations by the Corps and authorization by Congress for their construction.

A thoroughly modern cow



Very comfortable, this life.

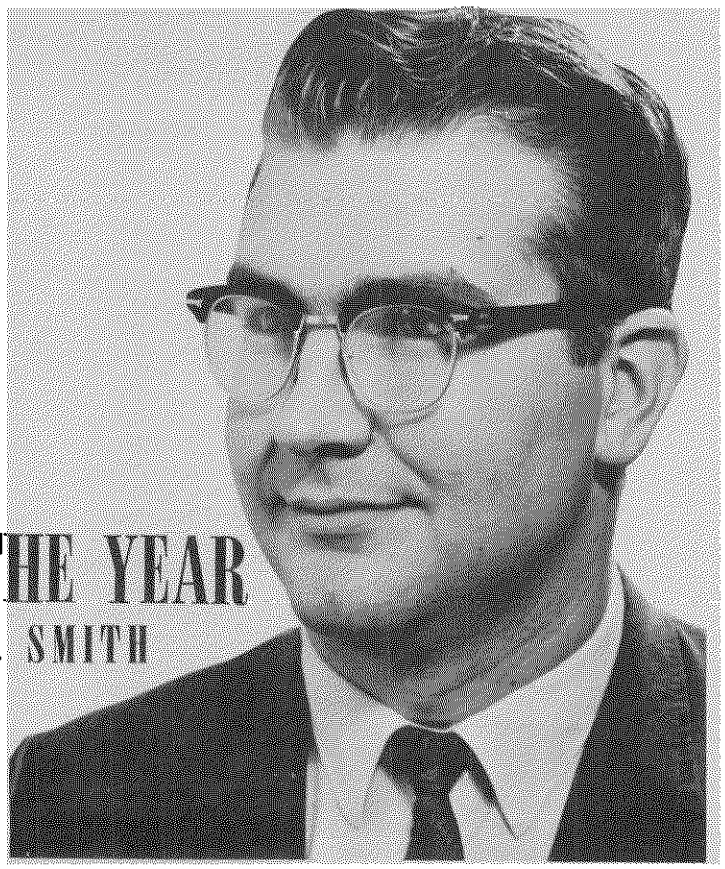
Electric heat and lights are a real pleasant change from a cold shed and lantern light. Maybe a little music in the background to add to a hard-working lady's comfort . . . and contentment.

In addition to the contributions we make to Louisiana's cities, extending the convenience and profitability of low-cost electric service in our rural areas is a very important program of Louisiana's Investor-Owned Electric Companies.

Your family . . . no matter where you live, benefits from our experience.

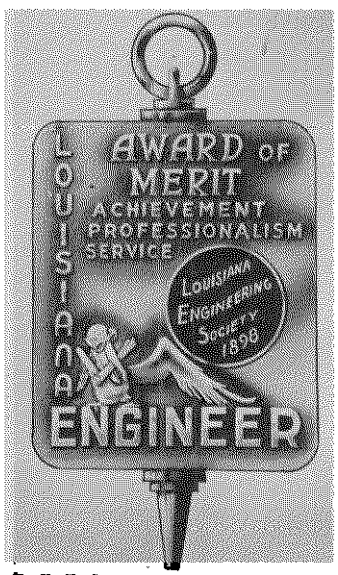
The owner of the thoroughly modern cow does.

INVESTOR-OWNED ELECTRIC COMPANIES
OF LOUISIANA! • Louisiana Power & Light Co. • Gulf States Utilities Co.
Southwestern Electric Power Co. • Central Louisiana Electric Co.
New Orleans Public Service Inc.



YOUNG ENGINEER OF THE YEAR

DR. CECIL L. SMITH



CITATION

Dr. Cecil Loyd Smith, Jr., Associate Professor of Chemical Engineering, Louisiana State University, Baton Rouge, received his undergraduate education and a bachelor of science degree in chemical engineering from LSU in 1963. He continued his post graduate work there, receiving a master's degree in 1965.

Dr. Smith received his Ph.D. degree in Chemical Engineering at LSU in June, 1966, and in so doing, LSU waived the minimum residence time for the degree. He then joined the faculty of the College of Engineering and was appointed an Assistant Professor of both Electrical and Chemical Engineering. He has taught a wide variety of courses in both of these departments, and his primary areas of interest have been systems engineering, computer applications, optimization, and mathematical modeling.

In July, 1967 LSU received a Project THEMIS award from the U.S. Department of Defense and Dr. Smith was appointed the Technical Director of this Project since he was one of the prime movers in obtaining the award. The subject of the study is "Real-Time, On-Line Digital Control"; it involves nine faculty members and sixteen graduate students; and it has resulted in an award of $1,200,000 to LSU to conduct the study.

As a result of Dr. Smith's work on Project THEMIS, LSU has developed a Hybrid Computer Simulation Center which houses an analog computer, a digital computer, and an interface computer. This center will be one of the most outstanding computer centers to be found in any college or university in the world. Dr. Smith is currently serving as the Director of that center.

Probably the most outstanding aspect of Dr. Smith's career has been his truly phenomenal contributions to the engineering literature—21 publications in the last three years; his significant efforts in continuing education activities — participation in 25 such activities in the last four years; and his presentation of papers before national and international technical meetings — five such presentations in the last three years.

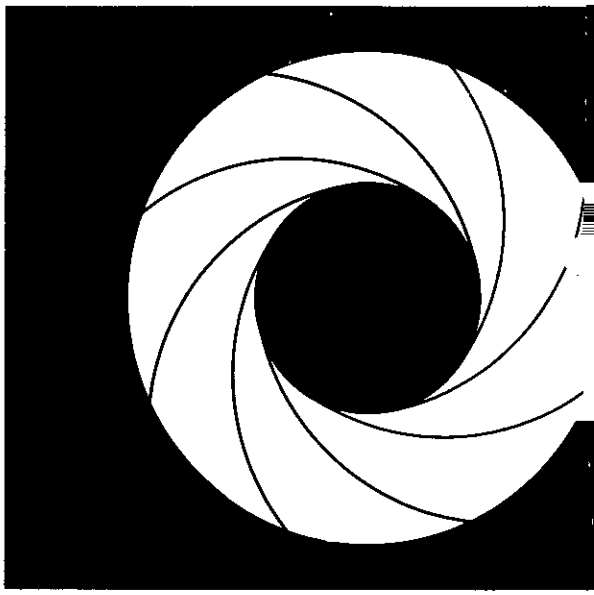
Dr. Smith is certainly one of the most outstanding young engineers in the United States and is a worthy recipient for our award.

CONVENTION C

PROFESSIONALISM IN HOUSING AND URBAN DEVELOPMENT—Paul K. Walker, Director, Engineering Division, H.U.D.

ONE OF MANY OUTSTANDING EXHIBITS—Company representatives displayed their latest products.

LIABILITY INSURANCE FOR THE PROFESSIONAL ENGINEER—Edward Wendell, Victor O. Schinnerer & Co.



Photos by W

HIGH-LEVEL CONFERENCE—(left to right) Doug Douglas, Past Convention Chairman; Pete Stouse, New Orleans Chapter Past-President; David Fried, New Orleans Chapter President.

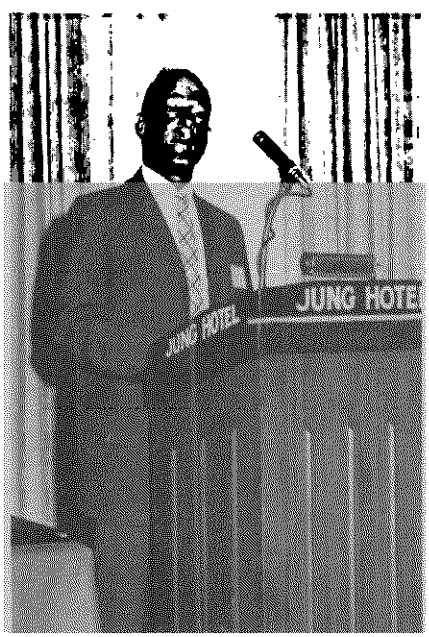
CONVERSATION DURING COCKTAILS—(left to right) Robbins, Executive Director of NSPE; Albert McKee, N Chapter President; and Dr. Dan Vliet, Executive Secreta State Board of Registration.

MERA

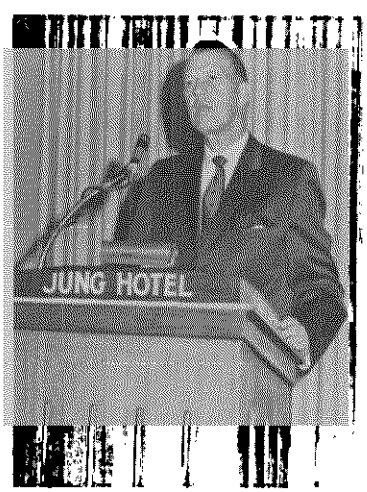
ANDING HIGH SCHOOL SCIENCE TEACHER—John Grosch, LES
nal Guidance chairman, left, makes presentation to Paul Keller,
High School.

Frye Jr.

VICE PRESIDENT OF NSPE LEROY CULBERTSON—Addresses the Awards Luncheon on "The Engineer as Professional."



VALUE OF PROFESSIONAL REGISTRATION—Dr. Dan Vliet, Executive Secretary to State Board of Registration.



UNIONS: THEIR EFFECT ON THE PROFESSION AND THE PROFESSIONAL—Paul Robbins, Executive Director of the National Society of Professional Engineers.

L.E.S. Executive Secretary

Gerald A. Simmons has been named Executive Secretary of the Louisiana Engineering Society effective June 15, according to Society President Leo M. Odom.

The new Executive Secretary was formerly with the Baton Rouge Area Chamber of Commerce, where he served as membership director.

Odom said that the Society was fortunate to have secured the services of a man with such a background. He urged L.E.S. members to let Simmons know they support him and actively assist him in his duties.

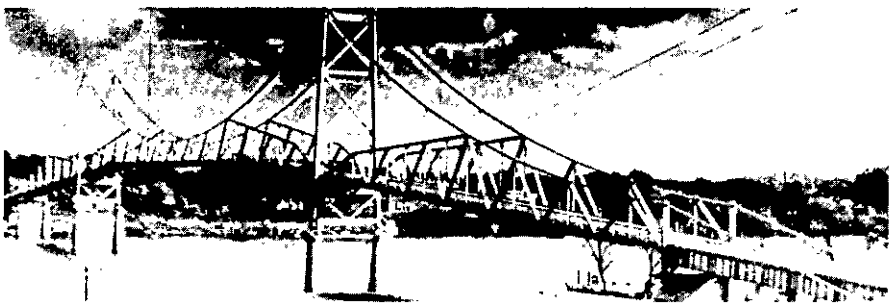
Simmons, 34, is a native of Simmesport and a 1957 graduate of Louisiana State University. He has been an assistant county agent with the Cooperative Extension Service at LSU and served as legislative and commodity director with the Louisiana Farm Bureau Federation. Prior to his work with the Baton Rouge Chamber, he was an assistant legislative director of the American Farm Bureau in Washington. In Washington he was responsible for legislative contact with Congressmen to secure enactment of legislation beneficial to agriculture.

He has served with the U. S. Army and is a member of the Downtown Lions Club and the National Association of Membership Directors. He is a member of the Catholic Church.

He is married to the former Martha Meaux of Lafayette and has three children.

Simmons will operate the Louisiana Engineering Society offices in Baton Rouge.

THE SILVER BRIDGE CATASTROPHE WHY?



Editor's Note: This article was one of four presented by students of engineering schools in Louisiana during the Student Technical Sessions of the LES Annual Convention, held in New Orleans April 23-25.

MICHAEL W. FLORES
Student
Louisiana Polytechnic Institute

On December 15, 1967, the forty-year old Silver Bridge across the Ohio River between Point Pleasant, West Virginia, and Gallipolis, Ohio, collapsed without warning during the evening rush hour. Forty-six people died, and many others were seriously injured.

There were many questions to be answered about the disaster. Many of these remain unanswered today.

The question most frequently asked is, "Why was there total collapse?" To answer this question a general understanding of suspension bridges is needed and then a look at the oddities of the Silver Bridge in its structural design.

Suspension bridges in general can be broken into four major parts:

1) The floor system and stiffening truss
2) The suspendors
3) The main suspension
4) The main towers

The floor system and roadway is held rigid by the stiffening truss system. The truss plays no role in the support of the roadway in normal suspension bridges. Its purpose is to keep the roadway from flexing while in use. All of the live load and dead load of the roadway is carried by the suspendors to the main suspension. The main suspension carries this load over the main towers to the bedrock anchors on the bank.

In normal suspension bridges the main suspension is made up of small strands of wire that run from one end of the bridge to the other. These small fibers of wire are either bound or woven together to create a round cable usually a foot or more in diameter. However, in the Silver Bridge this was not the case. The main suspension of the Silver Bridge was an eyebar chain of heat-treated carbon steel. These eyebars were 25 to 30 feet in length, one foot deep, and two inches thick. They were built up at the joints and connected by an 11-inch pin. These eyebars also made up the top part of the roadway stiffening truss making the truss more flexible than it should have been, due to the pin connections in the eyebars.

The eyebars were to share equally the 4½ million pound pull on the suspension, but it can easily be seen that if one eyebar gave more under stress than the other or the holes were spaced closer on one than the other, one eyebar may be receiving more stress and in an extreme case could be taking the entire 4½ million pounds of stress, which is well beyond the tested yield point.

Early accounts of the disaster state that the firm that produced the eyebars declined any responsibility for the strength and safety of its bridge's eyebars because they were too long for a testing machine to check their quality. This statement was true in 1924 when the firm made 400 eyebars for the Florinapolis Bridge in Brazil. However, the eyebars made for the Silver Bridge were produced in 1927 and of sufficient length for testing. Thus the eyebars contained in the Silver Bridge had a recorded ultimate, yield, and working stress.

The bridge was originally designed for a standard cable type suspension, but at the last minute the design of the bridge was changed, and the eyebar suspension was put in.

Used Rocker Towers

Before the Silver Bridge, most towers were of two types: 1) Rigid towers of masonry or steel whose saddles for cables were on rollers to permit the cables' longitudinal tension-equalizing movement, in response to varying temperatures and loads, or 2) Flexible towers whose bases were fixed, but whose tops could sway with the cables.

The Silver Bridge was the second bridge to ever use rocker towers.

The eyebar suspension was pinned to the rocker tower at the top with all of the play in the tower put at the base. The base of the tower is made of a concrete pier coming some 80 feet out of the water. To the concrete pier is bolted a large metal bracket containing a flat face. The tower sites on the base using a similar metal bracket containing a rounded face. It is this rounded face that supplies the rocking ability in the tower. Northing anchors the bottom of a tower, aside from loose-fitting dowels to keep it from shifting horizontally. The tower must depend upon the suspension to keep it erect.

The rocker tower is sound and advantageous and used many times today. But when you use rocker towers you take for granted that your suspension is sound. If the suspension goes,

the towers go automatically; therefore, total collapse. So in the case of the Silver Bridge, the entire bridge was only as strong as the weakest link in the eyebar chain.

By now it should be easy to see the cause for a total collapse, but what started the collapse?

Many experts from various fields have expressed their opinions and they all seem to lie in one of 4 categories:

1) Overloading
2) Change in the Original Structure
3) Fatigue
4) Corrosion

Overloading

It is undoubtedly true that if there had been no traffic on the bridge the structure would not have failed, but that is not to say that the bridge was overloaded. The bridge was originally designed for 15-ton trucks spaced 44 feet apart in both lanes, the entire length of the bridge, with a 42,000 lb. concentrated load at the center. The bridge was carrying 17 trucks at the time of collapse several of which were over this 15-ton specification, at least one of which was 36 tons in weight. If the thirty-six-ton truck had caused failure of the floor system of a bridge designed for 15-ton trucks even to the extent of falling through the floor into the river below, one might cite overloading as the cause. But failure of one floor section would not cause, nor is it likely that it would trigger, failure of the whole bridge. It should also be noted that in 1940 the original timber deck of the bridge was replaced with a deck supported by steel beams, increasing the strength of the floor system. This should indicate that the cause for failure lies in the main structural components, the towers and the chains with their anchorages. At the time of failure there were 40 cars on the bridge. Because the design assumed a series of fifteen-ton trucks the total design load for the bridge was much greater than that of the 17 trucks and 40 cars on the bridge at collapse. This information ruled out the most common belief that the bridge was overloaded.

Change in Structure

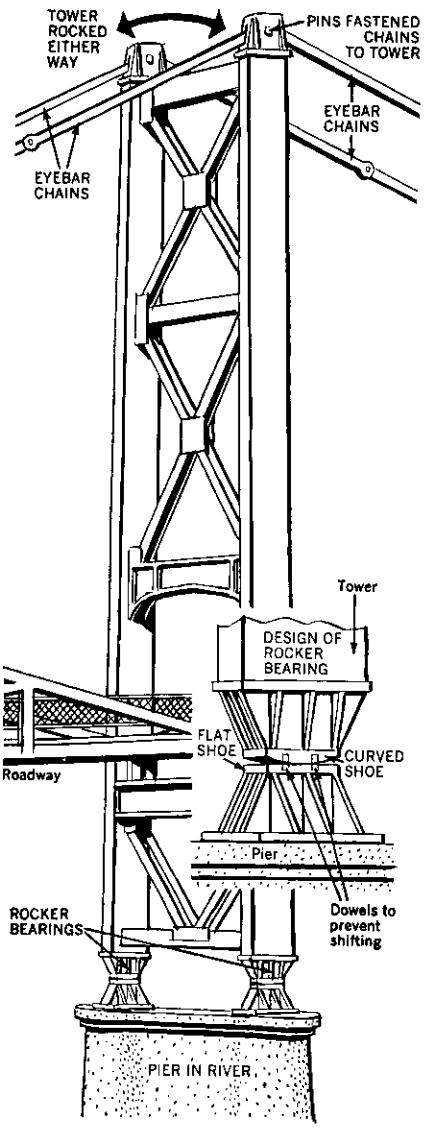
One team that investigated the disaster said that on the Ohio side of the river the tower pier had shifted due to scour, but reasoning that a pier shift would produce a gradual tipping and not a sudden collapse of the bridge rejected this hypothesis.

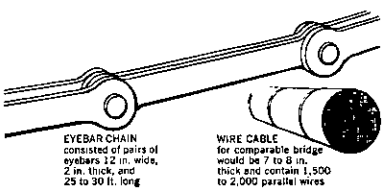
The bridge was designed with 6.8% grades in the side spans with the center span a parabolic curve coming tangent to the sidespan grades. However, in 1962 it was discovered that the center portion was horizontal, which changed the stress analysis in the original structure. This change alone would not cause the collapse but would add to mounting problems.

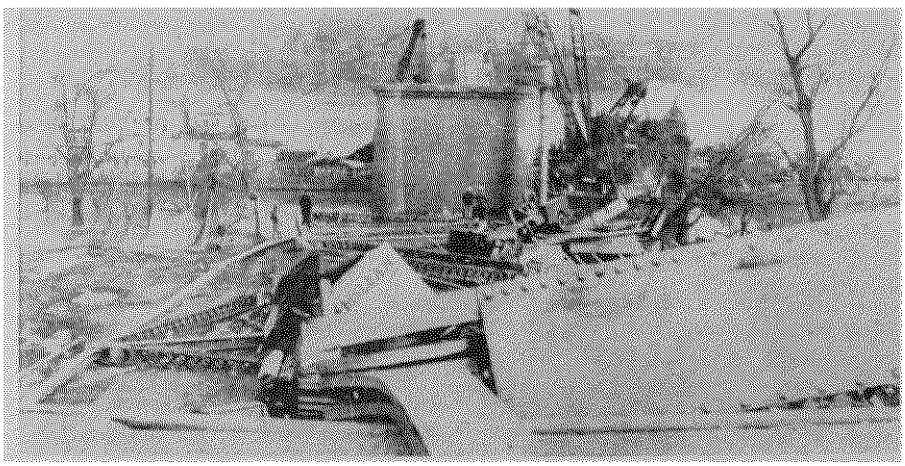
Fatigue and Corrosion

The Silver Bridge was built in 1928 by the J. E. Greiner Co. It was this company that painted the bridge with aluminum paint, the first in the United States to be painted this color, thus giving the bridge the name "Silver Bridge." The West Virginia and Ohio River Bridge Co. owned the bridge until 1941, when the state of West Virginia bought the bridge for $1,050,000.

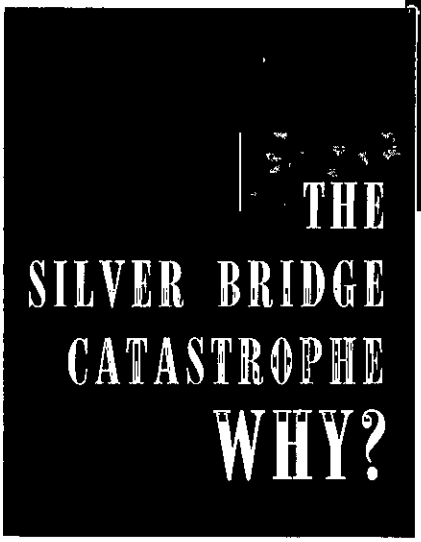
After purchasing the bridge in 1941, files of the state's road commission apparently contained no entries for inspection or repair of the bridge until 1951,







THE SILVER BRIDGE CATASTROPHE WHY?



Ohio side of the bridge near a point where the eyebar chain makes its sharpest bend in the entire bridge, passing over a small tower on the bank and then connecting to the suspension anchor. Although all eyewitnesses seem to give conflicting accounts of the collapse, Mr. Lloyd Forbus and Mrs. Maude Henry give facts that lead to the pin connection in the sharp bend.

at which time the bridge received its last painting. A highway-design technician in charge of bridge inspection for the state road commission, testified soon after the collapse that there had been a complete inspection of the bridge at this time and less extensive inspections on eight occasions since then.

The maintenance manual for the bridge states 21 points that should be covered in a major inspection. Upon questioning the technician in charge about the extent of this inspection, it was learned that of the 21 points, seven were actually checked. The upper structure of the bridge was checked by walking across the bridge and looking at the structure through binoculars. The inspection manual required that all upper structure should be climbed through and checked extensively. The eight inspections following this "major inspection" were termed "windshield-type inspections." This type of inspection consisted of viewing the structure from inside an automobile while passing over the bridge.

The bridge apparently became very corroded. This corroded condition and 40 years of constant vibration due to the weak truss system surely caused grinding on the pin connections in the main suspension.

One of the strongest arguments for initial cause seems to follow the idea of a sheared off pin. One of the first inspections of the disaster showed that the bridge gave way first on the

At 4:35 p.m., Mr. Forbus was driving across the bridge toward West Virginia when he saw a large nut in the roadway near the small tower on the Ohio side. He said the nut, similar in size to those used with bolts to connect eyebar links, was lying at an angle as if it still had a piece of the bolt in it.

At about the same time, Mrs. Henry was crossing the bridge in the opposite direction. She had to stop her car in a line of traffic near this same tower, and while waiting, she heard a clanking noise that was loud enough to hear well in her car even though the windows were up and the radio was on. "It was like something was loose on the bridge and the wind was blowing it," she said.

The bridge collapsed at 4:55 p.m.

After the collapse, President Johnson ordered a complete investigation of the disaster, appointing a committee to lead the investigation, and a safety check on every significant bridge in the U.S. This summed up to over 703,000 highway and railroad bridges to be inspected.

Experts Investigated

The type of investigation used by the committee assigned to the disaster is quite unique in that they called in plane crash experts to reconstruct the bridge at a nearby sight. Whenever a plane crashes, experts for the National Transportation Safety Board painstakingly fit the surviving pieces back together in an effort to establish the cause of the trouble. It was the hope of the committee that these experts could find the exact cause. The team was hampered by the fact that in the rush to reopen the river to navigation and to recover bodies of the victims many pieces were lost.

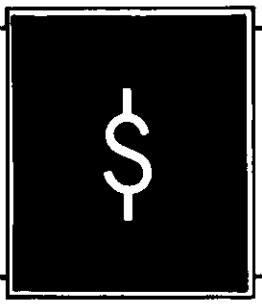
In December of 1968, the committee assigned to the investigation announced some major results but still nothing so exact that they can pinpoint the cause of the collapse. They found stress corrosion cracks had caused the fracture of one of the eyebars. The eyebar that contained these cracks was the eyebar that made up the suspension part of the connection at the small tower previously discussed. It was this committee's belief that this eyebar failed at the connection, sending all of the stress through the other eyebar. This concentration of load on the pin could easily have sheared it, which once again leads us to the accounts of Mr. Forbus and Mrs. Henry.

The cracks found in the eyebar were internal. There is no way of knowing just by looking at an eyebar if it contains these cracks, and there is no test to find these cracks while a bridge is in use. It was the committee's belief that because the main suspension of a suspension bridge was in constant stress the cracks could have caused collapse with no cars on the bridge at all. Because of these findings, the committee ordered the closing of the St. Mary's Bridge, which is 70 miles upstream from Point Pleasant, an exact twin of the Silver Bridge using eyebars in its suspension.

The closing of this bridge closes the books on eyebar suspension bridges in the United States. There are three bridges in Pittsburgh, Pa., using eyebars, but these are not suspension bridges and the eyebars play no major role in the support. The only remaining eyebar suspension bridge in the world is the Florianopolis Bridge in Brazil.

We may never know the exact cause of the failure of the Silver Bridge, but the information learned due to these investigations will surely be of significant value in the building of future bridges.

HOYT W. BROWN, JR., P.E.
L.E.S. Board Sponsor
Education Committee



ENGINEERING MANAGEMENT COURSE

COURSE OUTLINE

Semester 1 — CONCEPTS OF MODERN MANAGEMENT

I. Understanding an organization (4 hours)

II. The individual in an organization (2 hours)

III. Organizational objectives (2 hours)

IV. Function of managers (12 hours)
- a. Creating
- b. Planning
- c. Organizing
- d. Motivating
- e. Communicating
- f. Controlling

V. Management thought in perspective (4 hours)

VI. Principles of management (4 hours)

VII. Improving productivity in your organization (2 hours)

Semester 2—ECONOMICS FOR ENGINEERING

I. Economic systems and functions (3 hours)

II. National income determination (6 hours)

III. Price theory (9 hours)
- a. Demand
- b. Cost
- c. Market structures

IV. Income distribution (6 hours)
- a. Wage theory
- b. Interest and rent
- c. Profits

V. The money and banking system (3 hours)

VI. Economic policy (3 hours)

Semester 3 — ENGINEERING ECONOMY

I. Economics (16 hours)
- a. Planning engineering economy studies for decision making
- b. Interest—the time element in economy
- c. Dealing with multiple alternatives
- d. Dealing with uncertainties in forecast
- e. Incremental cost
- f. Economic studies for retirement and replacement

II. Operations research (8 hours)
- a. Mathematical programming
- b. Queuing theory
- c. Inventory theory

III. Personnel relations among technical employees (6 hours)

Semester 4 — FINANCIAL DECISION MAKING

I. Money markets (8 hours)
- a. Money, credit, and banking
- b. U.S. government obligations
- c. Interest rates

II. Financial management (14 hours)
- a. Form of organization
- b. Financial planning
- c. Working capital
- d. Fixed capital
- e. Bond financing and borrowing
- f. Corporate stock
- g. Dividends and surplus

III. Personnel investment planning (8 hours)
- a. Savings institutions
- b. Security markets
- c. Financial reports and analysis
- d. Security analysis

ABOUT THE AUTHOR

Hoyt W. Brown, Jr., is Utility Sales Manager for the New Orleans District Office of Combustion Engineering, Inc. In 1968 he was elected to a two-year term as State Director of the Louisiana Engineering Society. He is registered in Louisiana as a Mechanical Engineer and in Alabama as a Sales Engineer. He has served on the Board of Directors of ASME in New Orleans and as Vice President of ASME in Birmingham.

An inverse law in engineering begins to take effect as we move up the ladder of responsibility in our business world. We become less and less engineer as we become more and more manager. Yes, we may have the responsibility for the engineering work, but we no longer do it ourselves. We hire others to push the slide rule and to man the drafting boards. We even hire or promote the better slide rule pushers or better technical engineers to supervise the others. We may reach a point where we are even responsible for disciplines other than those we were trained in.

ENGINEERING MANAGEMENT COURSE

CONT.

To be able to do this, we have to become responsible for people, we have to become responsible for budgets and money; we can no longer limit ourselves to "it will work." Now it must not only work, but it has to work at a profit. This is true be it services or machines, ideas or bulldozers. In many instances, it must be both.

The further we move up the ladder of promotion, the less our engineering college training has qualified us for our new responsibilities. We must learn to think profitability as well as workability. We must learn to contribute to the many other product and marketing needs in addition to design and operation. We must learn to compete with people trained in marketing, law, labor relations, finance and planning. We must learn to administrate. We must learn to speculate. We must learn to dream. We must learn to change! We must learn to manage ourselves as we must learn to manage others.

I recently received the May issue of "Professional Engineer." There are two articles that I would recommend to your attention. The first asks the question, "Is the Engineer a second class citizen in terms of high level government jobs?" The article asks fourteen questions of us that will apply to any high level jobs. The questions are all good, but four, I think, really ring the old gong.

"1. Do you feel that Engineers, as a group, are well prepared as, say, lawyers to handle "Big Picture" decisions?

"2. Are there any changes which could be made in the Engineer's education which might better qualify him for, and encourage him to participate in, top-level government?

"3. Do you feel that the experience of Engineers in industry and in consulting firms has given the profession a layer of top management people who could adequately fill top-level government jobs?

"4. It has been said that when Engineers get into policy-making positions, they no longer identify themselves publicly as Engineers. Why is this, and what can be done about it?"

Training Adds Boost

The second article has two authors, both experienced engineering managers, S. W. Cochran, Vice President, Graphic Systems Division, RCA; and D. K. Chinlund, General Manager, Service Division, Western Electric Company. The title is "What Edge Does Formal Management Training Give Engineering Managers?" and states, "On-the-job management training and the good old school of hard knocks may have been the route to the top until the fairly recent past. But there's a new management scene today. Two top industry executives argue that formal management education gives the engineer an added boost on the executive ladder."

Mr. Chinlund concludes, "Industry must commit itself to the continuing education of its engineers. Management training is a vital force in helping the engineer become the fully aware individual he is capable of being. What we should strive to develop is the balance of an engineer-as-manager and manager-as-engineer, merging the two disciplines to bring out a man's full potential. Only in this way can we expect success in solving the many complex engineering and social problems of tomorrow."

Mr. Cochran summarizes as follows, "What are the qualifications of the engineering manager? I believe they are these: 1) A constantly updated technical education in depth plus technical vision; 2) The capability and personality to work with people — engineers, market specialists, controllers, customers and others; 3) The ability to schedule, plan and organize; 4) An understanding of modern production methodology; 5) Market comprehension; 6) A knowledge of economics.

"Whether the engineering manager has an MBA or a combination of B.S. degrees as part of his initial education and gets an MBA later, or *whether he attends a well-planned and well-implemented management program, he is much better pre-*

Classes to be held at LSU Medical School in New Orleans and the Baton Rouge Campus on Monday or Thursday at 7:00 p.m., please state preferential day.

If you are interested in these courses, please fill out the form below and return it to Mr. Hoyt Brown for the classes in New Orleans or Mr. T. J. Hogue for the classes on the Baton Rouge Campus of LSU. Their addresses are as follows:

Mr. Hoyt Brown, Jr.
513 John Hancock Bldg.
New Orleans, Louisiana

Mr. T. J. Hogue
So. Central Bell Telephone Co.
525 Florida Blvd.
Baton Rouge, Louisiana

NAME: ADDRESS:

I am interested in the New Orleans, Baton Rouge (circle 1) classes on Monday, Thursday (circle 1).

pared theoretically and practically to cope with his overall problems than by any other procedure."

LES to Offer Courses

In recognition of the necessity of Engineering Management education, LSU's schools of Engineering and Business Administration are cooperating with the Louisiana Engineering Society to provide this vital program for any and all engineers throughout the state. Initially, we are scheduling classes for New Orleans and Baton Rouge. As interest warrants (group of approximately 25 students) we will expand the program to Alexandria, Lafayette / Lake Charles, and Shreveport / Monroe.

The program is designed on a "carousel semester" basis. Each semester is independent so that the course may be entered at any semester and graduation occurs after completion of the four independent units. In this manner, students may attend the first semester in, say, Baton Rouge and then help organize another group to start on semester #2 in their own locale. The new group completes four semesters and graduates with newer students perpetuating the program.

LSU will furnish the course material and other colleges, such as Southwestern, Louisiana Tech or McNeese, could furnish the faculty and classrooms if they desired to participate. In this manner, the Louisiana Engineering Society is assisting LSU to provide a real and continuing service to the betterment of all engineers in the state.

We all owe the LSU schools of Business Administration and Engineering a real vote of thanks.

So add this "Blue Chip Course" to your continuing education portfolio. Your stock in trade will certainly increase. Study the course outline as printed with this article. If you are interested in participating, complete the form and mail it to the address indicated.

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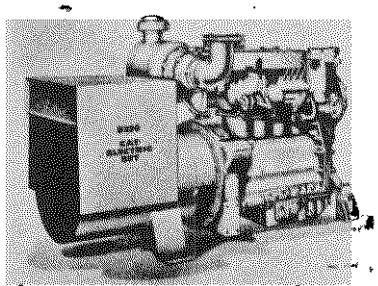

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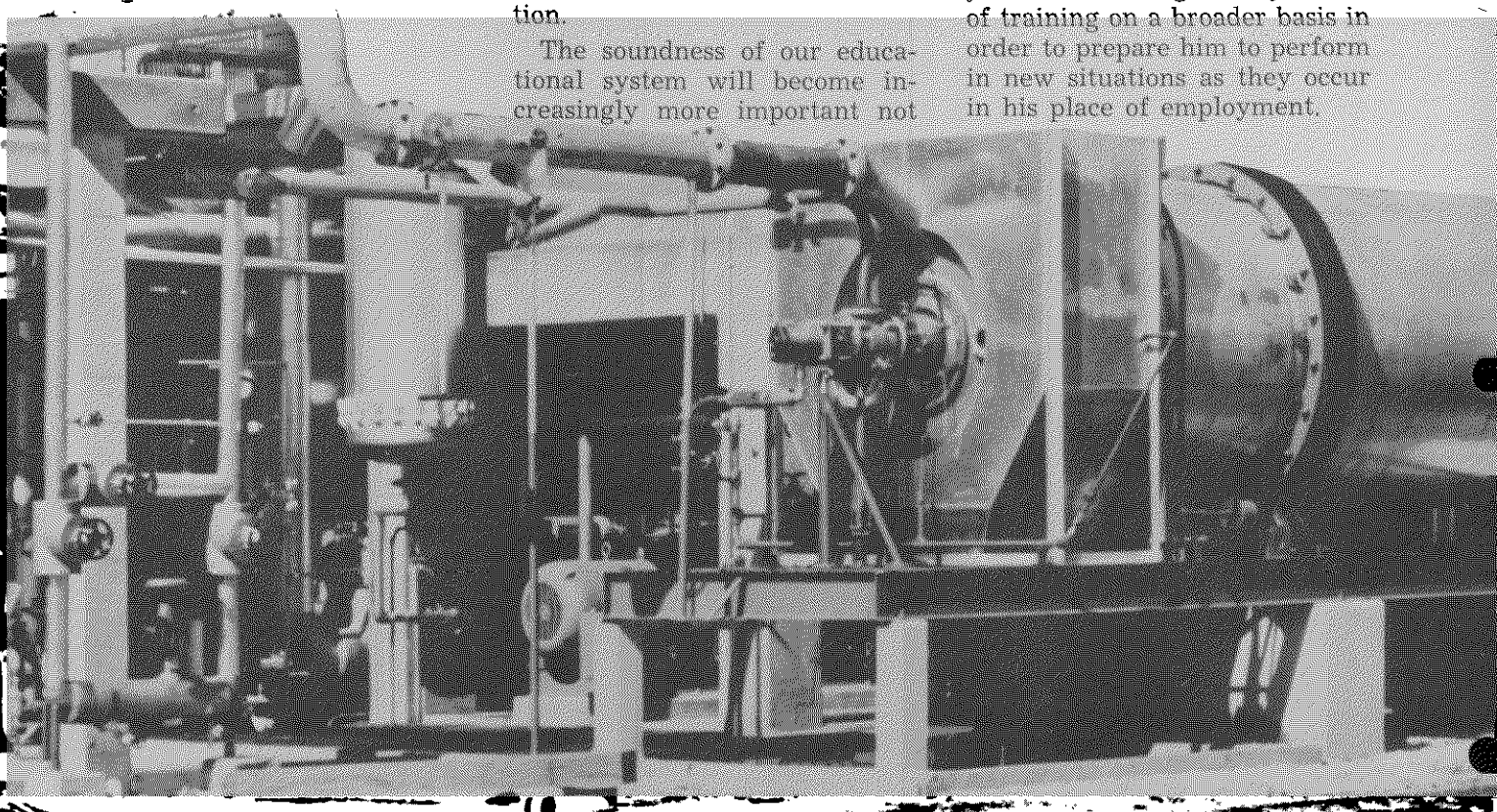
MANNING W. RISER
Pontchartrain Works Manager
DuPont Company

One of the most important factors affecting the future of the chemical industry in Louisiana will be the quality of our education and its relevance to the immediate and long range needs of industry. Our ability to maintain a leading position in an increasingly competitive industry will depend to a very large extent on our ability to effectively apply the talents of people and to efficiently make use of rapidly expanding knowledge.

First and foremost we will have continuing need for people in all job categories who are committed to the success of the enterprise. To have such a commitment an individual must be in a work situation where he can be the most productive and see himself as playing a vital role in the business and in society. People need help in locating and maintaining themselves in such a situation, particularly the young people searching for their first employment. More and more this will have to be included as part of their education.

The soundness of our educational system will become increasingly more important not only in supplying qualified people but in equipping people to cope with frequent change and the inevitable obsolescence that accompanies it. The rate of expansion of knowledge during the past 25 years has been astounding both in terms of scope and complexity. For this reason, meeting the needs for qualified people is a much more dynamic situation than it was in times past. The problem of staying abreast and making effective use of the knowledge being generated is in and of itself responsible for the creation of new disciplines. Our approach to education will have to take into account that because of rapid advances in technology, the products we produce and the equipment, techniques, and procedures we use to produce them will change possibly several times in the course of an employee's working career. We will more and more need the kind of people who will view such a changing situation as a challenge. This means our traditional concept of training an individual for a specific type of job will have to give way to one of training on a broader basis in order to prepare him to perform in new situations as they occur in his place of employment.



Education — Key to the Future of the

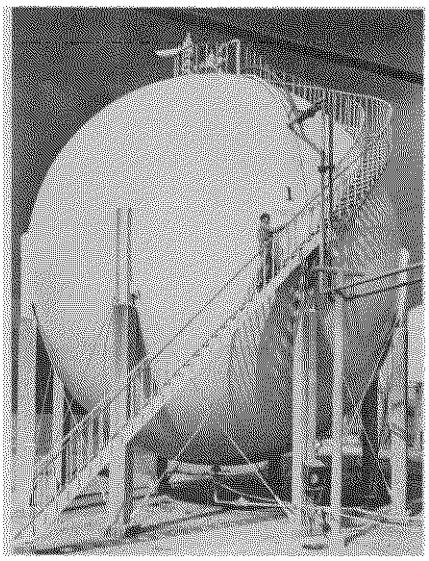
All of the responsibility for the future of the chemical industry in Louisiana, however, does not rest with our educational system. The concept of work in our society has changed quite a bit in recent years. Work is no longer considered simply as an individual's means to his own ends but rather as an end in itself. Through his work an individual can make a contribution in his own way to the society in which he lives either through the products he helps to produce or through the services he provides. Work forms the basis for individual fulfillment. For this reason industry will have to concentrate more on creating the kind of environment that will best bring out the creative and productive talents of people and thus provide a source of individual fulfillment. Employees will have to consider themselves and be considered as individuals who have come together to satisfy their own personal needs and aspirations but in so doing are anxious, willing, and able to identify closely with the goals and objectives of the enterprise.

In summary then, education and its link with industry will play a bigger and bigger role in meeting the challenges of domestic and international competition in the chemical industry for years to come. We are going to have to find ways to better gear our educational system to the needs of the individual as well as those of industry. We will have to discover more reliable means to evaluate early an individual's aptitudes and potential. In so doing we will be better able to guide him down paths that will increase his chances of success and realization of his full potential and thereby increase his chances of making significant contributions in his work.

At the same time industry will have to concentrate more on the scope and design of its various occupations in order to more nearly balance the expectations an individual develops through his educational experiences with the potential for fulfillment that exists in his work environment. It will become increasingly more important to equip the individual to respond positively and creatively to a rapidly changing world.

This challenge does not have an end. The needs will change every few years as knowledge increases and people with greater capabilities move into the work force. It is the successful response to this challenge that will maximize growth of the chemical industry in Louisiana.

Manning W. Riser was born in Ruston, La. and graduated in Chemistry from Louisiana Tech in 1936. He has been with DuPont Company since 1942 and has been Works Manager of the company's Pontchartrain Works in Laplace, La. since 1962. He presently serves on the board of directors of both the Louisiana Manufacturers Association and the Louisiana Chemical Association.



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SOCIETY ESTABLISHES CHAPTER IN THIBODAUX-HOUMA-MORGAN CITY

CARL E. HECK, SR., P.E.
President
Bayou Chapter

South Louisiana, an area long noted for its beautiful bayous and plantation homes, now has another distinction—it has become the home of the new Bayou Chapter of the Louisiana Engineering Society. The Bayou Chapter, the Society's eighth chapter in the state, was officially recognized by the LES Board of Directors on April 25, 1969.

The Thibodaux - Houma - Morgan City triangle has become one of the fastest growing sections in the state and presently well over 100 registered engineers reside in the area. The Society's Membership Committee, under the chairmanship of M. B. Ewing of Alexandria, recognized the need to better serve members living in the area and requested State President Leo M. Odom to explore the desirability of establishing a new chapter there. Members had been driving to Lafayette or New Orleans to attend chapter meetings.

A luncheon meeting was held in Thibodaux in February which was attended by about a dozen engineers, as well as by the Society's President and the Executive Secretary. It was the unanimous feeling of those attending that an LES chapter was needed and the group decided to call a second meeting in March and invite all members and non-member engineers residing in the area.

Response on the night of March 27 was extremely heartening. More than 50 interested men attended and participated in the general discussion. A petition calling for the establishment of a chapter was circulated and more than the required number of signatures were obtained.

The state Board of Directors recognized the chapter and we are now operating. The members of the Bayou Chapter felt that it would be best to rotate meeting sites from Thibodaux to Houma to Morgan City. Officers also were elected with this in mind. The President is from Thibodaux. The 1st Vice-President, Elton Gene Breaux, is from Morgan City; the 2nd Vice-President, Gene Milford, is from Houma; the 3rd Vice-President, Al Badeaux, is from Thibodaux; the Secretary, Douglass S. Talbot, is from Houma; and the Treasurer, Thomas Goyne, is from Morgan City.

PROFESSIONAL ENGINEERS GRANTED REGISTRATION

May 15, 1969

Affolter, Jerry W., Jr.—Chemical
Baton Rouge, La.
Akel, Majed A.—Civil
Jacksonville, Fla.
Allen, William K.—Mechanical
Roswell, Ga.
Blackmon, Elmer D.—Civil
Baton Rouge, La.
Bridges, Ronald B.—Petroleum
Jackson, Miss.
Broadway, Buddy S.—Civil
Picayune, Miss.
Broussard, Terral J.—Civil
Metairie, La.
Chennault, Ernest N.—Mechanical
Fort Worth, Tex.
Couvillon, John W.—Electrical
Metairie, La.
Doming, Hymel A., Jr.—Electrical
Metairie, La.
Dufour, Glenn M.—Electrical
New Iberia, La.
Durgee, Claude E.—Chemical
Pittsburgh, Pa.
Goller, John R., Jr.—Mechanical
New Orleans, La.
Gordon, Leslie W.—Civil
Metairie, La.
Hair, Richard H.—Electrical
Rock Hill, S. C.
Haston, Fred M., Jr.—Petroleum
New Orleans, La.
Horvath, Lawrence J.—Civil
New Orleans, La.
Keife, Gary M.—Mechanical
New Orleans, La.
Klotz, Bill W.—Civil
Houston, Tex.
Lo, Yu-Chiao—Civil
Metairie, La.
Long, Hollis W.—Mechanical
Houston, Tex.
Manning, Francis S.—Chemical
Tulsa, Okla.
Martin, Robert E.—Civil
Shreveport, La.

MEMBERSHIP CONTEST STANDINGS

RULES OF THE CONTEST

1. A Chapter must reach its 10% quota to qualify as the Contest winner.
2. The Chapter with the greatest percentage increase, based on application and reinstatement requests received by the state LES Office through the week prior to the June annual meeting will be the winner. Transfers into a Chapter or grade changes will not be counted as part of the quota. Students upon graduating will be counted for a Chapter only if the Chapter gets them to fill out an Application Form with up-dated information and, also, if they reside in the Chapter's Area.

Standing	Chapter	Quota	Applications	Percent
1	Monroe	12	31	258.33
2	Alexandria	11	26	236.36
3	Shreveport	18	37	205.56
4	Lafayette	15	22	156.67
5	Baton Rouge	50	54	108.00
6	New Orleans	79	73	92.40
7	Lake Charles	13	12	92.31
8	Bayou	?	3	?
	TOTALS	198	258	130.30

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McCaleb, Neal A.—Civil
Edmond, Okla.
McKelroy, Rodney S.—Mechanical
Knoxville, Tenn.
Morgan, Frank A., III—Petroleum
New Orleans, La.
Morgan, Jack P.—Mechanical
Houston, Tex.
Morris, Anthony P.—Chemical
Pampa, Tex.
Napolitano, Philip J.—Civil
New Orleans, La.
Nunez, Carlos L.—Mechanical
Pampa, Tex.
OHare, Maurice W.—Civil
Valley Stream, N. Y.
Oliver, Julian L., Jr.—Civil
Hagerstown, Md.
Otto, Keith D.—Electrical
Monroe, La.
Parker, Homer W.—Civil & Mech.
Jackson, Miss.
Patton, Robert S., Jr.—Civil
Dallas, Tex.
Paul, James R.—Petroleum
Houston, Tex.
Phillips, Charles S.—Mining
New Orleans, La.
Raiche, Henry A.—Mechanical
Norman, Okla.
Ray, Gerald L.—Agricultural
Baton Rouge, La.
Regan, Murray—Electrical
Jackson, Miss.
Rhodes, Raymond W.—Electrical
Bossier City, La.
Richardson, Ronald C.—Civil
Houston, Tex.
Ruesch, Richard L.—Industrial
Gretna, La.
Sample, Robert J.—Civil
Shreveport, La.
Schlesinger, Lee—Civil
Morton Grove, Ill.
Serpas, Geary M.—Mechanical
Lugoff, S. C.
Smith, Alfred E.—Civil
Baton Rouge, La.
Smith, Benjamin K.—Petroleum
Houston, Tex.
Sterling, Gordon H.—Civil
New Orleans, La.
Stevens, Jesse F.—Petroleum
Chehalis, Wash.
Strain, James T.—Electrical
Atlanta, Ga.
Stuart, Charles A.—Petroleum
Metairie, La.
Talbot, John S.—Petroleum
Houston, Tex.
Waibel, Fred E.—Mechanical
Wexford, Pa.
Wernette, Herman G., Jr.—Petroleum
New Orleans, La.
Wilcox, Charles R.—Civil
Atlanta, Tex.
Wilkins, Bert, Jr.—Chemical
Baton Rouge, La.
Bankston, John M.—Land Surveyor
Baton Rouge, La.
Baugh, William L.—Land Surveyor
Pasadena, Tex.
Gassen, Lucien C.—Land Surveyor
Luling, La.
Jones, Ellis L.—Land Surveyor
New Iberia, La.
Sullivan, Gilbert D.—Land Surveyor
Hammond, La.

NSPE

The National Society of Professional Engineers will hold its Southwest Regional meeting at the Fontainebleau Motor Hotel in New Orleans, October 23-25, according to LeRoy Culbertson, NSPE regional vice-president.

Attending the meeting will be Presidents, Presidents-Elect, National Directors, Vice-Presidents, Secretary-Treasurers, Executive Secretaries and Functional Section Chairmen of all state societies in the NSPE Southwest Region.

Culbertson said that the chief purpose of the conference is to have the key state officers meet and discuss items of common interest. Although the program is not yet finalized, it is probable that the Texas Water Plan of diverting the Mississippi River to Texas and New Mexico will be on the agenda.

Leaders of state societies will discuss such items as membership drives, engineering foundations, committee activities and other topics.

Co-chairmen of arrangements for the regional meetings are Waldemar S. Nelson and Edward J. McNamara.

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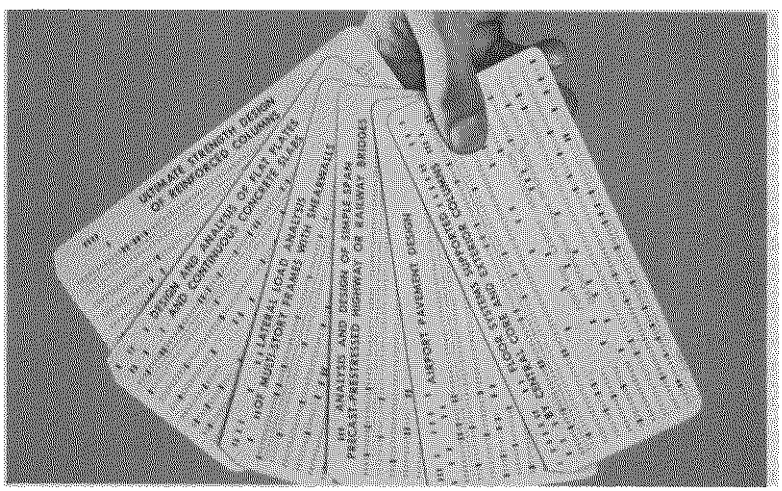

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MINUTES - LES BOARD OF DIRECTION

March 7, 1969 Lafayette, La.

President Odom called the meeting to order with the following Board members present: Farrell W. Adams, P.E.; Hoyt Brown, P.E.; T. J. Hogue, Jr., P.E.; E. J. McNamara, P.E.; Bill Miller, P.E.; S. J. Richard, P.E.; Ashby Stevens, P.E.; A. J. Szabo, P.E.; Jack Thigpen, P.E.; and James F. Williams, Jr., P.E. Also present were: Kenneth Deal, P.E.; M. B. Ewing, P.E.; Norbert Loup, Rod Singleton, P.E.; M. A. Steele, P.E. and Norman Ferachi, Executive Secretary.

The minutes of the January 11th Board meeting, after being corrected, were approved. The motion for approval was made by Mr. Adams, seconded by Mr. McNamara and passed.

Financial Report—The Financial Report of the Society as of February 28th was presented by Mr. Hogue. He pointed out that although the financial report indicates that the Society's finances are right in line with the budget, it will take hard work on the sale of booths for the convention and a close watch on other budgeted items to end our fiscal year with a balanced budget. Mr. McNamara moved that the financial report be accepted. The motion was seconded by Mr. Thigpen and passed.

OLD BUSINESS

Report on Statewide Meetings—Mr. Hogue informed the Board that he had canvassed the presidents of the chapters concerning (1) the number of regular state meetings that the Society should hold per annum and (2) the locations of these meetings. He distrubuted a written report detailing the answers he had received to these questions. The canvass showed that four of the seven chapters preferred having three state meetings per annum. To comply with the results of this canvass, Mr. Hogue moved that the Society conduct 3 statewide meetings per annum in the future rather than 4, the meeting being deleted being the Winter Meeting. The motion was seconded by Mr. Adams and passed.

Mr. Hogue distrubuted another report outlining a proposed schedule of locations and approximate dates for state meetings for the years of 1969, 1970 and 1971, and moved that this schedule be adopted. The motion was seconded by Mr. Szabo and passed. A copy of this schedule is attached to these minutes.

Mr. Brown requested that the President write to presidents of engineering societies in the surrounding states and suggest the possibility of joint meetings with those states. Mr. Odom replied that he would comply with Mr. Brown's request.

Report of Publications Committee—Mr. Nelson, chairman of the Publications Committee, who was absent, had submitted a report as he had been requested to do, concerning the proposed issuance of a roster of members. The letter contained information as to the cost of printing various numbers of copies of the roster and Mr. Nelson recommended that 2,500 copies be printed at a quoted cost of $480.20. He also recommended that a copy be mailed to each member and that all remaining copies be sold for $1.00 each. Mr. McNamara moved that the recommendation of the Publications Committee be adopted. The motion was seconded by Mr. Adams. After discussion, Mr. Thigpen offered an amendment to the motion providing that each chapter president be requested to check and approve the listing for his chapter before the roster is published and that this approval be signified by letter to the state secretary-treasurer. The roster is to reflect the Society's membership as of April 1 and copies are to be printed in time for the Society's Annual Meeting. The motion was seconded by Mr. Brown and passed. Mr. Szabo dissented.

VOTE ON CONSTITUTIONAL AMENDMENTS

Report of Tellers Committee—Mr. Ferachi reported that two members of the Tellers Committee, appointed by the president viz. Lamon Moody, Jr., P.E. and Gerald Dyson, P.E., had met and tallied the ballots on the proposed constitutional amendments affecting (1) references required with application for membership and (2) establishment of a new grade of membership—Privileged Member. Their report is shown below:

	For	Against
Proposal No. 1 Sponsored Membership	556	128
Proposal No. 2 Privileged Member	639	45

The Board accepted the report of the Tellers Committee.

Appointments to the State Board of Registration—Mr. Odom noted that a letter was recently sent to the Governor requesting that the Governor make the required appointments to the State Board of Registration as soon as possible. Mr. Brown pointed out to the Board that the state office had received a letter from the CEC of La. requesting that the LES Board add the name of Mr. Morgan J. Goudeau, Jr. of Opelousas to the list of nominees for appointment to the State Board of Registration. After discussion Mr. McNamara moved to table the CEC recommendation. The motion was seconded by Mr. Szabo and passed. It was requested that President Odom write to the President of CEC of La., pointing out that LES was not in a position to add or change it's recommendation at this time, but that LES would always consider recommendations from CEC at the proper time.

Formation of New Chapter—Mr. Odom reported that in accordance with the request of the State Membership Committee, he had explored the desirability of forming a new chapter in the Thibodaux-Morgan City-Houma area. A preliminary meeting had been held with a number of engineers from that area on February 27th and a second meeting is scheduled for March 27th. An account of the first meeting was outlined in a report that had been sent to Board members. Mr. Odom informed the Board that he expected a petition to be presented to the Board in the near future which would request the formation of a new chapter to be composed of members from St. Mary, Terrebonne and Lafourche parishes.

PRACTICE SECTION REPORTS

Professional Engineers in Education Mr. Thigpen, acting chairman of the section, informed the Board that minutes of the Winter Meeting of the Engineers in Education section were mailed to every LES member in education. He noted that a nominating committee will give its report at the Annual Convention and stated that officers for the section will be elected at that time.

Professional Engineers in Government—No report.

Professional Engineers in Industry—Mr. Steele informed the Board that his section is continuing its work on their goals for 1969.

Professional Engineers in Private Practice—Mr. Ferachi read a letter from Mr. Meyer, chairman of the section. Mr. Meyer requested that the state president send a letter to members of the LES committee on the Manual of Private Practice complimenting them for their efforts in revising the annual. Mr. Odom said that he would comply with Mr. Meyer's request.

COMMITTEE REPORTS

Honors and Awards—Mr. Duclos, chairman of the committee, reported that his committee nominated Dr. Cecil Smith of the Chemical Engineering Department of LSU in Baton Rouge for the Engineer Award of Merit. Mr. Williams moved that Dr. Smith be given the award if he is found to be eligible. The motion was seconded by Mr. Richard and passed.

Membership Committee—Mr. Ewing distributed a copy of the standings for the membership contest as of March 7th and requested that the chapters in South Louisiana exert more effort to obtain new members. The standings were as follows:

Standing	Chapter	Quota	Applications	Percent of Quota
1	Alexandria	11	22	200.00
2	Monroe	12	22	183.33
3	Shreveport	18	33	183.00
4	Baton Rouge	50	42	84.00
5	Lake Charles	13	10	76.92
6	Lafayette	15	10	66.67
7	New Orleans	79	52	65.82
	Totals	198	191	96.46

Convention—Mr. Ferachi informed the Board that the program for the Annual Convention has been completed. He stated that a printed program would be sent to all members of the Society by March 31.

Continuing Education—Mr. Brown reported concerning Mr. Odom's letter addressed to the Deans of the engineering colleges in the state, wherein he requested they consider setting up engineering management courses for practicing engineers. He stated that all Deans of the engineering schools had replied and that he and Mr. Hogue would pursue the matter further.

NEW BUSINESS

Nominating Committee—Mr. Odom informed the Board that in accordance with the Constitution of the Society, a nominating committee must be selected for the nomination of officers. Mr. Hogue moved that Mr. McNamara, Mr. Duclos and Dean Bogard compose the nominating committee. The motion was seconded by Mr. Adams and passed.

Finance Committee—Mr. Odom informed the Board that he had appointed Mr. McNamara, Mr. Vogt and Mr. Hogue as the Society's finance committee. He noted that the minutes of previous meetings did not reflect the fact that he had appointed a finance committee and that he wished the minutes of this meeting to show that he had appointed such a committee.

Construction Industry Legislative Council—Mr. Odom informed the Board that the C.I.L.C. had extended the LES an invitation to join C.I.L.C. as an associate member. Mr. Adams moved that the Society accept the invitation. The motion was seconded by Mr. Szabo. After discussion, a vote on Mr. Adams' motion was taken and the motion failed to pass.

Letter from Alvin Fromherz—A letter had been received by Mr. Odom from Mr. Alvin Fromherz in which Mr. Fromherz pointed out that at the present time there is no accepted designation for identification of engineers by a prefix title such as is now in use by M.D.'s. He suggested that the universities state in the text of the engineers degree that the title "Engineer" should be used before an Engineer's name. This would denote that engineers are professionals and should have the same status in the eyes of the public as doctors, lawyers, and the clergy. Mr. Fromherz requested President Odom to bring the matter to the attention of various universities of America and also the engineering alumni of said universities. The letter was referred to the Professional Engineers in Education functional section.

Letter from Lamon Moody—Mr. Odom read a letter from Mr. Moody, president of the Louisiana Land Surveyors Association, pointing out that registered engineers, land surveyors and architects can obtain a "Professional Planner" registration without examination or special degrees, as a result of inaction by the Supreme Court. The letter was referred to the engineers in Private Practice section.

Membership Report—Mr. Ferachi submitted a list of new applicants which had been published in the December issue of the Louisiana Engineer and reported that no objection had been received to these applicants. A list of members who had resigned or died since the last Board meeting was also submitted. A copy of each of these lists is enclosed.

Membership Forms—Mr. Adams informed the Board that since the two revisions relative to membership had been made to the LES Constitution, it would be necessary to have the Board approve a change in one membership form and the format of a new form. He stated that he had made the necessary revision and drafted the new form. Mr. Adams also pointed out that the brochure "An Invitation to Participate" would have to be revised. Mr. Williams moved that the Board approve the revision to the membership form, accept the new form and authorize Mr. Adams to prepare revisions to the brochure. The motion was seconded by Mr. Thigpen and passed.

It was announced that the next meeting of the Board will be held Friday, April 25th, 1969 at the Jung Hotel in New Orleans.

There being no further business, Mr. Thigpen moved that the meeting be adjourned. The motion was seconded by Mr. Hogue and passed.

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P. O. Box 15672

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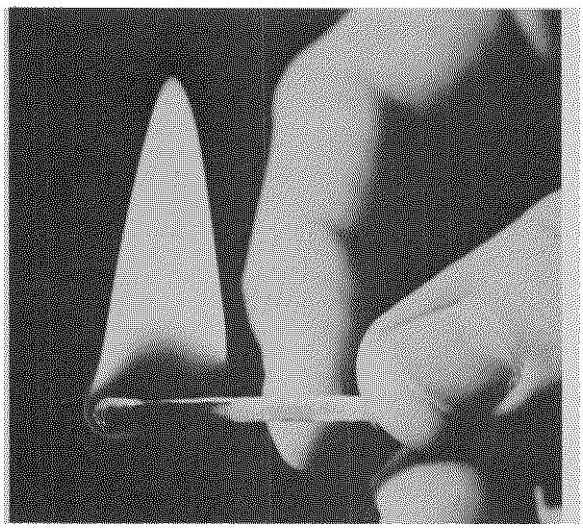

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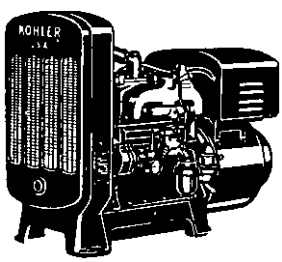

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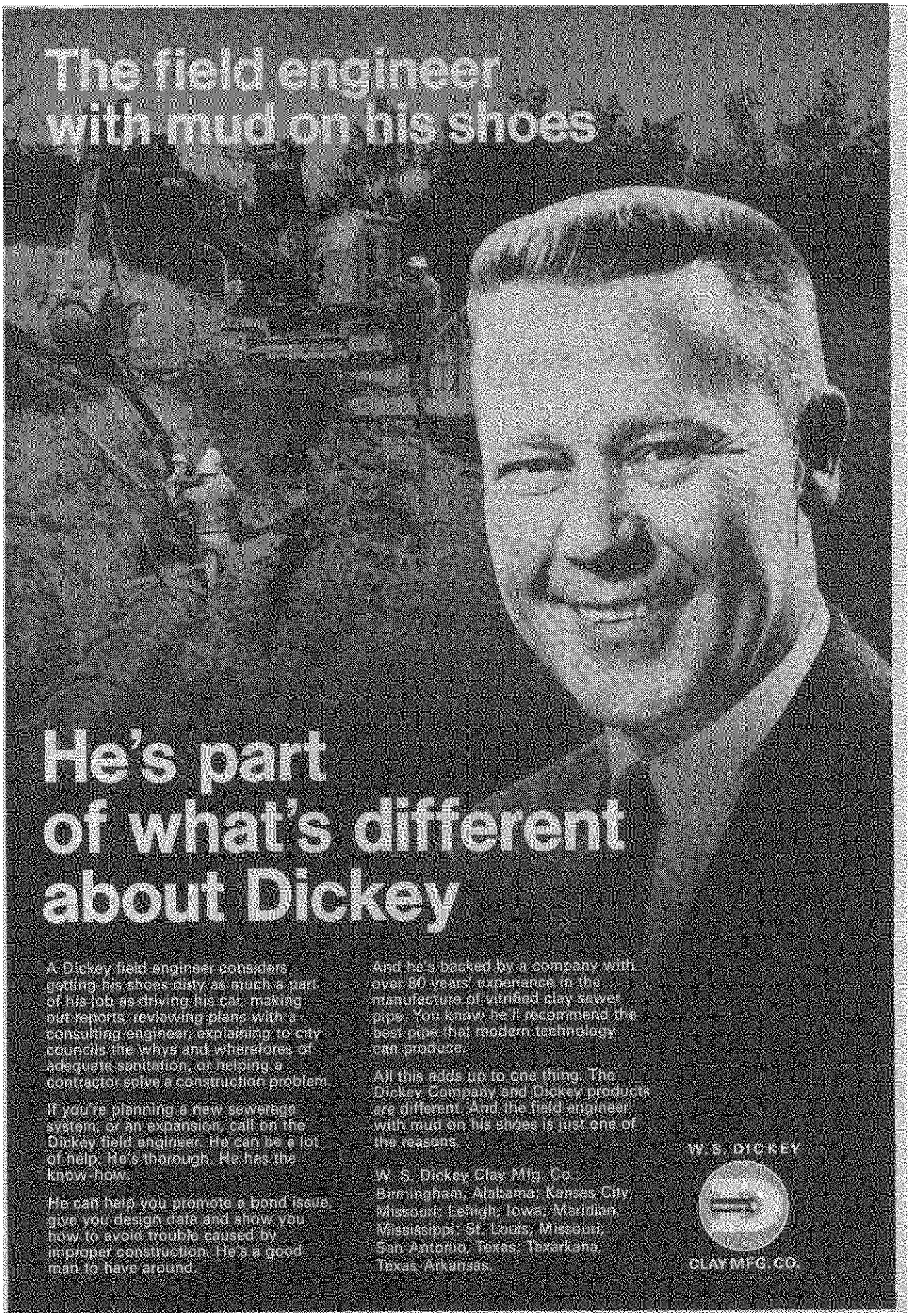
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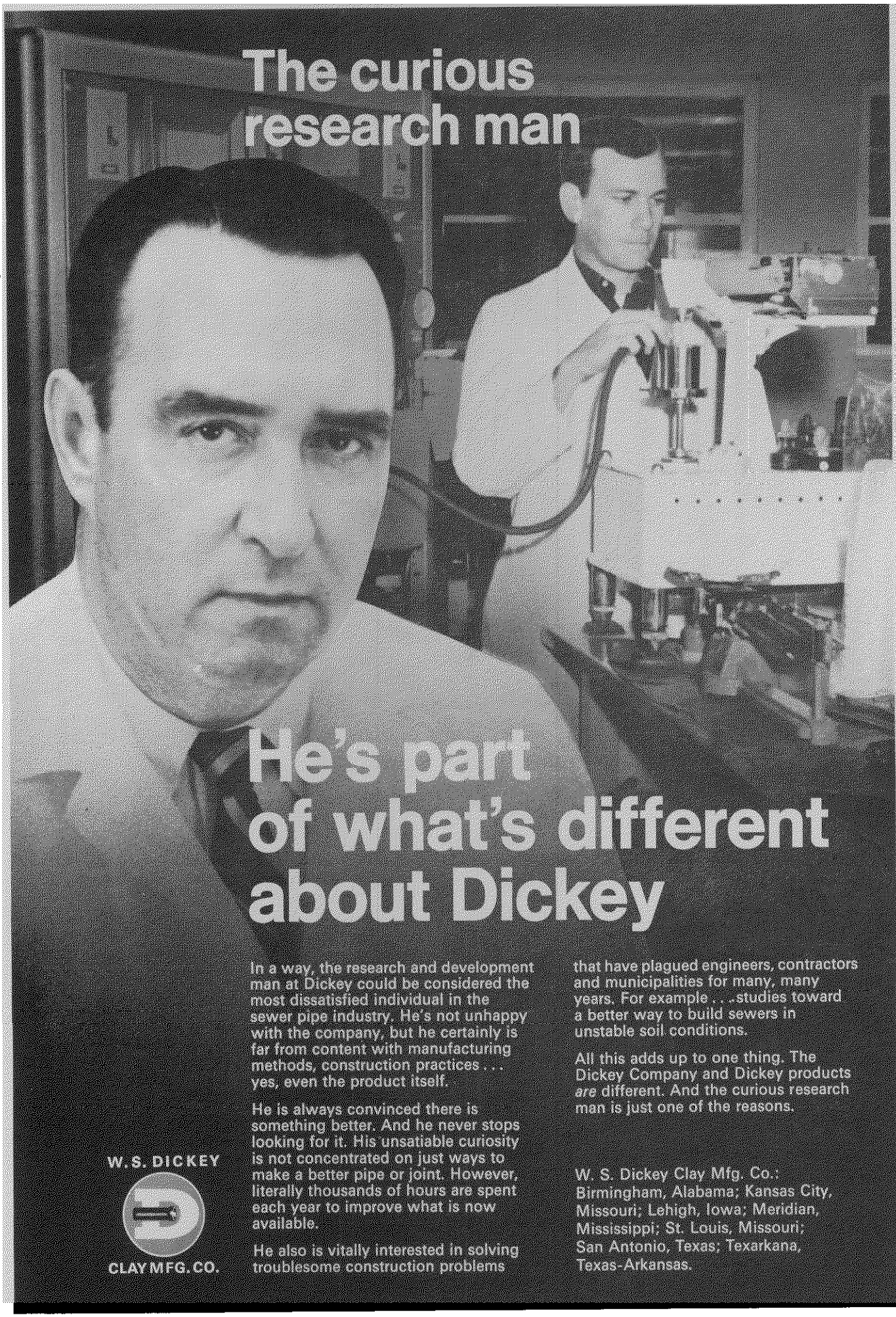
Vol. 55 No. 4, August, 1969

LOUISIANA ENGINEER

John F. Vogt, Jr., P.E., President, Louisiana Engineering Society



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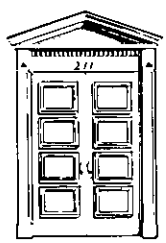

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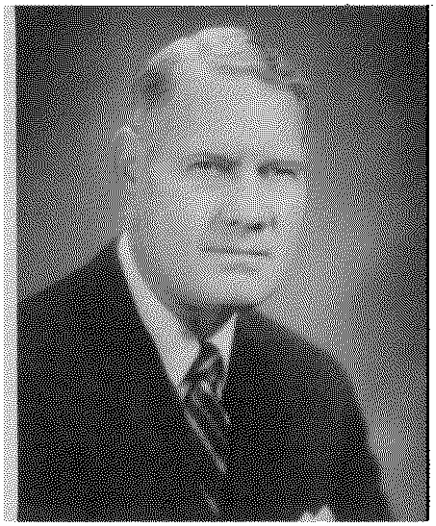

Cover: The cover of this issue is a portrait of John F. Vogt, Jr., P.E., President of the Louisiana Engineering Society. See Presidential Privilege on Pages 6 and 7.

LOUISIANA ENGINEER

TABLE OF CONTENTS

Presidential Privilege 6
L.E.S. Leaders 8
Major Changes in Engineering at Tulane 9
Professional Registration—Why and How 13
When Does the Next Bandwagon Leave? 17
National Director's Report 22
EngiNEWS 25

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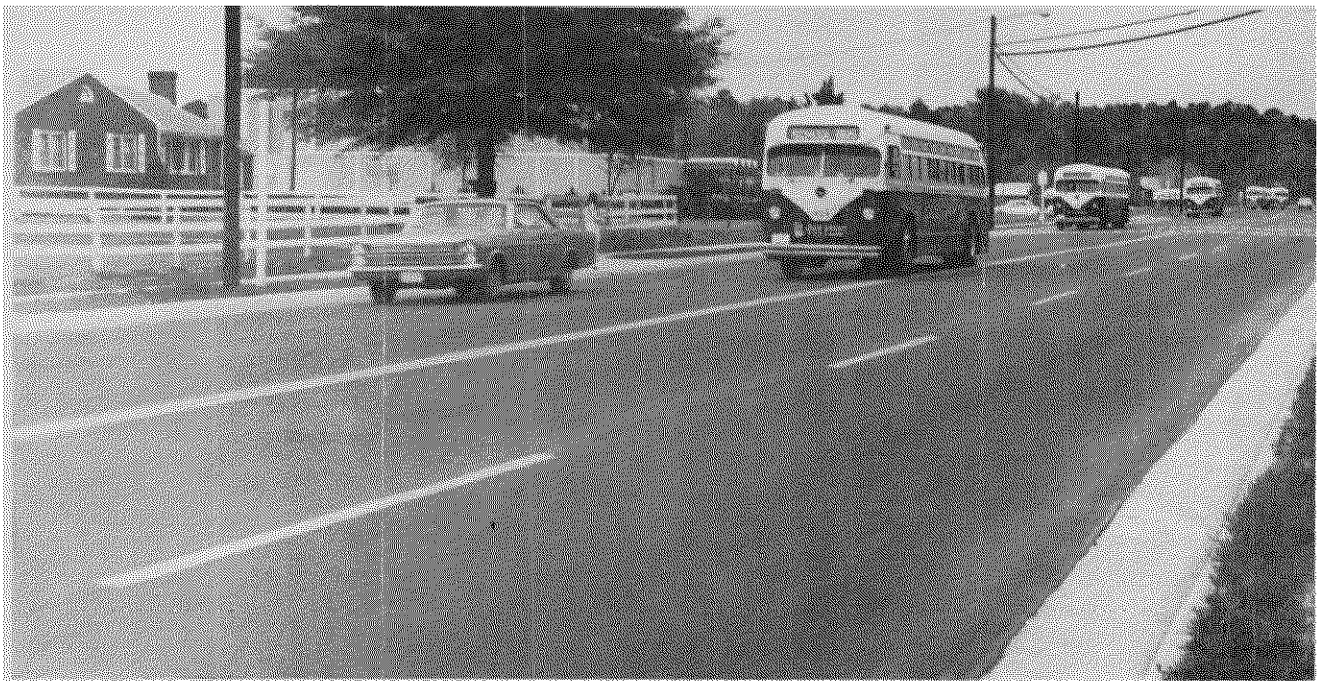

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TERRAIN... Flat coastal plain 16 to 18 feet above sea level.

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ROADWAY... **Subgrade:** Unstable silt-clay. **Base:** 8" asphaltic concrete (5½" and 2½" lifts) Virginia Type B-3 (1½" maximum aggregate). **Surface:** 1" Asphaltic concrete Virginia Type S-5.

ASPHALT... 85-100 penetration for all mixtures.

DRAINAGE... Surface run-off via curb gutters to curb drop-inlets and piped to open ditches.

COMPACTION... **Subgrade:** Untreated material to 95% lab density and lime treated subgrade to 100% lab density (AASHO T-99a) with vibrator rollers. **Base and Surface:** To a 90% minimum of maximum theoretical density with 10- to 12-ton 3-wheel and tandem type rollers.

CONTRACTOR... Clyde R. Royals, Inc., Hampton, Virginia, a member of the Virginia Asphalt Association Inc. and the National Asphalt Pavement Association.

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Presidential Privilege : Goals of 1969-70 Administration

To be able to continue the standards set by our Past President in providing a well-balanced, planned leadership type of administration would be a sufficient goal in itself to insure a successful year for the Louisiana Engineering Society during 1969-70.

We are now going into the sixth fiscal year of our existence as a State Society, complete with statewide officers, directors and an executive secretary. Certainly during this time we have developed within the organization an extent of professional maturity. I believe we have in many ways, and in thinking about goals for this fiscal year I have no intention therefore of attempting to disturb or disrupt these areas for the sake of change alone. To illustrate: The most pertinent interests of the Society are effectively covered in the appropriate standing committees that are now contained in our By-laws. I see no reason to alter the functions of these committees. (a) Membership, (b) Legislative, (c) Young Engineers, (d) Liaison with State Board of Registration, (e) Ethics and Professional Conduct, (f) Finance, (g) Public Relations, (h) Engineering Education, (i) Honors and Awards, (j) Constitution and By-laws, (k) State Admissions Committee, (l) Vocational Guidance, (m) Inter-Society Relations.

In addition, the periodic newsletter Perspective serves an important function of stressing the current issues of interest to the general membership; the LOUISIANA ENGINEER has become a well respected periodical in its field. It is my hope that we can continue the excellence and maturity portrayed in both of these publications.

I should be remiss however, if I failed to recognize certain situations within the Society that need alteration and to recommend that we devote some part of our attention toward modifying these areas. Let me take you through a quick review of certain significant historical effects:

Financial Resources of Society

The State Society has seen a net loss of about $23,000 in its operation during the past four fiscal years ending June 1969. This is composed primarily of certain heavy losses during the transition years of 1965 and 1966, although more currently we sustained a net loss of about $2,500 for the fiscal year just ended.

Membership Growth

Because of several years of very active membership solicitation programs the net growth of members in the Society has been about 25% since the middle of 1965.

Committee Activity Stymied

In many areas—Legislative, Membership, Young Engineers, Engineers Week and the like—despite sustained interest by various groups of members, necessary budgetary control procedures have become insurmountable obstacles that have held back the realization of many fine programs.

Chapter Accumulation of Funds

Despite an acute shortage in central operating funds, our two largest chapters have been accumulating substantial capital reserves.

Transient Nature of the Office of Executive Secretary

We have been unable to strengthen our central office by retaining the continuing services of an Executive Secretary, thereby limiting Society improvement from this source.

To me, the points illustrated are indicative of an extremely unhealthy financial situation despite a representative increase in Society membership and of a real need for a closer look at Society income and our program for disbursements. Let me make it perfectly clear at this point that the above references are not reflections of fault or oversight by past administrations; rather they indicate an outcropping of situations that only periodically and very recently have revealed themselves. Mr. Odom recognized the need being discussed here and appointed a committee to look into the financial matters of the Society. By prior coordination, his appointees are the same individuals that I hope to have our new board ratify as the Finance Committee for the coming year, who will be charged with presenting appropriate means of increasing Society income. It is also intended that a representative expenditure budget be developed by this committee for the fiscal year 1969-70 to accomplish specific necessary objectives, including committee appropriations for attractive programs, and that our income requirements (and budget) for the year be designed to accommodate these considered expenditures—whether this requires dues adjustment, reallocation of chapter appropriations or whatever other methods are recommended to secure the necessary income. Having served on the Finance Committee in the past, I am aware that this tact is a new approach inasmuch as the usual budget for the Society is developed by an estimate of expected income and then shaving expenditures to try to bring them in line with the income anticipated.

Naturally, even in light of the above, I am conscious of the fact that new members are still

I think it is only fitting that this initial privilege be utilized in bringing to our complete membership the administrative goals that were presented at our Annual Meeting in Lafayette.

By LES President John F. Vogt, Jr., P.E.

a great contribution to the financial soundness of the Society and exhort an acceleration of additional members as one of our fiscal goals for this reason. However, this reason alone is poor justification for seeking new members. New members mean new ideas, fresh enthusiasm, energy, drive, improvement and personal professional development. Getting new members must be, therefore, one of our foremost goals.

Since one of the regular sessions of the legislature falls during this fiscal year, and advance indications are that many bills defeated in former years by hard work on the part of the LES—bills that were found to be detrimental to the economic or social well-being of the Professional Engineer—will again reappear on legislative dockets, an alert and active Legislative Committee, properly backed by funds to perform an effective service, will be extremely necessary.

Public relations activities of the Society are weak and need improvement. In particular, we need to bring the views of engineers to the attention of legislators, public officials, the business community and other decision makers—so that a better environment can be created for the professional practice of engineering.

You may be interested to know that during the past ten years there has been an increase of only 1% in engineering students, which compares with a male college student increase of 52% during the same period of time. I present, therefore, a specific goal for our chapters—to work with the various high schools in their areas to encourage the formation of JETS Clubs or to provide engineering guidance to students with the thought of encouraging adequate and proper talents into the engineering profession. And this does not have to be done by LES alone—inter-society support and joint action are available if solicited.

Secondly, for the Chapters—in the N.S.P.E. over 50% of the members are classified as "Young Engineers"—by age this would be those under 35 years. I suspect the same percentage would roughly apply to the LES if I had these figures. Not enough emphasis is specifically directed to the young engineer at the Chapter level. According to these statistics, over 50% of the Chapter meetings should therefore be specifically devoted to the interests of the young man. This may be impractical; however, November is designated by the N.S.P.E. as Young Engineer Month. Let us at least set this meeting aside to spawn tomorrow's engineering leadership by having a truly effective Young Engineers program.

Finally, for each individual member, you put this administration into office with your ballot. I ask you now to cast your lot to back this administration, to command within yourself the strength to:

Remove all traces of complacency with regard to the LES;
Make every effort to keep well informed of Society business;
Seek understanding of all current activities; and
Encourage greater growth for yourself and the Society by helping to guide some chosen objective into fertile accomplishment.

John F. Vogt, Jr. is Manager of Engineering of New Orleans Public Service, Inc., where he has worked since 1939.

A native of New Orleans, he attended Jesuit High School and Tulane University, from which he graduated in 1938 with a bachelor's degree in electrical engineering. He joined Public Service as a temporary engineer in the Auditing Department and transferred into the Engineering Department in 1941 as an assistant engineer. He worked as a mechanical engineer from 1944 to 1961, in which year he was named manager of the Mechanical Engineering Division. He was named assistant manager, Engineering Department, in 1967 and assumed his present position on November 1, 1968.

He is past president of the Society of Tulane Engineers and the Engineers Club of Orleans; and a past chairman of the New Orleans Chapter of the American Society of Mechanical Engineers. He has also served as chairman of the Plant Design and Operating Committee of South-central and Southwest Utility Companies, and as national chairman of ASME's Membership Development Committee.

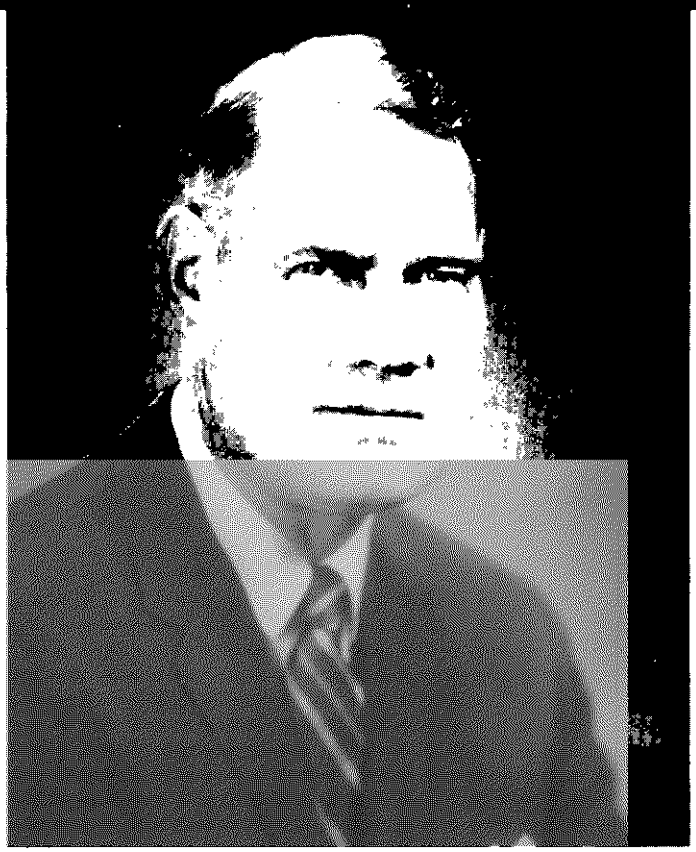
He has served the Louisiana Engineering Society during the past few years as Director, Secretary-Treasurer, Vice-President and President-Elect. He assumed the presidency of LES in July 1969.

He is also a member of NSPE, American Society for Testing and Materials, Chamber of Commerce, International House, Southern Gas Association, Electrical Association of New Orleans, and The New Orleans Board of Trade.

At college he was elected a member of Tau Beta Pi, national honorary engineering fraternity.

He is married to the former Audrey Seither. They have two daughters, Mrs. Bruce D. Baker of Woodland Hills, California and Mrs. Frederick J. Mikill II, and five grandchildren.

L.E.S. Leaders



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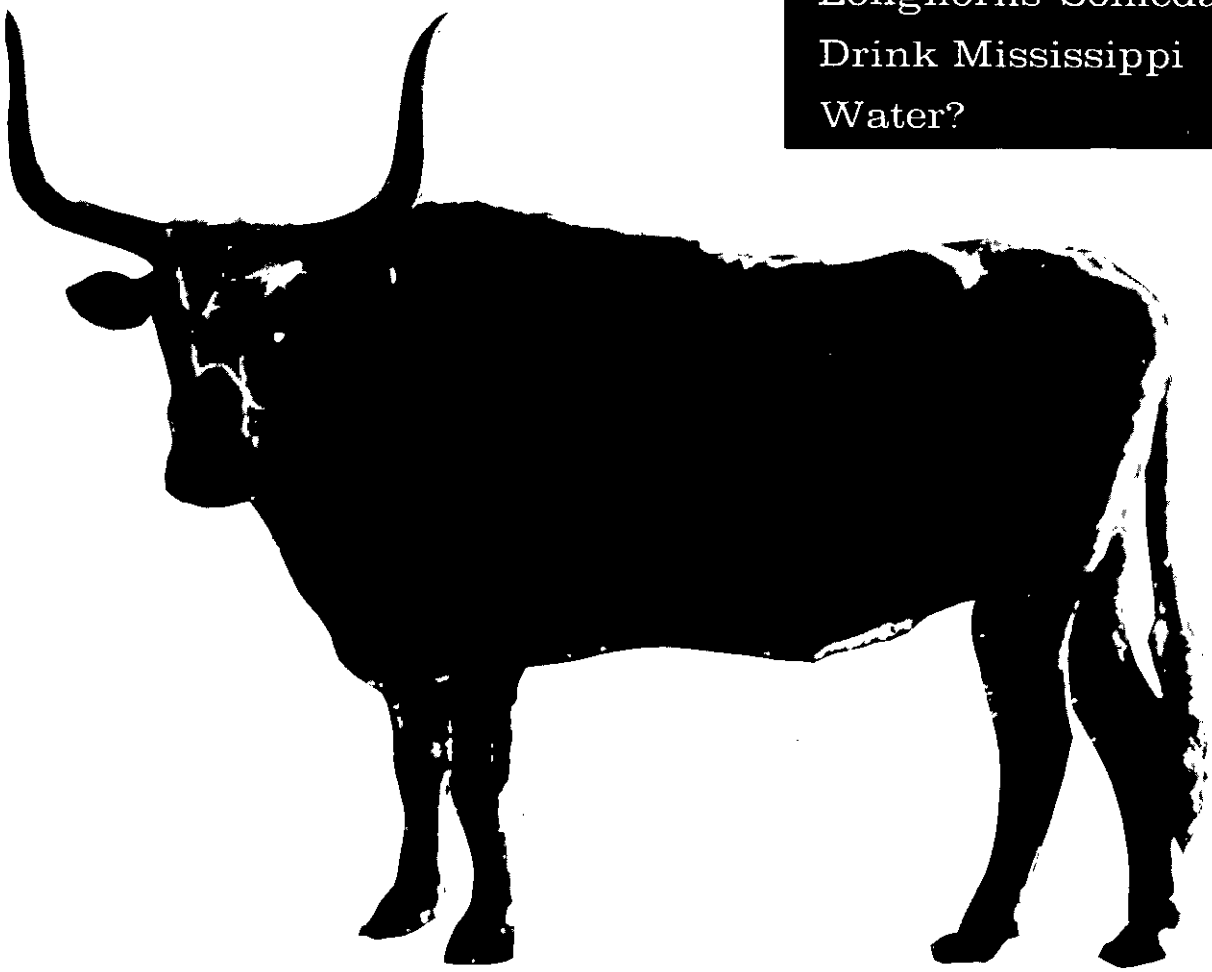
Will West Texas Longhorns Someday Drink Mississippi Water?



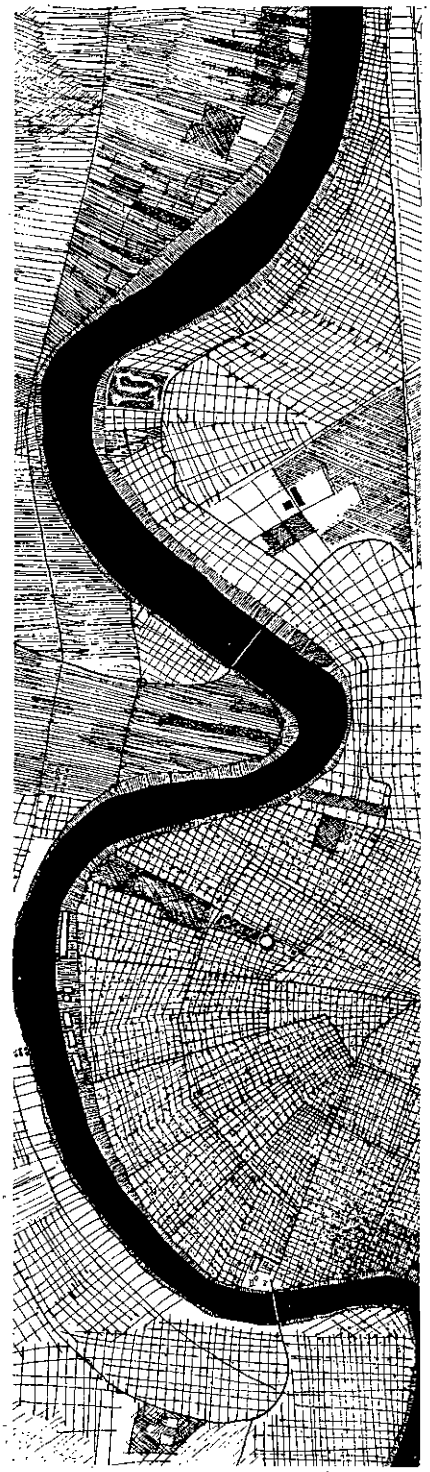
By Raphael G. Kazmann, P.E.
Assoc. Professor of Civil Engineering, L.S.U.

The winter of 1968-69 was notable for the fact that the plans of the Texas Water Development Board, which are predicated on pumping water from the Mississippi River for use in Texas, received sustained, nation-wide publicity for the first time. The full report on the Texas Water Plan (dated November, 1968) was made available to the Texas Legislature in February, 1969 (due to the usual delays in printing). In March, legislation to authorize the T.W.D.B. to issue up to 3.5 billion dollars worth of water development funds came out of committee and may already be law, when you read this. During the same period many public meetings in Texas and adjacent states have featured speakers from the Corps of Engineers and other federal agencies, state agencies, and knowledgeable outsiders to describe and discuss the plan, including the river diversion feature.

Such a panel discussion, titled "Use of the Mississippi River for Irrigation in Texas and New Mexico," was held at Louisiana State University on March 13, 1969. The program announced that the speakers would be Calvin Watts, Assistant Director of the Louisiana Department of Public Works; Howard Boswell, Executive Director of the Texas Water Development Board; Fred H. Bailey III, Chief of the Plans Formulation Branch, Mississippi River Commission, and Henri Wolbrette, Executive Vice-President of the Louisiana Chemical Association. The session was part of the 32nd Annual Short Course on Water, Sewerage, and Industrial Waste Disposal. More than 150 persons attended the panel meeting concerning the Mississippi River and the question and answer period was prolonged and lively.

The Texas Water Plan has been a long time in the making. The prolonged drought, which started in 1952 and was only broken by heavy rains and flooding in 1957, was the first of a series of events that caused the State of Texas to look for supplemental water. In 1960 the T.W.D.B. started work on a report entitled "A Plan for Meeting the 1980 Water Requirements of Texas." This report appeared in May of 1961. In the meantime, the U.S. Bureau of Reclamation and the Corps of Engineers were making technical studies of specific projects that had been proposed.

The Corps of Engineers reports included multiple-purpose reservoir projects, local flood control, navigation primarily



Two parts land, one part water: New Orleans in the bend of the Mississippi River.

along the Texas Gulf Coast, hurricane protection, and comprehensive reports on the Sabine and Trinity River Basins. The Bureau completed its Preliminary Report on the Texas Basins Project in 1963.

Local entities — cities, river authorities, and water districts—were also suggesting projects in their areas, some of which conflicted with proposals of Federal agencies.

Governor John Connally recognized the need for a more orderly and longer range analysis of the State's water problems, water needs, and solutions to these problems on a statewide basis, and by letter dated August 12, 1964, requested that a comprehensive State Water Plan be prepared. He said:

"I am increasingly concerned about drought conditions in Texas and progress of our efforts to develop adequate sources of water for all our State. I'm sure the members of the Texas Water Commission share this concern with all our citizens.

"The Bureau of Reclamation and the Corps of Engineers have proposed broad water development projects for Texas far beyond the plans of the Texas Water Commission report, 'A Plan for Meeting the 1980 Water Requirements of Texas.' In my opinion, these plans fall short of satisfying the water needs for all of Texas. . . .

"Therefore, by authority granted me under Article V, Section 22, House Bill 86, 58th Texas Legislature (The General Appropriations Act), I hereby request the Texas Water Commission to use any available moneys appropriated under the Act to begin at once to develop a comprehensive State Water Plan. In the public interest and to aid the economic growth and general welfare of the State, I urge that you explore all reasonable alternatives for development and distribution of all our water resources to benefit the entire State, including proposals contained in preliminary reports of the federal agencies."

Emergency funds were allocated for key planning staff for the accelerated program in October 1964 from appropriations to the Governor for the purpose of deficiency grants.

In 1966 the T.W.D.B. issued a series of reports on various phases of the Texas Water Plan: surface water supply, pollution problems, flood control and drainage projects, an evaluation of the underground water resources, and a comprehensive, preliminary plan to take water from East Texas (where floods are a problem) and carry it, along the coast, to the rich agricultural areas as far southwest as the irrigated agriculture of the McAllen-Brownsville area and other irrigated and irrigable lands in between, including lands in the vicinity of Corpus Christi.

The original Texas Water Plan recognized that the water available within the boundaries of Texas was inadequate to replace the underground water now being mined in the High Plains area in the vicinity of Lubbock. So, in effect, it "wrote-off" the future of the area with respect to irrigated agriculture.

Original Plan Changed

The impact of this decision was not lost on the citizens of the High Plains, who are hard working, capable people. They promptly organized "Water, Incorporated" for the purpose of expanding the Texas Water Plan to include the importation of water for delivery to the High Plains—and across the state line to the High Plains area of New Mexico. They predicted that by 1985 the underground water will have been mined out to the point where the area under irrigation will begin to contract and the long slide from an irrigation economy to the original poverty-level dry crop economy will have started.

The arguments of the High Plains representatives were persuasive and as a result the T.W.D.B. took another hard look and expanded the original Texas Water Plan by, essentially, adding a "Trans-Texas Division" which would transport and lift out-of-state water to the area of irrigation. The source and quantity of water was left to others—primarily the U.S. Corps of Engineers. Texas has repeat-

edly stated that it only wants water that would be "surplus" or "excess" for existing and projected future requirements. Under President Johnson legislation passed the Congress authorizing studies by the Corps of Engineers.

The ultimate system of reservoirs and canals for moving water from place to place in Texas has not been finally determined, as the T.W.D.B. does not do engineering planning outside the borders of Texas and consequently it has not made any study as to probable points of input of diverted Mississippi River water. The Board has, however, decided that by 2020 A.D. the irrigated areas will require 12,000,000 to 13,000,000 acre-ft/yr within Texas and an additional 1,500,000 acre-ft/yr for New Mexico—a total of approximately 14 MAF/y. [An acre-ft is the volume of water required to cover an area of one acre to a depth of one ft, i.e., 43,560 cubic ft or 326,000 gallons.]

We are now in a position to look at some of the physical facilities needed, together with the estimated costs, of the Texas Water Plan, together with construction needed for the river diversion, as far as these have been made known.

The River Diversion

On an 11-months basis the diversion plan would assume the withdrawal of more than 20,000 cubic ft per second from the Mississippi River. However, since this water is to be used for irrigation (usually in a three-month period) and 25 percent of the total water demand is estimated to occur in a thirty-day period of each year, much surface storage is needed. This storage will be provided, in most part, in the Sabine, Sulphur, and Cypress watersheds and in the Bull Lake reservoir west of Lubbock. From the latest T.W.D.B. report, the total conservation pool of the major reservoirs existing or under construction in these watersheds is approximately (excluding Bull Lake) 15 MAF. Of this quantity possibly 5 MAF of the available storage (the Toledo Bend Reservoir, Lake Texarkana, and Lake of the Pines) is already preempted, leaving approximately, and optimistically, 10 MAF for the Trans-Texas Diversion. Pending an operational analysis of the system, this storage quantity might appear to be adequate on a year-by-year basis, but in years of low flow in the Mississippi River, when a sufficiency of "surplus" water may not be available, the irrigation area would be on an interruptible basis as far as water is concerned. The cost of the system within the state of Texas was estimated to be approximately 9 billion dollars. The cost of the diversion of water from the Mississippi is unknown.

The T.W.D.B. is awaiting the word from the Mississippi River Commission, due in 1972 or 1973, as to how much water will be available, and over what period of each year. Pending this information, studies are being made on the assumption of a steady rate of withdrawal of approximately 35,000 cubic ft/sec over the 7-month period of high flows in the river, so as to assure the availability of sufficient canal and pump capacity to move water into storage whereever space is available, and to convey it at adequate rates to the points of use.

Problems

There are a number of interesting operational problems in connection with the river diversion which have not yet been discussed in public. Probably the most difficult, single, technical problem is how to economically separate the silt and sediment from the water obtained from the Mississippi River — and where this should be done. As a rough, preliminary estimate, assume the average sediment content of the water to be 2000 parts per million by weight during the 7-month annual diversion period. Then for 14 MAF a total of almost 40 million tons of sediment and silt will be put into the system. If we take the density of sediment to be 100 lbs/cu ft, this amounts to almost 20,000 acre-ft of sediment storage per year, or half of one percent of the storage in the Toledo Bend Reservoir. Moreover, this sediment will be deposited in the first slack pool that is reached by the canal taking water across Louisiana, if the water is not separated from the sediment before it leaves Louisiana. This rate of deposit would rapidly destroy Toledo Bend reservoir, or any other reservoir selected as the point of entrance, by transforming it into a mud flat or shallow swamp.

There are a number of other engineering problems, all undoubtedly under study by those charged with the preliminary evaluation: how do you maintain a canal that cuts across the drainage pattern of the Atchafalaya Floodway? If water is to be carried above ground, what will be the levee design—Atchafalaya guide levees have had a distressing tendency to subside below design grade. What will be the most desirable point of diversion: above New Orleans at Old River, in Arkansas, or below New Orleans? This decision is yet to be made. What are the effects of water storage in the reservoir system of the Missouri River, the Ohio River, and the Arkansas River in altering the natural pattern of discharge of the Lower Mississippi? No one knows—the studies are yet to be made. What is the definition of "surplus water" that will serve to set the limits of the diversion of river water? After these questions have been answered adequately, the more difficult ones still remain: how will this project affect the ecology — the shellfish, fish, game, food-chain, bird life, etc.— of the Delta area and how is this to be evaluated? Who pays for the project and especially for possible damages? What will the impact be on the economy of Louisiana and the availability of water in the Delta? Work is

(Continued on Page 30)

ANNUAL CONVENTION
LOUISIANA ENGINEERING SOCIETY

April 23 - 24 - 25 | **Jung Hotel** | **New Orleans, La.**

WEDNESDAY, APRIL 23

6:00 p.m.- 8:00 p.m. Registration—Hall of Americas Foyer

7:00 p.m.- 8:30 p.m. Early Bird Cocktail Party — North Hall — Ladies Welcome (Hosted by New Orleans Chapter)

THURSDAY, APRIL 24

8:00 a.m.- 5:00 p.m. Registration—Hall of Americas Foyer

9:00 a.m.-10:00 a.m. General Session—Terrace Suites 1 and 2
"THE VALUE OF PROFESSIONAL REGISTRATION"
Speaker to be announced

10:00 a.m. Coffee—North Hall

10:30 a.m.-11:30 a.m. General Session—Terrace Suites 1 and 2
"UNIONS: THEIR EFFECT ON THE PROFESSION AND THE PROFESSIONAL"
Paul H. Robbins, P.E.
Executive Director
National Society of Professional Engineers
Washington, D.C.

11:30 a.m. Beer and Po Boy Luncheon—North Hall
(Eat famous New Orleans po boys, view the fabulous exhibits, tap your toes to jazz played by Phil Zito's Band)

1:45 p.m.- 2:45 p.m. General Session—Terrace Suites 1 and 2
"LIABILITY INSURANCE FOR THE PROFESSIONAL ENGINEER"
J. S. Duvall
Assistant Vice President
Victor O. Schimnerer & Co. Insurance
Washington, D.C.

2:45 p.m. Coffee—North Hall

3:15 p.m.- 4:15 p.m. General Session—Terrace Suites 1 and 2
"PROFESSIONALISM IN HOUSING AND URBAN DEVELOPMENT"
Paul K. Walker, P.E.
Director, Engineering Division
Office of Assistant Secretary for Metropolitan Development, Department of Housing and Urban Development
Washington, D.C.

6:30 p.m.- 8:30 p.m. Exhibitor's Cocktail Party — North Hall — Ladies Welcome (A swinging party hosted by all exhibitors. Enjoy yourself to the best of your favorite music as played by Phil Zito's Band.)

FRIDAY, APRIL 25

8:00 a.m.-12:00 noon Registration—Hall of Americas Foyer

8:30 a.m.-10:00 a.m. Functional Section Meetings (All members invited)

10:00 a.m. Coffee—North Hall

10:15 a.m.-12:00 noon Student Technical Papers — Terrace Suites 1 and 2

12:00 noon-12:30 p.m. Cocktail Party—North Hall—Ladies Welcome
A sponsored cocktail party in the exhibit area

12:45 p.m.- 2:30 p.m. Awards Luncheon—Terrace Suites 3 - 4 - 5—Ladies Welcome—The Society will honor the Young Engineer of the Year and Life Members
"THE ENGINEER AS PROFESSIONAL"
W. LeRoy Culbertson, P.E.
Vice President
National Society of Professional Engineers
Vice President
Natural Gas and Gasoline Department, Phillips Petroleum Company

2:30 p.m.- 3:00 p.m. Society Business Meeting (All members invited)

3:00 p.m.- 4:00 p.m. Committee Meetings (All members invited)

4:00 p.m. Board of Directors meeting

LADIES ACTIVITIES

THURSDAY, APRIL 24

9:30 a.m.-11:30 a.m. Hospitality Room, Coffee served

10:00 a.m. Walking tour of the French Quarter (Dutch Treat)

6:30 p.m.- 8:30 p.m. Cocktails (with men)

FRIDAY, APRIL 25

9:00 a.m.-12:00 noon Hospitality Room, Coffee served

9:00 a.m. Ladies Advisory Committee Meeting, Hospitality Room

10:00 a.m.-11:30 a.m. Short Program

12:00 noon-12:30 p.m. Cocktails (with men)

12:45 p.m. Luncheon (with men)

REGISTRATION FEES
(Prior to Noon, April 24)

Single $13.00
(Includes registration, one ticket to Beer and Po Boy Luncheon and a ticket to Awards Luncheon)

Double $19.00
(Includes registration, one ticket to Beer and Po Boy Luncheon and two tickets to Awards Luncheon)

REGISTRATION FEES AT DESK

Registration $5.00

Beer and Po Boy Luncheon $2.50

Awards Luncheon $7.00

Make Your Reservations Now! Direct!

BRIDGE INSPECTIONS

STEVE NASCA, P.E.
Bridge Maintenance Engineer
Louisiana Department of Highways

REINFORCING RURAL BRIDGE—A maintenance crew is adding piling for additional support to a small bridge built in 1930 on State Route 20 near Gibson in Lafourche Parish.

After 46 persons plunged to death in the Ohio River on December 15, 1967 as the Point Pleasant, West Virginia - Kanauga, Ohio bridge collapsed, there followed a nationwide clamor for safer bridges and better inspections.

In Louisiana, with its 4,964 state-system bridges of 37 varying types, the story was the same as the rest of the nation. What had been adequate yearly inspections since the major bridge building period of the 1930's was soon to be replaced with more stringent efforts.

The week following the Ohio River disaster, the President appointed a committee, with the Secretary of Transportation as chairman, whose chief objective was to come up with procedures and criteria to insure safe bridges throughout the nation. This action triggered the Congress to direct special attention to bridges under the Federal Highway Act of 1968. Records and inspections now being performed by the Louisiana Highway Department as a cooperative effort will be a requirement of law when national bridge inspection standards are finally adopted.

Safety is the dominant factor in the philosophy of Louisiana's bridge maintenance program. Engineers feel that safety is far more than keeping vehicles from falling into rivers, though that is of prime importance.

Roadways and bridges are a part of life in America. They are as necessary as food, clothing, and shelter. Safety is concerned with the entire spectrum of communication in any sort of emergency. So bridge inspection and maintenance is carried out with this picture in mind.

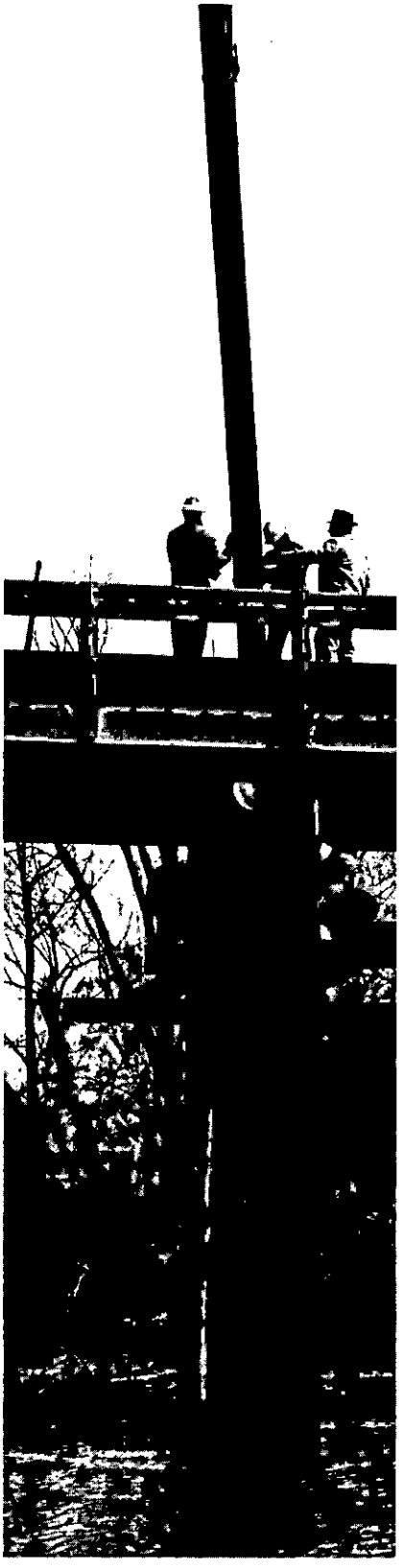
On the other side of this picture is crew safety. Except during major work involving replacement of major bridge components, maintenance forces strive to keep one-way traffic moving on the structure, a further danger to crews already working at a hazardous job. Keeping a bridge safe for vehicles is a very unsafe job for the men at work.

New Procedures Outlined

At the time of the Ohio River disaster and before, the Louisiana Highway Department required that each of its nine districts submit an inspectional report once yearly rating the condition of each structure in the state.

Less than two weeks after the Ohio River disaster, the Board of Highways adopted a resolution instructing inspections be made on all bridges at least twice yearly.

In April, 1968, the Bureau of Public Roads sent out a memorandum to the states concerning bridge inspection. Requested was a report on the number of structures to be inspected, and a listing of these bridges in two categories. The first category included all bridges built before 1935 plus any other bridges



GOING THROUGH THE DECK . . . A maintenance crew lowers piling through a hole cut into the concrete deck to replace defective piling on a bridge located on State Route 13 a mile north of Crowley in Acadia Parish.

which, because of type, location, or frequent heavy traffic loads, were in critical condition. The second category included all other bridges.

The memorandum said that all bridges of the first list, those needing attention immediately, were to be inspected by November 1, 1968. The second list, presumably bridges of less immediate concern, should be completed by January, 1970. The BPR's memo also helped by outlining procedures for bridge inventory, inspection programs, and types of inspection.

By August, 1968, the bridge maintenance engineer was assigned to coordinate and guide the progress of the statewide bridge inspection program. Inspections of the older, more critical structures was to be accomplished by district personnel working with headquarters engineers.

The inspection of bridges built before 1935, and other structures of critical need, was completed February 13, 1969.

Bridges of the second, less critical, category will undergo inspection on the twice-yearly basis both by headquarters engineers and district representatives. District people are normally equipped to complete these twice-yearly inspections. Only in cases where further assistance is needed, either because of problem complexity or work overloads, will the districts call on headquarters engineers.

Following the completion of inspections of all bridges in both categories, a program of continuing review and evaluation within each subsequent five-year period will be carried out. Of course, inspections will be made twice yearly in the state maintained system as required by the Board of Highways resolution.

Personnel Work Together

Each of the nine Louisiana highway districts have at least one, and probably two, bridge crews with personnel for specialized jobs These district crews are equipped to do all normal maintenance, and can even repair bridges such as timber trestles and precast concrete decks with timber pile and framing. Normally these crews do work programmed by the district engineer after coordinated inspections by the district maintenance engineer. His assistants and other maintenance people are continually checking road and bridge conditions. Some repair needs have been made known by interested travelers who may have witnessed a damaging accident; such alert notices have lead to early correction of damages.

In addition to the district maintenance crews, statewide crews help the district when emergencies occur or when there is a pile up of normal work. Statewide assistance is particularly important when specialized work such as electro-mechanical or larger repairs are needed.

With the large number of varied Louisiana bridge types, the various crews — bridge, water, sheetpile, painting, electrical, mechanical and marine— must be ready at any time to repair timber, concrete, or steel structures. Many of these forces are on 24-hour call regardless of season. Also on very short notice, engineers and supervisory people can be on their way to a bridge site to determine the nature of damage, or need for emergency repairs.

Keep Bridge in Service

At the bridge site, these engineers who have hurried to the spot must determine the extent of damage if there's been an accident, or the need for repairs if a breakdown has occurred. If the problem is beyond the scope of normal district maintenance work, emergency contracts can be let. Whatever course is needed to fully repair the structure

BRIDGE INSPECTIONS

HYDROGRAPHIC SURVEY TEAM . . . Highway crewmen are shown checking equipment just prior to conducting a hydrographic survey at the Interstate-10 bridge across the Ouachita River at Monroe to check for scour in the vicinity of the structure's foundation.

with minimum delay, whether the work can more quickly be done by department people or contractors . . . this is a decision faced often by bridge engineers.

When major repairs are needed, a high degree of coordination between sections within the Department is a must. Any number of district people may work with headquarters maintenance, bridge design, bridge construction, and accounting sections when extensive calculations and plans are needed for contract projects. Sometimes a large amount of data must be acquired quickly.

To insure that scour of rivers on major crossings does not undermine piers, a hydrographic team makes an annual survey which records any changes in the river bed profile. This information is then plotted showing location of the bridge substructure, plus data on the original river bed profiles. The nature of the river meandering is noted. When changes indicate that scour will create a danger to piers and embankment, corrections can be made. Any unusual change in the scouring action demands more detailed surveys so proper data can be sent to engineering sections for correction.

Bridge inspection is demanding. It is a visual procedure which requires persons who can make proper evaluations while suffering extremes in heat or cold, and working in the face of possible insect or snake bite. With all that, the inspector must be able to climb above or below structures, and finally make recommendations for engineering corrections of various problems.

Many major structures are too high and are impossible to inspect on the spot. Binoculars help here, plus a careful inspection of adjacent areas for deterioration and need for maintenance.

For structures not covered with overheard trusses, the Department has a specially designed hydraulic crane mounted on a heavy duty truck. This special rig can extend a 17-ft. movable platform under the bridge while being operated on the roadway. Portable and highly maneuverable, this traveling scaffolding can save many manhours of work.

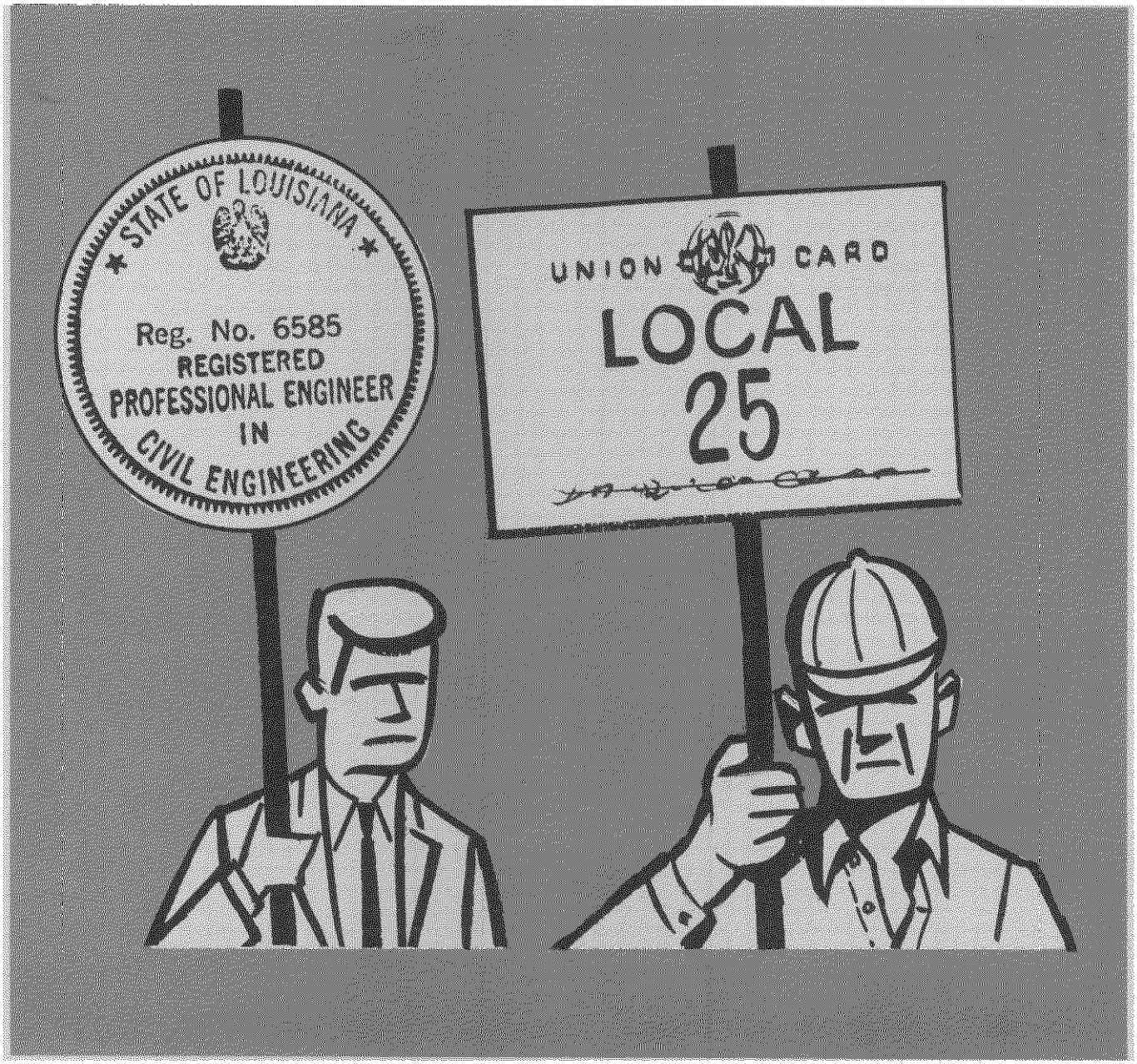
Conclusions

In new construction, many persons are involved in designing, building, and inspecting to insure safe bridges. Proper maintenance with the same type of high-level, aggressive engineering thrust is a real need. The work of inspection and maintenance is exacting, and must be done to assure complete safety to the traveling public and to protect enormous investments in bridges.

Yesterday's engineers were conservative and thorough in their design work; they've given us a legacy of fine old structures which have long surpassed their design capability but still safely carry undreamed of loads of traffic. As the years go by, plans should be made to retire these older structures and program a bridge replacement plan.

THE UNION APPROACH

GARY CRITES
Assistant to the Executive Director
Illinois Society of Professional
Engineers



How would you like to increase your income, improve your working conditions, receive more fringe benefits and, at the same time, be certain that you will be respected and listened to as a knowledgeable professional? Sound good? Then become a union man.

These and other things are what's being offered to the engineer, architect and technician to induce him to seek shelter under the union umbrella.

Professionalism and unionism are not only compatible, but you can do a better job as a professional and, incidentally, increase your status and financial well-being, if you are a member of a union. This is a sample of some of the new language you'll probably be hearing more of from the union organizer in the near future as he adjusts and adapts himself to the world of the professional he seeks to draw in-

to a union organization and into collective bargaining. The unions are now viewing the professional as the "new Colossus" of the work force—a heretofore untapped source of new dollars for the dwindling union coffers that has been brought on by the decrease in the number of blue collar workers.

Let me stress that the union's basic philosophy hasn't changed. What has changed is just the way it's presented and the willingness to be flexible when coming to terms at the bargaining table. This new language is significant in the change of approach the unions are now taking in dealing with the professional and the technician.

Many of the things I'll be telling you, you might have heard before. Well and good—you will hear them again. But more importantly, some of these things might be new to you, and it's better that you hear them from me now, than in the form of questions from your employees after they've talked with a union organizer.

Basically, the union's new approach can be broken down into two parts. (1) New language and greater flexibility, and (2) New organizing methods. Let's take a look at the new language and greater flexibility first of all.

Unions have, by and large, stopped talking equality to the professional as a benefit of unionism. Unions feel the professional thinks of himself as an individual and a superior person, so the new language reflects the protection and advancement of status that can be achieved through unionism. Protection in that the employee cannot be dismissed out of hand. No matter what the offense it is quite likely to end up in the machinery of arbitration where, if the past is any indication, the union usually comes out on top. A professional's status comes from greater power at the bargaining table with collective bargaining, and the big lobbies at the state and national level. Union workers are a privileged class and are treated as such by employers and congressmen alike.

Unions are going to stop knocking the company or firm when talking to an employee. They are coming to realize that the employee selected the company he's now working for and in most cases is proud to be associated with it—it's part of his status. The new approach is that a man can do a better job for the company and himself as a professional, if he joins the union. As an example — if the union professional comes up with a money-making or money-saving idea for the company, but is at odds with his immediate supervisor over its merits, he can get his idea through to top management without fear of economic and job reprisals from his supervisor. In this way he can better serve the company because he will not be held down by his inadequate supervisor. And let's face it, gentlemen, this would have some appeal. You know there are many employees who feel that they know as much or more than the man immediately over them in the organization chain of command.

This chain of command is also used to the union's advantage in another way, but this time it's almost reversed. The unions are going to be devoting a lot of effort to get the engineering supervisor's name on an authorization card to hold an election. They know that once they sign up the supervisor, many of those under him will follow his lead. And don't think that because he is a supervisor he's part of management and therefore ineligible to sign an authorization card or vote in an election. He may be, but his eligibility will be determined by the NLRB, not by you.

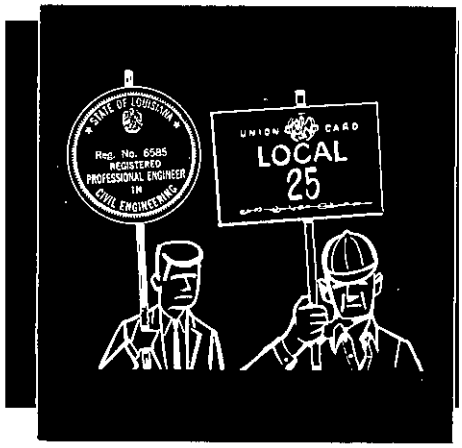
Organizers will show, whenever possible, that belonging to a union is a definite plus toward advancing into management. They will point to top management men who were once union members. It may surprise you, but this can be done. Many men in a variety of fields who are now in top management positions once carried a union card. Copies of these cards can be passed around to employees as evidence of the top man's former union membership. Hard as it may be to believe, companies have selected active union men to rise to top management. The reasons are two: (1) It removes him as a threat, and (2) The active union men are very often natural leaders and demonstrate an initiative above the normal employee. Many of the qualities of a manager are also to be found in a union organizer.

You can uphold and stick by your professional opinion more easily if you are a union employee, rather than a non-union man. If you find that the company is designing a product that is not in the best interest of the general public welfare, there is little you can do about it as a non-union employee — you will do it the company way or lose your job. As a union employee, you can stand up for what you feel is right and in the best interest of the general public without fear of economic reprisals.

Unions believe that engineering and architectural employees are, as a general rule, resentful toward the evaluation systems used by management in some firms. Organizers will play on this resentfulness and any other sore spot that most of the employees have in common. Unions feel that a minor gripe everyone has in common is more useful to organizing than a major complaint that only a few employees share.

Unions will claim, and in some cases be able to prove, that fee schedules and therefore employee wages, have escalated in an area because all firms in that area were union. As the wages go up, so do the operating costs and so do the fees.

Union organizers will make an



attempt to find out what each professional in an organization is being paid, then they'll publicize it. This will work to the union's advantage as some employees on the lower rung of the pay scale are bound to feel resentful and feel they are worth as much as those who are being paid more If resentful, the employee will be more inclined to sign that authorization card.

"When the headhunters come into the company, you'd better be organized for your own security." This will be the union organizer's battle cry to employees following a merger. Unions know that in most mergers some jobs will be deleted. The organizer will point to those men who have been dropped and hold out the union as the only safe haven for the remaining employees.

Organizers are now looking for instances where employees are under-utilized. They know that if a professional is doing the job of a technician, or if a technician is doing the clerk's job, there will be resentment—and resentment is the union's foot in the door. Organizers will promise to elevate an employee's work in a union job classification.

Unions are now becoming flexible. No longer is it desirable to talk in terms of seniority, job security, shorter hours and equality when speaking to the professional employee. So the unions have become flexible by necessity.

Professionals often have no desire to be included in a bargaining unit with technicians or technicians with manual workers. Organizers now recognize this as a fact of life, so they will be prepared to split the professionals and technicians off into separate bargaining units. But the union will be careful to establish so-called "blood pacts" or common bargaining dates between all union personnel. A "blood pact" simply means that when one group walks out, so do all the other groups. And they stay out until the grievance has been settled. Common bargaining dates assure that until all units are satisfied, no single unit signs a contract.

Unions are willing to make contract terms flexible and are prepared to agree that advancement will be made on the ability to do the work in addition to seniority. However, when talking to long-time employees, the unions will still stress the benefit of seniority that goes with unionism. Unions know that whatever they promise, and whatever goes into the original contract, can be changed and deleted in the next contract that is drawn up after the original agreement expires. The important thing to the unions is to get it—after they're in, then the old philosophy is usually brought back to play.

Many unions have stopped talking about wage scales when talking to professional employees. Instead, they now talk about wage minimums. In this way, the professional will feel that he has the security of a minimum wage, but his advancement will not be impaired by a wage ceiling.

The unions have come up with some new organizing methods and some are more recent than others. Today, I shall deal with three—three you may not be so familiar with—three that have not been so common in the past, but which, I believe, will start showing up with more and more frequency.

The first applies to large firms and industry. If unions fail to organize the professional and technical employees in a company, a greater emphasis will be made on organizing all the other employees. Once this is done, pressure will be applied to management at the bargaining table to obtain a big slice of the financial and fringe benefits pie for the union employees. If the unions are successful in this, little of the so-called "pie" will be left for the nonunion professionals and technicians. The professionals and technicians therefore, reason the unions will be forced to organize in self-defense—to gain assurances that they won't be short-changed when the next bargaining date rolls around.

The next technique is common to both manufacturing firms and firms in private practice. This is the "top down" technique of organizing a company. In the past, most of the organizing has been from the "bottom up" or by the authorization card and election route starting with the employees. But unions have found that in many cases, professional and technical employees have no desire to be unionized and have refused to sign the cards or vote against the union in an election. Hence, the "top down" approach, which begins with management. Pressure in the form of walkouts or slow-downs is applied to a union company doing business with a non-union firm. The management of the union company is told, off the record, that they should cease doing business with the nonunion firm unless they want the labor trouble to continue. The union company therefore puts pressure on the nonunion firm to become unionized or lose its business. The management of the nonunion firm is faced with losing business or going union, or so it would appear.

The third method is more applicable to firms in private prac-

(Continued on Page 30)

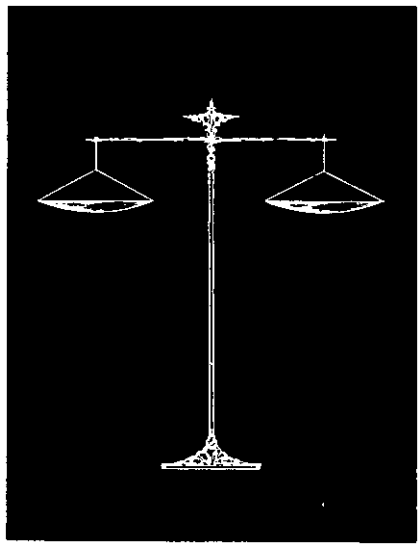
when it is founded on adequate knowledge and honest conviction while he is serving as a witness before a court, commission or other tribunal." Canon 7—"He will refrain from expressing publicly an opinion on an engineering subject unless he is informed as to the facts relating thereto." Canon 24—"He will exercise due restraint in criticizing another engineer's work in public, recognizing the fact that the engineering societies and the engineering press provide the proper forum for technical discussions and criticism."

Rules of Professional Conduct —Rule 10—"He will not advocate or support enactment of community laws, rules, or regulations that he believes are not in the public interest."

Discussion:

Some aspects of an engineering problem will admit of only one conclusion, such as a mathematical equation, but it is a fallacy to carry this statement to the ultimate conclusion that all engineering problems admit of only one correct answer. Particularly in large and complicated engineering problems, such as a water-power complex, there may be many approaches, all based on sound engineering principles. Large public projects are notably in this category, and the approach finally adopted may properly reflect not only engineering diagnoses, but also determinations of public policy. Engineering judgment from exclusively an efficiency and cost standpoint may conclude that a proposed highway should be built through the heart of a heavily populated residential district. Public policy may dictate, however, that the highway should be built at greater cost and less efficiency through a lightly populated area. An engineer who presents either point of view cannot be said to be "incorrect."

There may also be honest differences of opinion among equally qualified engineers on the interpretation of the known physical facts. Assuming complete factual agreement on such factors as water flow, soil conditions, rate of evaporation, past rainfall, runoff, etc., engineers can and do arrive at different conclusions based on their best understanding of the application of those facts. Also, it should be recognized that in the type of case at hand the engineers must base their opinion on estimates of indeterminate factors, e.g., construction cost by one method or another, population



growth, economic development of the area and possible future trends in more efficient equipment.

Canons 5 and 7 refer to expression of "opinion," confirming the idea that the engineer is called upon for the expression of his judgment, not the mere recital of known engineering data. Rule 10 refers to the engineer being an "advocate" of a position, again recognizing that contrary conclusions are to be expected. The practice of engineering is "the application of special knowledge of the mathematical, physical, and engineering sciences to . . . creative work . . . ." (Section 2 (d), Model Law).

The only Canon which need give us pause is Canon 24 dealing with public criticism of the work of another engineer. But Canon 24 does not prohibit such public criticism; it only requires that the engineer apply "due restraint." We take this language to mean that in offering public criticism of the work of another engineer, the engineering witness will avoid personalities and abuse, and will base his criticism on the engineering conclusions or application of engineering data by offering alternative conclusions or analyses. Canon 24 implies that engineering criticism should be confined to engineering society gatherings and the engineering press. However, this should not be interpreted as interfering with the duty of the engineer to his client, employer or the public to offer his expert knowledge and opinion to public bodies which bear the responsibility for acts of public importance. Canon 5 recognizes the expression of opinion on engineering matters in connection with testimony before courts, commissions and other tribunals. We believe that the wording of Canon 5 can be extended to public hearings and procedures.

Conclusion:

It is not unethical for engineers to offer conflicting opinions on the application of engineering principles, or to criticize the work of another engineer, at hearings on an engineering project, in the interest of the public, provided such criticism is offered on a high level of professional deportment.

Board of Ethical Review

L. R. DURKEE, P.E.
PHIL T. ELLIOTT, P.E.
A. C. KIRKWOOD, P.E.
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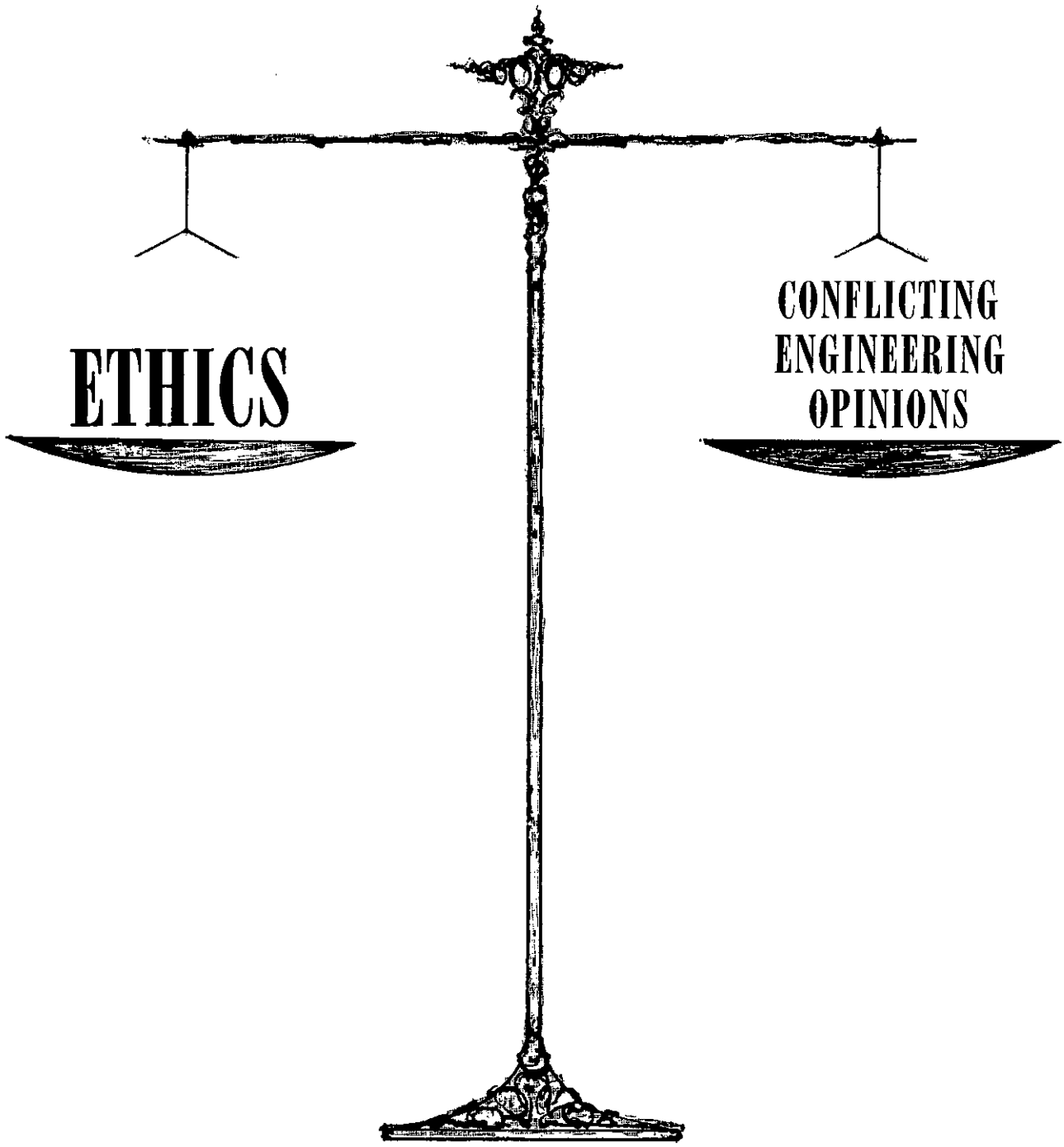

Case No. 63-6

Subject:

Conflicting Engineering Opinions —*Canon 5—Canons of Ethics; Canon 7 — Canons of Ethics; Canon 24—Canons of Ethics; Rule 10—Rules of Professional Conduct.*

Facts:

A state legislature has pending various bills involving water supply, flood control and production of electric power. The most efficient and economical method to achieve the desired result has been debated within the legislature and among the citizens generally for several years. Hearings are called by a committee of the state legislature to receive comments and recommendations on the various proposals which have been offered. A professional engineer representing the state power commission testifies that engineering studies by him and his professional colleagues indicate the most efficient solution from an engineering standpoint is a series of low dams. Another professional engineer, representing a private power company, testifies that his engineering analysis indicates a more effective and less expensive solution, producing the same results, by using one high dam. Each engineering witness submits voluminous engineering data in support of his position, and freely criticizes the analysis and findings of the other.

Question:

Is there a violation of the Canons of Ethics by one or both engineers in offering conflicting opinions or in criticizing the work of the other at a hearing on an engineering project in the interest of the public?

References:

Canons of Ethics—Canon 5—"He will express an opinion only

Why Statutes of Limitations?

MILTON F. LUNCH, Legislative Counsel, NSPE

AN ANCIENT PRINCIPLE of law holds that in the process of establishing rules whereby men may adjust and settle their differences it is important and necessary that there be some point in time when rights and obligations must be settled, and after that time the aggrieved party is foreclosed from exercising his right or claim. This principle is embodied in the laws of every state, though statutes of limitations vary according to the state and type of claim; the precise details are as determined by the legislature.

There are sound, practical reasons for this well-established principle of law. Witnesses to the transaction in dispute may die or move away; physical evidence may be lost; memories grow hazy. And not the least reason for the rule is that as a matter of good business practices a person should have some reasonable security that the slate has been wiped clean of past errors or failures in connection with former transactions. An equally important principle, however, is that an aggrieved or injured party have an adequate period of time to perfect and process his claim from the date of the occurrence which caused the alleged injury or damage. This period of time generally is about three years, though it will vary by states and types of cases.

Time is the Design Profession's Headache

By and large, these general principles have worked satisfactorily over the years. But the increasing volume of claims and suits against design professionals has disclosed a grave weakness that works to the serious detriment of engineers and architects. The flaw lies in the date from which the statute starts to run. In the normal case this is not a particular problem. The injured party has three years (or other statutory period) to file his suit from the date of

"Reprinted from *Consulting Engineer* magazine, February 1964"

the injury. Normally this provides an adequate period for the defendant to know of the possibility of suit following the injury caused by his alleged negligence and to collect his evidence, preserve pertinent documents, obtain statements from witnesses, and perform any other task related to his defense.

But take the case of a mechanical consulting engineer who designed a heating system for a structure this year. His work is completed, his fee paid, his plans filed away, and, so far as the engineer knows, all is well. Then 5, 10, or 15 years later the boiler explodes and third persons are killed or injured. Suddenly the engineer is faced with a lawsuit based on his alleged negligence in the inadequate design of the heating system — a transaction that is remote in his memory. His plans may have disappeared. The heating contractor who may have committed an error in installing the unit by not following the engineer's design may be out of business. Employees of the engineer who may have been most familiar with the details may have departed for parts unknown. Under these circumstances the engineer can never know for certain that any professional assignment performed by him throughout his career may not come back to haunt him.

Typical Cases

This situation is not completely hypothetical, for these actual cases are typical of a growing concern:

¶ A granary designed by an engineer in 1934 exploded in 1957. Suit was brought in 1959 for negligence in design and construction. The case is still in court, but even if the engineer wins on the merits he has faced considerable expense in defense costs for damages occurring almost a quarter of a century after the completion of his professional services.

¶ An office building designed by an architect in 1940 had safety hooks for outside window cleaning. In 1956 the hooks pulled out and a window washer was killed. His estate sued the architect; it was awarded damages based on its claim of negligent design.

¶ A building designed in 1954 included underground piping to the water wells that supplied the building. In 1960 trouble developed because the piping had corroded, and both the architect and engineer were sued for negligence in specifying a kind of piping material that was not suitable for the soil conditions. An arbitrator has decided against the defendants, but the amount of damages is yet to be determined.

¶ A leading case — repudiating the old rule that a suit will not be entertained unless there is privity (contractual relations) between the parties — involved injuries resulting from the fall of an infant from a low concrete porch of an apartment house. The suit was brought six years after the apartment house was completed, based on the architect's failure to provide a protective railing. In this situation, however, the court dismissed the suit on the ground that liability must be based on a hidden danger, and here the danger was obvious.

An important consideration in cases of this type is not necessarily whether damages are assessed against the design professional. Even if the architect or engineer wins the case he has been put to considerable expense and time to formulate and present his defense. And it is not an adequate answer to point to professional liability insurance as the source of bearing the defense costs. Costs of defense are one of the most important ingredients making for high premiums for liability insurance.

Statute of Limitations Legislation

What can the design professions do to offset or limit stale claims or suits? Engineers, architects, and contractors in Wisconsin paved the way with an answer in 1961 when legislation was obtained for a special statute of limitations under which legal actions will not be heard for damages or injuries occurring more than six years after the performance of design, planning, supervision of construction, or construction of a facility or building. The special statute does not apply, however, to persons in actual possession and control as owner, tenant, or otherwise.

Following the Wisconsin initiative, a number of other societies of engineers and architects have moved in a similar direction. So far only Ohio and Illinois have been successful. The Ohio limitation is for 10 years, however, and is limited to persons who are certified or licensed as architects or professional engineers under the state law. The Illinois statute was first introduced for a one year period, but this was felt by the legislature to be an unreasonably short time. The legislation, as enacted, adopted a four year period. Pennsylvania architects and engineers came close in 1963; the legislature enacted a bill with a 10 year period, but the Governor vetoed it.

The practical and legal difficulties in drafting and securing enactment of similar legislation in the other states has led to a national effort to provide a "model" statute of limitations. Through the joint efforts of AIA, NSPE, and AGC a model statute has been prepared and circulated to the state groups of each organization. Like all model statutes, this one must be taken as a guide and tailored to meet the legal technicalities of other state laws to which it may relate; for practical political considerations it may have to be revised as to scope of application or the number of years within which an action may be brought. The model, drafted with the aid of the legal counsel of the sponsoring organizations, goes somewhat beyond the existing state laws in legal details and extent of coverage. It suggests four years as the reasonable period of time for an action, and also a limitation on damages to property as well as

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Monroe Chapter Receives Charter For Auxiliary

An organizational meeting of the Monroe Chapter of the Louisiana Engineering Society Ladies' Auxiliary was held recently at the Embers in Monroe.

Purposes of the organization, as explained by Mrs. Charles W. Stokes of Lake Charles, state chairman of the Ladies Auxiliary Advisory committee, include service to the Louisiana Engineering Society, promotion of friendship among the wives and families of the members and the provision of financial assistance to students in engineering schools in Louisiana.

Mrs. Stokes welcomed the charter members of the organization and installed the officers. Officers of the Auxiliary are Mrs. George L. Heller, president; Mrs. Fred C. Culpepper Jr., president-elect; Mrs. J. J. Thigpen, vice president; Mrs. Henry T. Poulan, treasurer; Mrs. Eldred E. Monda, recording secretary; Mrs. Edwin C. Rowan, corresponding secretary; Mrs. Edward C. Farmer and Mrs. A. G. McGee, membership chairmen; Mrs. W. E. McGough and Mrs. Carter B. Ackel, publicity chairmen.

Mrs. Ase M. Ray Jr., Mrs. James L. Griffin, and Mrs. Thomas R. Henry Jr., social chairmen; Mrs. Fred C. Brownlee and Mrs. Hardy M. James, telephone chairmen; and Mrs. Richard E. Driscoll, Mrs. Morley T. Johnston, Mrs. Charles DeLand, Mrs. R. W. Dingman, and Mrs. Edward O'Donnell, program chairmen; Mrs. Grover J. Trammell, Mrs. R. E. Storms, educational chairmen.

Charter members who attended in addition to the offiers were Mrs. J. H. Barnwell, Mrs. D. E. Bivens, Mrs. Clifton Boyd, Mrs. D. F. Burkhalter, Jr., Mrs. Berley DeVille, Mrs. Charles H. Edward Jr., Mrs. Donald Gene Fordham, Mrs. Sidney Gill, Mrs. R. G. Hart Jr., Mrs. J. H. Hebert, Mrs. J. O. Herpin Jr.

Mrs. Houston K. Huckabay, Mrs. David L. Johnson, Mrs. Fred Kull, Mrs. Calvin A. Lemke, Mrs. Henry M. Messinger, Mrs. William Mitchell Jr., Mrs. Bobby E. Price, Mrs. Daniel D. Renaeau, Mrs. S. C. Smith, Mrs. Louis R. Soulier, Mrs. John L. Stimac, Mrs. A. D. Williams Jr., Mrs. Joe Robert Wilson, Mrs. Loren W. Weyand, Mrs. Robroy M. Young, Mrs. T. C. Morgan, Mrs. S. E. Huey Sr.

PRESENTS CHARTER—Mrs. Charles W. Stokes of Lake Charles presents the charter to the Monroe Chapter of the Louisiana Engineering Society Ladies' Auxiliary. It is received by the newly elected officers, from Mrs. Stokes' left: Mrs. George L. Heller, president; Mrs. Fred C. Culpepper, Jr., president-elect; Mrs. J. J. Thigpen, vice-president; Mrs. Henry T. Pulan, treasurer.

persons. The full text of the model statute is as follows:

Section 1. No action, whether in contract (oral or written, sealed or unsealed), in tort or otherwise, to recover damages

(i) for any deficiency in the design, planning, supervision or observation of construction or construction of an improvement to real property,

(ii) for injury to property, real or personal, arising out of any such deficiency, or

(iii) for injury to the person or for wrongful death arising out of any such deficiency,

shall be brought against any person performing or furnishing the design, planning, supervision or observation of construction, or construction of such an improvement more than four years after substantial completion of such an improvement.

Section 2. Notwithstanding the provisions of Section 1 of this act, in the case of such an injury to property or the person or such an injury causing wrongful death, which injury occurred during the fourth year after such substantial completion, an action in tort to recover damages for such an injury or wrongful death may be brought within one year after the date on which such injury occurred (irrespective of the date of death) but in no event may such an action be brought more than five years after the substantial completion of construction of such an improvement.

Section 3. Nothing in this act shall be construed as extending the period prescribed by the laws of this state for the bringing of any action.

Section 4. The limitation prescribed by this act shall not be asserted by way of defense by any person in actual possession or the control, as owner, tenant, or otherwise, of such an improvement at the time any deficiency in such an improvement constitutes the proximate cause of the injury or death for which it is proposed to bring an action.

Section 5. As used in this act, the term "person" shall mean an individual, corporation, partnership, business trust, unincorporated organization, association, or joint stock company.

Need Concerted Action

Professional liability problems are bound to grow if the past few years is an indication of the future. Bringing the time element on liability claims under control will not solve the over-all liability problem, but it can be a significant step. Consulting enginers therefore should join forces promptly with architects and contractors in a concerted effort to obtain the best possible legislation to bring the problem into balance with the fair interests of the public and of the design professions and the construction industry.

On occasion the courts have taken it upon themselves to reject stale claims as a matter of equity and justice. The Supreme Court of Tennessee recently dismissed a suit filed in 1958 against a surveying firm alleging an error in the survey of a parcel of land performed in 1934. The Tennessee high court commented: "If these surveyors could be held liable to such an unforeseeable and remote purchaser 24 years after the survey, they might, with equal reason, be held liable to any and all purchasers to the end of time. We think no duty so broad and no liability so limitless should be imposed."

This type of sound reasoning will be helpful in meeting similar cases while corrective legislation is being considered. However, it should not be regarded as an adequate substitute for pinning down in law the principle indicated by the Tennessee tribunal. Judges, like other professionals, are notoriously independent in their views. The design professions may be leaning on a thin reed to hope other jurists will likewise see the problem so clearly and fairly. ▲▲

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SHREVEPORT CHAPTER—Farrell Adams, left, president of the Shreveport Chapter, congratulates Michael I. Smith, center, a senior in mechanical engineering at Louisiana Polytechnic Institute. Mike, son of the Rev. and Mrs. Billy O. Smith, was awarded a $200 scholarship by the chapter. At right is Erwin H. Pfeuffer, chapter secretary. Mike has maintained a 3.3 academic average, is a member of the student chapter of ASME, a member of Tau Beta Pi and Pi Tau Sigma.

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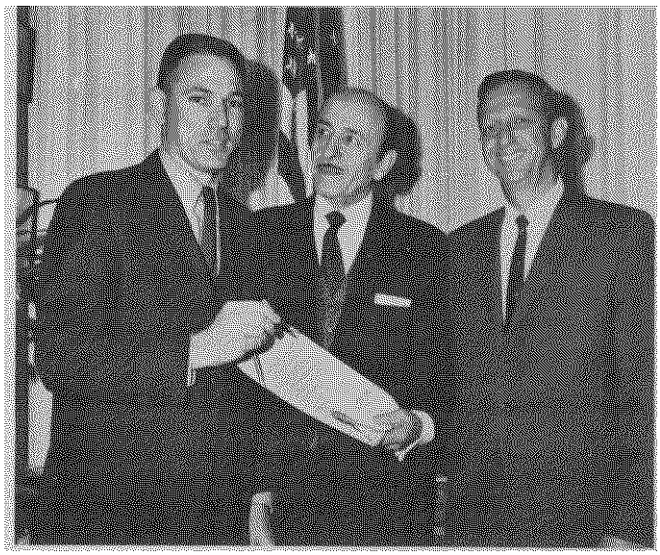

NEW ORLEANS CHAPTER—Mayor Victor H. Schiro, center, is shown presenting a proclamation calling attention to National Engineers Week to Roger K. Battle, chapter chairman for National Engineers Week. Pictured at right is David Fried, president of the New Orleans Chapter.

MEMBERSHIP CONTEST STANDINGS

RULES OF THE CONTEST

1. A Chapter must reach its 10% quota to qualify as the Contest winner.

2. The Chapter with the greatest percentage increase, based on application and re-instatement requests received by the state LES Office through the week prior to the June annual meeting will be the winner. Transfers into a Chapter or grade changes will not be counted as part of the quota. Students upon graduating will be counted for a Chapter only if the Chapter gets them to fill out an Application Form with up-dated information and, also, if they reside in the Chapter's Area.

CONTEST STANDINGS

RANK	CHAPTER	QUOTA	APPLICATIONS	PERCENT
1	MONROE	12	28	233.33
2	ALEXANDRIA	11	24	218.18
3	SHREVEPORT	18	35	194.44
4	LAFAYETTE	15	22	146.67
5	BATON ROUGE	50	51	102.00
6	NEW ORLEANS	79	63	79.75
7	LAKE CHARLES	13	10	76.92
	TOTALS	198	233	117.68

LAKE CHARLES CHAPTER—A partial photo of the head table at the annual National Engineers Week Banquet is pictured here. Persons in the photo, from left to right, are: Mr. Peter Leathard, President of McNeese Engineering Society and recipient of this year's Outstanding Senior Engineering Student Award; Mr. and Mrs. W. H. Miller, President of Lake Charles Chapter of the Louisiana Engineering Society; the Honorable and Mrs. J. E. Sudduth, Mayor of Lake Charles; Mr. W. F. Boyer, Executive Vice-President, Gulf Coast Aluminum Corporation and guest speaker; Mrs. Henry LeVois; Mr. Henry LeVo's, Gulf States Utilities Company and Master of Ceremonies; and Rev. L. A. Richardson, Pastor, St. Andrew's Presbyterian Church. Mr. William Calgreen, Hercules, Inc., is shown in the foreground. The title of Mr. Boyer's presentation was "The Aluminum Industry."

MINUTES - LES BOARD OF DIRECTION

JANUARY 11, 1969
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President Odom called the meeting to order with the following Board members present: Farrell W. Adams, P.E.; Daniel V. Cresap, P.E.; Fred C. Culpepper, P.E.; David B. Fried, Jr., P.E.; T. J. Hogue, Jr., P.E.; Art Meyer, P.E.; William H. Miller, PE.; Sylvan J. Richard, P.E.; Harry D. Richardson, P.E.; M. A. Steele, P.E.; Ashby Stevens, P.E.; J. J. Thigpen, P.E; and John F. Vogt, P.E. Also present were: H. Nash Ogden, P.E.; Louis Duclos, P.E.; Judah Fink, P.E.; Charles W. Hair, P.E.; Grover J. Trammel, P.E.; and Norman Ferachi, Executive Secretary.

The minutes of the December 6th Board meeting, after being corrected, were approved. The motion for approval was made by Mr. Adams, seconded by Mr. Thigpen and passed.

Financial Report—The financial report of the Society for the first six months of the fiscal year was presented by Mr. Hogue. He said that income was still about $500 more than budgeted to date due mainly to the fact that advertising and miscellaneous income received was more than was anticipated in the budget. The total expenses have been $61 less than budgeted. Mr. Miller moved for acceptance of the report. The motion was seconded by Mr. Richardson and passed.

Practice Section Reports

Professional Engineers in Education—Mr. Thigpen, acting chairman of the section, stated that some 10 engineers in education had met to discuss the advantages of forming a Professional Engineers in Education section of LES. He stated that it was the consensus of the group that a practice section should be formed and that officers will be nominated at the next statewide meeting. A nominating committee was selected consisting of Dr. Jesse Coates of LSU; Grovel Trammel of LPI; Felix Boudreaux of USL, and Dr. Dan Vliet of Tulane. It was noted that the formation of the practice section could be approved by the LES board once bylaws have been submitted and approved.

Professional Engineers in Government—Mr. Cresap reported that he was quite pleased with the attendance of PEG members at the Winter Meeting and attributed part of the increase to the recent change in the section's bylaws specifying that a delegate and an alternate delegate from each chapter be appointed to attend statewide meetings. During the section meeting, Mr. Duclos had spoken on certification of engineering technicians and Mr. Hair had discussed his Young Engineers committee. A general discussion had been held on the subject of improving the professional status of Engineers in Government and Mr. Cresap noted that NSPE had been contacted for advice. Mr. Cresap recommended to the Board that members from each practice session be named to each state committee, thereby helping each section keep posted on committee activities. He remarked that the print-out of the Professional Engineers in Government section was not accurate and each chapter is being requested to check its' print-out.

Professional Engineers in Industry—Mr. Steele reported that a subcommittee is presently working on proposed legislation to change the registration law. These proposals deal primarily with the exemptions now allowed under the law. Mr. Akbar Brinsmade is in charge of this subcommittee. Mr. Steele also noted that the Professional Engineers in Industry print-out had been sent to NSPE headquarters so that NSPE can update its mailing list on PEI matters. He also noted that his section is making arrangements to submit articles for publication in the LOUISIANA ENGINEER.

Professional Engineers in Private Practice—Mr. Meyer moved that the minutes of the December 6th meeting concerning the distribution of the copies of the Manual of Practice be rescinded, and that initially only one copy of the Manual of Practice will be sent to each consulting engineering firm that has members in the PEPP section. The first copy is to be sent at no charge and additional copies may be obtained for the cost of reproduction. The motion was seconded by Mr. Szabo and passed.

Mr. Mayer told the Board that he was authorized to expend a certain amount of the PEPP Special Fund to reimburse LES for services rendered on behalf of PEPP members. Mr. Szabo moved that $370 be transferred from the PEPP Special Fund and paid towards legal fees incurred by LES. The motion was seconded by Mr. Meyer and passed.

Committee Reports

Inter-Society Relations—Mr. Tom Alexander, committee chairman, said that his committee discussed methods of coordinating meetings of other societies. He said a special subcommittee was working to obtain these dates and will submit them to the state office, which will serve as a clearing house for engineering society meetings. This same committee is working to obtain an up-to-date list of officers of technical societies in the state. His committee is also working to promote more joint meetings with technical societies.

Honors and Awards—Mr. Duclos informed the Board that since no nominees were submitted for state awards, this committee did not meet.

Engineering Technicians—Mr. Duclus, committee chairman, noted that the December issue of the LOUISIANA ENGINEER printed an excellent article on the American Society for the Certification of Engineering Technicians. He urged chapter presidents to name their members to the state Engineering Technicians committee if they have not already done so.

Ethics and Professional Conduct—Mr. Dobbs, committee chairman, noted that most of his committee work is done by correspondence. He stated that several items concerning ethics had been received by his committee during the year but all were handled without requiring Board action. His committee presently has several items under review.

Vocational Guidance—Mr. Judah Fink reported for Mr. Grosch. He stated that applications for NSPE scholarships had been reviewed and that the Vocational Guidance committee's recommendation had been forwarded to NSPE.

Membership—Mr. Stevens reported for Mr. Ewing. The

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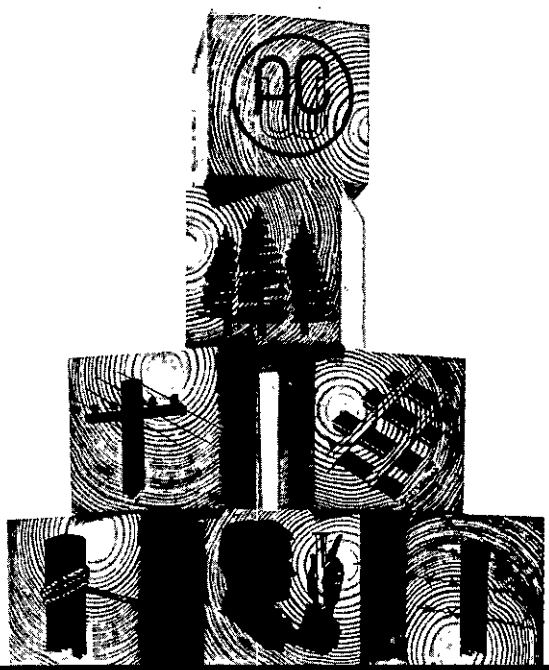

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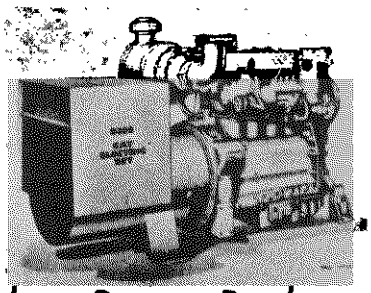

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Membership Committee had several requests to make of the Board of Directors: Viz. (1) that the Board instruct the state office to send all outstanding certificates of membership to the chapters in time for engineering week activities. (2) that the state office obtain results of Project 72/70 from NSPE and that these results be sent to the membership committee. (3) that the state president appoint a committee to study the formation of a chapter of LES in the Morgan City-Houma-Thibodaux area. President Odom instructed Mr. Ferachi to comply with requests one and two. Concerning the formation of the new chapter, Mr. Vogt suggested that it would be best to have interested members residing in that area to petition the Board of Directors. Mr. Odom stated that he and the Executive Secretary would investigate the matter further.

Standings as of the 2nd of January were:

Standings	Chapter	Quota	Applications	% of Quota
1	Monroe	12	17	141.6667
2	Shreveport	18	25	138.8889
3	Alexandria	11	14	127.2727
4	Baton Rouge	50	28	56.0000
5	New Orleans	79	44	55.6962
6	Lake Charles	13	7	53.8462
7	Lafayette	15	7	46.6667
	Totals	198	142	71.7172

Special Committee on Land Surveyors Registration—Mr. Lamon Moody, president of the Louisiana Land Surveyor's Association, Mr. C. J. Tircuit, past president of LLSA and Mr. Duclos presented a committee report on proposed changes to the state registration law. A detailed list of the proposals were distributed to each Board member present. Mr. Moody informed the Board that LLSA had studied these proposals for several years as a means of upgrading the Land Surveying profession. He noted that these changes have been researched and now have the support of the LLSA. He noted that if the support of LES and all other engineering societies is obtained, his organization will submit them to the State Board of Registration's attorney. Mr. Nelson moved that the Board receive this report and refer it to the Committee on Liaison with the State Board of Registration with instructions that this committee study the proposed changes and discuss them with the State Board of Rigistration. The motion was seconded by Mr. Adams and passed.

Young Engineers Committee—Mr. Charles Hair, committee chairman, stated that his committee had met and outlined several areas of activity for his committee. It was decided that the Young Engineers committee would operate on a chapter level to promote the participation of young engineers in society affairs, and also stress the contacts available through membership in LES. He said it was the committee's consensus that they could work effectively in counseling young engineers as to incompatibility between professionalism and unionism. The committee will make an effort to officially recognize young engineers at chapter meetings and to obtain nominees for the young engineers award of merit.

Mr. Hair said the committee members report that young engineers have a problem in obtaining the directions for becoming registered engineers. President Odom pointed out that the State Board of Registration has a booklet outlining the steps to becoming a registered engineer. Mr. Nelson drew attention to the fact that NSPE will provide engineering schools with carefully prepared "Senior Packs" which outline the advantages of registration. Discussion followed as to how these packs may be obtained and it appeared that some cooperation on the part of the offices of the Deans is required.

Old Business

Mr. Bubenzer's letter concerning a possible new Society—A letter from Mr. Bubenzer expressing concern over a movement toward formation of a new engineering society to include unregistered as well as registered engineers had been sent to all Board members prior to this board meeting. Mr. Nelson informed the Board that a resolution permitting NSPE to allow unregistered engineers to become members would be acted upon at the NSPE Winter Meeting later this month. Mr. Meyer moved that the LES board instruct its two national directors to NSPE to vote against reducing NSPE membership requirements. The motion was seconded by Mr. Adams and passed.

Professional Policy on plans for engineering work on buildings—A letter dated November 22, addressed to the President, by Mr. Willey Poole, P.E., of Baton Rouge was read. This letter, copies of which had been sent to the Board members, was written because of Mr. Poole's concern about a recent attempt by representatives of the Louisiana Architect's Association to obtain repeal of a provision of the building code of the Baton Rouge City Council which requires that plans for electrical work in that city shall be prepared by and sealed by a registered electrical engineer. He requested the Board to take steps to forestall such moves by the architects in the future as he believes they are going to be made throughout the state.

After discussion it was decided that the most effective step that the Board could take under its constitution and bylaws would be to adopt a "Professional Policy" to be included in the minutes of the Board, copies of which could be sent to all city councils and state and parish agencies which construct or issue permits for construction of works involving engineering designs. Mr. Ferachi pointed out that the contsitution requires that in order for such a resolution to be acted upon at a meeting it must have been circulated to the members prior to the meeting or that the Board members present at the meeting must authorize its consideration by unanimous consent. The President called for a show of hands on the latter alternative. The vote for consideration was unanimous.

The following resolution was then offered by Prof. Richardson and seconded by Mr. Meyer:

"In order to provide for the safety and health of the public, the LES hereby adopts the following Professional Policy: 'All engineering plans and specifications should be prepared and sealed by registered professional engineers who have qualified with the Louisiana State Board of Registration in the branch of engineering in which the work lies, including particularly

those plans and specifications covering foundations, structural framing and mechanical and electrical systems for buildings for which the prime design contract may be held by architects and other professionals''' The motion passed by more than the 2/3 vote.

New Business

Membership Roster—President Odom recommended that LES print a roster of all members if the work could be done for a reasonable cost. He referred this proposal to the publications committee and requested that Mr. Nelson obtain estimates on printing such a roster and present them to the next meeting of the Board.

Fallout Shelter Courses—President Odom noted that he had been informed by NSPE of several courses on Fallout Shelter Design would be conducted in Louisiana. No action was taken by the Board.

Transfer of Society Funds—Mr. Hogue requested that the finance committee study the investment of society funds with the intention of obtaining the highest interest rates available. Mr. Ferachi informed the Board that the finance committee should also consider returning $4,000 that was borrowed from reserves to the society's havings account.

Milestones of Members—President Odom noted that Roger Guissinger, a former member of the Board, and Steve Nasca had been recently promoted in the Dept. of Highways. He was instructed to write letters of congratulations to Messrs. Guissinger and Nasca. Mr. Adams noted that J. Freeman of Shreveport, a past president of LES, had been made a Life Member of ASCE. President Odom stated that he would write a letter of congratulations to Mr. Freeman also.

Membership Report—Mr. Ferachi informed the Board that 56 members were delinquent in paying 1968 dues. According to the LES constitution these members are automatically dropped by LES and their names are to be published in the LOUISIANA ENGINEER. Mr. Adams noted that there were several members obtained in 1968 who had failed to pay their 1968 dues. He moved that the membership of these new members be revoked and such action be noted in the LOUISIANA ENGINEER. The motion was seconded by Mr. Steele and passed.

Mr. Ferachi submitted a list of members who had resigned or died since the last board meeting. A copy of this list is attached.

Letter from Executive Secretary—Mr. Hogue informed the Board that he had requested the Executive Secretary to outline goals and objectives for the remainder of the administrative year as well as long range goals Mr. Ferachi had prepared the requested outline and had forwarded a copy to Mr. Odom. Several members of the Board expressed interest in seeing Mr. Ferachi's recommendations and Mr. Odom directed that copies to sent to each Board member.

Engineers Joint Council—Mr. Odom informed the Board that the Engineers Joint Council General Assembly would meet on January 23 in New York City, and requested that any board member going to New York City at this time attend the meeting on behalf of LES.

The next meeting of the Board will be held on Friday, March 7th, 1969 in Lafayette.

There being no further business, Mr. Stevens moved that the meeting adjourn. The motion was seconded by Mr. Steele and passed.

SOCIETY BUSINESS MEETING
JANUARY 11, 1969
JACK TAR CAPITOL HOUSE
BATON ROUGE, LA.

President Odom opened the meeting with a quorum present.

Mr. Ewing informed those present that a request for a change in the LES Constitution had been submitted in accordance with proper procedure. The request outlines a new classification of member and list the annual dues for such membership. The new classification would be Privileged Member and the annual dues would be $5 per year. Mr. Duclos moved that the proposed amendment be circulated in accordance with the LES Constitution. The motion was seconded by Mr. Steele and passed.

Mr Odom informed the assembly that a ballot would soon be sent to voting members on this new classification of Privileged Member as well as amending the constitution to allow new members to be sponsored by an LES members. This sponsored member plan was detailed at the Alexandria Planning Conference in September.

Mr. Adams noted that during the Alexandria Planning Conference those present had voted to withdraw from Engineers Joint Council. He pointed out that the LES Board of Directors had since voted to retain membership in EJC. He moved that LES retain its membership in EJC. The motion was seconded by Mr. Nelson and passed.

President Odom asked if there was any other business to be brought before the Society.

Mr. Nelson displayed to those present a thick agenda for the NSPE Winter Meeting to be held in Las Vegas this month. He noted that the agenda represented a tremendous amount of work done by the NSPE committee.

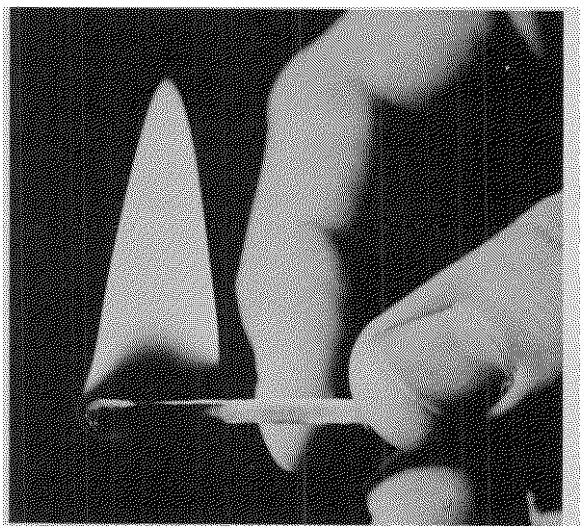
Mr. Nelson pointed out that a real effort had been made to improve the content and format in the LOUISIANA ENGINEER during the past year. He requested members to submit articles on engineering topics of interest to the publications committee. He noted that these articles can be technical or non-technical.

Mr. Duclos said that LES members should publically commend Mr. Nelson and the persons responsible for work on the LOUISIANA ENGINEER. He stated that it was the best engineering publication that he has seen and noted that he is constantly receiving compliments on the LOUISIANA ENGINEER. Mr. Nelson was applauded by those present.

Mr. Dobbs asked the president if any plans had been made on a state level for Engineering Week. Mr. Odom answered by saying that nothing is done on the state level to promote Engineering Week and this is traditionally handled on the chapter level.

Mr. Vogt moved that the meeting be adjourned. The motion was seconded by Mr. Duclos and passed.

A match is a poor substitute when power fails...



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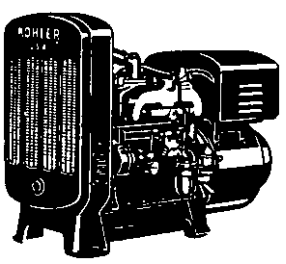

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March 27, 1969

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Barnes, Robert B.—Civil
Jackson, Miss.
Beck, Charles H.—Electrical
Metairie, La.
Bodden, Nix O.—Chemical
Lake Charles, La.
Boudreaux, Wayne J.—Mechanical
Martinsville, Va.
Brammer, Donald J.—Petroleum
Metairie, La.
Bratton, Bert L.—Chemical
Shreveport, La.
Broussard, Steven J.—Civil
Rosenberg, Texas
Bruckner, Arthur, II—Industrial
Baton Rouge, La.
Bruehl, Henry H.—Civil
Huntington Station, N. Y.
Bufkin, Lynwood T.—Chemical
Baton Rouge, La.
Castle, Harry W.—Chemical
Lake Charles, La.
Chang, Mike—Mechanical
Houston, Texas
Clarke, David E.—Civil
New York, N. Y.
Dodson, Richard S.—Civil
Columbus, Ohio
Donovan, Francis M., Jr.—Mechanical
Baton Rouge, La.
Edwards, Bill H.—Chemical
Houston, Texas
Eisenbach, Robert L., Jr.—Chemical
Baton Rouge, La.
Fisher, Lawrence R., Jr.—Civil
Baton Rouge, La.
Futch, Harold F., Jr.—Electrical
Dallas, Texas
Gerrits, John R.—Mechanical
Metairie, La.
Giles, Boyd A., Jr.—Mechanical
Minden, La.
Goston, John M.—Mechanical
Pittsburgh, Pa.
Gray, Frank McK.—Civil
Kettering, Ohio
Green, James L.—Civil
Vicksburg, Miss.
Hall, Gary E.—Petroleum
New Orleans, La.
Hebert, Bobby D.—Mechanical
Maplewood, La.
Hempel, Hugh W.—Civil
Denver, Colo.
Ketteringham, George R.—Electrical
Slidell, La.
LaBaume, Ronnie R.—Petroleum
Lafayette, La.
Lane, Richard N., Jr.—Civil
Houston, Texas
Leone, Vincent D.—Petroleum
Beaumont, Texas
Maier, A. Russell—Civil
St. Louis, Mo.
Mallios, Jimmy P.—Mechanical
Houston, Texas
Mandel, Stanley W.—Mechanical
Dallas, Texas
Maroko, Michael C.—Mechanical
Tarzana, Calif.
Matens, Camp E.—Mechanical
Baton Rouge, La.
Mauldin, Alfred F., Jr.—Civil
Lafayette, La.
Metzger, James H.—Civil
Baton Rouge, La.
Moore, Charles—Civil
Port Chester, N. Y.
O'Quin, Thomas J.—Electrical
Metairie, La.
Ostermiller, Ronald D., Jr.—Chemical
Houston, Texas
Poplin, Jack K.—Civil
Baton Rouge, La.
Portman, David L.—Mechanical
Memphis, Tenn.
Prillaman, Andrew O.—Mechanical
Springhill, La.
Randall, Roddie C.—Mechanical
Tallulah, La.
Ratcliff, Joseph E.—Mechanical
Minden, La.

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Weber, Eugene A., Sr.—Mechanical
Morgan City, La.
Wilkins, James D.—Electrical
Bay Springs, Miss.
Wilkinson, Michael T.—Mechanical
Ruston, La.

ENGINEERS IN NEWS

Daniel F. Burkhalter, consulting electrical engineer in Monroe, has been named by the State Board of Education to its advisory council studying vocational education programs for the poor and disadvantaged. He is one of 21 persons from throughout the state named to the council.

C. M. Cockrell, chief design engineer for Freeport Sulphur Company, has been selected to receive the W. H. Hobart Memorial Award by the American Welding Society. The presentation is to be made April 30 in Philadelphia.

James S. Janssen, president of the New Orleans City Park Improvement Association, was cited by The Sports Foundation for excellence in the field of park and recreation management. He received the award for work done by the association in improving the physical facilities at City Park. Janssen was President of the Louisiana Engineering Society in 1962.

Thirteen members of the Louisiana Engineering Society will be honored April 25 during the LES Annual Convention in New Orleans. Each has been a member of the Society for 30 years and by virtue of that will become Life Members of LES.

New Orleans Life Members are **John C. Bartley, Wallace V. DeGruy, Donato E. Guiza, Robert N. Habans,** and **George A. Heft.**

Members from Baton Rouge are **J. B. Carter, James T. Huey, O. G. Kirby** and **Lawrence V. Willey.**

Shreveport and Monroe each have one member. From Shreveport is **Ernest M. Freeman** and from Monroe is **Sampson C. Smith.**

In addition to the above, **Kenneth W. Mackenzie** of Knoxsville, Tenn., will also be honored.

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THE UNION APPROACH cont.

tice. Unions have established their own firms, headed by professionals, in competition with nonunion firms. Contractors and owners are then informed that they will hire the union firms or face labor trouble on the job. The nonunion firms will be faced with going union, or losing jobs where the owner or contractor fears the threatened labor trouble and sets up unionism as a condition of receiving the job.

One very important area which isn't new, I've merely touched on, but it should be emphasized. One big arrow in the union's quiver is the powerful lobbies they maintain on the state level and in Washington, D.C. The ramifications involved in this are so vast they they could be the subject of a seminar unto themselves. But I will say this—if professionals do not keep on the alert to actively engage in activity on the floor of their state legislatures and in the halls of Congress, they might find themselves legislated right into a union contract. Such things as legalizing secondary boycotts and common situs picketing, laws allowing collective bargaining for public employees, as well as a major revision as the Taft-Hartley Act would throw the professionals into a position even weaker than they now enjoy.

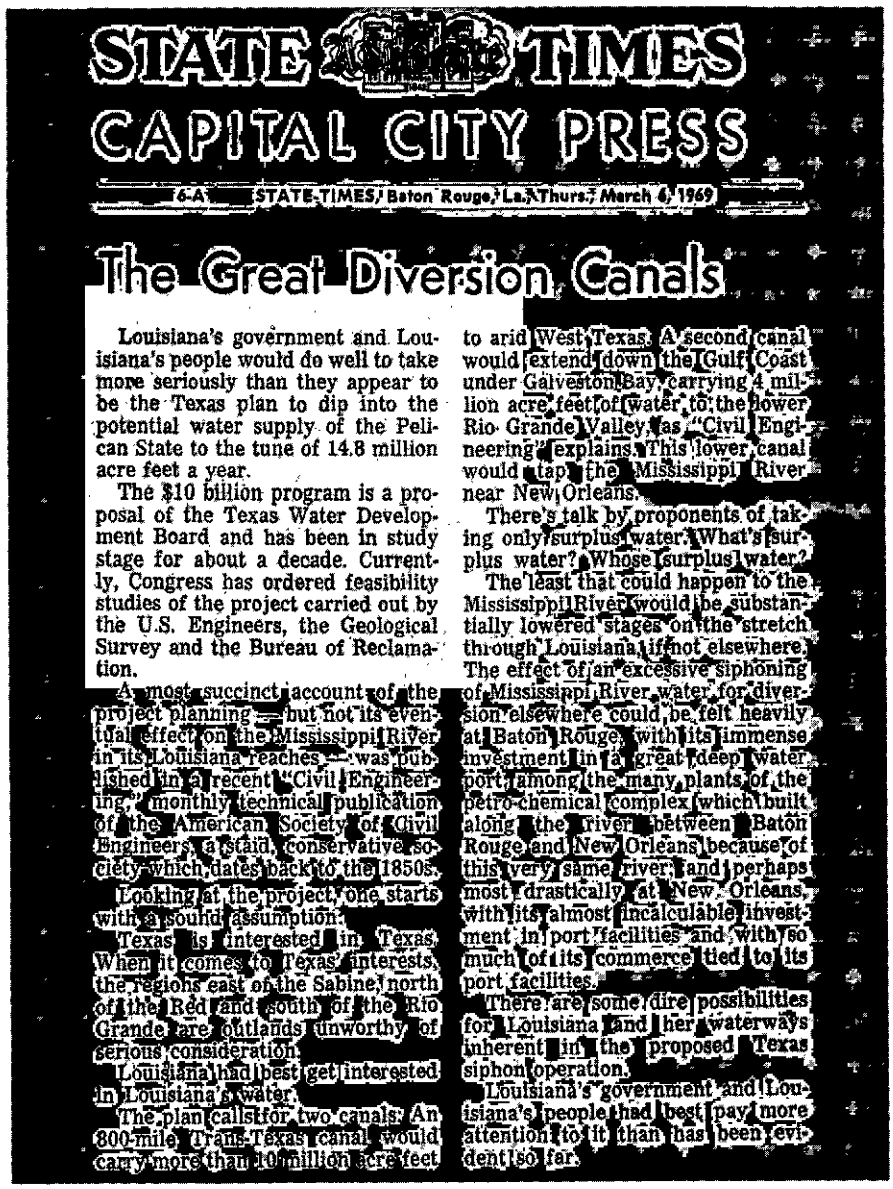
As you've been listening to me, you might have been saying: "The union's approach isn't valid, their statements don't hold water." But let me warn you that merely denying them doesn't do any good. I hope you are in a position to refute these statements, but more importantly, I hope you have an opportunity to do so before you find yourself across the table from the union in collective bargaining. Then, gentlemen, it will be too late. Thank you.

MISSISSIPPI RIVER cont.

proceeding to determine the answers.

The Future

These are difficult questions to answer, and the list is much longer than the sample of questions mentioned in the previous paragraph. But what if the diversion of Mississippi River water is not feasible, will the development of Texas be stopped due to a water shortage? It is the writer's opinion that the State of Texas will proceed to develop all of its water resources and will move the water from East Texas, where it is in surplus, to the Gulf Coast area where the climate is drier and where much of the population lives. The Texas Water Development Board already has a nucleus of fine professional engineers, the benefit of the experience of many eminent consultants and consulting firms, capable leadership and negotiators, and there is no reason to believe that the State of Texas will not proceed with the maximum development of its water resources, regardless of the fate of the water importation project.



STATE TIMES
CAPITAL CITY PRESS

6-A STATE-TIMES, Baton Rouge, La., Thurs., March 6, 1969

The Great Diversion Canals

Louisiana's government and Louisiana's people would do well to take more seriously than they appear to be the Texas plan to dip into the potential water supply of the Pelican State to the tune of 14.8 million acre feet a year.

The $10 billion program is a proposal of the Texas Water Development Board and has been in study stage for about a decade. Currently, Congress has ordered feasibility studies of the project carried out by the U.S. Engineers, the Geological Survey and the Bureau of Reclamation.

A most succinct account of the project planning — but not its eventual effect on the Mississippi River in its Louisiana reaches — was published in a recent "Civil Engineering," monthly technical publication of the American Society of Civil Engineers, a staid, conservative society which dates back to the 1850s.

Looking at the project, one starts with a sound assumption.

Texas is interested in Texas. When it comes to Texas interests, the regions east of the Sabine, north of the Red and south of the Rio Grande are outlands unworthy of serious consideration.

Louisiana had best get interested in Louisiana's water.

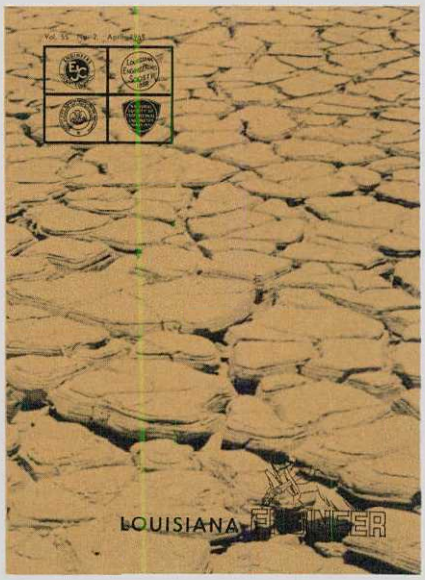
The plan calls for two canals. An 800-mile Trans-Texas canal would carry more than 10 million acre feet to arid West Texas. A second canal would extend down the Gulf Coast under Galveston Bay, carrying 4 million acre feet of water to the lower Rio Grande Valley as "Civil Engineering" explains. This lower canal would tap the Mississippi River near New Orleans.

There's talk by proponents of taking only surplus water. What's surplus water? Whose surplus water?

The least that could happen to the Mississippi River would be substantially lowered stages on the stretch through Louisiana if not elsewhere. The effect of an excessive siphoning of Mississippi River water for diversion elsewhere could be felt heavily at Baton Rouge with its immense investment in a great deep water port among the many plants of the petro-chemical complex which built along the river between Baton Rouge and New Orleans because of this very same river, and perhaps most drastically at New Orleans, with its almost incalculable investment in port facilities and with so much of its commerce tied to its port facilities.

There are some dire possibilities for Louisiana and her waterways inherent in the proposed Texas siphon operation.

Louisiana's government and Louisiana's people had best pay more attention to it than has been evident so far.



Cover: Will the Mississippi River in Louisiana look like this someday? Read all about it on Page 6.

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LOUISIANA ENGINEER

TABLE OF CONTENTS

Presidential Privilege 5
Diversion of the Mississippi River 6
Convention Program 10
Bridge Inspections 11
The Union Approach 14
Conflicting Engineering Opinions 17
Why Statutes of Limitations 19
EngiNEWS 22

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Daily Business Trends . . . WDSU—5:25 P. M. • Daily Business News . . . WWL—4:30, 5:00, 5:30 P. M.

PRESIDENTIAL PRIVILEGE

By LES President Leo M. Odom

There is an old figure of speech that says of a foolish person that "he's like a goose; he wakes up every morning to a new day." This comparison seems to me to fit an overwhelming majority of today's college "activists." The concepts of terms like "generation gaps" and the petulant impatience with the thick headedness of the Establishment are familiar to most of the over-thirty people and bring us a deep feeling of nostalgia for those confident days of our own youth when everything seemed so much simpler than it appears now that we have, by simply getting older, become members of that same Establishment.

In our day the main source of inspiration in reaching our solutions was the poetry of Omar Khyyam instead of the writings of Mao and Marx. We yearned to grasp "This sorry scheme of things entire—shatter it to bits and then remould it nearer to the Hearts Desire!" Of course the Establishment in those days had the great advantage over the present that there was no TV to follow us around when we had our shirt-tail parades or hanged the Dean of Men in effigy from the flag pole. And Omar himself greatly weakened his revolutionary messages by displaying in other verses the balancing wisdom that separates a true sage from a fanatic.

Today, in sickening continuous repetition reaching us from every type of propaganda facility, our eyes and ears are constantly assaulted by claims that the new inventions and sociological findings have made old moral codes and old economic systems obsolete. Our profession is very unpopular with the new breed of intellectual leaders because of the things they, in their great wisdom, have discovered that we have not done. It is quite possible on the other hand that History will accuse us of planting the seeds of destruction of our society by making it possible for so many batter brains to live without working thus giving them the leisure in which to think their addled thoughts and the facilities with which to sow them into the public mind.

Admittedly there is a generation gap and the progress of science and technology has had a large hand in creating it. The following quotation from Walter Bagehot, the English essayist, expresses our situation in better language than I am capable of:

"One peculiarity of this age is the sudden acquisition of much physical knowledge. There is scarcely a department of science or art which is the same, or at all the same, as it was fifty years ago. A new world of inventions has grown up around us which we cannot help seeing; a new world of ideas is in the air and affects us though we do not see it."

The peculiar part of this observation is that it was written in 1867 instead of 1969.

THE DIVERSION OF
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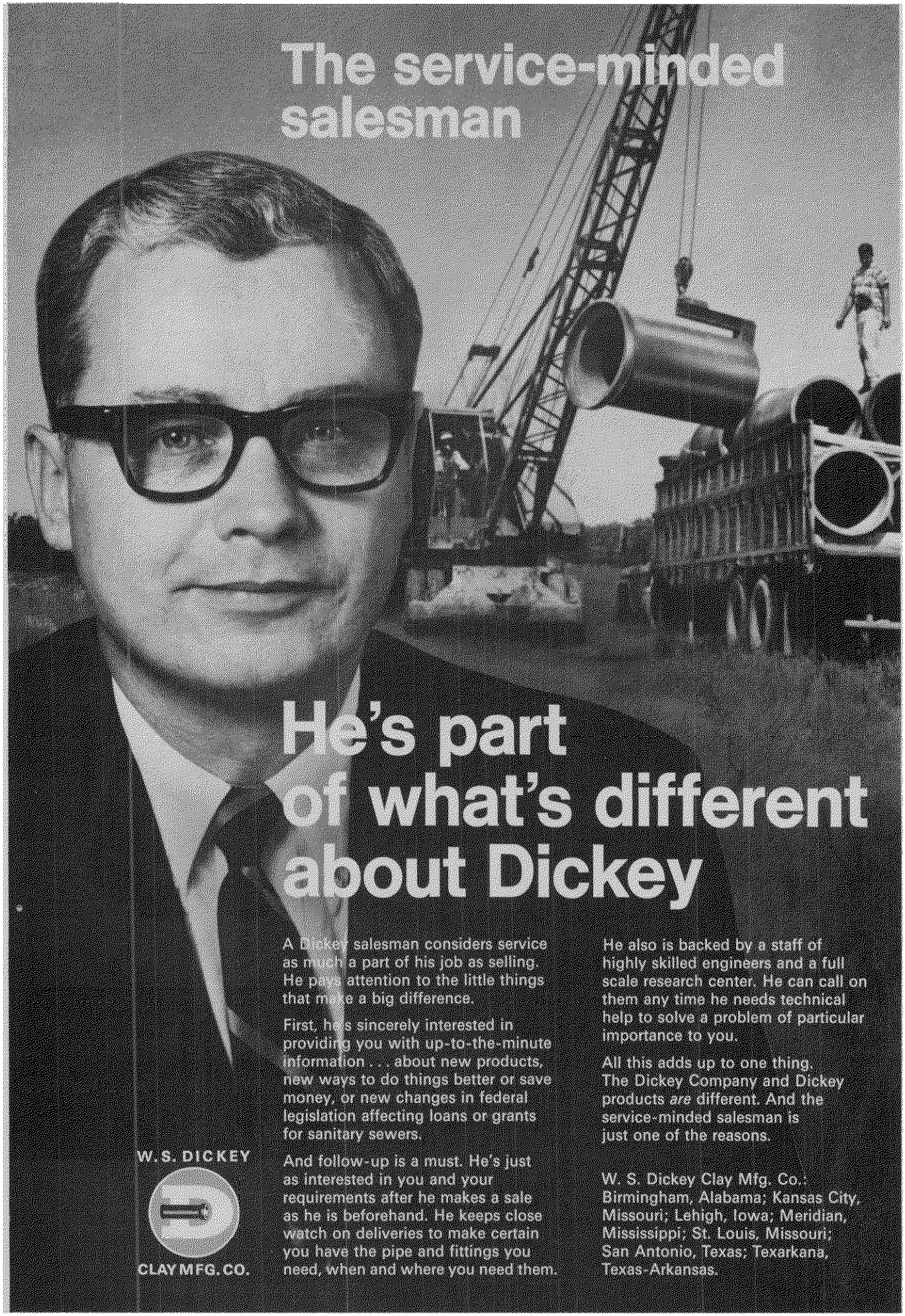
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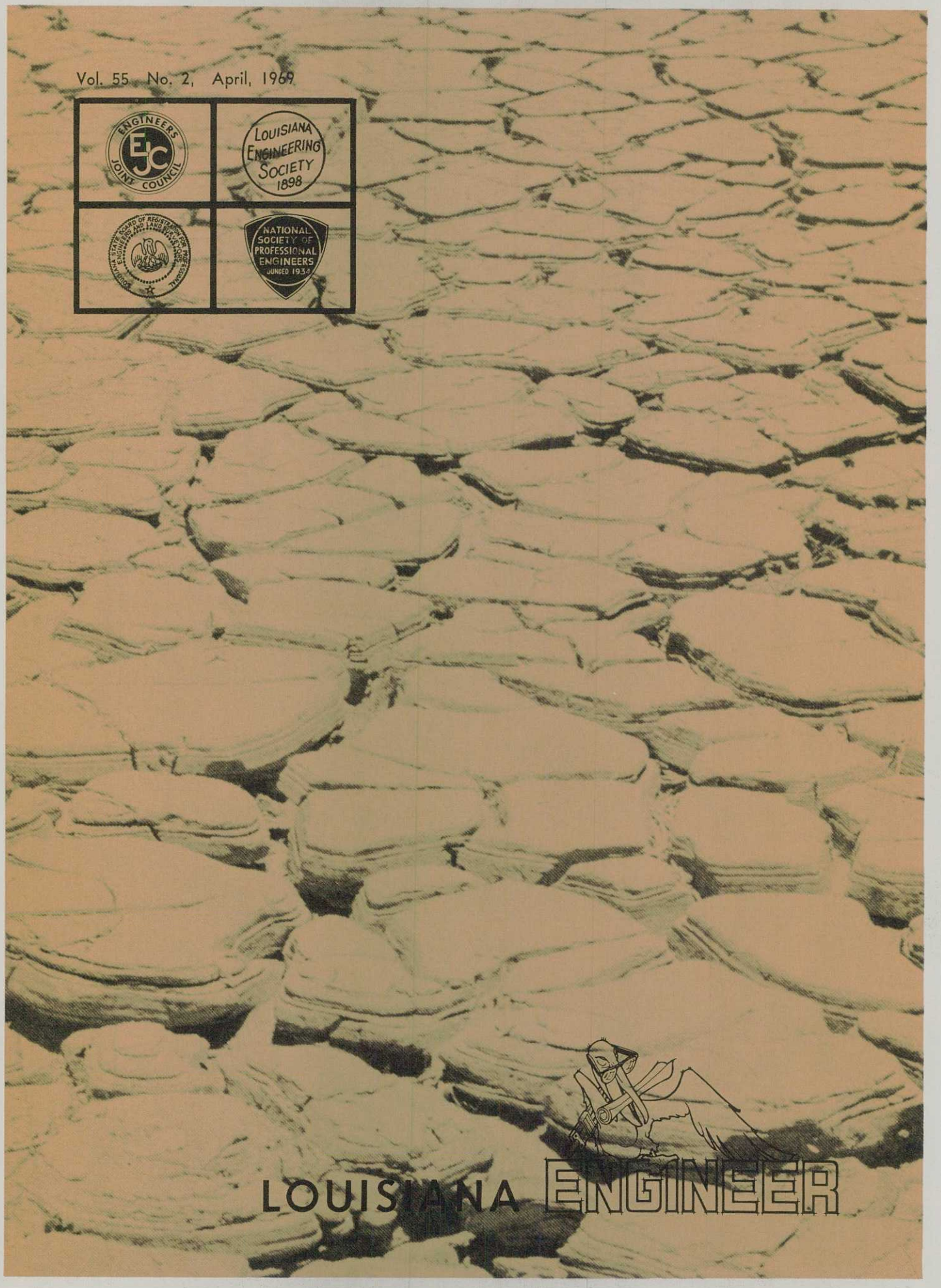
Mississippi Diversion? See Page 6

Vol. 55 No. 2, April, 1969



LOUISIANA ENGINEER

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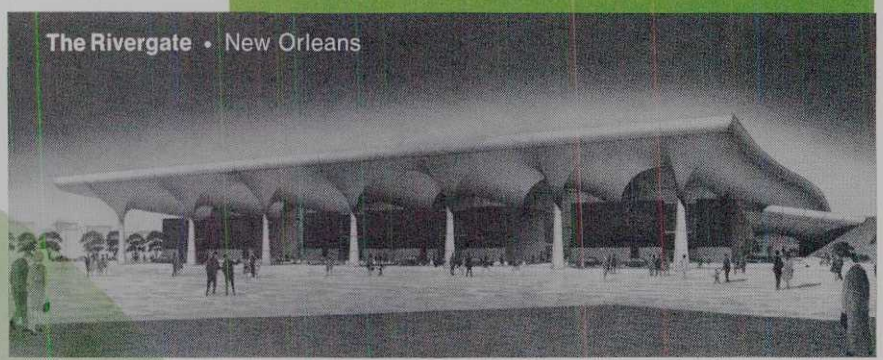

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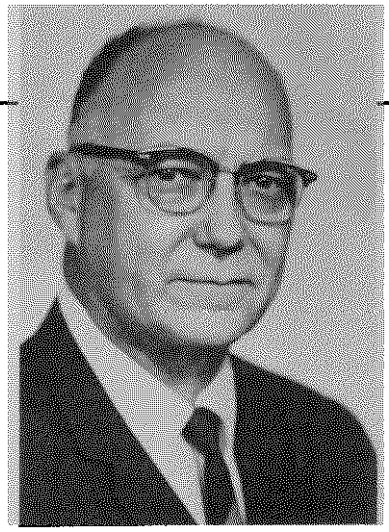


PRESIDENTIAL PRIVILEGE

By LES President Leo M. Odom

In the development and administration of the modern environment the Professional Engineer has a primary role. However, his contribution receives little attention unless something goes wrong for which he can serve as a convenient scapegoat. The correction of this situation has been one of the major aims of the NSPE since its inception. In working toward this goal the Society has utilized the concept of National Engineers Week, the week in which Washington's birthday falls, for a great many years.

Louisiana's debt to the vision of engineers as well as their technical abilities is so readily apparent that it is hard for us to see how their contributions can be overlooked by the public. The names of the great engineers who have solved the problems involved in the development of our natural resources, the uses of our waterways, the protection of our lands from flooding, and in dozens of other fields should loom so large in the public mind that one should think they would be found in our most elementary history books. Unfortunately, this has not been the case.

One instance that shows vividly how quickly an engineer's contributions can be forgotten is that of the late Major General Harley B. Ferguson. It is a well known fact among river engineers that the cut-off program on the Mississippi River was solely responsible for the reduction in flood crests between Helena and Old River to levels at which floods can be confined by levees of reasonable height. General Ferguson, based on his own studies, became so convinced of the necessity for these cut-offs that he started making them while they were still specifically left out of the authorized flood control project, thus taking chances with his career that a weaker man would have avoided.

Yet, when General Ferguson died in Lafayette, Louisiana, a few months ago the news of his death received about one inch of space in the New Orleans newspapers and no mention at all was made of his contributions to the welfare of his beloved valley.

Without discounting the value of calling attention to the achievements at the moment it would seem that we are overlooking a great opportunity for increasing the public awareness of the contribution of the engineer to society in not making more diligent efforts to ensure that the records of accomplishments of the outstanding members of our profession are not permitted to fade away.

THE WHITE HOUSE

WASHINGTON

February 3, 1969

I want to commend the National Society of Professional Engineers for your sponsorship of National Engineers Week, and for the fitting theme which you have chosen to highlight this year's observance.

Our nation's urban problems will not be solved by merely applying more resources; we must apply our existing resources more effectively. This is indeed a task in which America's engineers can constructively participate. You will be deciding how our resources can be used more efficiently. You will be prime movers in shaping our cities and uplifting the urban way of life.

More than ever before you have the opportunity to educate the nation by presenting an enlightened approach to urban problems which reflects both technical knowledge and sound value judgment. By using past methods more effectively and forging ahead to new and better solutions to the problems of the modern city, you bring unlimited promise to America and to the fulfillment of a foremost goal of this Administration.

Richard Nixon

Professor Edwin H. Young, P.E.
President
National Society of Professional Engineers
2029 K Street, N.W.
Washington, D. C. 20006

The Engineer as Citizen

Editor's Note: The Leeds & Northrup Company was honored at a luncheon at the Franklin Institute on February 16, 1968 when one of its executives was cited as "Engineer of the Year" by the engineering societies in the Delaware Valley. Nathan Cohn, Executive Vice President—Research & Corporate Development and a member of the Board of Directors of the Leeds & Northrup Company, is a graduate of Massachusetts Institute of Technology. He is a Fellow and past president of the Instrument Society of America and a Fellow of the Institute of Electrical and Electronic Engineers and the American Association for the Advancement of Science. He has been awarded the 1968 Lamme Medal IEEE, the 1968 Albert F. Sperry Medal of the ISA and the 1968 John Price Wetherill Medal of the Franklin Institute; all for his contributions to electric power systems control.

Mr. Cohn accepted the Engineer of the Year citation with this address.

By Nathan Cohn

I am deeply grateful to the technical societies in the Delaware Valley for having designated me Engineer of The Year. I count this a very high honor. In acknowledging it, some words Herbert Hoover recorded in his autobiography come to mind. Mr. Hoover, a great engineer, wrote: "All the accolade an engineer aspires to is the favorable verdict of his fellow professionals." These words fully reflect my own sentiments of thanks and appreciation.

An assignment of the Engineer of The Year is to serve during this National Engineers' Week as a spokesman for the engineering profession. It is intended that he help to focus public attention on the importance of the engineer in our society, that he consider with other engineers where opportunities lie for greater contributions by the engineering profession and, in the process, that he direct the attention of promising technically inclined students to the nature and the attractions of the profession.

In fulfilling this role here at this luncheon today, I have selected as the subject of my remarks, "The Engineer as Citizen."

In my discussion I would like to review and explore with you the activities, the obligations, and the opportunities of the engineer in the several environments in which he works and lives, in each of which he is a franchised citizen and in each of which he carries corresponding responsibilities of citizenship.

I would cite three such areas.

First, the engineer is a citizen in the professional environment of his employment. Second, he is a citizen in the professional environments outside of his work, as in his technical societies and professional associations. And, third, he is a citizen of the society and the community—at all of its levels—in which he lives.

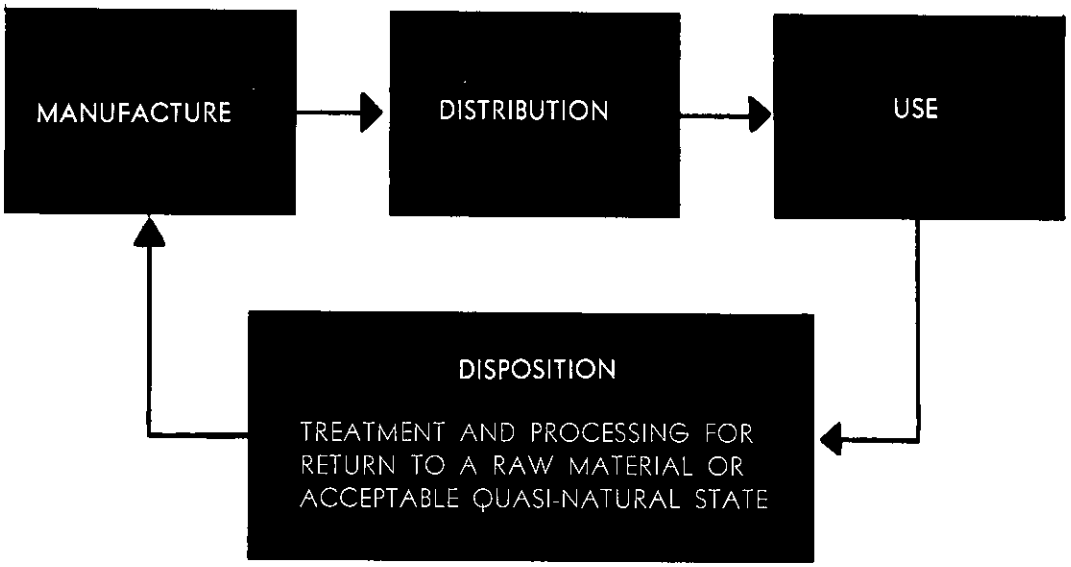
In discussing these areas of the engineer's citizenship, I will talk of the prevailing composition and some educational aspects of the profession, its relation to science, its concepts of utility and progress, and I will cite briefly one example of the large-scale socio-engineering problems that—increasingly in the future—will require the coordinated systems approach for effective resolution.

I hope that my remarks will bear reasonable relevance to the purposes of National Engineers' Week. I hope that they will, indeed, assist in directing public attention to the accomplishments of the profession, will stimulate students to examine engineering as a potential career, and will challenge engineers to accept greater responsibility in the society which, in large measure, their technology has created and in which they are, themselves, not guests, but like their neighbors, resident.

The week must also be one of self-appraisal by the engineering profession, to understand and evaluate its own activities more fully and to measure whether it is, indeed, achieving the high goals that it has defined for itself; whether what it is, is as good as what it could be.

One thing is certainly clear. The engineering profession has come a long way over the years in achieving public recognition and respect. In opening these remarks I quoted a comment by Herbert Hoover. Let me report a brief anecdote also recorded in his memoirs, defining how engineers were looked at in earlier days. He was returning by ship to New York after filling a professional assignment in England and shared his dining table with a British lady of great cultivation. She participated with him in stimulating conversations at the table about literature, art, history, national customs and what not. As they were coming up New York Harbor, at the farewell breakfast the lady turned to Mr. Hoover and said, "I hope you will forgive my curiosity, but I should like awfully to know—what is your profession?"

Mr. Hoover replied, "I am an engineer." To which the good lady emitted an involuntary exclamation



". . . in the total systems planning sense, the individual cycles must be extended beyond distribution to include disposition."

and said, "An engineer! Why, I thought you were a gentleman!"

Yes, engineering has come a long way since then. The practicing engineer is a citizen of a professional environment that has been described, and rightly so, in terms at once complimentary and challenging.

The late W. E. Wickenden of Case Institute of Technology described engineering as an activity of high individual responsibility, of distinctly intellectual content, with opportunities for service, self-expression and the pursuit of a high standard of excellence.

Dean J. R. Dunning of the Columbia School of Engineering and Applied Science said, "The mission of the engineer is to create a new and better world."

Walker L. Cisler, Detroit Edison Co. said, "The ultimate purpose of . . . engineering is to enrich the content of life."

These are admirable goals, worthy of reminder and repetition, particularly on occasions like this one, even though I expect we would agree that they are not necessarily in the conscious minds of engineering practitioners as they attack and resolve the daily problems and vexations encountered in their professional work.

Statistics of Engineers

Let us see, at this point, what some of the basic statistics of the engineering practitioners of the nation are, and what the anatomy of their training and activity is.

There are today over 700,000 engineers in the country.[1] Except for teaching, it is the nation's largest profession, comprising about one out of every fifty in the total U.S. labor force. The median age is 39. About 86% of the total are employed in private industry, of which about one-third work on government projects, and two-thirds on commercial projects. Three-quarters of the total are employed by companies having more than 1,000 employees, but two-thirds of all engineers work in groups of ten men or less.

Most engineers have at least a bachelor's degree. About 19% of the bachelors also have master's degrees, and 5% of them have a doctor's degree. As a footnote on the economic climate that has been available to the engineer, a recent survey[2] of over 300 engineering schools and technological institutions disclosed that of their 22,000 June 1967 engineering graduates, 98% had already accepted jobs or made firm commitments for jobs or further education by the time of graduation. About a fourth of the graduates were going on to graduate school.

So much for statistics. They are, of course, not particularly revealing insofar as the content of engineering activity is concerned.

The important thing to observe, I think, is that engineering is not a monolithic discipline, practiced in a single specific kind of way, requiring a single specific kind of preparatory education. Contrarily, it covers a broad spectrum of need and application, and there is room within it for a whole host of various kinds of educational preparation, personal capability, and individual attitudes and aspirations. The nature of technical competence needed by the practitioner covers correspondingly a very wide span in an almost limitless number of technologies. There is a comparable pattern in the range of responsibility which at any given point in his career the engineer is asked or expected to assume.

How then, with respect to his work and attitudes, shall we define attributes of good citizenship for an engineer in his professional activity and responsibility?

Responding to that question, it will be well first to recognize yet once again the distinction between the engineer and the scientist. Much has been said and written on this subject, and it has been suggested at times that the engineer is becoming less and less distinguishable from the scientist. But the two roles remain, in the classical sense, distinctly different.

The objective of the scientist is to tear away shadows of uncertainty, to reveal facts and laws—nature's facts and laws—not previously known. In

(Continued on Page 28)

CODE OF ETHICS FOR ENGINEERS

Preamble

The Engineer, to uphold and advance the honor and dignity of the engineering profession and in keeping with high standards of ethical conduct:

- *Will be honest and impartial, and will serve with devotion his employer, his clients, and the public;*
- *Will strive to increase the competence and prestige of the engineering profession;*
- *Will use his knowledge and skill for the advancement of human welfare.*

Section 1—The Engineer will be guided in all his professional relations by the highest standards of integrity, and will act in professional matters for each client or employer as a faithful agent or trustee.

a. He will be realistic and honest in all estimates, reports, statements, and testimony.

b. He will admit and accept his own errors when proven obviously wrong and refrain from distorting or altering the facts in an attempt to justify his decision.

c. He will advise his client or employer when he believes a project will not be successful.

d. He will not accept outside employment to the detriment of his regular work or interest, or without the consent of his employer.

e. He will not attempt to attract an engineer from another employer by unfair methods.

f. He will not actively participate in strikes, picket lines, or other collective coercive action.

Section 2—The Engineer will have proper regard for the safety, health, and welfare of the public in the performance of his professional duties. If his engineering judgment is overruled by nontechnical authority, he will clearly point out the consequences. He will notify the proper authority of any observed conditions which endanger public safety and health.

a. He will regard his duty to the public welfare as paramount.

b. He shall seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health and well-being of his community.

c. He will not complete, sign, or seal plans and/or specifications that are not of a design safe to the public health and welfare and in conformity with accepted engineering standards. If the client or employer insists on such unprofessional conduct, he shall notify the proper authorities and withdraw from further service on the project.

Section 3—The Engineer will not advertise his work or merit in a self-laudatory manner, and will avoid all conduct or practice likely to discredit or unfavorably reflect upon the dignity or honor of the profession.

a. Circumspect advertising may be properly employed by the Engineer to announce his practice and availability under the following conditions:

(1) Professional cards in recognized, dignified publications, and listings in rosters or directories published by responsible organizations are acceptable forms, provided that the cards or listings are consistent in size and content, not in excess of one-quarter page, and are in a section of the publication regularly devoted to such professional cards. Information given must be restricted to firm name, address, telephone number, names of principal participants, and the fields of practice in which the firm is qualified. A dignified symbol or art work representative of the firm's practice may be used.

(2) Identification of the firm name, address and telephone number on vehicles and equipment together with services related thereto.

(3) Brochures and other factual representations of experience, facilities, personnel and capacity to render service, providing they are not misleading with respect to the Engineer's direct participation in the projects described.

(4) A statement of his name or the name of his firm and statement of his type of service may be posted for which he renders services.

b. An Engineer may prepare descriptive articles for the lay or technical press which are factual, dignified and free from ostentations or laudatory implications. Such articles shall not imply other than his direct participation in the work described unless credit is given others for their share of the work.

c. Permission may be given by an Engineer for his name to be used in commercial advertisements, such as may be published by contractors, material suppliers, etc., only by means of a modest dignified notation acknowledging the engineer's participation and the scope thereof in the project described.

d. Telephone listings shall be limited to name, address and telephone number either under or with each branch listing in which he qualifies.

e. He will not allow himself to be listed for employment using exaggerated statements of his qualifications.

f. He will not use his professional affiliations or public office to secure personal advantage and will avoid any act tending to promote his own interest at the expense of the dignity and standing of the profession.

Section 4—The Engineer will endeavor to extend public knowledge and appreciation of engineering and its achievements and to protect the engineering profession from misrepresentation and misunderstanding.

a. He shall not issue statements, criticisms, or arguments on matters connected with public policy which are inspired or paid for by private interest, unless he indicates on whose behalf he is making the statement.

Section 5—The Engineer will express an opinion on an engineering subject only when founded on adequate knowledge and honest conviction.

a. The Engineer will insist on the use of facts in reference to an engineering project in a group discussion, public forum or publication of articles.

Section 6—The Engineer will undertake engineering assignments for which he will be responsible only when qualified by training or experience; and he will engage, or advise engaging, experts and specialists whenever the client's or employer's interests are best served by such service.

Section 7—The Engineer will not disclose confidential information concerning the business affairs or technical processes of any present or former client or employer without his consent.

a. While in the employ of others, he will not enter promotional efforts or negotiations for work or make arrangements for other employment as a principal or to practice in connection with a specific project for which he has gained particular and specialized knowledge without the consent of all interested parties.

Section 8—The Engineer will endeavor to avoid a conflict of interest with his employer or client, but when unavoidable, the Engineer shall fully disclose the circumstances to his employer or client.

a. The Engineer will inform his client or employer of any business connections, interests, or circumstances which may be deemed as influencing his judgment or the quality of his services to his client or employer.

b. When in public service as a member, advisor or employee of a governmental body or department, an engineer shall not participate in considerations or actions with respect to services provided by him or his organization in private engineering practice.

c. An engineer shall not solicit or accept an engineering contract from a governmental body on which a principal or officer of his organization serves as a member.

Section 9—The Engineer will uphold the principle of appropriate and adequate compensation for those engaged in engineering work.

a. He will not undertake or agree to perform any engineering work on a free basis, except for civic, charitable, religious, or eleemosynary nonprofit organizations when the professional services are advisory in nature.

b. He will not undertake work at a fee or salary below the accepted standards of the profession in the area.

c. He will not accept remuneration from either an employee or employment agency for giving employment.

d. When hiring other engineers, he shall offer a salary according to the engineer's qualifications and the recognized standards in the particular geographical area.

e. If, in sales employ, he not will offer, or give engineering consultation or designs, or advice other than specifically applying to the equipment being sold.

Section 10—The Engineer will not accept compensation, financial or otherwise, from more than one interested party for the same service, or for services pertaining to the same work, unless there is full disclosure to and consent of all interested parties.

a. He will not accept financial or other considerations, including free engineering designs, from material or equipment suppliers for specifying their product.

b. He will not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with his clients or employer in connection with work for which he is responsible.

Section 11—The Engineer will not compete unfairly with another engineer by attempting to obtain employment or advancement or professional engagements by competitive bidding, by taking advantage of a salaried position, by criticizing other engineers, or by other improper or questionable methods.

a. The Engineer will not attempt to supplant another engineer in a particular employment after becoming aware that definite steps have been taken toward the other's employment.

b. He will not offer to pay, either directly or indirectly, any commission, political contribution, or a gift, or other consideration in order to secure work, exclusive of securing salaried positions through employment agencies.

c. He shall not solicit or submit engineering proposals on the basis of competitive bidding. Competitive bidding for professional engineering services is defined as the formal or informal submission, or receipt, of verbal or written estimates

of cost or proposals in terms of dollars, man days of work required, percentage of construction cost, or any other measure of compensation whereby the prospective client may compare engineering services on a price basis prior to the time that one engineer, or one engineering organization, has been selected for negotiations. The disclosure of recommended fee schedules prepared by various engineering societies is not considered to constitute competitive bidding. An Engineer requested to submit a fee proposal or bid prior to the selection of an Engineer or firm subject to the negotiation of a satisfactory contract, shall attempt to have the procedure changed to conform to ethical practices, but if not successful he shall withdraw from consideration for the proposed work.

These principles shall be applied by the Engineer in obtaining the services of other professionals.

d. He shall not solicit or accept an engineering engagement on a contingent fee basis if payment depends on a finding of economic feasibility, or other conclusions by the engineer.
e. While in a salaried position, he will accept part-time engineering work only at a salary or fee not less than that recognized as standard in the area.
f. An Engineer will not use equipment, supplies, laboratory or office facilities of his employer to carry on outside private practice without consent.

Section 12—The Engineer will not attempt to injure, maliciously or falsely, directly or indirectly, the professional reputation, prospects, practice or employment of another engineer, nor will he indiscriminately criticize another engineer's work in public. If he believes that another engineer is guilty of unethical or illegal practice, he shall present such information to the proper authority for action.

a. An Engineer in private practice will not review the work of another engineer for the same client, except with the knowledge of such engineer, or unless the connection of such engineer with the work has been terminated.
b. An Engineer in governmental, industrial or educational employ is entitled to review and evaluate the work of other engineers when so required by his employment duties.
c. An Engineer in sales or industrial employ is entitled to make engineering comparisons of his products with products by other suppliers.

Section 13—The Engineer will not associate with or allow the use of his name by an enterprise of questionable character, nor will he become professionally associated with engineers who do not conform to ethical practices, or with persons not legally qualified to render the professional services for which the association is intended.

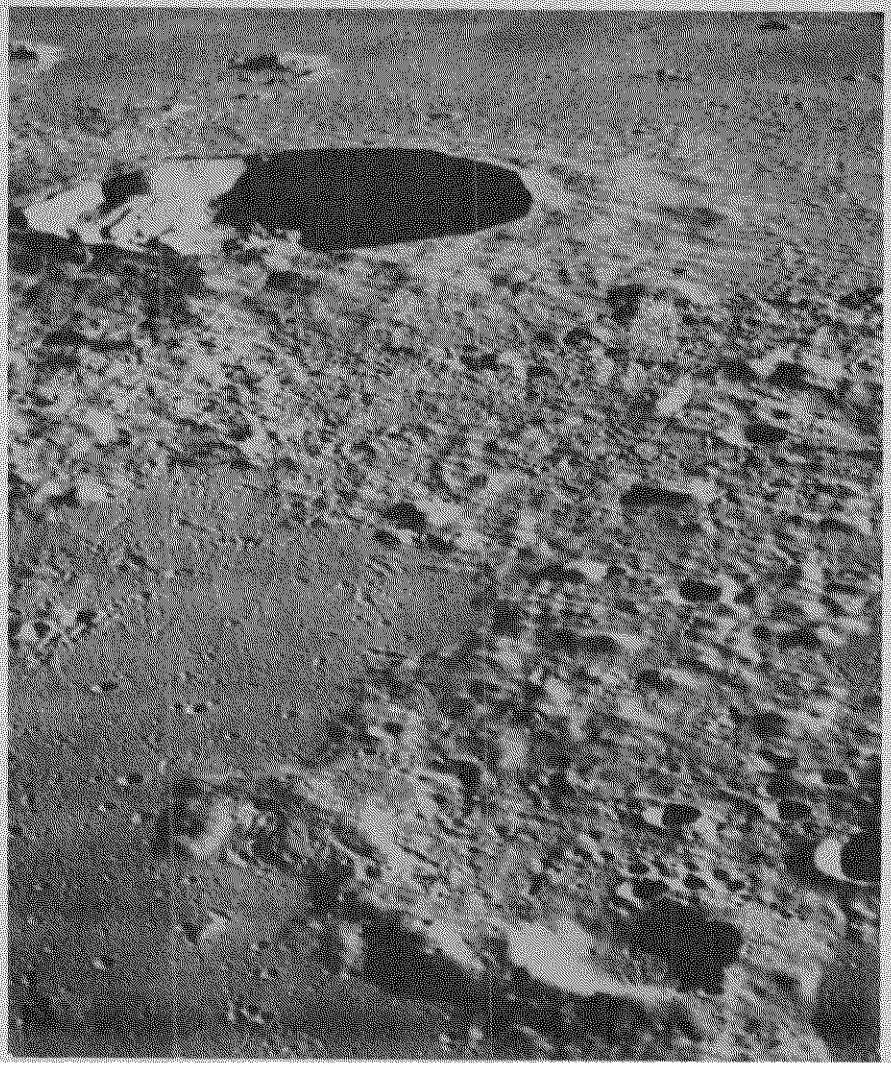
a. He will conform with registration laws in his practice of engineering.
b. He will not use association with a non-engineer, a corporation, or partnership, as a "cloak" for unethical acts, but must accept personal responsibility for his professional acts.

Section 14—The Engineer will give credit for engineering work to those to whom credit is due, and will recognize the proprietary interests of others.

a. Whenever possible, he will name the person or persons who may be individually responsible for designs, inventions, writings, or other accomplishments.
b. When an Engineer uses designs supplied to him by a client, the designs remain the property of the client and should not be duplicated by the Engineer for others without express permission.
c. Before undertaking work for others in connection with which he may make improvements, plans, designs, inventions, or other records which may justify copyrights or patents, the Engineer should enter into a postive agreement regarding the ownership.
d. Designs, data, records, and notes made by an Engineer and referring exclusively to his employer's work are his employer's property.

Section 15—The Engineer will cooperate in extending the effectiveness of the profession by interchangng information and experience with other engineers and students, and will endeavor to provide opportunity for the professional development and advancement of engineers under his supervision.

a. He will encourage his engineering employees' efforts to improve their education.
b. He will encourage engineering employees to attend and present papers at professional and technical society meetings.
c. He will urge his engineering employees to become registered at the earliest possible date.
d. He will assign a professional engineer duties of a nature to utilize his full training and experience, insofar as possible, and delegate lesser functions to sub-professionals or to technicians.
e. He will provide a prospective engineering employee with complete information on working conditions and his proposed status of employment, and after employment will keep him informed of any changes in them.



ENGINEERING ACHIEVEMENTS OF 1968

The National Society of Professional Engineers has announced its selections of the "Engineering Achievements of 1968." They reflect engineering's wide-ranging role in modern life, as it seeks solutions for problems as varied as air pollution, underwater navigation, and new building technology.

The top choices were the Apollo 8 translunar flight; the Meramec Power Plant in south St. Louis County, Missouri; the Navy Navigation Satellite System, and the Palacio del Rio Hotel, San Antonio, Texas. Others selected were the Arkansas River multi-purpose development, the First National Bank Building in Chicago, the closing of the Darien Gap in the Pan-American Highway, the Delaware Memorial Bridge Twin Span, the Passenger Tire Uniformity Measuring Machine of B. F. Goodrich Co., electronic switching systems for telephone communications, and a new steelmaking process.

NSPE termed the Apollo moon voyage "an unparalleled feat, attributable to the joint efforts of engineering and science." A high degree of engineering reliability was demanded to take man on his farthest journey from the earth, enter and leave the gravity of another celestial body for the first time, and return safely through fantastic heat loads.

The Meramec plant of Union Electric Company was named for putting into operation an air pollution control system designed by Combustion Engineering Co. It removes at least 83 percent of sulphur dioxide from flue gases, more than 99 percent of fly ash, and all but immeasurable quantities of sulphur trioxide. More than a $1,000,000 investment and six years of laboratory and pilot testing went into the development of the massive equipment. This work was given favorable mention by NSPE last year, though not included in the top achievements.

A member of the board of judges who is an expert on air pollution termed two other new processes of equal importance. One is the Monsanto catalytic oxygen sulphur dioxide removal facility now in operation at the Portland, Pennsylvania generating station of the Metropolitan Edison Company. The other is the Wellman-Lord process that will be used at the Potomac Electric Power Co. in Baltimore County, Maryland.

The Navy Navigation Satellite System was developed by the Applied Physics Laboratory of the Johns Hopkins University at Silver Spring, Md. It provides extremely accurate, world-wide, all-weather position information for surface and subsurface vessels. The Navy uses it in the Polaris submarine force and in major combat ships of the surface fleet. Private and commercial navigators also are availing themselves of its capabilities. The system involves measuring the "Doppler shift" of frequencies transmitted from a satellite, to an accuracy of one part

in a billion. In the Navy a computer reduces operator effort to a minimum.

The Palacio del Rio Hotel, San Antonio, Tex., was singled out for its unique module of construction, whereby complete rooms are fabricated miles away from the site and hoisted into place by a giant crane. H. B. Zachry, a professional engineer, heads the company bearing his name which built the hotel. One judge expressed the view that the concept "will bring new horizons and dimensions to the construction industry, which has not faced up to the challenge of modernization for many, many years."

The development of the Arkansas River for navigation, flood control, water supply recreation, hydroelectric power and fish and wildlife was hailed for its multiple economic, social, and esthetic benefits to the region and the nation. It is the most extensive water resources project under construction in the United States today, and the largest civil works project ever undertaken by the U. S. Army Corps of Engineers.

The First National Bank Building of Chicago is a 60-story structure with unique curved exterior walls. The design was subjected to extensive wind tunnel testing. Engineers were C. F. Murphy & Associates and P&W Engineers, Inc. Architects were C. F. Murphy & Associates and The Perkins and Will Partnership.

Closing the Darien Gap in the Pan American Highway was accomplished by the U. S. Bureau of Public Roads. Its engineering studies determined the feasibility of the Atrato Swamp route through Panama and Colombia, previously thought impossible. This route offers a projected saving of 205 miles in distance and $120 million in costs. When built, it will complete the 19,000-mile Pan American Highway, longest unbroken stretch of roadway on earth.

The Delaware Memorial Bridge Twin Span will provide a one-way facility in each direction for the important river crossing on the New York-Washington route. The new structure is 24,286 feet, supplementing the old structure of 24,465 feet, and making the bridge the longest in the world. Construction of the New Jersey anchorage involved the world's largest continuous underwater concrete pour. It measures 246 by 106 by 30 feet. Estimated cost of the new span is $70 million.

The passenger tire uniformity measuring machine developed by B. F. Goodrich Co. is considered to be a substantial contribution to both automobile safety and riding comfort. Non-uniform tires can cause vibration in body panels, frame supports, and even in the steering system to the point of possible loss of control. All Goodrich original equipment tires are checked on this machine, which gives better correlation of results than older balancing systems.

A Bell System team of Bell Telephone Laboratories and Western Electric engineers has developed and put into service a solid state electronic switching system to replace all electromechanical telephone systems now in operation. The application of stored program (computer-like) machines will give the fastest and most flexible telephone service possible. Eventually electronic switching will evolve into a nationwide network offering time saving new customer services and features for business and resident subscribers.

A major breakthrough toward continuous and automatic steelmaking was achieved through a system of slab reheating furnaces and controls, supplied by Surface Combustion Division of Midland-Ross Corp., Toledo, Ohio for Granite City Steel Co., Granite City, Illinois. It is in operation in a hot strip mill designed for complete computer control, and it is hoped will lead eventually to reducing the time lag between iron ore and hot rolled products from weeks to minutes. Part of the system is a new type mechanical conveyor to transport 1,000 tons of slabs at 2300°F. temperature for the 110 foot length of the furnace.

Other developments receiving favorable mention but insufficient votes for inclusion in the group were:

The Metropolitan Sanitary District of Chicago's reclamation of low grade land by sewage sludge, proving the feasibility of such a method of waste disposal with side benefits to the agricultural economy.

The inflatable spare tire developed by B. F. Goodrich to save space in compact cars.

The "total energy system" designed by Schooley, Cornelius, Schooley for Ohio State University River Dormitories. A natural gas-driven reciprocal engine was used to meet the needs for 1800 tons of air conditioning, 3600 kw of electricity and 250,000 gallons of hot water per day.

The world's highest capacity and largest railway car, 159 feet long. Built for Westinghouse by McDowell-Wellman Engineering Co., Cleveland, it breaks through previous shipping limitations on weight and dimension of apparatus such as generators for electric power stations. Clearance problems are solved by development of a device to shift the load.

Perfection of paper clothing, particularly paper dresses, by companies such as Kimberly-Clark.

The work of the Naval Facilities Engineering Command in South Vietnam, with more than 200 projects at 50 locations, one port and airfield complex alone costing more than $100 million.

The nominations were submitted by chapters of the National Society of Professional Engineers throughout the country, and screened by a committee of leading professional engineers.

how to become a professional engineer

DR. DANIEL H. VLIET, P.E.
Executive Secretary
Louisiana State Board of
Registration for Professional
Engineers and Land Surveyors

Under Louisiana Law persons may qualify to become registered Professional Engineers on the following bases: **Graduation Plus Experience, Experience Plus Examination, Long Established Practice,** and **Interstate Registration.** Professional Engineers are registered by the Louisiana State Board of Registration for Professional Engineers and Land Surveyors in the branches of Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, Metallurgical, Mining and Petroleum Engineering.

To qualify on the basis of **Graduation Plus Experience** an applicant must be a graduate of an engineering curriculum approved by the Board. He must have passed a written examination in fundamental engineering subjects administered by the Louisiana Board or by a similar Board of Registration of another state. In addition, he must be recommended by five registered Professional Engineers and have a minimum of four years of experience, obtained subsequent to graduation, of a character satisfactory to the Board.

The Board may waive, in its discretion, the examination in fundamental engineering subjects for applicants who graduated from approved engineering curricula prior to July 1, 1959 and who have a specific record of eight years of engineering experience, obtained subsequent to graduation, of a character satisfactory to the Board.

The basic requirements for registration as a Professional Engineer on the basis of **Experience Plus Examination** is a minimum of eight years of experience in engineering work of a character satisfactory to the Board and a passing grade in a two-day written examination. One day of the examination is devoted to fundamental engineering subjects, the other to subjects associated with the branch of engineering in which the applicant seeks registration. Each applicant must be recommended by five registered Professional Engineers and be interviewed by the Board before he is permitted to take the examination in his branch of specialization.

The Board may register an applicant without a written examination if he meets the requirements for registration on the basis of **Long Established Practice.** A person who applies on this basis must be recommended by five engineers registered in Louisiana and must submit proof that he has had a minimum of twenty years of engineering practice, not less than twelve years of which shall have been in responsible charge of important engineering work. Each applicant must include in his application a record of his education and pre-professional experience sufficient to justify that at the time he started practicing engineering he had attained knowledge and skill approximating that attained through graduation in an approved four-year engineering curriculum. It is not necessary that the applicant's total experience be limited to one branch of engineering, but registration will be granted only in the branch in which the applicant appears to have obtained the greatest proficiency.

A person who is registered in another state or country may seek registration in Louisiana under the **Interstate Registration** provision of the law. He must be recommended by five registered Professional Engineers and must have qualifications similar to those required for registration in Louisiana on the basis of Graduation Plus Experience or Experience Plus Examination. The state or country in which the applicant is registered must state that it will accept the certificates of registration issued by the Louisiana Board on a reciprocal basis.

On request the Louisiana State Board of Registration for Professional Engineers and Land Surveyors will send a complete set of the requirements for registration and will answer any questions regarding registration. The address of the Board is 4747 Earhart Boulevard, Suite 207, New Orleans, Louisiana 70125, and the telephone number is (504) 486-6039.

Ford, Bacon & Davis

Editor's Note: This is the first in a series of articles to be printed in the LOUISIANA ENGINEER presenting Louisiana engineering firms that have achieved national prominence.

In telling the story of Ford, Bacon & Davis, the parallel paths of the industrial development of the state of Louisiana and the company's growth and development are strikingly and surprisingly apparent.

For in 1895, Ford and Bacon, Engineers, undertook its first major assignment: that of electrification of the mule-powered Orleans Railroad in New Orleans. Following the parallel paths, Ford, Bacon & Davis designed and supervised construction for the first major electric utility power plant using natural gas as fuel. And, carrying the analogy along, the firm was a pioneer in the concept of long-distance, high-pressure (for then) gas transmission lines. Now, Ford, Bacon & Davis Construction Corporation, in addition to nationwide activities, is aiding the phenomenal growth in the chemical and petrochemical complexes of the Pelican State. Interspersed with the side-by-side progress cited above, was the work done for the forest products and paper industry as well as design of sugar refineries.

In reviewing the history of the firm, the observation of George W. Bacon, one of the founding partners, in 1932 is indicative and prophetic: "Change is the law of life. It is the keynote of business. Business exists to give people what they want. Their wants are in a constant state of flux. Change goes far faster than men can know." In consonance with this philosophy, a subsidiary, headquartered in Monroe, Louisiana, had been formed and started operations in 1931 as Ford, Bacon & Davis Construction Corporation, despite the fact that 1931 was not generally considered to be an auspicious time to start a new business. To round out the services required by industry, in 1966, Ford, Bacon & Davis, Texas, was incorporated and has moved recently into its new building at Garland, Texas, a suburb of Dallas. While each of the major segments of the corporation develops a certain degree of specialization, the resources of the whole provide a reservoir of experience and skills.

While Ford, Bacon & Davis Construction Corporation was incorporated in 1931, most of the work in which it was engaged was performed from project offices which were located close to the job site. However, with the increase in activity, a general office was established in downtown Monroe in 1944. The next year, however, the need for more office space and the press of our civilization (more parking space for employees) dictated the move one-half mile down the river to 805 South Grand Street.

By 1957, space requirements for all departments had so increased that an office and engineering building was constructed on 19 acres in the southern part of Monroe. At the same time, the equipment, warehouses, and shops of the construction department were moved to this location. In 1967, there was added an 18,000-square-foot annex for engineering design work which included two large drafting rooms, engineering library, and client offices, as well as a conference room, and executive offices.

While many engineering firms, in the normal course of business, delve into and hopefully solve many varied problems, it appears that Ford, Bacon & Davis has had an unusually wide exposure. For example,

- ...from studies to determine the optimum location of a brewery in the United States, to the design and construction of a railroad in Australia . . .
- ...from the design of a titanium dioxide plant in Georgia, to independent verification of environmental control plans for the treasures of the Metropolitan Museum in New York . . .
- ...from valuation reports for tax and rate-making purposes, to pipeline crossing of the Mississippi River . . .
- ...from combined cycle power plants, to pollution control studies . . .
- ...from sulfur-recovery plants, to economic feasibility studies for utilities and industrial plants . . .

Fred C. Culpepper, Jr., P.E.
Senior Vice President
Ford, Bacon & Davis Construction Corp.

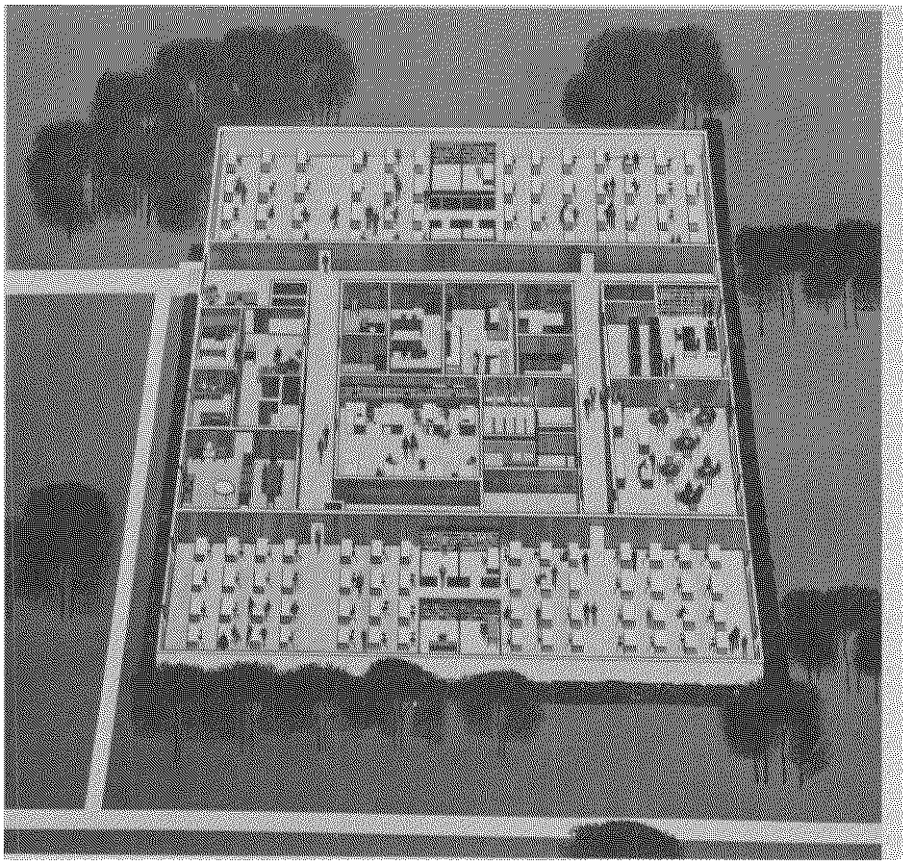
...from coal slurry pipelines, to offshore gas pipelines . . .

...from market surveys, to design of carbon black plants . . .

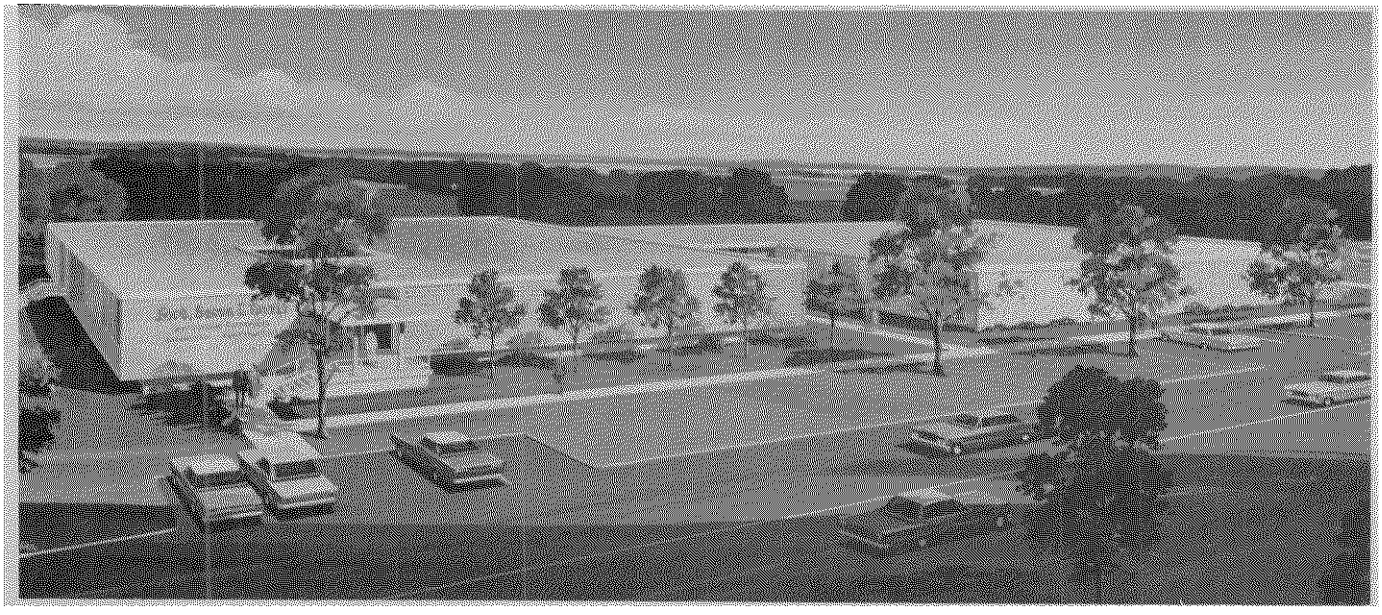
...from power plants to automated warehouses . . .

It is history that each major conflict in which the United States has been committed has found it largely unprepared, both militarily and industrially. During both World Wars, Ford, Bacon & Davis has contributed its skills and experience in providing the sinews of war on an emergency basis. During World War II, the firm was involved in engineering design and construction for the Manhattan District at Oak Ridge, and with butadiene, styrene, and copolymer plants, as well as ordnance installations. Also, many key people, on loan from the company served as "dollar-a-year"

(Continued on Page 21)



Engineering building in Monroe, above, counterclockwise along west wall (foreground): drafting group I, engineers' offices, drafting group II; south wall: employees' dining room, library; east wall: drafting group IV, engineers' offices, drafting group III; north wall: vice president and chief engineer's suite and engineering department conference room. Inner area includes estimating department, stenographic pool, reproduction room, and visiting client's offices. Rendering below is of the main office of FB&D Construction Corp.



THE 1969 CONVENTION PREVIEW

JUNG HOTEL APRIL 23, 24, 25 NEW ORLEANS, LA.

PRELIMINARY PROGRAM

WEDNESDAY, APRIL 23

7:00- 8:30 p.m. **EARLY BIRD COCKTAIL PARTY** (A sponsored party in the Exhibit Area)

THURSDAY, APRIL 24

8:00 a.m. Registration
9:15-10:15 a.m. General Session
10:15-10:30 a.m. Coffee break
10:30-11:30 a.m. General Session
11:30 a.m. **BEER AND PO BOY LUNCHEON** (To be held
1:30 p.m. in Exhibit Area. We will have a strolling musical trio to play during this time.)
1:45- 2:45 p.m. General Session
2:45- 3:00 p.m. Coffee break
3:00- 4:00 p.m. General Session
6:30- 8:30 p.m. **EXHIBITOR'S COCKTAIL PARTY** (To be held in Exhibit Area. We will have a six-piece Dixieland band.

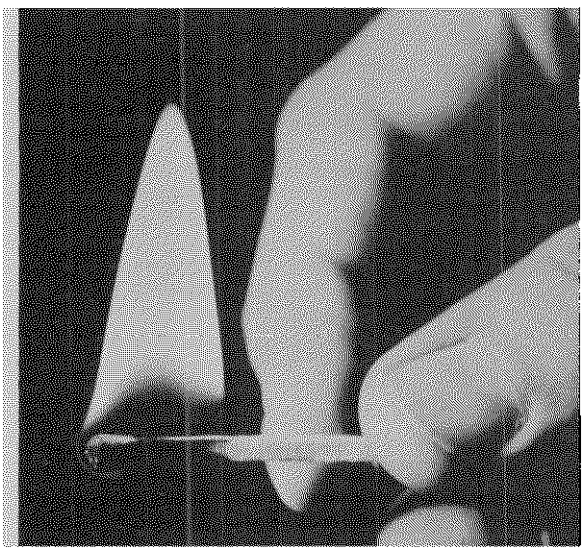
FRIDAY, APRIL 25

8:00 a.m. Registration
8:30-10:00 a.m. Meetings of members in Private Practice, Industry, Government and Education
10:00-10:15 a.m. Coffee break
10:15-12:00 Noon Student Technical Papers
12:00-12:30 p.m. **COCKTAILS IN EXHIBIT AREA** (A sponsored cocktail party)
12:45- 2:30 p.m. Honors and Awards Luncheon with Keynote Speaker
2:30- 3:00 p.m. General Society Business meeting
3:00 -4:00 p.m. Committee Meetings
4:00 p.m. Board of Directors meeting

Convention chairman Al Adoue, Jr., seated center, is pictured with members of his committee during a recent meeting. Seated from left are Norman Ferachi, LES Executive Secretary; Adoue; William Frye, Jr., program chairman. Standing from left are Jerrell Freeman, finance chairman; Dale Mackie, publicity chairman; and Warren Chigoy, exhibits chairman.

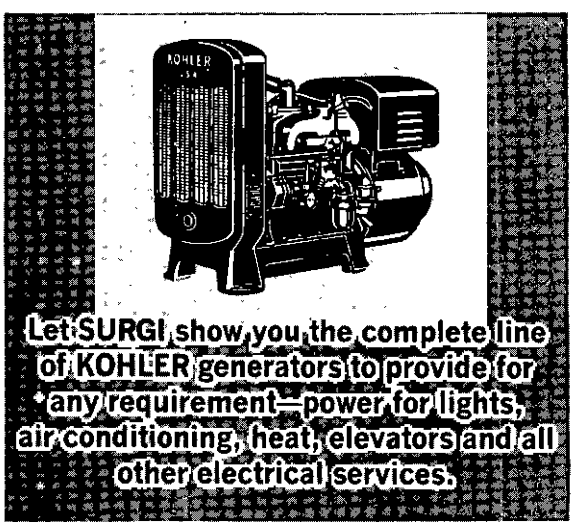
Other members of the Convention Committee are shown below. Seated from left are Ronald Cressy, registration chairman; Mrs. Adele Cressy and Mrs. C. M. Cockrell, ladies auxiliary. Standing are Ray Maddux, vice chairman; David Fried, New Orleans Chapter president, and L. C. Grundmann, program committee. Members not pictured were Rodney Mouton, arrangements chairman; Raymond Gould and William Hebert, both on registration committee; and John Vogt, Jr.; liaison with state board.

A match is a poor substitute when power fails...



Kohler Electric Plants

bring the power back, in seconds, when an emergency occurs



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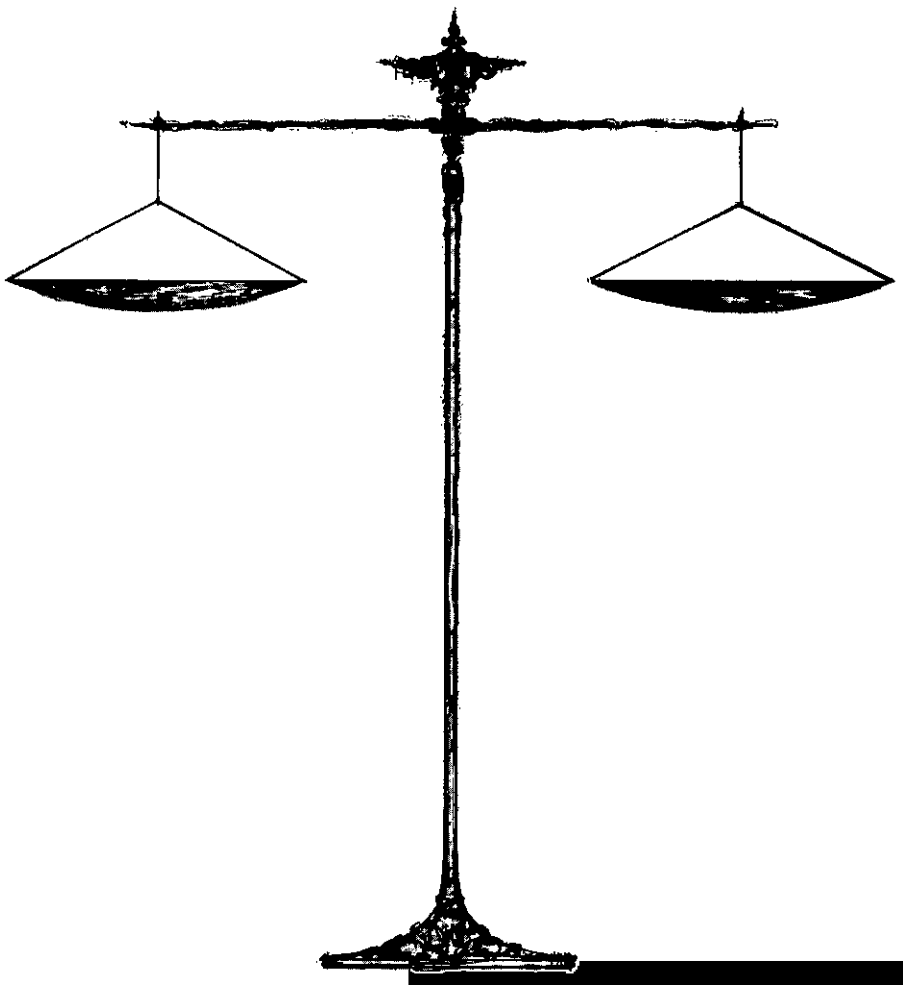
SELECTION OF FIRMS



Case No. 64-3
Subject:

Selection of Firms—Canon 25—Canons of Ethics

Facts:

Roe & Doe, a local firm of consulting engineers, had been interviewed by representatives of the city engineering staff authorized to conduct interviews and make recommendations to the city council for employment of a consulting engineer for a water-sewer job. In due course, Roe & Doe were notified by the engineering staff representative that they had been recommended for the work. Before the city council acted upon the recommendation which it had received, Smith & Jones, also a local consulting engineering firm who knew the factual background, appeared before the city council and presented their qualifications for the work. They were interviewed by the city council and a contract for the work was negotiated with them.

Roe & Doe allege that Smith & Jones are guilty of unethical conduct in contacting the city council for the same work, knowing that Roe & Doe had already been recommended. Smith & Jones, however, contend that they were invited by the city council to present their qualifications.

Questions:

Was it unethical for Smith & Jones to present their qualifications to the city council:

1. On their own initiative?
2. If requested to do so by the city council?

References:

Canons of Ethics — Canon 25 —"He will not try to supplant another engineer in a particular employment after becoming aware that definite steps have been taken toward the other's employment."

Discussion:

In Case 62-10 and Case 62-18 we considered the meaning of the language in Canon 25 regarding "definite steps" having been taken for the employment of an engineer. In these cases it was held that an engineer may not ethically seek to displace another engineer who has been or is about to be retained for particular work.

The present case raises the further question of whether a recommendation to retain a particular firm constitutes "definite steps" under Canon 25. We defined "definite steps" in Case 62-10 to mean ". . . that the engineer has been informed by the client that he has been selected to negotiate an agreement for a specific project." We believe that this definition should be extended to cover a situation of the type in this case—where the engineer has been notified by an authorized agent of the client that he has been recommended to be retained for a specific project. On this basis, it would be unethical for another engineer or firm to take the initiative in trying to supplant the engineer or firm who was under consideration on the basis of an authorized recommendation to the client. This is distinguished from the situation in which a number of engineers or firms seek to present their qualifications before a selection has been made or before an official recommendation has been submitted.

If Smith & Jones, however, did not take the initiative and

were, in fact, invited by the city council to present their qualifications for consideration, we think that the city council has, in fact, exercised its authority to disavow the "definite steps" which had been taken by the city's engineering staff representatives. The city council has a clear legal right to defer action on the recommendation for Roe & Doe if it desires to consider other firms before making a final selection. Under these circumstances, Smith & Jones would not be trying to "supplant" another engineer or firm. We construe "supplant" in the light of the dictionary definition of "to supersede another, especially by force, trickery, or treachery," to which for our purposes we would add, "or unethical means."

Although not technically required by the Canons or Rules, we think it would be desirable professional conduct for Smith & Jones to advise Roe & Doe of the circumstances and seek to ascertain whether there were valid reasons for Smith & Jones to decline the invitation of the city council.

Conclusions:

1. It would be unethical for Smith & Jones to contact the city council on their own initiative.

2. It would not be unethical for Smith & Jones to respond to an invitation from the city council for consideration of their qualifications for the work.

Board of Ethical Review

PHIL T. ELLIOTT, P.E.
A. C. KIRKWOOD, P.E.
WALDEMAR S. NELSON, P.E.
MARVIN C. NICHOLS, P.E.
EZRA K. NICHOLSON, P.E.
N. O. SAULTER, P.E.
L. R. DURKEE, P.E.

Ford, Bacon & Davis

This photo taken in 1896 shows the electrification of the Canal & Claiborne line in New Orleans using the street divider or "neutral ground" for tracks.

men with the War Production Board and the Reconstruction Finance Corporation.

After the original partnership of Ford, Bacon, and Davis was reorganized and incorporated, there was an increasing awareness of the necessity for retention of control by those who were active in the day-to-day operation. This was particularly important because of the professional nature of the majority of the work.

Accordingly, a plan was developed and implemented whereby voting common stock could only be held by officers, directors, and key employees during active service with the corporation. By prearrangement, the corporation repurchased the stock of any employee no longer active.

Perhaps the effectiveness of such a policy is shown by the fact that over 75 percent of directors of Ford, Bacon & Davis Construction Corporation are registered professional engineers. As a matter of interest, there are in the Monroe office 30 registered professional engineers, covering qualification in 35 states.

Geared to the demands generated by the industrial expansion of the South, Ford, Bacon & Davis Construction Corporation continues to offer varied engineering and construction services with its four operating divisions — engineering design, projects, construction, and sealants. The company has always been very active in promoting the engineering profession. It is now headed by George O. Phillips, president, who is a member of the Louisiana Engineering Society. Fred C. Culpepper, Jr., a member of the board of directors of LES, is senior vice president of the corporation.

It may be of interest to note that Alexander Leslie Black, who later became a vice president of Ford, Bacon & Davis, was one of the charter members of LES and was a signatory to the original letters of incorporation of the Society.

MEMBERSHIP CONTEST STANDINGS

RULES OF THE CONTEST

1. A Chapter must reach its 10% quota to qualify as the Contest winner.

2. The Chapter with the greatest percentage increase, based on application and reinstatement requests received by the state LES Office through the week prior to the June annual meeting will be the winner. Transfers into a Chapter or grade changes will not be counted as part of the quota. Students upon graduating will be counted for a Chapter only if the Chapter gets them to fill out an Application Form with up-dated information and, also, if they reside in the Chapter's Area.

CONTEST STANDINGS

RANK	CHAPTER	QUOTA	APPLICATIONS	PERCENT
1	MONROE	12	19	158.33
2	SHREVEPORT	18	27	150.00
3	ALEXANDRIA	11	15	136.36
4	BATON ROUGE	50	34	68.00
5	LAKE CHARLES	13	8	61.54
6	NEW ORLEANS	79	45	56.96
7	LAFAYETTE	15	7	46.67
	TOTALS	198	155	78.28

ENGINEERS IN NEWS

E. M. "Jiggs" Freeman, a Past President of the Louisiana Engineering Society, was recently made a Life Member of the American Society of Civil Engineers.

The American Wood Preservers Institute cited **J. Bres Eustis**, president of Eustis Engineering Company of New Orleans, for his contribution to the science of pile foundation engineering. Mr. Eustis was a participating author in a series on pile foundation engineering in the WOOD PRESERVING NEWS.

Two Baton Rouge engineers with the La. Department of Highways were recently promoted. **Roger Guissinger**, a past member of the LES Board, was promoted to Chief Loca- and Design Engineer. **Steve Nasca** was promoted to Bridge Maintenance Engineer.

Charles A. Killgore, Ruston, was honored with the Silver Beaver Award of the Boy Scout Council in Monroe in January. Mr. Killgore is Assistant Professor of Chemical Engineering and Director of the Louisiana Tech Nuclear Center. In 1968 he was Ruston's Young Man of the Year.

Also receiving the Silver Beaver Award, the Monroe Council's highest honor, was **Ernest J. Falgo, Jr.**, Bastrop.

Walter F. Blessey has been appointed to the Board of Commissioners of the Orleans Levee District.

CONTINUING EDUCATION

The Division of Continuing Engineering Education in cooperation with the Water Resources Center at Louisiana Polytechnic Institute is sponsoring a Water Resources Institute to be held on campus June 19, 1969. The subject of the institute will be "Aspects of the Diversion of Mississippi River Water to Texas and New Mexico." The purpose of the institute is to bring together persons from various industries, governmental agencies, consulting firms, municipalities, and universities who are interested and involved in the program subject as well as those persons affected by such an endeavor.

Anyone interested in receiving more information on the Water Resources Institute should contact Dr. Bobby E. Price, Director, Water Resources Center, Louisiana Polytechnic Institute, Ruston, Louisiana 71270.

NEW MEMBERS

ALEXANDRIA

Harold H. Myers
108 North 12th St.
Oakdale, La. 71463

Larry R. Wells
608 Edgewood Dr.
Pineville, La. 71360

BATON ROUGE

Zahir Bolourchi, P.E.
940 Stanford Ave., #301

Jerry W. Broussard
11905 Baylor

James R. Buchtel, P.E.
11087 Bellarbor Dr.

Norman C. Ferachi
454 Wingate

Marshall M. McKell, P.E.
449 Nassau

Ted J. Nissing, P.E.
834 Seyburn Court

Hassan K. Salam
715 Cora Dr.

Winfred L. Summers, Jr.
P. O. Box 15669

James D. Wethern
2726 McConnell Dr.

Dempsey D. White, P.E.
2045 Sierra Vista

LAFAYETTE

Leonard G. Fontenot, P.E.
P. O. Box 7
St. Landry, La. 71367

LAKE CHARLES

John J. Caruthers
P. O. Box 1562
Lake Charles, La. 70601

MONROE

Marshall M. Cloud, P.E.
1822 E. Madison
Bastrop, La. 71220

Jerome M. Hatcher, P.E.
Louisiana Tech
Industrial Engineering
Ruston, La. 71270

Mrs. Peggy R. McDaniel, P.E.
International Paper Co.
La. Mill
Bastrop, La. 71220

Charles F. Stubbs, P.E.
P. O. Box 1762

Ralph N. Temple
Swartz, La. 71201

NEW ORLEANS

Ronald L. Beam, P.E.
4809 Jefferson Hwy.

Lyle W. Ferguson, P.E.
5516 S. Saratoga

Prescott S. Follett, P.E.
439 Betz Place
Metairie, La. 70005

James L. Mills, P.E.
13501 Chef Menteur, Apt. 236

Laurent J. Noel, Jr., P.E.
4413 Karen Ave.

Donald A. Olivier, P.E.
1909 Condon Ave.
Metairie, La. 70003

George O. Starke, P.E.
1941 Concord Road
Gretna, La. 70053

SHREVEPORT

Francis V. Barnett, P.E.
3460 Broadmoor

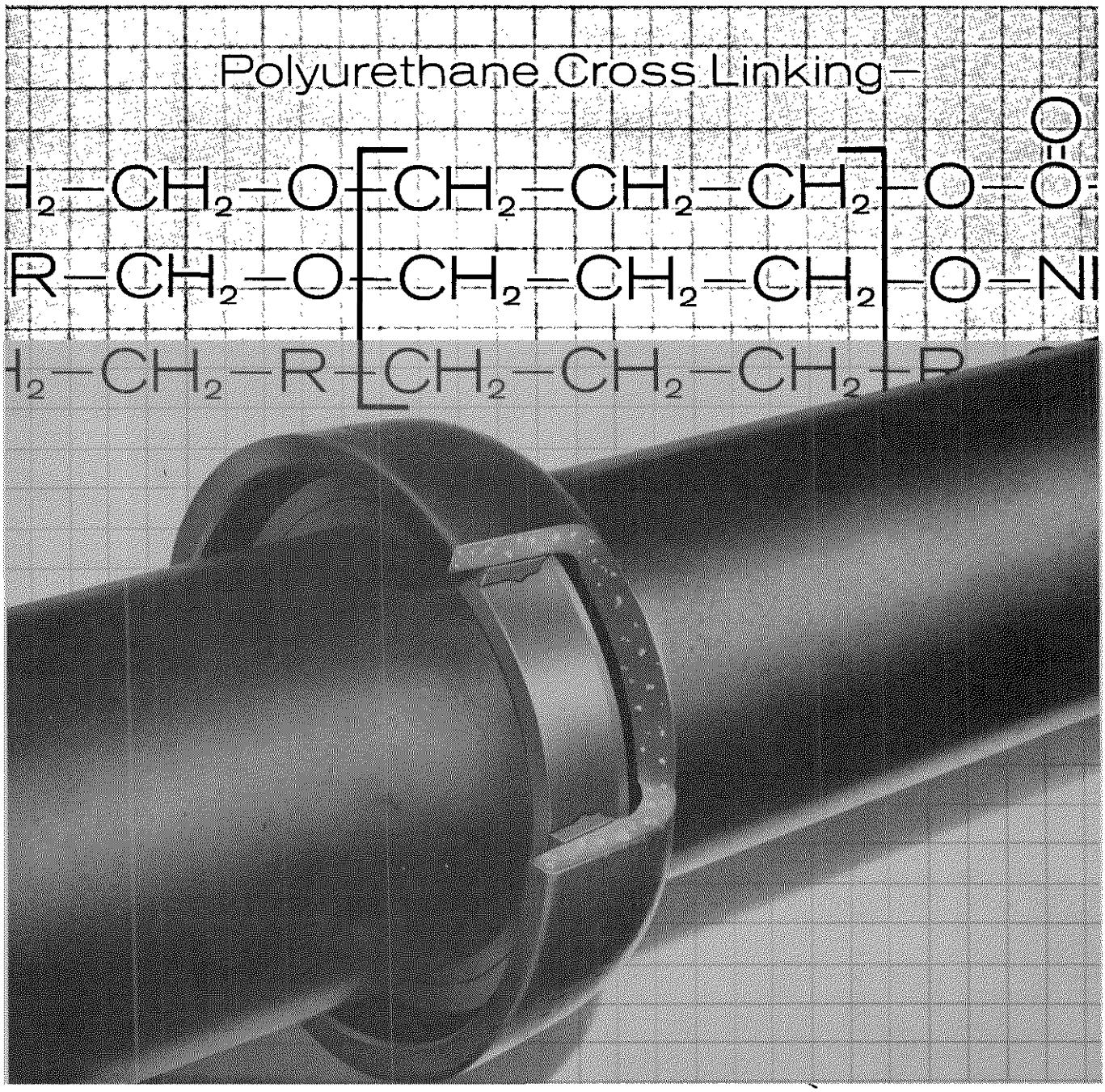
L. R. Butler, P.E.
P. O. Box 1407

Harold J. Gibson, P.E.
1142 Janther Place

MEMBERS DROPPED

Herman M. Andreas
Bruce K. Bailey
Sidney W. Bailey
Paul K. Barsley
Frank J. Basile
Joseph H. Benton
C. Z. Breaux, Jr.
Robert F. Burns
Albert P. Castaing
Felix G. Cole
Billy C. Daniels
Jim P. Elfers
Billy R. Foster
H. R. Gilbert
Raul Gonzales
James O. Gundlach
Walter T. Hermann
William H. Jarrell
Thomas H. Johnson
Elwin R. Lagasse
Stephen Langlinais*
John L. Lewis
Douglas R. Long
William B. Martin
Charles R. McBride
Charles B. McCarthy
Gerald T. Naffe
Ernest V. Nahr
Albert Patterson
J. R. Pousson*
Gerald G. Reaux
William E. Robert
Joseph Schexnaider
Herman T. Schmitt
Henry D. Sento
Antonio Shelton
Edward R. Sherwood
James B. Shipp
Enoch Talley
Henry H. Talley
Edward V. Trahan
Irwin L. Tunis
Alex R. Valdo
Anthony Vaughn
Dennis J. Vidrine
Walter Whitehead
David G. Williams*

*Membership revoked



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It has more "fight back," too. Stress relaxation tests prove this . . . and proves the urethane Coupling provides a tight joint indefinitely.

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February 12, 1969
By the Louisiana State Board of Registration for Professional Engineers and Land Surveyors

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Nashville, Tenn.
Barton, Robert L.—Petroleuum
New Orleans, Louisiana
Borders, William E.—Electrical
Shreveport, La.
Boss, Aldrich J.—Industrial
Baton Rouge, La.
Bowers, Martin J. E.—Civil
New York, New York
Bradshaw, Charles E.—Civil
Atlanta, Georgia
Broussard, Charles C. A.—Civil
New Orleans, Louisiana
Bryant, Philip A.—Chemical
Baton Rouge, La.
Candreia, Thomas A.—Electrical
New Orleans, La.
Carter, Loyal W.—Chemical
Lake Charles, La.
Clemmons, William R.—Chemical
Baton Rouge, La.
Desai, Pratap U.—Mechanical
Houston, Texas
Donnelly, Richard E.—Mechanical
Middletown, New York
Dunlap, Charles E. Jr.—Chemical
Baton Rouge, La.
Espino, Enrique I.—Civil
Puerto Rico
Farrar, Harry V., Jr.—Civil
Alexandria, La.
Garrett, Billy J.—Agricultural
LaPlace, La.
Gilbreath, Charles H.—Civil
Tuscaloosa, Alabama
Griffin, William G.—Mechanical
New Orleans, La.
Groves, Stanford E.—Chemical
Baton Rouge, La.
Guerra, Ricardo J.—Petroleum
Houston, Texas
Guidry, Joseph T.—Electrical
Greenwell Springs, La.
Guinan, Homer Ray—Petroleum
Garden City, New York
Hinckley, Robert O.—Mechanical
Opelousas, La.
Hollenbeck, William J.—Mechanical
Pampa, Texas
Honosky, Tony J., Jr.—Industrial
Baton Rouge, La.
Houlder, Clifford J.—Civil
Morgan City, La.
Hubbard, Lloyd F., Jr.—Mechanical
Pittsburgh, Pa.
Gurney, Isaac M.—Chemical and Mechanical
Baton Rouge, La.
Immele, Leonard B.—Mechanical
Kansas City, Missouri
Ingallinera, Manuel M.—Chemical
Baton Rouge, La.
Jabben, Gary D.—Electrical
Shreveport, La.
Jordan, Brad B., Jr.—Civil
Roxboro, North Carolina
Landry, John W.—Civil
Carencro, La.
Lees, William L. G.—Electrical
New Orleans, La.
MacNaughton, Michael G.—Civil
Kirtland AFB, New Mexico
Marquez, David J.—Civil
El Paso, Texas
Meenen, Arthur R.—Civil
St. Louis, Missouri
Naylor, Rodney A.—Civil
New Orleans, La.
Ottersen, Otter P.—Civil
Shreveport, La.
Pannagl, Donald A., Sr.—Mechanical
Houston, Texas
Porche, Isaac R.—Electrical
New Orleans, La.
Rabalais, Michael R.—Mechanical
Baton Rouge, La.
Ramirez, Adolfo, Jr.—Civil
Metairie, La.
Randal, William E.—Electrical
El Paso, Texas
Reeves, John R., Jr.—Chemical
Bastrop, La.
Rimkus, Robert E.—Chemical
Pasadena, Texas
Robbins, Garland E.—Civil
Beaumont, Texas
Rollman, William H.—Electrical
San Antonio, Texas
Service, Willis J., Jr.—Chemical
Houston, Texas
Seward, Robert M.—Civil
Chicago, Illinois
Shaver, John W.—Civil
Raleigh, North Carolina
Sirmen, Samin I.—Mechanical
Dallas, Texas
Smith, Larry James—Mechanical
Louisville, Kentucky
Soukup, Charles H.—Civil
Country Club Hills, Ill.
Tamayo, Ignacio J.—Mechanical
Gretna, La.

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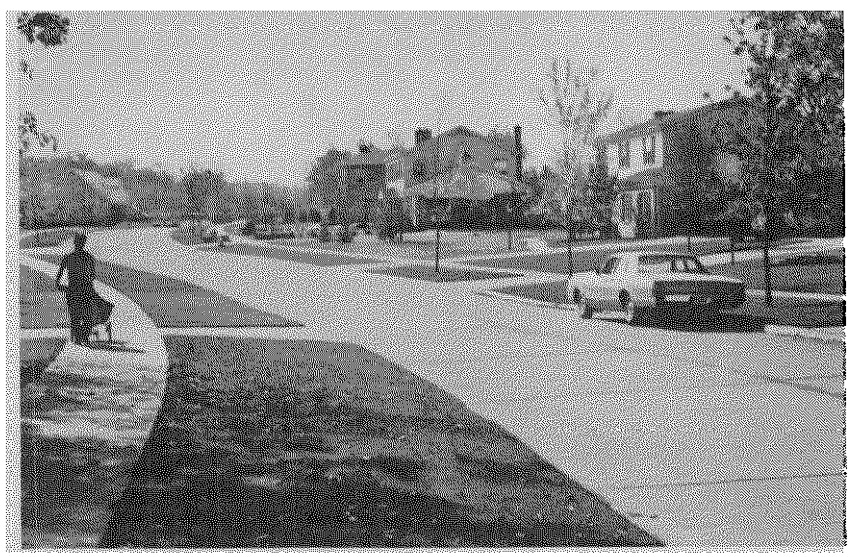

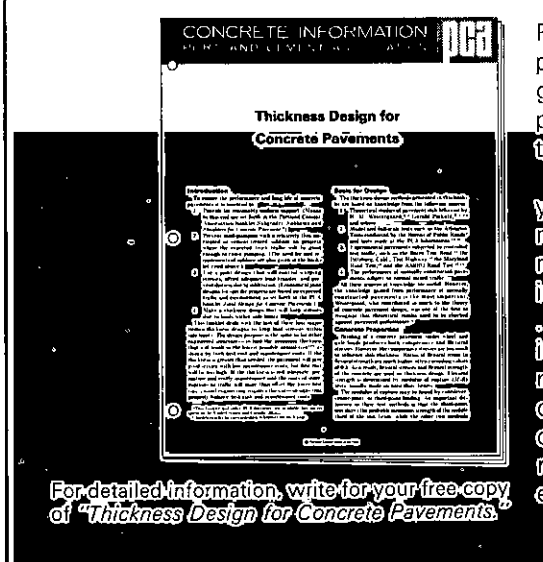

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Fayetteville, Arkansas
Tibbitts, Jonathan C.—Civil
San Diego, Calif.
Tilly, Harwell P.—Civil
Metairie, La.
Venator, Vern K.—Mechanical
Monroe, La.
Villaume, Jacques P.—Mechanical
Metairie, La.
Wallace, Phillip K.—Electrical
Baton Rouge, La.
Walters, Floyd G.—Chemical
Drexel Hill, Pa.
Webre, Desire J., Jr.—Agricultural
Baton Rouge, La.
Wood, John Wright, Jr.—Electrical
San Diego, Calif.
Woodward, James W., Jr.—Civil
Terry, Miss.

LaBorde, Lance J.—Land Surveyor
Mansura, La.
Plauche, John P.—Land Surveyor
Baton Rouge, La.
Prichard, Lawrence S.—Land Surveyor
Monroe, La.
Wineland, Doyle A.—Land Surveyor
Omaha, Nebraska

PROFESSIONAL ENGINEERS GRANTED REGISTRATION

December 4, 1968

By the Louisiana State Board of Registration for Professional Engineers and Land Surveyors

Allegro, Joseph J.—Civil
Hyde Park, Mass.
Baw, Philemon S. H.—Mechanical
Baton Rouge, La.
Barnett, William O.—Civil
Dallas, Texas
Bernat, Henry A.—Mechanical
Shreveport, La.
Bowman, James H. Jr.—Mechanical
Lake Charles, La.
Brown, Wilson D.—Mechanical
Haverford, Pa.
Brune, Fred G.—Industrial
Metairie, La.
Corliss, Fred R.—Mechanical
New Orleans, La.
Cummins, Donald P.—Mechanical
Pampa, Texas
Evans, Samuel G. Jr.—Civil
Atlanta, Ga.
Gramann, Henry T. Sr.—Mechanical
Huntsville, Texas
Guy, Luther W.—Civil
Liberty, Miss.
Hamm, Charles R.—Mechanical
Marblehead, Mass.
Harding, Charles I.—Civil
Jacksonville Beach, Fla.
Hill, Milton B. E.—Civil
Gulfport, Miss.
Hoxsie, Gerald R.—Mechanical
Metairie, La.
Johnson, Malcolm L.—Mechanical
Houston, Texas
Kerr, Clayton P.—Chemical
Cookeville, Tenn.
Kulawik, Stanley A.—Petroleum
Shreveport, La.
Lain, William G.—Electrical
Corpus Christi, Texas
Lapeyre, Pierre A.—Mechanical
Houma, La.
LeDoux, Charles H.—Electrical
Lake Charles, La.
Love, Orval R.—Mechanical
Spring, Texas
McDuff, Earl W.—Civil
Hurst, Texas
Munson, John H.—Civil
Sugar Land, Texas
Nado, Robert J.—Civil
Oakridge, New Jersey
Noble, Robert W.—Civi
Shreveport, La.
O'Malley, Richard J.—Mechanical
Brenham, Texas
Pattillo, Alexander F.—Civil
Birmingham, Alabama
Pickett, Alfred C.—Mechanical
Baton Rouge, La.
Pientka, Adam J.—Civil
Park Ridge, Illinois
Rasor, Charles F.—Civil
Terrell, Texas
Rice, Howard G.—Mechanical
Irving, Texas
Sawvel, Glenn C.—Petroleum
Lafayette, La.
Schnebelen, Warren A.—Mechanical
Plaquemine, La.
Sibley, Ralph A.—Civil
Greenville, Pa.
Smith, Noel V. Jr.—Mechanical
Maplewood, La.
Smotherman, George L.—Mechanical
Minden, La.
Stipe, Dennis R.—Agricultural
Baton Rouge, La.
Sweeney, Ralph E.—Chemical
Bastrop, La.
Taylor, Glenn A. Jr.—Petroleum
Gretna, La.
Turner, Clyde Jr.—Civil
Denham Springs, La.
Waring, Charles D.—Mechanical
Marion, Ohio
Williams, Thomas Jr.—Electrical
Ruston, La.
Woodard, John M.—Civil
Little Rock, Ark.

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MINUTES - LES BOARD OF DIRECTION

DECEMBER 6, 1968
HILTON INN, KENNER, LA.

President Odom called the meeting to order with the following Board members present: John P. Vogt, Jr., P.E.; Hoyt Brown, P.E.; Fred C. Culpepper, P.E.; Farrell W. Adams, P.E.; S. J. Richard, P.E.; M. A. Steele, P.E.; William H. Miller, P.E.; David B. Fried, Jr., P.E.; E. J. McNamara, P.E.; Ashby B. Stevens, P.E.; Arthur E. Meyer, Jr., P.E.; Waldemar S. Nelson, P.E.; A. J. Szabo, P.E.; James F. Williams, Jr., P.E.; and T. J. Hogue, Jr., P.E. Also present were: Dan Vliet, P.E., Executive Secretary of the State Board of Registration; M. B. Ewing, P.E.; Roland W. Laurent, P.E.; John Grosch, P.E.; Frank W. Heroy, Jr., P.E.; Len Denson, P.E., representing the Ethics Committee, and Norman Ferachi, Executive Secretary.

The minutes of the November 8th Board meeting, after being corrected, were approved. The motion for approval was made by Mr. Nelson, seconded by Mr. Culpepper and passed.

Financial Report—The financial report of the Society from July 1 through the month of November was presented by Mr. Hogue. He said income was running somewhat higher than budgeted because the membership bills were mailed earlier this year, accounting for earlier returns. The total expenses are substantially equal to the amount budgeted to date. Mr. Nelson moved for acceptance of the report. The motion was seconded by Mr. Szabo and passed.

Functional Sections

Private Practice—Manual of Practice—President Odom reviewed the action of the Board at its last meeting on the revisions to the PEPP Manual of Practice. Mr. Meyer moved for acceptance of the Manual of Practice as presented. The motion was seconded by Mr. Szabo. After discussion it was agreed to distribute the Manual of Practice in mimeograph form to all members of the PEPP section, with the provision that after use in the form for one year, pertinent corrections will be made and a permanent manual published. The motion passed with the provision that (1) the manual be corrected to indicate that the Louisiana Engineering Society is associated with Engineers Joint Council and the National Society of Professional Engineers; and (2) that it be corrected to also state that names of qualified firms in private practice may be obtained from NSPE.

Government—No Report
Industry—No Report

Education—President Odom told the Board that many members in the field of education had expressed interest in forming a Professional Engineers in Education section within LES. Mr. Odom said he would request that Dr. J. J. Thigpen of Ruston act as Temporary Chairman for the section until a permanent section is formed and bylaws adopted.

Committe Reports

Liaison with Board of Registration—The Committee for Liaison with the State Board of Registration recommended that in view of the fact that Dr. Jesse Coate's term on the State Board has expired, the following names be presented to the Governor from which he is to appoint his successor:

Mr. Farrell Adams, P.E.
Dr. Jesse Coates, P.E.
Mr. Chris Demopolos, P.E.
Mr. Ed Jolly, P.E.
Dr. Thomas S. Leary, P.E.

Mr. Szabo moved that the list of names be submitted upon the written acceptance of all the nominees. The motion was seconded by Mr. Culpepper.

Mr. Hogue moved to amend the motion to add the name of Dr. Leonard C. Adams of LSU to the list. Mr. Szabo accepted the amendment, and the motion passed.

Revision of registration laws for Land Surveyors—President Odom informed the Board that Mr. Duclos and the committee studying revisions of registration laws for Land Surveyors had submitted a preliminary report. Copies of this report were passed to Board members present. Mr. Nelson moved that the Board receive and study the report. The motion was seconded by Mr. Culpepper and passed. Action will be taken at the next Board meeting.

Convention Report—Mr. Ferachi gave a progress report on the Annual Convention to be held April 23, 24, 25, 1969 in New Orleans. He reported that Al Adoue, convention chairman, has finalized his committe and the first meeting has been held.

Mr. Fried reported that he had written to the presidents of each chapter requesting that they select one of their members as liaison man for the convention and also work with the Ladies Auxiliary in each chapter. The duties of this liaison man will be to coordinate and promote attendance to the convention in their respective chapters. He stated that the convention committe will also include a member of the New Orleans Auxiliary.

Publication Committe—Mr. Hogue reviewed the proposals of Myron Tassin, the society's publication consultant, to stimulate advertising in the LOUISIANA ENGINEER. After discussion Mr. Nelson moved that the Society table action on the proposal. The motion was seconded by Mr. McNamara and passed.

Vocational Guidance—Mr. Grosch reported the progress of the Vocational Guidance committee. He stated that his committe will soon select LES finalists for NSPE sponsored scholarships and urged all chapters to submit their nominees as soon as possible.

Honors and Awards—Past-President McNamara informed

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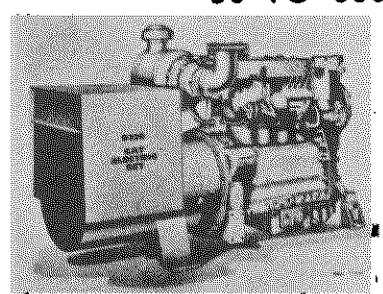

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the Board that February is the deadline for submitting nominees to the Honors and Awards Committee for consideration of LES awards.

Membership—Mr. Ewing presented the membership to the Board. The progress report as of December 5th is shown below:

Standing	Chapter	Quota	Applications	Percent of Quota
1	Shreveport	18	23	127.7778
2	Alexandria	11	14	127.2727
3	Monroe	12	12	100.0000
4	Baton Rouge	50	27	54.0000
5	Lake Charles	13	7	53.8462
6	New Orleans	79	40	50.6329
7	Lafayette	15	7	46.6667
	Totals	198	130	65.6566

Statewide Meetings—Mr. Hogué gave a progress report for the Ad Hoc committee appointed to study statewide meetings. After much discussion it was pointed out that most of the chapters feel that all meetings should be conducted within the state, with the Annual Convention being held annually in New Orleans and all other statewide meetings rotated throughout other chapters so that each will have an opportunity to host a statewide meeting. It was also pointed out that the chapters feel that the Winter Meeting should be eliminated beginning in 1970. President Odom requested that the committee finalize this report and present it at a later Board meeting.

Winter Meeting in Baton Rouge—Mr. Ferachi made a report on the coming Winter Meeting to be held in Baton Rouge on January 10-11, 1969. The program for the meeting was presented. It provides for a cocktail party on the evening of the 10th, time for each functional section and state committee, and time for the Woman's Auxiliary. A general Society business meeting is scheduled after the luncheon. The meeting concludes with a Board meeting.

Engineers Joint Council—Mr. Ferachi read a letter from Dr. Roger W. Richardson wherein he cited several reasons why LES should retain its membership in Engineers Joint Council. Mr. Nelson moved that Dr. Richardson's report be accepted and that LES retain its membership in EJC. The motion was seconded by Mr. Szabo and passed.

Engineering Technicians — President Odom informed the Board that Mr. Duclos has been appointed chairman of the State Committee on Engineering Technicians. He pointed out that it is the duty of each chapter president to name 2 members to this State committee and also form a chapter committee on engineering technicians. He urged all chapters to comply as soon as possible.

New Business

Discussion of State Registration Laws—President Odom introduced Dr. Dan Vliet, Executive Secretary of the State Board of Registration. Dr. Vliet gave a report on the State Board of Registration's policies concerning changes in the Engineers Registration Law. He said the Board welcomed the opportunity to work with LES concerning a review of the law.

Electrical and Mechanical Codes—President Odom read a letter from Mr. Wiley Poole of Baton Rouge concerning engineering matters before the City Council of Baton Rouge. After discussion it was decided to circulate this letter to all members of the Board for review at the next Board meeting.

Mr. Bubenzer's letter—Mr. Ferachi noted that he had received a letter from Mr. Bubenzer concerning Dean Rob Roy's proposal for a new engineering society. After discussion it was decided to circulate this letter to all members of the Board for review at the next Board meeting.

Continuing Education—Mr. Hoyt Brown requested that a letter which he had drafted be written to the deans of the engineering colleges in the state citing the need for and request them to consider conducting a course in engineering management intended for engineers who have been out of school 15 years or more. There being no objection, President Odom agreed to write the letter to the deans.

Obituaries—President Odom informed the Board that he was disappointed in the attention being paid by the chapters to preparation of memoirs and that he intends to send a memo to each chapter president outlining a procedure for preparation of such memoirs and urging them not to neglect this small task of recognizing the passing of our fellow members.

Membership Report—Mr. Ferachi submitted a list of new applicants which had been published in the October issue of the LOUISIANA ENGINEER and reported that no objections had been received. A list of members who had resigned or died since the last Board meeting was also submitted.

President Odom announced that Mr. Leroy Culberton, Regional Vice President of NSPE, had accepted an invitation to attend the April Convention in New Orleans.

The next meeting of the Board was set for January 11th at the conclusion of the Winter Meeting in Baton Rouge.

There being no further business, Mr. Vogt moved that the meeting adjourn. The motion was seconded by Mr. Hogue and passed.

NOVEMBER 8, 1968

SHERWOOD FOREST COUNTRY CLUB
BATON ROUGE, LA.

President Odom called the meeting to order with the following Board members present: Daniel V. Cresap, P.E.; Ashby Stevens, P.E.; Harry D. Richardson, P.E.; S. J. Richard, P.E.; M. A. Steele, P.E.; A. E. Meyer, P.E.; Farrell W. Adams, P.E.; William H. Miller, P.E.; James F. Williams, P.E.; Waldemar S. Nelson, P.E.; E. J. McNamara, P.E.; John P. Vogt, Jr., P.E. and T. J. Hogue, Jr., P.E. Also present were: Guy J. Seghers, Jr., P.E.; M. B. Ewing, P.E.; Frank M. Heroy, Jr., P.E.; Roger W. Richardson, P.E.; Charles Hair, P.E.; Jack Perrault, P.E.; Ray Storms, P.E.; Louis Duclos, P.E.; and Norman Ferachi, Executive Secretary.

The minutes of the October 4th Board meeting were read, and after being corrected, were approved. The motion for approval was made by Mr. Vogt, seconded by Mr. Ewing and passed.

Financial Report—The financial report of the Society from July 1 through the month of October was presented by Mr. Hogue. It was pointed out that although on a cash basis the Society is living within its budget, that there are unpaid bills in the amount of approximately $3,700 outstanding. It was also pointed out that advertising income is outstanding in the amount of approximately $2,500. There being no objections, the President accepted the report.

Delinquent Memebers — Mr. Hogue had prepared a list of members by chapter showing the outstanding dues amount owed for 1968 which he discussed. A copy of each chapter's list was given to each chapter president and Mr. Hogue urged them to contact delinquent members without delay in view of the fact that unless a member's dues are paid before the end of the year, membership in the Society shall be forfeited.

Functional Section Reports

Private Practice—Mr. Meyer noted that the PEPP Section had reviewed the proposed Manual of Practice for Professional Engineers in Private Practice and recommended that the Society adopt this manual for use by the engineers in the Society. The PEPP Section also recommended that two minor changes be made prior to publication. After discussion, Mr. Williams moved that the Board withhold action on the matter until the next Board meeting. The motion was seconded by Mr. Adams and passed. President Odom then requested that all Board members be furnished a copy of the report for full study.

Government—Mr. Cresap distributed copies of a proposed change in the PEG Section Bylaws. The proposed change is as follows: "(1) The Professional Engineers in Government Section being a state-wide functional section of the Louisiana Engineering Society shall include in its organization a delegate and alternate delegate from each LES chapter, to be appointed by each chapter. Delegates and alternate delegates shall attend functional section meetings and report at the chapter level proceedings and actions of the PEG. Further, the delegates and alternate delegates shall be responsible to promote participation and interest in the PEG and LES." Mr. Vogt moved that the proposed change be adopted. The motion was seconded by Mr. Nelson and passed.

Industry—Mr. Steele informed the Board that there was nothing to report from the Section of PEI. President Odom requested that the PEI Section study the NSPE 1969 Industrial Professional Development Award and report back to the Board.

Committee Reports

Ad Hoc Committee—Engineering Technicians—Mr. Duclos said that his Ad Hoc Committee had made an in-depth study over the last several months on the need for having an engi-

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- Sola-Flex Expansion Joints
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Application Engineers to Southern Industry

neering technicians committee. After discussion Mr. Adams moved that the President be authorized to appoint a State Committee to continue the activities of the Ad Hoc Committee on Engineering Technicians, with the understanding that chapters set up similar committees. The motion was seconded by Mr. Hogue and passed.

Liaison with the State Board of Registration—In the absence of Mr. Stokes, President Odom reviewed his written report. This report outlined the recommendations on the forthcominng vacancy on the State Board of Registration for Professional Engineers and Land Surveyors. Dr. Roger W. Richardson withdrew his name for consideration and Mr. Vogt moved that the report be returned to the committee to replace Dr. Richardson's name and that assurances be obtained from the nominees that they would be willing to serve and would have the time to serve if elected. The motion was seconded by Mr. Williams and passed. Mr. Nelson suggested that Mr. Stokes inform each nominee of the amount of work involved and obtain their written assurances that they would serve if appointed.

Membership—The Secretary-Treasurer reported that he had received an addendum to the petition to establish the new membership classification of "Privileged Member." Mr. Ewing reported that the word "Privileged Member" was as defined and recognized by the National Society of Professional Engineers and that this will be taken before the general meeting of the membership in January.

Mr. Ewing distributed copies of the membership contest standings as of Nov. 8th. The standings were as follows:

Standing	Chapter	Quota	Applications	Percent of Quota
1	Shreveport	18	22	122.222
2	Alexandria	11	3	118.182
3	Monroe	12	7	58.333
4	Lafayette	15	7	46.667
5	New Orleans	79	33	41.772
6	Baton Rouge	50	19	33.000
7	Lake Charles	13	2	15.385
	Totals	198	108	54.5454

Year—33 percent
Percent of Quota—55 percent

Mr. Ewing also requested that the membership contest results be published bi-monthly in the LOUISIANA ENGINEER. President Odom directed that this be done.

Young Engineers' Committee — Mr. Charles Hair gave a progress report in which he outlined to the Board that the purpose of this committee would be to promote professional development, citizenship, ethical conduct and other worthwhile goals for young engineers as published by the National Society of Professional Engineers. Mr. Hair stated that to date he has received appointments to his committee from one chapter president. Mr. Nelson requested that the deans of the state's engineering schools be advised of the availability of the Senior Kits published by NSPE for new engineering graduates. President Odom directed Mr. Ferachi to handle this for the Society.

Legislative Committee—Mr. Jack Perrault, who is chairman of the Legislative Committee, informed the Board that he had talked to an assistant of the Governor concerning the lists of nominees previously submitted to the Governor to fill the 2 vacancies on the State Board of Registration. In addition, he has sought the assistance of Senator Eaton in the matter. Mr. Perrault was told that the matter would be brought to the attention of the Governor without delay.

Report on Statewide Meetings—Mr. Hogue gave an interim report on the reaction to a questionnaire concerning statewide meetings that he had sent to the chapters. He said that only two chapters have reported to date. The concensus of the submitted reports is that perhaps one of the state meetings can be eliminated and that the Spring Convention be held annually in New Orleans and that other meetings be rotated among all chapters. President Odom requested that the full report be finalized as early as possible.

Chapter Evaluation—Each chapter president present reported his feelings toward the NSPE Chapter Evaluation Program. Each reported acceptance of the procedure with the intention that it be used as a guide in setting their goals for the year.

New Business

Administrative Procedures—Mr. Adams moved that the Secretary-Treasurer make an Annual Membership Audit Report at the Board meeting held in June each year at the time of the installation of officers; this report to include a breakdown of all grades of membership by Chapters and non-residents giving the last year's totals, the changes and the new totals, and the number of deceased, resigned and dropped; the period of the report to be for approximately one year starting at the date of one annual meeting and ending with the next. The motion was seconded by Mr. Meyer and passed.

Mr. Adams moved that (1) the Secretary-Treasurer establish a permanent registry of all Society publications form numbers; (2) that all forms be given an LES form number assigned and printed on it, minor revisions to be given the notation as to the revision number and major revisions to have new numbers; (3) samples of every form to be permanently filed in the registry; (4) the only publications not to be assigned form numbers be the LOUISIANA ENGINEER magazine and the newsletter which are numbered serially, or other one-time publications; and (5) all forms such as membership pamphlets, applications, processing, membership card, membership certificate, dues notices and other office forms shall have form numbers. The motion was seconded by Mr. Meyer and passed.

The Secretary-Treasurer distributed printouts furnished by our contractor for computer work of the membership rolls of each chapter to each chapter president. He noted that the printouts had not been checked by the state office and requested that each chapter make a detailed verification and return it to the state office as scon as possible.

Attorney Fees—President Odom stated that at the recent session of the State Legislature, it was necessary to retain an attorney jointly with the Consulting Engineers Council to represent the engineering profession in fighting two bills introduced at the behest of the Louisiana Architects Association. The Society has been informed that the total attorney fees are $750. After discussion, Mr. Nelson moved that the Society pay one half of this amount with the understanding that the PEPP Section be asked to share in this cost. The motion was seconded by Mr. Williams and passed.

Advertising Agent—The Executive Secretary informed the Board that Myron Tassin, publications consultant for the Society, had hired an agent to represent the magazines he handles. Mr. Tassin has asked if LES would be interested in having LOUISIANA ENGINEER magazine represented by this agent. After discussion it was agreed to defer action until the next meeting. President Odom asked that Mr. Hogue talk to Mr. Tassin and report back to the Board.

Conference on Unionization—Mr. Ferachi reported on a conference that will be held in St. Louis, Missouri, on unionization within the profession. The meeting is designed to be a follow-up to a conference on unionization held last year. He urged that interested persons attend the St. Louis meeting.

Engineers Joint Council—Dr. Richardson stated that he had conferred with representatives of EJC recently in New York. From this meeting he learned of several reasons that it might be desirable for LES to retain its membership in EJC. Dr. Richardson asked that the Board defer action until he could report further on this important matter. It was moved by Mr. Vogt that action be tabled on this matter until the next Board meeting. The motion was seconded by Mr. McNamara and passed.

NSPE Southwest Region Meeting—Mr. McNamara and Mr. Nelson reported that the 1969 Southwest Region meeting of NSPE will be held October 23, 24 & 25, 1969 at the Fontainbleau Motel in New Orleans and that they will serve as co-chairmen.

Mr. Nelson reported that he, Mr. McNamara and Mr. Frank Macdonald represented the Society at the 1968 Southwest Regional meeting of NSPE held in Cheyenne, Wyoming on October 11, 12 and 13, 1968.

Mr. Odom noted that he had received a letter from NSPE offering to have a national representative of NSPE attend an LES general meeting. Mr. Odom stated that he will write to Mr. Leroy Culbertson, vice president of the Southwest Region of NSPE, asking him to attend the LES Winter Meeting in January.

Mr. Odom noted that he had received a letter from the NSPE Awards Committee requesting nominees for the outstanding engineer for 1968. After discussion he referred the letter to Mr. Duclos, chairman of the Honors and Awards Committee.

Mr. Odom informed the Board that two members of the Board, Mr. McNamara and Mr. Vogt, had recently been promoted within their company, and that another distinguished member of the Society, Mr. Z. W. Bartlett had also been promoted. The Board directed Mr. Odom to write letters of congratulations to these members.

The date of the next Board meeting was set for December 6th in Kenner, La.

There being no further business, Mr. Vogt moved that the meeting be adjourned. The motion was seconded by Mr. Adams and passed.

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The Engineer as Citizen

(Continued from Page 9)

the natural sciences particularly, his objective is solely the enhancement of knowledge, the destruction of ignorance. Knowledge for its own sake is the driving motivation of the scientific investigator. In a sense, the scientist postulates and then resolves perplexity; he considers his task ended when the cloud of perplexity has been dissolved.

The engineer, on the other hand, in resolving his perplexities, has goals beyond the clouds, goals based on utility. His utilization of scientific concepts and of available technologies, or his search for new ones, is always in the vineyard of application and use, and usually with restrains imposed by economic values. The engineer does not quarrel with the scientist's 'knowledge for knowledge's sake." In fact, he strongly encourages that kind of research as a potential future source of information which he can himself use in his own future efforts. But, for the engineer, the element of utility remains the keystone of his work.

Performance Is Test

The engineering practitioner recognizes that his work demands demonstrable results. This is unlike many other professions where real appraisal yardsticks do not exist. The engineer must demonstrate the effectiveness of his design or development by successful operating performance out in the cold, hard world of practical practice. In this world, predictions, hopes and estimates are ultimately overtaken by facts; public performance becomes the unyielding and uncompromising test. His work must withstand the harsh judgments of use and of time and, generally, of economic justification.

I have said that the engineer remains sympathetic to the scientist who wishes to seek knowledge for its own sake. There is a bridge between the two, the engineer and the scientist, over which there is a continuous flow of this knowledge, from discovery to utilization. But there is a footpath, too, over this bridge, for the travel of personnel, in both directions. For individuals are at times interchangeable in these two roles. And then there are some, a rare few, of great stature, who stand tall enough to plant a foot firmly in each area; who are able to practice simultaneously, effectively, in both disciplines.

I suspect that the interrelationships between science and engineering—and the occasional mobility of personnel between the two—may be at the root of the extensive discussion and debate that prevail on what the appropriate educational training of an engineer should be. There are those who urge training in the basic sciences for all of the undergraduate years, with specialization and application knowledge developed in postgraduate periods or within engineering enterprises. And then there are those who, contrarily, advocate a high measure of practical engineering training in selected disciplines prior to the award of a bachelor's degree. There is, I believe, merit in both philosophies, and in all of the gradations that fall between, simply because there are so many different variations in engineering practice, and qualification for its many varied categories will be derived from varying kinds of educational training.

The common denominators, as I see them, in the educational development of an engineer, or for that matter any individual, are threefold. There is, first, the acquisition of knowledge. There is, second, its utilization in practical and, it is hoped, creative activity. And, third, and most importantly, there is the distillation of wisdom from this acquired knowledge and experience, the wisdom that becomes the hallmark of the mature citizen of the engineering profession.

In his projection of new knowledge to new uses, the engineer makes the pursuit of excellence his guide. But in his wisdom he remains practical enough to distinguish between the pursuit of excellence and the pursuit of perfection. The latter, perfection, may be impossible or uneconomic to achieve. For the wise engineer, the excellent is that which, within the limits of applicable constraints, is the best attainable. But in his wisdom, he does not confuse this with, nor will he accept, the mediocre just because it, too, is attainable.

The very factors that define the tasks, the technological content, the operating methods, the rewards and the recognitions of the engineer's world of work are continually changing, and will certainly be different in the future. Engineering is progress and progress is change. As someone has said, "Adapting to change has always been the name of the engineering game." So the engineering citizen is not entombed by tradition, nor does he worship the venerable. But in his wisdom he recognizes that truth need not be discarded just because it is old, but is to be set aside only if it is infirm, in which case it is, of course, not truth at all.

I have commented on the broad span of responsibilities of the engineer in his working environment. Regardless of the level of his responsibility or the importance of his work, his first loyalty as a citizen of his business enterprise is to fulfill his assigned tasks to the best of his ability. Then each engineer must decide for himself what the extent of his aspirations and ambitions are, how hard he is willing to work to achieve them, and the extent to which he wishes to rise in the hierarchy of engineering responsibility.

One author[3] sees the professional engineer of the future as a man "having a first-rate mind and intensely dedicated to his work, willing to put in long hours and to accept the generally more stressful decisions he must make." "What leisure he does have," he goes on to say, "must increasingly be devoted to reeducating himself in a continuing learning process." Many of us will wonder why the author thinks that isn't a contemporary need—and practice.

Those who choose to follow such a demanding path will reap corresponding rewards. One of these rewards, in the modern technological society, is that of management responsibility, a role which engineers perform very well. In my own industry, scientific instruments and automatic controls, a recent survey indicated that something over 90% of the top executives of a dozen leading companies in this field had scientific or engineering background. For many engineers the management function will be a goal toward which they will direct their efforts and which, if attained, they will consider as a peak achievement of citizenship in the working community.

Let us move on to the engineer as a citizen in the community of technical and professional societies. Not a great deal needs to be said. There are over fifty such professional groups, for example, who are participating here in the Delaware Valley in National Engineers' Week. The groups exist because engineers want

them to exist, participate in them and support them. Such organizations perform yeoman service in educational, publication and communication areas.

The engineer who is anxious to develop his capabilities and skills becomes an active citizen in this professional community, and participates in the membership and activities of his chosen professional organizations. He can gain valuable knowledge and establish important friendships from such participation. He can, in turn, contribute to the development of organizational growth, and work at the development of personal traits and techniques which can make him a more valuable member of his own business community. He can grow while contributing to the growth of others. For those who have managerial aspirations, the opportunities for leadership in such professional communities are many, the practice of interpersonal and managerial arts frequent. Good citizenship in this community serves as sound training for comparable professional activity "back home" in the business community.

Also, it is within the framework of such technical and professional organizations that engineers are recognized for their achievements.

The man on the street can frequently identify a Nobel Prize winner in science because of the publicity given his scientific achievements which, indeed, the average man may not even understand. But the man on the street is less likely to know about outstanding engineering achievements, even though they may well touch his daily living. Somehow such achievements do not become a part of the legend of the common world. But within technical and professional societies such recognition does exist, engineers recognize the deeds and accomplishments of their fellow engineers, even if, in the public eye, they remain essentially anonymous.

The professional engineer will seek to do his part as a volunteer citizen of this professional world.

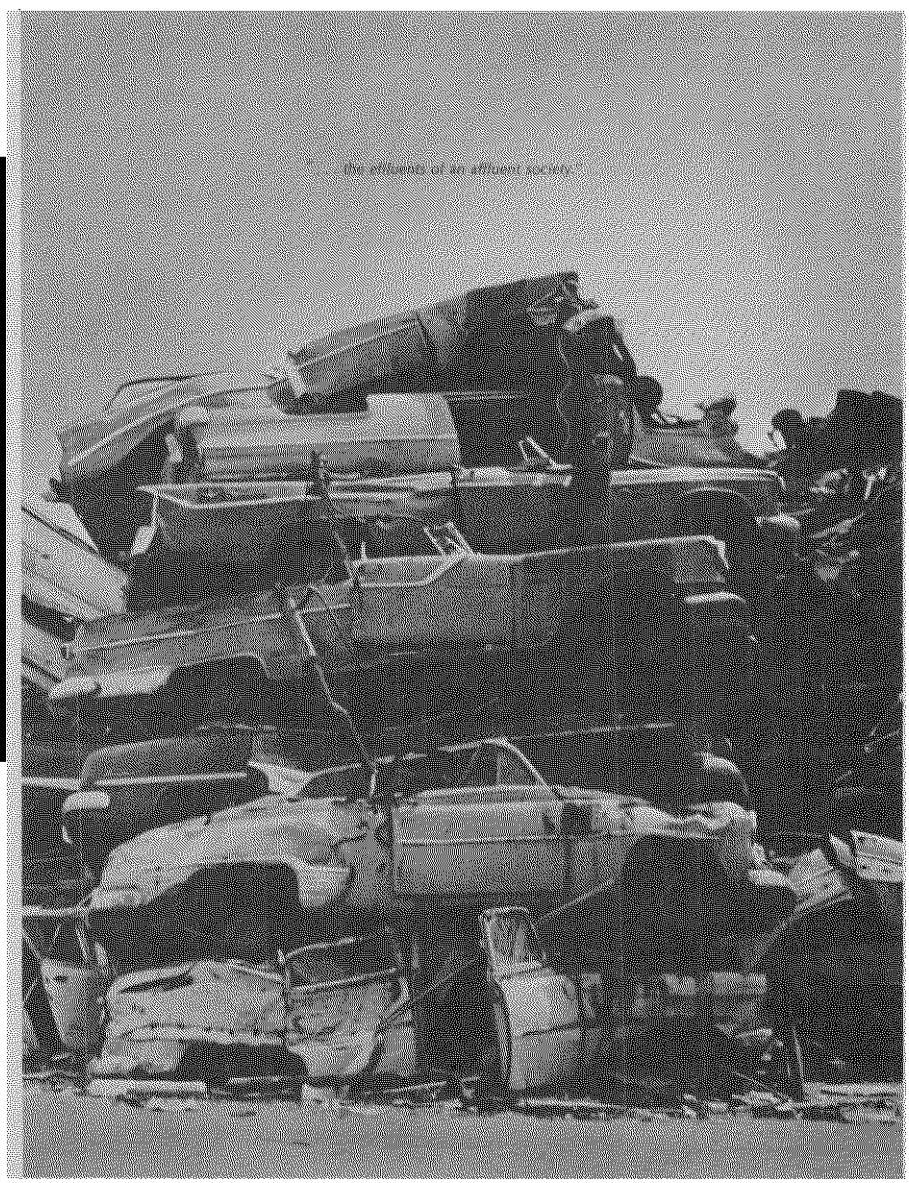
We come then to the last of the engineer's environments: the social community—at all of its levels—in which he lives. As a citizen of this community he should be conscious of the prevailing problems of the day, political, economic, moral and social. As a good citizen he will exercise his franchise, participate in the selection of his representatives in various levels of government and seek through them—and more directly, if necessary—to express a voice related to the needs of the community and of his fellow men.

In this context, he should be able to understand the ultimate challenges of technological progress. If it is true that his mission is to create a new and better world, he must refrain from creating a worse one, or letting a worse one be created. He should certainly be expected to do no less than other citizens in the resolution of the social problems of his day. In many cases, by virtue of his understanding of nature's laws and the technical aspects of his environment, he should be able to do more.

The theme of this week's activities is ENGINEERING — Design for World Health. The theme recognizes the decreasing dimensions of the world, the interactions of one area with another, and the importance of considering the welfare of all the world's people.

Health can be medical and, certainly, that is inherent in this year's theme. But health can also be economic and social, and I am sure that the framers of this slogan intended no limitation on the interpretation of "World Health." Thus, the engineer in his pursuits as a citizen of society must reflect on factors which influence the total health of his community, its economic welfare, its social balance and the equities of all its members. He must make as certain as he can that the interests of all of those who are now living are served, and that those who are to follow will find environments for living which can yield health and happiness.

Transportation Secretary Alan Boyd has said that our technological precocity has gotten us into major dilemmas, or has failed to get us out of them. That is true. Man has a genius for creating problems, perfect problems. All too often his solutions are imperfect and impermanent. Nevertheless, we need the best available man-made solutions. Should they



by any chance be divinely inspired, so much the better.

Certainly, a major problem of our time, one that is receiving considerable discussion in many circles, is how best to dispose of the effluents of an affluent society. The engineer, like his neighbors, must try to be a force for finding solutions to this pressing problem. He must help find ways to avoid the continued desecration of natural resources and environments.

It occurs to me that the ultimate resolution of this major problem of pollution and desecration, like other large-scale problems that will increasingly face us in the future, rests in the engineering technique called systems planning.

Generally speaking, our present-day economic activity is geared to **manufacture** and **distribution.** Now, in the total systems planning sense, the individual cycles must be extended beyond distribution to include **disposition.** Everything that is manufactured, or is a by-product of manufacture or use, must ultimately be disposed of. There will, to be sure, be an inventory in the process of distribution, an inventory in the process of use, and even an inventory of permanence, as in collections and museums. But the remaining effluents of our society in solid, gas or liquid form, must be disposed of, or recycled for reuse.

Think of the vast number of manufacturing plants of the nation turning out, every day, endless streams of products. All, ultimately, after their period of use, and along with the by-products of manufacture or use, must be disposed of. If in a given day, 30,000 or 40,000 cars are made—then some day, somewhere, after their periods of use, 30,000 or 40,000 cars must be disposed of.

Disposition Is Important

And so it is with all of the products of manufacture or use. The addition of **disposition** to the present normal cycle of **manufacture** and **distribution** is the new dimension. It will require careful overall systems planning in which the engineer can share. The creative and planning processes must be extended on a coordinated systems basis all the way through to a satisfactory end result, including by-product or refuse treatment, or disposal, or processing for other uses. In this way manufacturing and distribution creativity and planning will be matched by disposal creativity and planning, and the environments of our society will remain clean and undefiled. The engineer, in the best exercise of his citizenship, can and will share in the resolution of this and related systems problems.

In my discussion with you I have commented on aspects of an engineer's citizenship in the various environments in which he works and lives. Now, as I approach the end of my remarks, I should like to quote some thoughts recently recorded[4] by Vannevar Bush, a teacher at M.I.T. in my undergraduate days there, who, despite soundly based claims to fame in many areas of human endeavor, prefers—indeed, insists—on identifying himself as an engineer, one of the greatest I think our profession has produced.

Mr. Bush wrote an essay defining a gentleman. Well, harking back for a moment to the unwitting contrast of gentleman and engineer in the Herbert Hoover anecdote I referred to at the outset of my remarks, I think we can safely assume that Mr. Bush, himself a citizen of the world, would have no objection at all to our equating the two and adapting his definition of a gentleman to an engineer at his best.

The Engineer as Citizen

Here is the adaptation of what he wrote:

"Such a man has the pride of the individual who is not afraid of the world or the men in it. It is a pride based on a confidence that there are areas of accomplishment in which he can on occasion excel, even if it be only in a minor way . . . What is he at his best? He is a man who aspires to wisdom, because of his keen interest . . . in all that conditions his relations with his fellows, and their relations with one another; who goes beyond this and strives to add to the sum total of human intellectual accomplishments . . . He is a man who is modest and kind to the humble and the unfortunate. Above all, he is a man with a mission to minister to the welfare of the society in which he lives, and who takes a just pride in the guidance and leadership he can provide. He is a member of the modern group upon which continuance and further development of our free way of life ultimately depend."[5]

That, my friends, is the way, in these words of Dr. Bush, I see the stamp and style of the **Engineer as Citizen,** a citizen in all of his environments, a practitioner of competence and wisdom; one who seeks to build effectively and well, where so much effective building is needed if we are to have the world health of this week's theme. And I see him —despite all of the erosive and destructive forces at large here and elsewhere in the world today, and for all of the ills of our times—as an optimist with vision to gaze beyond today's discernible horizons, beyond the disarray of today's world; with vision to glimpse the possible future, a future which he is determined shall become reality. That future for him is a world of order and tranquility, where there are vineyards for all, in which all may perform productive and creative work in accord with their capabilities, and all may seek happiness.

For that, after all, remain's man's best hope.

So may I ask that you join me in saluting National Engineers' Week. Let us salute engineering as a worthy profession, satisfying to the practitioner and of value to our lives and our society. At the same time, let us as engineers embrace the challenge of resolving the problems that result from the very progress the engineer shares in creating. And let us encourage young people, in their survey of vocations, to consider engineering as a potentially satisfying and rewarding profession, where there is schooling, training and practice that will enable them to accept the role of perceptive and participative citizens, equipped to meet with competence and courage the challenges of their own emerging world of tomorrow.

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"The new graduate degree program at Tulane marks still another milestone in balancing theory with practice at the graduate level."

MAJOR CHANGES IN ENGINEERING AT TULANE

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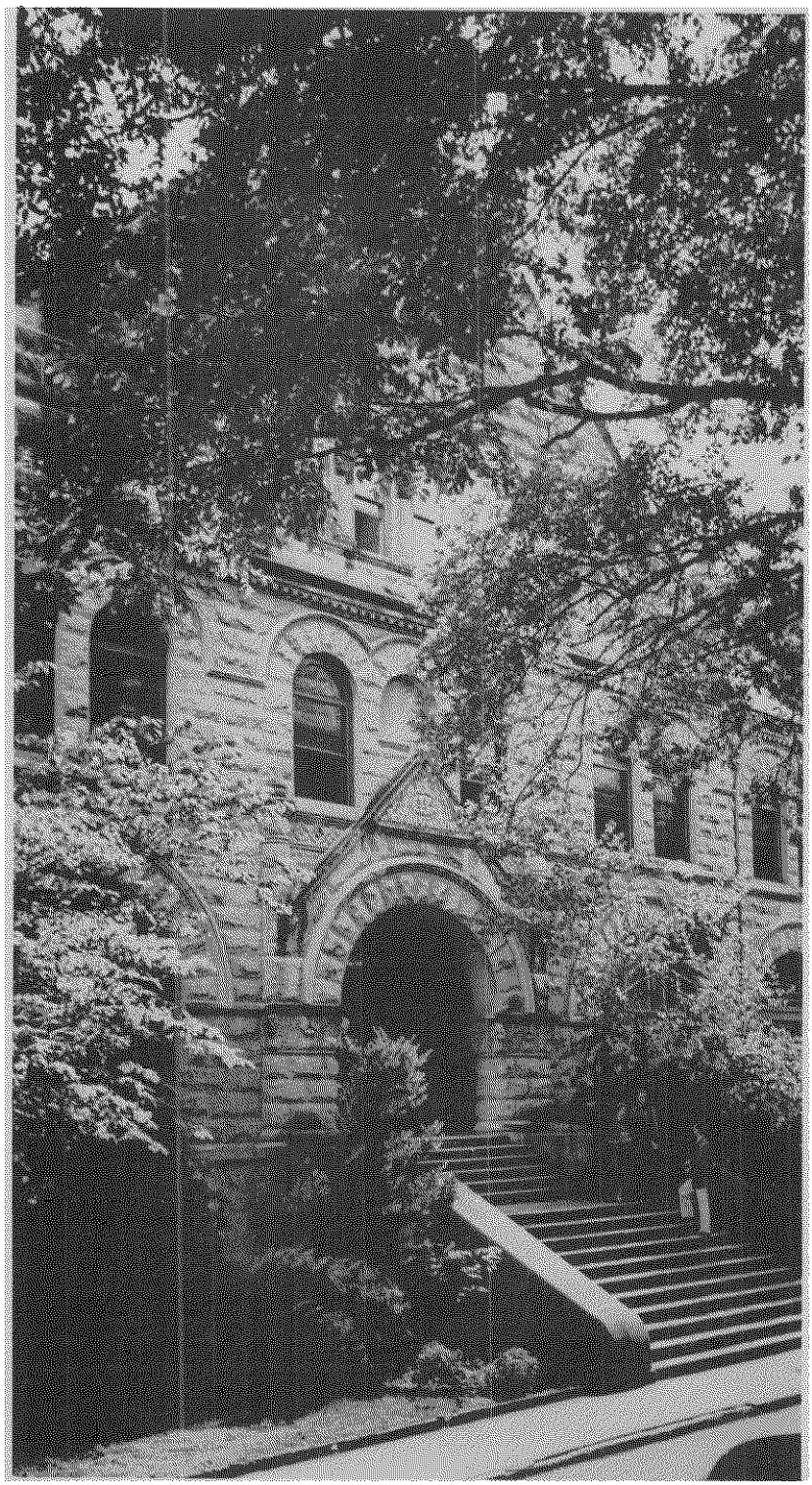


Gibson Hall, the main administration building at Tulane University.

A plan for two changes in the School of Engineering at Tulane has been formally approved and will be put into effect step by step over the next few years. The purposes of the plan are to extend the scope of graduate engineering education, to enhance the quality of undergraduate curricula, and to improve the financial situation of the School of Engineering and the University.

The changes take the School in the direction of becoming a more self-contained professional school. There are two features to the plan:

(1) The School of Engineering will administer its own graduate program and award the advanced degrees of Master of Engineering (M.Eng.) and Doctor of Engineering (D.Eng.). It will continue to award the undergraduate degree of Bachelor of Science in Engineering.

(2) The faculty of the School of Engineering will teach all of the required courses in mathematics, physics, chemistry, and English in the undergraduate engineering curricula. These courses have been taught in the liberal arts and sciences divisions of Tulane. Each of these features will be discussed later in this article.

These changes are in keeping with the School's traditions of excellence in teaching, of flexible, creative curricula, and of response to scientific and technological advances. The School is devoted to the policy of offering a high-quality educational program for an able group of students in keeping with its position as part of a privately-endowed university. Its student body has always been of modest size and its faculty always devoted to excellence in teaching. Lecture courses in engineering, both undergraduate and graduate, are taught by faculty members. Graduate students engage only in laboratory instruction and, in a few instances, in limited supervised lecturing.

Major Changes in Engineering at Tulane (Continued)

The School has kept pace with changes in engineering education. A strong base of mathematics and sciences was built into the undergraduate curricula in the 1950's, in keeping with the recommendations of the Engineers' Council for Professional Development. Engineering science courses that extended and applied the principles of mathematics and science to basic areas of engineering such as solid mechanics, fluid mechanics, thermodynamics, electric fields and circuits, electronics, and rate processes were also introduced. And so, engineering curricula acquired a more scientific flavor.

Recognized Balance

On the other hand, the School of Engineering at Tulane was one of the first schools to recognize the need of balancing the post-war scientific aspects of engineering education with the professional and design aspects. Starting from humble beginnings with open-ended problems in the freshman course some fifteen years ago, the School now offers a four-year sequence of engineering design and analysis courses. "The purpose of the four-year design program is (1) to give the student an opportunity for independent thinking of a creative nature; (2) to provide an opportunity for the application of engineering science knowledge to practical application as soon as the theory is presented; (3) to give the student an opportunity to solve problems within the limits of his capability, the problems drawing on the student's experience but also extending his thinking into newer fields; (4) to expose the student to the concept of complete design including all restraints and factors."[1]

The School has built a graduate program leading to the degree of Doctor of Philosophy in the past ten years, also in keeping with the post-war trends in engineering education. This degree as well as the Master of Science degree is offered through the Graduate School at Tulane. Since 1963, 46 Ph.D. degrees and 122 M.S. degrees have been awarded in engineering. There has been a corresponding build-up the engineering faculty which presently numbers 42 full-time members of whom 32 hold doctorates from 22 different institutions. Seven of those who do not hold the doctorate have been engaged for many years in either theoretical or applied research so that the faculty is well-qualified to offer a graduate program.

The new program leading to the Master and Doctor of Engineering degrees opens the doors for professionally oriented work, but it does not do away with the traditional theoretical or academic research. It simply extends individual, creative work on the part of the student into every kind of engineering problem. Many design problems in engineering today, as well as many problems in production, construction, operation or maintenance require the same degree of unique and creative thinking on the part of the graduate student that is required in traditional "research." Put another way, many unsolved production, construction or design problems today will yield to a highly educated mind capable of applying to them modern mathematical tools and computer techniques along with common sense and judgment, i.e., modern engineering methodology. From this point of view, a research problem is no more challenging than a problem in design or production. The School of Engineering is thus not expanding its graduate program to include something new and completely different. It is simply recognizing that the engineering approach to problems in research, design or production is essentially the same and that students should gain knowledge and experience in applying this broad approach.

Before World War II, engineering education consisted largely of teaching the state of the art at the undergraduate level; there was relatively little emphasis on graduate work. After World War II there was a decided swing toward scientifically based undergraduate curricula and a tremendous build-up of scientifically oriented graduate study and research. The introduction of open-ended design courses in undergraduate curricula in recent years is another milestone in the history of engineering education.

Faculty Is Experienced

The new graduate degree program at Tulane marks still another milestone in balancing theory with practice at the graduate level. Industry spends much more for engineering development than for scientific research. There are many good reasons why engineers should be given advanced education at the graduate level to prepare them for professional practice and industrial production as well as advanced education to prepare them for research. About three-fourths of the engineering faculty has had experience in industry and professional practice so that it is well-qualified to offer such a professionally balanced graduate program.

It is too early to state specific details of the graduate program because it must be evolved over a period of several years and the final form may be different in some details from what is envisioned today. A Board of Advisors made up principally of influential Tulane engineering alumni from all major segments of the profession is in the process of being appointed. A fac-

[1] Chester A. Peyronnin, Jr., "Design, Mainstream of Engineering," American Society of Mechanical Engineers, paper no. 65-WA/MD-10, New York, 1965.

ulty committee is working on recommendations for the overall structure and the details of the new program. It is anticipated that applications for admission to the School of Engineering to study for the Master or Doctor of Engineering degrees will be accepted for September, 1970.

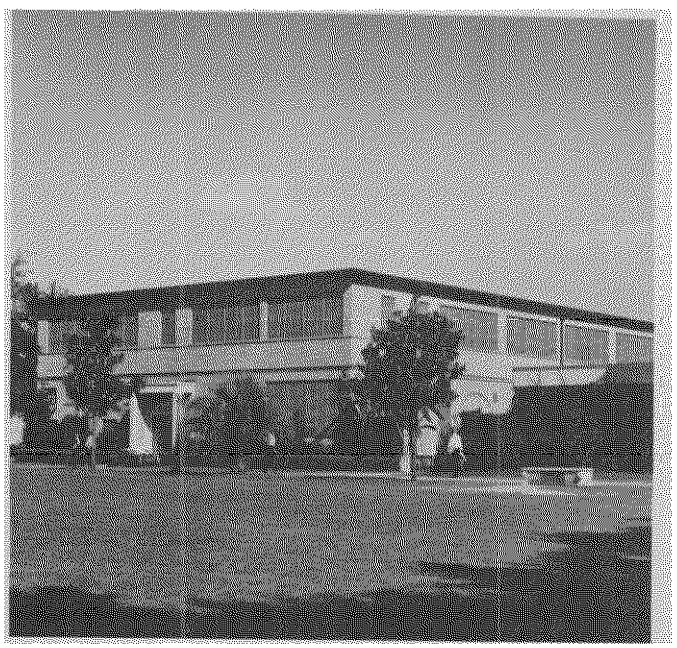
Let us turn now to the second feature of the plan. Many will wonder why the School of Engineering proposes to teach with its own faculty the courses normally required of engineering students in mahematics, physics, chemistry, and English. There are several reasons for this. One is that students benefit greatly when their mathematics and science courses are taught as a combined study of theory and application with theory closely followed by application to engineering problems. This is a statement that can be successfully debated pro or con depending upon the assumption that one makes at the outset. From a hard-headed engineering point of view, however, experience has shown that full attention to theory with no application whatsoever is generally not so successful in preparing engineering students for the use of mathematics and science later in their undergraduate and graduate studies as is a combined treatment of theory and application.

Another reason is that growing college enrollments and the limitations on financial resources have, in many major universities, made it necessary to have elementary courses taught by relatively inexperienced faculty members who frequently are just beginning their teaching careers. There has been a corresponding demand for senior professors to teach at the senior or graduate levels. Another quite natural factor is that mathematics and science teachers understandably like to teach their courses from the point of view of pure mathematics and science, not as applied subjects or as service courses. So the School of Engineering gains with respect to both of these factors by being able to teach these subjects with experienced faculty members.

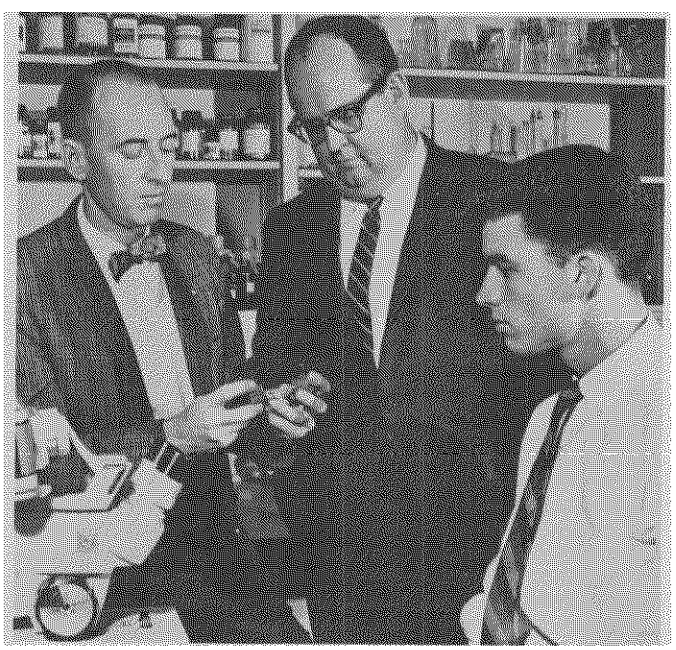
Another aspect of the proposal for the engineering faculty to teach the courses in mathematics, physics, chemistry and English is to improve the financial situation of Tulane University. Engineering students will be transferred out of the freshman and sophomore courses in these subjects which they now take in the liberal arts and sciences divisions of Tulane and this will permit these divisions to enroll their own students in the seats vacated by the engineering students. It is estimated that the undergraduate enrollment of the University can be increased by several hundred students with but little, if any, increase in faculty by this move on the part of the School of Engineering.

Sections to be Larger

The additional instructional burden in the School will be met by shifting to larger sections in the elementary courses. Presently, freshman sections run from 25 to 40 students and sophomore sections from 20 to 25 students. Under the new plan, freshman sections will be increased to about 75 students and sophomore sections to about 60 students. Graders from among the graduate students will be



The modern Mechanical Engineering Building at Tulane.



Dr. Leon B. Walker, Jr., Associate Professor of Biomedical Engineering (left), and Professor Edward H. Harris, Professor of Mechanical Engineering (center) examine a tendon specimen with a student in biomedical engineering.

Major Changes in Engineering at Tulane (Continued)

provided to the instructors in these new large-section courses and will also serve as tutors in some courses where tutorial or problem-solving sessions are scheduled.

Many educators assume that better instruction can be obtained with students in smaller sections than in larger sections. This is something that has been questioned and has been successfully challenged by findings in a number of cases where valid experiments have been made with larger sections. It is believed that there will be no loss in effectiveness of teaching under the new plan because (1) teachers in the large-section courses have been picked for their proven ability to teach students effectively; (2) these teachers will be highly motivated to teach the courses successfully in view of the significance of these courses as foundation courses in all of the engineering curricula; (3) the teachers for all of the courses in the freshman year will work as a team with appropriate scheduling of class quizzes among the freshman subjects and with careful checking and cross-checking of student performance at frequent intervals.

Some eyebrows have been raised about the School of Engineering teaching its own mathematics and science and many eyebrows have been raised about English. There is precedent, however, for schools of engineering to teach their own mathematics, physics, chemistry, and English. The School of Engineering at Vanderbilt University has its own courses and faculty in engineering mathematics in its Division of Engineering Science. The School of Engineering at the University of Virginia has its own Departments of Humanities and of Applied Mathematics and Computer Science. The Department of Humanities offers courses at all levels, freshman through senior, with the freshman courses being primarily grammar, composition and technical communications. The school of engineering at the University of Louisville is called the Speed Scientific School. It has Departments of Engineering Physics, of Engineering Mathematics, and of Economics, Humanities, and the Social Studies in addition to the traditional engineering departments. The last department offers courses in English, economics, finance, government, history, humanities, marketing, psychology, and sociology. There are other examples of this kind in other schools.

There is one major difference between the foregoing schools and the School of Engineering at Tulane; there will be no separate departments of mathematics, physics, chemistry, and English or humanities within the School. Courses will be taught by engineering faculty members from the four traditional departments of Chemical, Civil, Electrical, and Mechanical Engineering with the exception of English which will require the addition of qualified faculty to the School. The question of English is still moot because the first step in starting the plan will be to teach only the freshman "engineering mathematics" and "engineering physics" courses in the fall of 1969. These are the official course titles. The course designations will be respectvely Engineering 113-114 and Engineering 125-126. Other common courses such as engineering graphics, elementary mechanics, and thermodynamics will also carry plain "Engineering" designations in contrast with departmental designations such as Chemical Engineering or Mechanical Engineering. Although the complete proposal has been approved, it remains to be seen whether or not the School of Engineering will take over the teaching of English. The question of chemistry is still moot until a decision has been reached with regard to the freshman chemistry laboratory and the staff.

In 1969-70, the freshman courses in engineering mathematics and engineering physics will be taught by two faculty members from civil engineering, two from electrical engineering and two from mechanical engineering. The freshman faculty team will also include another mechanical engineering professor who will teach the beginning course in engineering design and analysis, three professors from the chemistry department, and the professor in charge of freshman English from that department. The team met for the first time just before the end of the spring semester to work out a synchronized class quiz schedule for the first semester.

The same textbooks that are currently used by many departments of mathematics and physics throughout the country will be used for engineering mathematics and engineering physics, namely, R. E. Johnson and F. L. Kiokemeister, *Calculus with Analytical Geometry*, (4th ed.), and F. W. Sears and M. W. Zemansky, *University Physics*, (3rd ed.). Engineering mathematics will carry five semester hours of credit each semester and engineering physics three semester hours each semester. Engineering students have taken physics without a laboratory for several years and no laboratory will be required for the new course.

The new plan does not change the pattern of courses in the humanities and social sciences to be taken by engineering students. These courses will still be elected from the course offerings in the liberal arts and sciences divisions of Tulane by engineering students in the sophomore, junior and senior years.

The School of Engineering at Tulane has kept pace with the times and has made contributions to engineering education in the past. It expects to do likewise in the future under the new plan.

Professional Registration–Why and How

JAMES H. SAMS
Executive Secretary
National Council of Engineering Examiners, Clemson, S.C.

Editor's Note: There are between 600,000 and 800,000 qualified engineers in the United States. State Boards of Professional Engineering Examiners report about 317,000 engineering registrations; it is estimated that perhaps 70,000 are duplicate (additional state) registrations. Dr. Van Vliet, P.E., Executive Secretary to the Louisiana State Board of Registration for Professional Engineers and Land Surveyors, felt that this article concerning qualifications for registration in other states should be of interest to Professional Engineers in Louisiana.

The first registration law in the United States covering engineering and land surveys was passed in Wyoming in 1907. It was enacted to protect the public from unscrupulous persons who were preparing land plats and establishing water rights without the proper field work. Louisiana followed in 1908 and the registration movement for engineers was under way. This was preceded by the registration of dentists, in 1883, and later the doctors and pharmacists. Today the 50 states and the four jurisdictions — the District of Columbia, Puerto Rico, the Canal Zone and Guam—have registration laws to regulate the practice of engineering. The registration of the professions is a right reserved by the states under their police powers. Despite several attempts, a federal law on registration has not been enacted by Congress.

While licensure does involve some recognition of attainments, it should be stressed that this is a recognition of minimal achievements deemed adequate by the State to guarantee safe performance in the applicant's field. The State, in effect, is expressing its confidence in the applicant's ability to develop through professional study and practice, and to achieve much higher performance as he learns the finer points of engineering design. The Board of Examiners has assured itself *before* a person is licensed that he has received a fundamental engineering education and that he has had reasonable engineering experience which is acceptable to the Board of Examiners, gaged by the standards required by the registration law and by the profession.

The National Council of Engineering Examiners (NCEE) was founded in 1920 by the seven state boards then having engineering registration acts, and the other states have joined it as their laws were enacted. This Council has worked diligently for more uniform registration acts and for simpler procedures when engineers wish to be registered in additional states.

Initial Registration

All states and the four legal jurisdictions in the United States now require all who practice engineering which affects the life, health or property of the public to be registered. Land surveyors are registered in 43 states. Many industries and government departments now require their engineers above beginning levels to be registered, even though they may be exempted under provisions of the registration act or other state laws. Engineers should, therefore, become registered as soon as they meet the minimum qualifications of the law.

While the registration act of each state varies somewhat in its wording, most of the states include the basic requirements as outlined in "The Model Law for the Registration of Professional Engineers and Land Surveyors." This is periodically revised by the National Council of Engineering Examiners, and serves as a guide for devising and updating sections of state laws.

The state laws have three sets of qualifications for the registration of engineers — for a graduate of an approved engineering curriculum, for a non-graduate, and for an engineer who has been registered in another state under conditions equal to or higher than those requirements in the first two categories.

For a graduate of an approved engineering curriculum, most states require an additional period of four years of engineering experience satisfactory to the Registration Board and a satisfactory written examination. Almost all states now allow the engineering graduate to take the first part of the examination covering the fundamentals of engineering at the time he graduates from an engineering curriculum accredited by the Engineers' Council for Professional Development. This qualifies the man as an Engineer-in-Training. A second examination — in the principles and practice of engineering—is taken after the engineer has passed the examination on fundamentals and has had the minimum required experience, following graduation.

Over three-fourths of the State Boards now require the two-day, 16-hour, written examination. It is rapidly becoming a standard requirement as state laws are updated. Forty-three states now require it of engineering graduates, and 46 states require it for non-graduates. When these and any other requirements of the particular state law are met, registration is granted.

An applicant who is not a graduate of an approved engineering curriculum must have

more engineering training and experience satisfactory to the Board before he will be permitted to take the written examinations. Usually he must pass the examination on fundamentals before he is permitted to take the examination on principles and practice.

In 41 of the 43 states that require land surveyors to be registered this is handled by a joint Board for engineers and land surveyors. In most states graduates of an approved curriculum, which includes comprehensive land surveying courses, must have at least two years of land surveying experience and pass a written examination. Non-graduates are required to have longer experience under registered land surveyors before being allowed to take the written examinations.

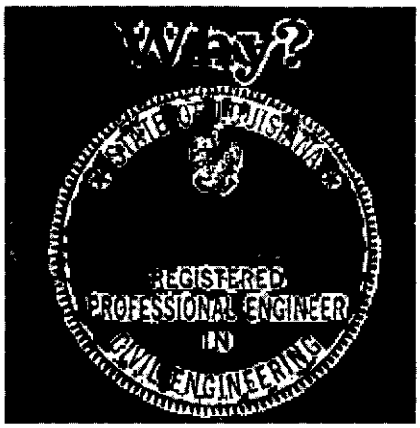
Examinations

Very few people enjoy taking examinations and engineers are no exception. State Boards are frequently asked why they require a graduate of an approved engineering curriculum to take another examination in fundamental engineering subjects, in which he has been given much more complete examinations by the professors in college. The objective is different. The professor is concerned with an understanding of the subject matter of his course. The State Board is required by law to determine, by all means available to it, whether or not the applicant understands the fundamental engineering principles; he must know how to apply these principles to the design of engineering works, machines, structures, and systems in such a way that the life, health or property of the public will not be jeopardized. Until the engineering colleges require an equivalent comprehensive written examination of their seniors shortly before graduation the State Boards will probably continue to require the fundamentals examination.

The State Board examination is not a comprehensive examination in each subject. It is intended to be a test of whether or not the applicant can apply the required engineering knowledge to the solution of several typical problems in his major field. Examinations are not given in narrow specialties because engineers are broadly trained and must be qualified to apply their expert knowledge in more than one narrow application.

Registration confers a lifetime privilege, as long as the engineer performs his work in a satisfactory professional manner. An engineer is ethically bound to practice within the bounds of his technical knowledge. Failure to do so can involve him in civil law suits for incompetence and in subsequent loss of his registration.

While the written examination is not the complete test of an applicant's qualifications, it is one of those in universal use by all the professions to assist



the State Boards in determining whether or not an applicant has the necessary technical knowledge. Replies from references furnished by the applicant do not always tell the full story and the Board is required to determine, as far as possible, an applicant's qualifications for practice. The written examination has been found to be a reliable means of supplying part of the information needed. It will continue to be used until a better way is found.

Some states will permit engineers previously registered when a written examination was not required, to take the written examinations without prejudice to their present registration. When the examinations have been passed, their records are changed to show that they are now registered under the new requirement. This added qualification can then be considered by other State Boards when the engineer applies for registration.

Certificate of Qualification

One of the purposes of NCEE is to improve general acceptance of inter-board recognition of registration of engineers. One of the services of NCEE in carrying out this objective is to serve as a central agency to verify the professional records of engineers who have been registered by at least one State Board and who meet the minimum requirements outlined in the By-Laws of NCEE. This service was started in the 1930's; as the Model Law and the state laws were changed the By-Laws requirements for a "Certificate" were also changed.

Today the NCEE By-Laws provide three sets of requirements for certification: A graduate of an ECPD-accredited engineering curriculum with 12 years of experience at the professional level who passed a 16-hour written examination given by a Member Board; a non-graduate with 20 years experience plus a satisfactory 16-hour written examination; and an ECPD graduate with 20 years experience and a satisfactory 8-hour written examination. Credit for four years experience is allowed a graduate for an ECPD-accredited curriculum.

These verified professional records are made available when an engineer wishes to be registered in additional states. Most State Boards accept these records as verified evidence in considering an applicant for

registration. A few reverify the registration in the states in which the applicant is already registered; some require a copy of an applicant's college transcript. Replies from the engineer's character references can be supplied directly to the State Board by NCEE when desired. The cost of certification is $40. This can be updated, as experience is gained, for a smaller charge. The amount varies with the additional material to be verified.

Certification is not available for land surveyors. Their practice is usually only in one or two states so certification would have limited value.

The National Council is a fact-finding and certifying agency, acting as a clearing house for state registration authorities and as a reliable source of verified information regarding the professional records of engineers. It does not legally register anyone and does not grant any authority or issue any license of registration.

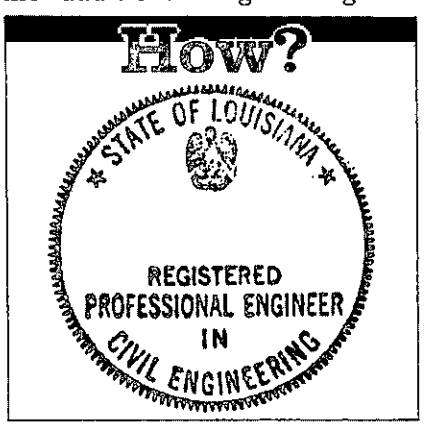
Registration by Reciprocity

An engineer or land surveyor is required to be registered in each state in which he wishes to practice, or offer to practice. A registrant in any one state may properly request registration in another state. The request may be handled by either reciprocity or comity. Strictly speaking, reciprocity must be previously established by agreement between the legislatures of two states, or by treaty between two countries. Many state laws make use of the term reciprocity but there are a very limited number of written reciprocal agreements.

Comity is an established legal practice, defined by the courts, in which one state extends to citizens of another the same privileges that it provides for its own citizens. In matters of registration the widespread practice of State Boards is to require the same qualifications of the applicant holding registration in another state as it requires of its own citizens.

Most states have a provision in their law to allow a registrant of another state to practice for a short period of time in their state if he requests permission in writing from the State Board concerned and, in some cases, pays a temporary fee. Penalties for failure to advise the State Board regarding temporary practice can be severe, and embarrassing, to the engineer, the land surveyor and the client.

Some misunderstandings have occurred when engineers have applied for registration in other states. Most of these are due to differences in the requirements of the registration laws. Table I lists the minimum requirements for engineering registration in the states at the present time. Appreciable differences still exist among state laws. Note, for example, that for an approved engineering graduate the additional engineering experience required varies from two to four years and the written examinations vary up to 16 hours.



An engineer currently registered under the requirements that include an 8-hour examination in the principles and practice of engineering may seek registration in another state where the law requires a 16-hour examination. Credit usually will be given for the 8-hour examination and the applicant will only be required to pass the fundamentals examination and meet the other requirements of education and engineering experience. The second state accepts the tests of the first state as far as they meet the requirements of the law in its state. There is no such thing as blanket reciprocity. Each application is considered under the applicable sections of the state registration act and the Board regulations that are most favorable for the applicant.

The registration laws were never intended to deny a qualified engineer the right to practice engineering, but the applicant is expected to meet the requirements of the registration act in the states in which he wishes to practice. He should not expect to be registered without meeting the same qualifications as those required of the citizens of the state. When the requirements are the same in all states, the problems of reciprocity will be eliminated. Engineers in states having low requirements should work towards amending their laws to make them more consistent with other states. It is only fair to future engineers to do so.

Foreign Engineers

The education of engineers and their legal recognition as professionals in other countries varies widely. This creates many problems for engineers wishing to practice outside of their own country. Extensive efforts have been made by both the National Council of Engineering Examiners in the U.S. and by the Canadian Council of Professional Engineers, separately and through their Joint International Committee, to obtain up-to-date information on both engineering college curricula and on the legal requirements for practice in other countries. This could be used to establish proper credit for education and requirements for registration for those coming to

these countries to practice engineering. The registration or licensing bodies of several countries do keep this information current, but very little or no information is available from most of them. Consequently, most engineers from other countries find that they must take the written examinations of the requisite State Board, if their education can be verified, before being registered to practice engineering.

Future Trends

Future registration of engineers will undergo a number of changes for many reasons. Greater uniformity of registration laws is a must, due to the mobility of engineers. In the United States much progress has been made in the last 20 years but more needs to be done in a number of states. The Model Law serves as a guide. Ask the NCEE for a copy. If requirements in your state are not compatible with the Model Law you can work with engineering organizations to bring them in line.

In the near future an engineering college degree will be a requirement. The NCEE has strongly advocated this for three years. Engineering is now so complex that a fundamental engineering education is essential to provide the best engineering service to the public.

Examinations will also change. Due to the proliferation of engineering specialties, all of the written examinations will soon move up to the time of college graduation and will cover broad engineering fields. They may be extended beyond the present two days and become more comprehensive in nature. A Uniform Examinations Committee of NCEE, initiated in 1965, prepares uniform examination questions. These are made available to Boards that wish to use them; in 1967 they were used in 42 of the 54 jurisdictions.

Registration for general practice will continue to be on the basis of a set of minimum qualifications deemed to be adequate for the protection of the public. Recognition of higher proficiency in narrow specialties will become the function of certifying agencies either established within our broad professional engineering societies or by a joint agency of several of the societies which have a common or overlapping interest in certain engineering fields. The Environmental Engineering Intersociety Board, sponsored by several of the national societies, is an excellent example. An engineer wishing to be certified by this Board must first be a Registered Professional Engineer, and then must pass special examinations administered by this Board in order to be certified as a specialist in the area.

As these objectives are reached, engineering will become more universally recognized as a learned profession. You can speed this by taking an active part in the professional engineering activities in your area.

MINIMUM REQUIREMENTS FOR REGISTRATION

For Graduates of Approved Engineering Curricula				For Non-Graduates			
Category	Years of Experience	Hours of Exams	No. of States	Category	Years of Experience	Hours of Exams	No. of States
A	4	8	4	L	6	16	1
B	4	12	1	M	8	8	5
C	4	16	41	N	8	16	32
D	2	16	1	O	10	16	4
E	3	16	1	P	12	12	1
F	4	0	6	Q	12	16	9
				R	15	8	1

For All Applicants with Long Experience, Category "S"—24 states

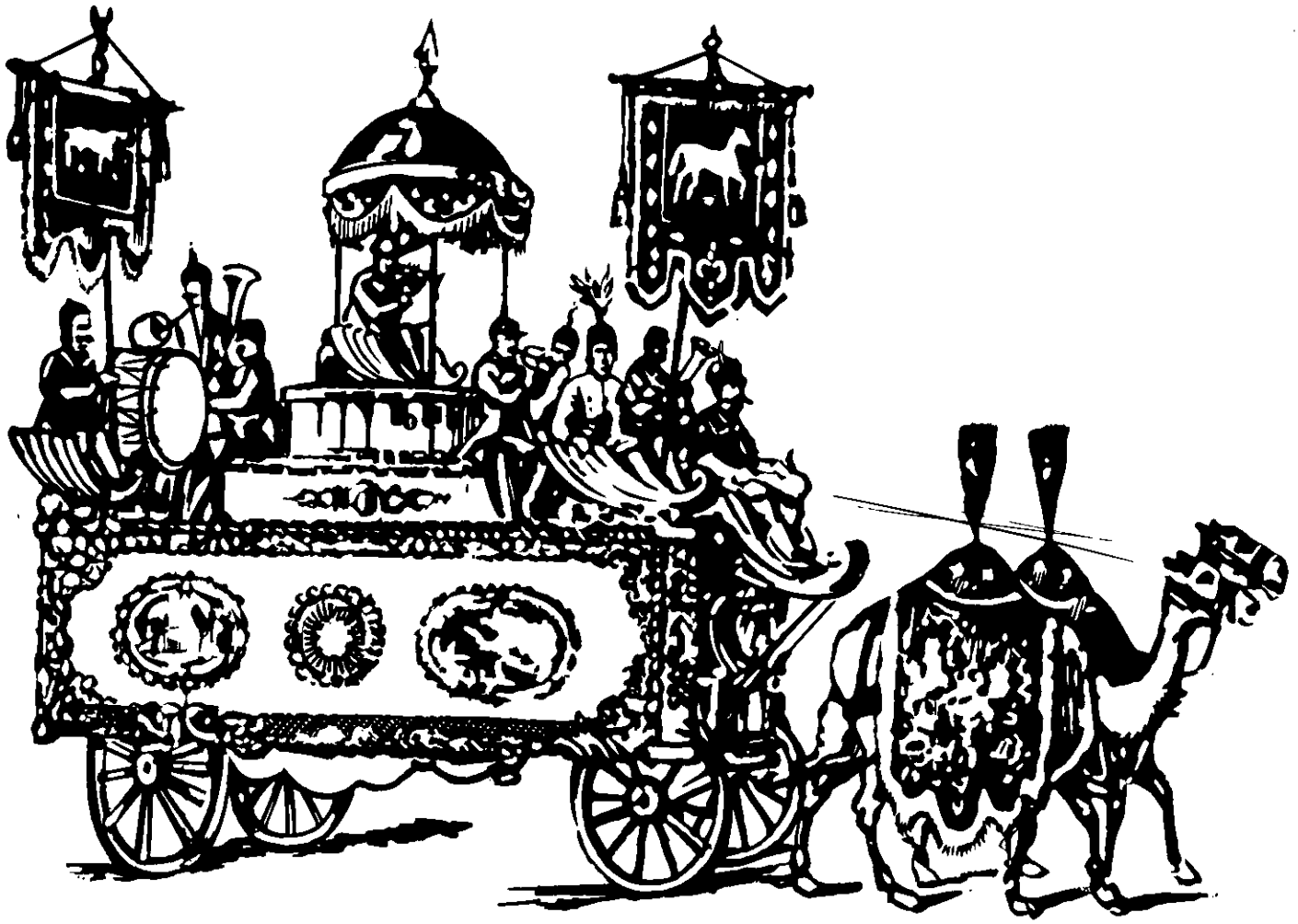
From 12 to 35 years of engineering experience satisfactory to the State Boards is required; examinations are sometimes required, depending on the education and the quality of the experience. Frequently a minimum age is specified for consideration under this category. The applicant should check with the individual State Board to determine the specific requirements for registration under these conditions.

List of states with the minimum qualification required for registration in the categories listed above

Alabama C-N
Alaska C-N
Arizona C-N
Arkansas C-N
California D-L-S-
Canal Zone C-Q-S
Colorado C-R
Connecticut C-O
Delaware F-M-S-
Dist. of Col. C-Q-S
Florida C-O
Georgia C-N
Guam C-N-S-
Hawaii E-Q
Idaho C-N
Illinois C-N
Indiana C-O
Iowa C-Q
Kansas C-N
Kentucky A or C-N-S
Louisiana A-N-S-
Maine C-Q-S-
Maryland C-M-S-
Massachusetts F-M-S-
Michigan C-N
Minnesota C-Q-S
Mississippi F-N
Missouri C-N
Montana C-N
Nebraska C-N-S-
Nevada C-N-
New Hampshire A-M-S-
New Jersey C-N-S-
New Mexico C-N
New York B-P-S-
North Carolina C-N
North Dakota C-N
Ohio C-N-S
Oklahoma F-M-S-
Oregon C-N-S
Pennsylvania A-Q
Puerto Rico C only
Rhode Island C-Q-S
South Carolina C-N-S-
South Dakota C-N-S-
Tennessee F-N
Texas F-N
Utah C-N
Vermont C-Q-S-
Virginia C-O-S-
Washington C-N
West Virginia C-N
Wisconsin C-N-S-
Wyoming C-N-S-

When Does the Next Bandwagon Leave?

A. D. MOORE
Professor Emeritus of Electrical Engineering
The University of Michigan

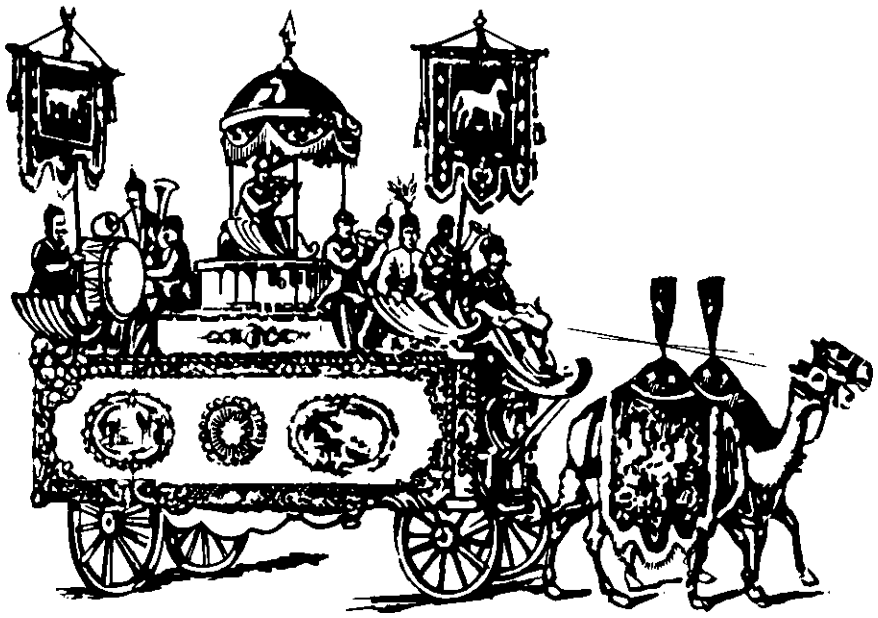


Quite a few bandwagons have been rolling in the past few years. Among them are the technical and scientific bandwagons crowding the American university campus. I personally can't join them all, having just so much time and capacity, but that doesn't mean I'm not as strongly attracted to them as the next fellow is.

No, I have nothing as such against any of these bright new curricular vehicles, such as computers, semi-conductors, physics of the solid state, microelectronics and integrated circuits, systems engineering, information theory, holography, lasers and masers, radar, radio astronomy, cybernetics, servos, automation, the drive toward the metric system, or more emphasis on mathematics or on physics or what have you. As an electrical engineer, I know very well that these bandwagons carry a lot of electrical engineering. But I know just as well that they carry a lot of electrical science too, and when I see them crowding the campus I can't help wondering if they're not getting in each other's way. If they are, and if more of them are rolling all the time, then it's time to slow down the parade. We need hordes of electrical scientists, granted—but not at the expense of electrical engineers.

The point is that each new bandwagon should be closely scrutinized, along with its riders. Should we put the whole wagon into the curricular parade, or just part of it? At the usual price of over-simplification, let us assume that the four-year undergraduate program is made up of 40 courses. Then we have a curricular parade limited to 40 bandwagons; and for every new one added, an old one has to drop out. It really isn't that simple, of course. Instead of being eliminated outright, the older wagons are subjected to a gentle but persistent "squeeze."

The squeeze is obvious when a committee goes on the search for hours that can be sacrificed to add some new course. (That's when the pressure comes to reduce graphics content, or to eliminate the rotating machinery lab, or what not.) The squeeze is less obvious and much



more difficult to control when there's a gradual increase in the number of staff members who are electrical scientists and not engineers; when textbooks are adopted that offer more theory and less engineering; when the engineering curriculum comes slowly to contain more and more courses that are really electrical science. Industrial employers among others are seriously questioning the validity of the squeeze, at least in the form of the graduates they are receiving from our universities. (See, for instance, R. K. Hellmann's "A Reappraisal of Engineering Education," in *IEEE Transaction on Education* for March 1966.)

When the squeeze is on to reduce the hours required in some area, the defenders of that area should adapt the prevailing jargon to their own purposes. Is there still, anywhere in the country, an engineering school that requires Shop? If so, keep cool (and change the name from Shop to "Solid State Transforms"). Is your Drawing Department due for another trimming? Stand firm (and change its name to the "Department of Integrated Linear Systems Communications").

Energy Conversion

Today we hear a lot about "invariant principles." There is a trend toward reducing apparently diverse mechanisms and phenomena to their invariant principles, and thus to teach in generalized terms. Hence the recent introduction of Energy Conversion. And hence a little story about the dedicated professor who taught Energy Conversion at only the highest level of invariant principles. On a winter moose hunt, he got lost in a blizzard and stumbled into a cabin that was well supplied with firewood. But he froze to death. No one had ever taught him how to strike a match.

The fact is that, broadly speaking, few of us learn deductively—from the general to the specific. We learn, rather, inductively—from the specific to the general. The power of generalization can't be assumed; it requires a certain degree of maturity and experience. Our trends toward high-level, theoretical, invariant-principle, generalized teaching could easily lift our students' heads so high that even their toes don't touch ground. In fact, this may already have happened in some quarters; but more of this later.

One symptom of the "generalizing" trend is the recent onset of the generalized or universal laboratory machine, which I describe as a device that does many things poorly and nothing well. Which reminds me of a comment made recently by Dr. James B. Fisk, president of Bell Laboratories:

> An engineer does not make elegant solutions of non-existent problems. Neither does he make sloppy solutions of real problems.

I wish that statement could hang on the wall of every engineering classroom and laboratory; that it could be read aloud whenever a curriculum revision committee is called to order; and that every author of a new text could have it to look at, right above his typewriter and preferably in neon.

John R. Pierce, another Bell Laboratories man, has spoken up on the subject and is quoted in the *Journal of Engineering Education* for May 1966. From Pierce's important contributions to Project Echo and to various advances in electronics, we might expect him to be strongly biased in favor of far-out, wild-blue researches. But no, he expresses concern that

> engineering is being alienated from the productive civilian economy which makes possible both our good life and our expenditure on defense and space.

Continuing, he says

> We are doing this inadvertently, through the nature and magnitude of the support given to university engineering research by defense and space agencies. If we are to remain strong and prosperous, we must take thought and action to draw engineering education and civilian industry closer together . . . Whatever influences university engineering research inevitably and irresistibly influences all of engineering education and all engineering students.

But again: more of this later. I cast my nets wide, you see, and am bound to catch something.

The growth of scientific and engineering research during the

past 20 years (much of it stimulated by defense and space needs) is without doubt an awesome phenomenon. Who has been largely responsible for it? To answer that, step back in time with me for a moment. When I joined the staff at the University of Michigan in 1916, I became part of an engineering faculty who wanted to *teach*. That's why we were there. Nearly every man was at least a good teacher, and quite a few were excellent. There weren't many Ph.D.'s among them and few of the Ph.D.'s did much research. Some did consulting; in fact some of them did too much consulting. Now this sort of faculty was prevalent through the great depression, and at least until 1941. Let us call it the "old-time" faculty.

Obviously, the engineering graduates prominent in business and industry in 1941 had been trained by old-time faculties. Since it usually takes 20 years or so for a graduate to achieve a top position, it follows that the engineering graduates prominent in 1961 and even today are mostly products of the old-time faculties. This leads to an interesting conclusion: Insofar as engineers were *in charge*, the vast proliferation of new things in science and engineering came about under the guidance of engineers trained in the "old school." It would seem that the relative simplicity of engineering education in the older days did the country no great harm. The proliferation did occur—with astounding speed and to an astounding extent.

The Ph.D. Mill

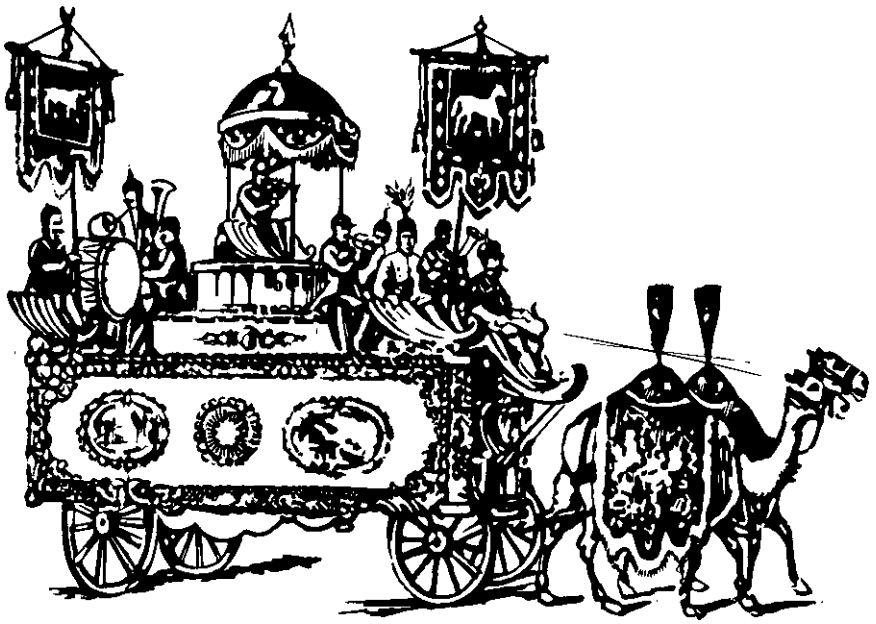
In contrast, the "new-time" engineering faculty is largely and increasingly staffed by men with Ph.D.'s. For advancement, the edict is the familiar "Publish or Perish!" As has been pointed out on all sides, faculties are sometimes enlarged on grounds of research interests rather than teaching ability. Flooded with students as we are, much of our teaching is done (and apparently *must* be done) by teaching fellows—that is, by men on their way to the Ph.D., many of whom can't teach and are devoid of industrial experience. And we have now reached the point at which the Ph.D. mill is self-perpetuating.

Moreover, many of our engineering textbooks are written by specialists in the sciences. These books are often stripped of the historical and biographical items which stand as vital elements in our technical culture. To find hardware pictured in such books is getting to be a real surprise. In short, our texts are becoming completely mathematical and theoretical. How much engineering do they leave room for? No wonder an official of a major electrical manufacturing company tells me, "It is impossible to hire a designer of rotating machinery."

Not long ago I read a little book by D. K. C. MacDonald, who takes the reader back in time and space to the Scotland of the 1830's. He tells of a little boy who was forever pestering his delighted parents with questions—having them explain the flow of water—making them follow out the elaborate system of "call wires" used in their large house—never satisfied until he had mastered a mechanism by understanding it. When the boy grew up he became head of the Cavendish Laboratory, there taking the Chair of *Experimental* Physics. For James Clerk Maxwell was first and foremost an experimentalist and a builder of equipment. He based his thought and work on material reality. What if Maxwell came alive and found how most of us are trying to teach purified electricity and magnetism? I think he'd say, "My equations, by themselves or even with illustrative solutions as examples, can mean little to your students. Why don't you have them conduct their own experiments and get their own firsthand experience with some of Faraday's work, or with appropriate equipment you've dreamed up? Don't you ever have them show up a magnetic field with some iron filings? Don't you ever make an electric field portray itself in some manner? If you give a man nothing but theory and mathematics, how do you expect him ever to acquire a *feeling* for fields?" But again: more later.

By the way, mention of Faraday brings up another bit of worry. Faraday was a physical and not a mathematical thinker. It appears certain that he had next to no mind for mathematics. It is nearly as certain that Charles Darwin was a mathematical illiterate. In our undergraduate and graduate curricula we have set up requirements that would exclude both men; if they did somehow get into a graduate program, they would soon be hustled out of it. The world certainly needs more such thinkers, while the race offers many men who have all the gifts except the gift for mathematics. Don't we owe them a bit of worry?

Faraday, who did such a phenomenal job of self-education, started out as a poor lecturer and turned himself into the master of the lecture-demonstration. This took up some of his finest energies, and is the means by which he presented many of his outstanding discoveries. Yet I am familiar with no recent work in electrical engineering which has mentioned him as a great teacher and a great demonstrator. There used to be many such teachers, you know. During lecture tours I've been approached many times, after a demonstration, by men with much the same reminiscence: They wanted to tell me of the great teacher they had had (often in physics or chemistry) who *demonstrated*. That was the teacher they remembered, and it was his course that they recalled more clearly than



any other. Must the great teacher be entirely supplanted by the closed-circuit TV set? One wonders. Or if TV revives him instead, one wonders if he can survive the guidance of a curriculum committee. But no more of that, now or later.

As for John Pierce, what specifically did he mean when he said we're neglecting our civilian economy? He didn't offer a list of items, maybe because one is so easy to work out. What about power apparatus and auxiliaries? The transformation and distribution of power? Motors and control? For the household: clothes washers, dishwashers, freezers, refrigerators, ranges, grills, toasters, mixers, vacuum cleaners, fans? For the house: wiring, fusing, and so on? What about the whole subject of storage batteries? What about transport: electric railways, ship propulsion, submarines, electric cars, electric trucks, cars, subways, elevators? For the auto: starting, lighting, ignition? What about the manufacture of cable, wire, insulation? And electrostatics, with its three main divisions of precipitation, separation, and coating? What about welding, and the power supply for it? What about electric heating for the home—electric furnaces—industrial heating via resistance heating — induction heating — dielectric heating? What about illumination—for home, street, highway, theater, parks?

These and countless other items make up the contribution of a single engineering field—electrical engineering — to the civilian economy. These are major productive activities through which table profits are made; and it is taxes, to labor the obvious, that support the nation's space and defense efforts. Yet these are the very activities we have been dropping by the wayside, to be picked up by those "to whom it may concern." When a professor of electrical engineering dismisses these activities by calling them "old hat" and fully developed, he is half right. (The first half.) But surely they have not even approached full development. If they have not been advanced in recent years, neglect is largely to blame. Who will claim that in this year 1969, *anything* in our rampant technology is not subject to challenge and to new development?

Engineering Graduates

Finally, let me cast a net toward the end product of our academic effort—the engineering graduate.

One of my earlier students (a bona fide product of the old-time faculty) now heads one of the most important research laboratories at General Electric. To quote him, "It used to be that when I gave a Ph.D. a problem, he was happy. Nowadays, if I give him a problem, he is happy provided it fits in his training. If it doesn't fit in with his training, he doesn't know what to do." Another of my students is far up in a giant organization, for which only the best are recruited. He himself goes out to recruit the best for it—the best top Ph.D.s. He tells me "After we get them, we can't trust their graphics until we retrain them." (Engineers with poor graphics! Singers with poor breath control!)

As distressing as these random items may be, they don't rank with what I call the "Inventories.' I dreamed up these Inventories as a way of investigating the background of senior undergraduate students in electrical engineering. In administering the Inventories, I made it plain that no student's standing would in any way be affected by results. The locale I keep confidential. During the past few years I've lectured at some 40 colleges and universities, and there was opportunity at any one of them. The school I chose would certainly be rated among the top 20 in the U.S.; many would rate it higher.

INVENTORY 1: This concerned 48 of the commonest materials in electrical engineering. In Part I, the student was to mark the materials which, in the ordinary sense of the word, are conductors. The scoring was: (Correct) minus (Incorrect) minus (Unknown). Among 45 second-semester seniors, there were two perfect scores. The class average was 51%; the low score was —7. In Part II, the student

was to mark the materials *ordinarily* considered to be magnetic, the criterion being obvious attraction of a considerable chunk by a strong magnet. The scoring was: (Correct) minus (Incorrect). There were five perfect scores. The class average was —2.95; the low score was —26.

INVENTORY 2: In this, a magnet (with poles marked) was held with the jaws down. A closed rectangular conducting loop was held with its upper side in the air gap, and was allowed to fall. In Part I, the question was: If there is a current, show it properly with an arrow. Of 44 arrows shown, 31 were shown correctly. In Part II, the question was: If there is a force on the loop, show it with an arrow. Here, 20 arrows were shown correctly. Four seniors showed a horizontal force; two, a rotary force; one, a diagonal force; two, a force in line with the conductor; one stated "no force" and three left the whole thing blank.

INVENTORY 3: In this, the three standard views of a cubical glass box were shown, with a compass mounted on top of the box, pointing parallel to the edges and with "N" marked on one end. Two views of a simple round coil were shown nearby; the coil was just big enough to fit nicely into the box. The task was to draw the coil inside the box in all three views, and to show by an arrow that current would make the compass do what it was doing. Among the 45 seniors, 18 responded with correct drawings. Seventeen others got the coil in properly, but indicated the wrong current. Several responded with incompatible coil views. As a side issue, I rated the quality of coil sketches as follows: 4 good, 12 acceptable, 17 poor, 8 miserable, and 4 utterly miserable.

INVENTORY 4: This had to do with a tin can with a lid. When the lid was removed, a metal ball could be seen hanging from it by an insulating thread, the thread and ball being definitely off-center. It was assumed that can and lid were handled by insulating tongs, and that a charge was placed on the ball. In Part I, the lid was replaced carefully, without letting the ball touch. There were five questions about the several charges present, and the force effect, if any. Forty-five seniors turned in 33 sets of correct answers. In Part II, the can was first tilted, to let the ball touch the sides. There were five more questions, but only one need be taken up here. Faraday's famous Ice Pail experiment, and some of our modern teaching, failed to prevail: 23 men left a charge on the ball!

INVENTORY 5: This showed a magnetic circuit, with a coil around a central member and with the iron going symmetrically around the right and left sides of the coil. The iron was not closed; there were identical air gaps at each side. The seniors were given the number of coil turns and the ampere-turns of mmf acting on one gap. Their problem was to find the coil current. Of the 45 answers, 4 were correct.

INVENTORY 6: For this, a sketch was shown that looked much like a D'Arsonval instrument; it contained a magnet, a round armature, and a one-turn coil. The coil leads came out, through slippings, to a voltmeter. The turn was to be rotated momentarily, producing a voltage. The seniors were given the flux density, and axial length, and the speed of each side of the turn in inches per second. Their problem was to find the instantaneous volts induced. Of the 43 answers, 7 were correct, and 8 gave one-half the correct value. The other answers gave a fantastic array of values. I should for a special reason quote one answer. For B=70,000 lines per square inch, axial length=1 inch, and speed=600 inches per second, the answer was

$$\frac{(600)^2\ 70{,}000 \times 1}{R}$$

The special reason for quoting it? I was informed that this chap was a Teaching Assistant!

The results of the Inventories speak for themselves. If a school lays great stress on all the ramifications of Maxwell's equations but permits men to graduate with so faltering a grasp of the rudiments. Maxwell might have good cause to raise his eyebrows. Gentlest of men, he might even be moved to speak sharply.

This is no place for me to be making general recommendations. And in no sense am I recommending a return to the subjects and methods of 1935. (Please don't mistake my message to be that!) But I do have one suggestion for any department that finds itself turning out men who cannot answer the simplest and most basic theoretical questions. If, somehow, ground-level knowledge and capability have been ignored by the college, and are not supplied by the high school, and are not picked up by students somewhere along the way, then a hurdle might well be introduced, perhaps at the end of the third year of undergraduate study. In order to acquire *senior status*, every student would have to get himself over this hurdle. He would know of its existence early and would have to prepare for it on his own. It would consist of just such classical simple Inventories as those I have mentioned—those and plenty of others.

How do I, from my vantage point of years and experience, account for the decline of practical engineering knowledge and skills? (The decline must be obvious to all engineers, young or old, and whether or not they consider it a bad thing.) Well, in earlier days, life was far simpler. We had *time*, and we had teachers and books, and from them we learned something of what I have called *technical culture*. Like all human tribes, engineers have their myths and legends, their heroes and history, their social rules and their political structure. To ignore this fact of tribal cultural life is to ignore not only half the interest but half the *art* of engineering. To fail to transmit a sense of this culture to our students is to deprive them of full identification in and with their professional roles.

It is precisely this sort of culture that has been all but lost in the crush of bandwagons. Our teachers seem to know little engineering history, and what they do know they have no time to convey. Our texts make a point of ignoring such unscientific (and therefore irrelevant) matters. Yes, these are busy times, and we must get on with it in a hurry.

But before the next bandwagon starts rolling, I think we should all start checking credentials. Else we'll find that in trying to be all things to all men—big and bright and bouncy —we have failed some men in some vital way.

National Director's Report

Several important actions were taken up by the NSPE Board of Directors at its July 9-12, 1969 meeting in Kansas City. Among them was the action to submit to the general NSPE membership a repeat opportunity to vote on the membership requirements. This action was decided upon after a considerable period of caucus debate in order, hopefully, to put this question to rest. The ballot would be voted on in 1970. As before, this change would allow non-registered engineers to become members if they pass some rather strict requirements, including twelve years experience after graduation from an approved engineering college curriculum. Another amendment will be the coverage of the land surveyors membership.

Another constitutional vote, this one to be presented to the membership late in 1969, will be on the question of increasing the dues ceiling, with immediate increase to $25 annually for Members and $12.50 for Junior members.

A recommendation to reduce the number of National Directors was referred to the Constitutional and By-Laws Committee, I believe this question will be approved by the Board in January for presentation to the members for a 1970 constitutional vote also.

The Directors adopted the recommendation of the Registration Committee to request each state society to strive for legislation to update the respective state registration laws. The Board directed the NSPE Registration Committee to ask each state organization to report on progress in its legislative program.

Last January, the Board had accepted the Committee's precept as covered in "A New Concept for Engineering Registration," recently distributed by NSPE. This concept would require the bachelor's degree in engineering as a minimum requirement and would permit the graduate of an approved curriculum to take his examination at the time of, or prior to, graduation. Although he would be granted a certificate of registration with the title of Professional Engineer after graduation and passage of the 16-hour written examination, he would not be permitted to practice until after certification after four years of experience. Although each state can be expected to make its own changes in this concept, it was pointed out that all states should make an urgent effort to move registration laws to a more nearly uniform base for all the states.

Several actions were taken for the benefit of the practice sections. Of particular interest to PEPP, the Board will ask the American Institute of Architects to void its recent statement of policy which in effect defines the scope of architecture much too broadly and in effect claims much of the scope of engineering. Also, because AIA this year refused to pay its assessment toward the construction industry arbitration cost, the NSPE Board agreed to share with remaining societies in paying AIA's unpaid portion this year, but to discontinue support of the program in the future if this unfair basis should continue.

PEPP Document

Also of special interest to PEPP was the acceptance of a contract document of relations between lawyers and engineers. Further, at the recommendation of the Board of Ethical Review, the Board directs the Ethical Practices Committee to prepare a revision of the Code of Ethics to prohibit advertising of engineering services. (It would be acceptable to advertise for prospective employees so long as the advertising is not a claim of ability.)

For Professional Engineers in Government, the Board ap-

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proved a new "NSPE Government Agency Professional Development Award." This will be very similar to the PEI's Industrial Professional Development Award and could be awarded annually to the government agency best promoting professionalism for its engineer employees.

For benefit of Professional Engineers in Industry, the Board of Directors approved a recommendation of PEI that NSPE support legislation establishing a National Economic Conversion and Diversification Commission and ensuring the engineering profession's adequate representation on the Commission. The purpose of this legislation would be the planning and coordination with defense oriented industry and non-defense industry to plan shifts of high activity from one to the other in a way to eliminate periods of massive non-utility of engineers.

A most interesting feature of the Kansas City meeting was a panel discussion by a group of distinguished young engineers. In a nutshell, they felt that NSPE should get the young engineers involved at the earliest possible time in activities of both chapter and state organizations if we are to interest them and retain membership of that group. Also they agreed that if we do not understand why the young engineer is not interested in becoming a member of the professional society, we need merely ask them. They will tell us why.

In addition to the above actions, there were of course many administrative matters that had to be approved which cannot be covered in this space. Also, interesting and enlightening reports were heard from many engineering society representatives. Our President, Mr. Ed Young, P.E., made a fine annual report, although it was very sobering in that it revealed many needed programs that must be eliminated or abbreviated because of lack of funds. His report and also that of our outstanding Executive Secretary, Paul Robbins, outlined some of the many services our national society performs.

Representatives frequently appear before national committees and commissions, both in behalf of the public and in behalf of the engineer. (An effective public relations program continues.) Representatives, mostly presidents, of the other engineering societies reported on joint or parallel programs and interests. These included the American Society of Certified Engineering Technicians, Institute for the Certification of Engineering Technicians, Professional Engineers Conference Board for Industry, American Society for Engineering Education, National Council for Engineering Examiners, American Institute of Mining Engineers, Engineering Council for Professional Development, American Society of Civil Engineers, and the Canadian Society for Engineering. In connection with ECPD, I might add that a large segment of NSPE's educators favor full membership in ECPD. In fact, one of the committees has recommended application for full membership.

Mrs. Fred McCombe, president of the Ladies' Auxiliary Advisory Committee, presented a fine report outlining the expanding assistance the ladies are giving their husbands' state and chapter level activities.

The new NSPE public relations film-strip depicting engineers' participation in solution of crucial civic problems of several U. S. cities was shown and well received by the Board.

Participation in this meeting rekindles this director's appreciation of NSPE's efforts on the national level in behalf of the engineer and his professional status. I believe they justify more support by LES through a much higher percentage of NSPE membership.

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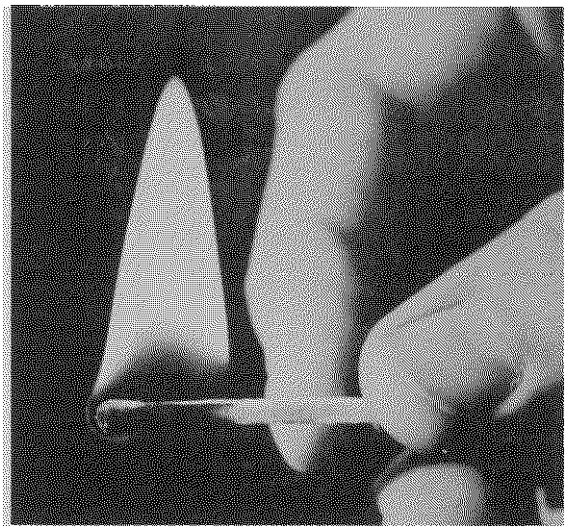

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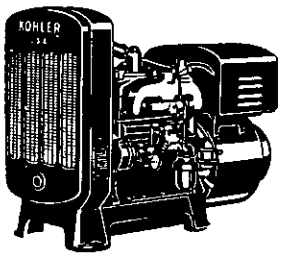

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NEWS FROM THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

PEPP NEWS

A prominent event of the NSPE meeting in Kansas City in July was the announcement by the PEPP Section of progress made toward consolidating the American Institute of Consulting Engineers, the Consulting Engineers Council, and the Professional Engineers in Private Practice of the National Society of Professional Engineers.

A joint news release was issued by the National presidents of these three organizations. We print their release here as a matter being of interest to the profession in general and of particular interest to the engineers in private practice.

"By mutual agreement between CEC, AICE and PEPP a Joint Study Committee has been formed with the assignment of working out the details of a single consolidated organization to represent, both on a National and on a Local level, all consulting engineers in independent practice throughout our country.

We are in agreement that the time has come when such a single organization is necessary, and that this should represent the various elements contained within the three existing Associations.

The Joint Study Committee has the following members:

Richard O. Walker, Jr.	AICE
Richard Hazen	AICE
John K. M. Pryke	CEC
Sanford K. Fosholt	CEC
Morton S. Fine	PEPP
Donald P. Schnacke	PEPP

The Committee held their first meeting in New York City on June 17, 1969. At this meeting it was agreed that the following procedures should be adopted:

Firstly—The writing of a set of Governing Principles upon which the new organization would be founded. It is hoped that by early Fall this set of Principles will be circulated to each of our Associations for preliminary approval.

Secondly—The drafting of a Constitution and By-Laws for the new organization to be based upon the approved Governing Principles. It is hoped that this will be ready for submittal to our Associations by the early summer of 1970.

Thirdly — Upon approval of the draft Constitution and By-Laws, the final detailing of Operating and Committee procedures should be completed.

The Joint Committee fully realizes the extent and scope of the responsibilities placed upon it. Therefore, it solicits the help of all members of our Associations. Please let the Committee have your ideas and thoughts.

Furthermore, to enable the tremendous task of consolidation to be properly coordinated, it is hoped that efforts on a local level will be coordinated through our Joint Committee."

NSPE ELECTS NEW PRESIDENT

Pierce G. Ellis, P.E., vice president, Division Operations, of the Wisconsin Public Service Corporation in Oshkosh, has been elected president of the 65,000-member National Society of Professional Engineers and Harry C. Simrall, P.E., Dean, College of Engineering, Mississippi State University, assumes the post of NSPE president-elect. Mr. Ellis and Mr. Simrall will begin their new positions in July at the Society's Annual Meeting in Kansas City. Mr. Ellis will succeed Edwin H. Young, P.E., professor of chemical and metallurgical engineering at the University of Michigan.

Mr. Simrall becomes NSPE's first president-elect in the 5-year history of the National Society. Previously, he served NSPE as Southeastern Regional vice president and as national director for Mississippi. Mr. Simrall is a former president of the Mississippi Society of Professional Engineers and currently is a member of the Mississippi State Board of Registration for Professional Engineers and Land Surveyors.

NEW ORLEANS MEETING

President of the National Society of Professional Engineers, Pierce G. Ellis will attend the NSPE Southwest Regional meeting to be held at the Fontainebleau Motor Hotel in New Orleans, October 23-25.

Main items on the agenda will be discussions of the Texas Water Plan to divert the Mississippi River to Texas and New Mexico, and air and water pollution control.

Attending the meeting will be Presidents, Presidents-Elect, National Directors, Vice-Presidents, Secretary-Treasurers, Executive Secretaries and Functional Section Chairmen of all state societies in the NSPE Southwest Region.

Leaders of state societies will discuss other items such as membership, engineering foundations, committee activities and other topics.

Co-chairmen of arrangements for the regional meetings are Waldemar S. Nelson and Edward J. McNamara.

IN MEMORIAM

FELIX JOSEPH BOUDREAUX

DIED JUNE 22, 1969

Felix Joseph Boudreaux was an engineering educator for 23 years. At the time of his death he was professor and head of the department of Electrical Engineering at the University of Southwestern Louisiana.

Dr. Boudreaux was born in Washington, Louisiana on December 15, 1916, the son of the late Elodie St. Cyr and Raphael Boudreaux. He attended public schools in Opelousas, Louisiana and was graduated from Southwestern Louisiana Institute, now U.S.L., in 1941 with a B.S. degree in Electrical Engineering.

After serving as a field engineer for RCA in Camden, New Jersey 1941-43, he entered the U. S. Navy, serving as Radio Officer in the U. S. and Pacific Operational Area until 1946.

In 1947 he obtained his M.S. degree in Electrical Engineering from the University of Illinois and in that year began his association with the U.S.L. Electrical Engineering Department.

He was granted the Ph.D. degree from Oklahoma State University in 1959 with research and teaching in the field of Electromagnetics and Applied Mathematics.

In 1962-63 he served as professor at the U. S. Naval Post Graduate School in Monterey, California while on leave from U.S.L. Upon his return to U.S.L. he was named Head of the Department of Electrical Engineering.

Some of the many scientific, professional, and honorary organizations in the field to which he belonged are: Institute of Electrical and Electronics Engineers; American Society of Engineering Education; Louisiana Engineering Society; Sigma Xi, University of Illinois; Phi Kappa Phi, Oklahoma State University; Tau Beta Phi, University of Southwestern Louisiana; Eta Kappa Nu; and listed in Who's Who in America. In May of this year he was honored with a cash award from the Halliburton Company for excellence in classroom teaching.

Dr. Boudreaux was active in the Louisiana Engineering Society and was a past president of the Lafayette Chapter.

Dr. Boudreaux maintained reserve status with the U. S. Navy until June, 1969, when he retired with the rank of Commander.

He is survived by his widow, Florence Daigle of Lafayette; two sons, Ronald Boudreaux of Baton Rouge, Kirt Boudreaux of Lafayette; and two half sisters, both of California.

As a teacher of engineering and as a gentleman, his accomplishments may be summed up by the remarks of one of his former students who said, "I am the engineer I am today because of Dr. Boudreaux's leadership and excellent classroom teachings."

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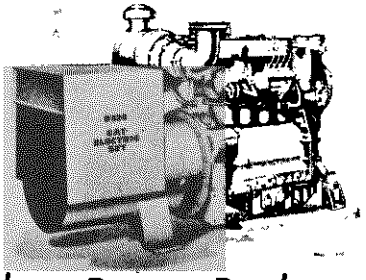

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Cole, Charles H.—Civil
Huntsville, Ala. 35802
Coleman, Edward C., Jr.—Mechanical
Guntersville, Ala. 35976
Combs, John R.—Civil
Irving, Texas 75060
Cowin, Stephen C.—Mechanical
New Orleans, La.—70118
Dartez, John H.—Mechanical
Baton Rouge, La. 70806
Duncan, Mack H.—Electrical
Houston, Texas 77035
Elkins, John C.—Civil
Bossier City, La. 71010
Fourqurean, William E.—Industrial
New Orleans, La. 70124
Fowler, Oliver W.—Petroleum
Houston, Texas 77024
Funk, Herbert B.—Mechanical
Houston, Texas 77017
Glassman, Frederick P.—Electrical
Metairie, La. 70003
Greenberg, David B.—Chemical
Baton Rouge, La. 70808
Gresham, Leroy Q.—Mechanical
Houma, La. 70360
Hall, Daniel D.—Civil
Annandale, Virginia 22003
Haynes, William K.—Civil
Bastrop, La. 71220
Hendricks, Thomas A.—Civil
Arlington Heights, Ill. 60005
Humphrey, James E.—Chemical
Springhill, La. 71075
Jones, George V.—Chemical
Lake Charles, La. 70601
Kazan, Leon—Electrical
Huntingdon Valley, Pa. 19006
Lasater, Robert C.—Civil
North Little Rock, Ark. 72116
Lott, Sam A.—Electrical
New Orleans, La. 70122
MacNicholas, Ronald R.—Chemical
Wheaton, Ill. 60187
Norris, James C.—Chemical
Houston, Texas 77021
Purifoy, Tommie A.—Chemical
Baton Rouge, La. 70814
Rabb, J. W.—Electrical
Accokeek, Md. 20607
Ratcliff, Appleton B.—Civil
Baton Rouge, La. 70809
Redovnikovich, Anthony P.—Mechanical
Metairie, La. 70005
Sincox, Edwin C.—Petroleum
Haynesville, La. 71038
Hegland, Trygve—Civil
8620 Wetzikon, Switzerland
Wait, Harold V.—Petroleum
Lafayette, La. 70501
Watson, Ernest D.—Petroleum
Beaumont, Texas 77707
Werber, Daniel—Civil
Inwood, New York 11696
Wink, Joseph C., Jr.—Mechanical
New Orleans, La. 70117
Wirsching, Joseph E.—Civil
New Orleans, La. 70114
Wise, Billy M.—Electrical
Oklahoma City, Okla. 73107

NEW MEMBERS

ALEXANDRIA

Jimmy R. Anyan, P.E.
604 South Ave.
Winnfield, La. 71483

Sam B. Frank, Jr.
P. O. Box 1249

Richard M. Graves
112 Jana Dr.
Pineville, La. 71360

Ronnie Luno, P.E.
P. O. Box 661

Paul O. McGowen, P.E.
1535 Mohon

Alfred R. Nolan
294-C Brown's Bend

John W. Richardson
Route 3, Box 94
Colfax, La. 71417

BATON ROUGE

Rodolfo J. Aguilar, P.E.
2866 Whitehaven Dr.

John M. Bankston, P.E.
976 Castlewood Dr.

Aldrich J. Boss, P.E.
347 Nassau Dr.

Samuel N. Brown, Jr., P.E.
1717 Peck Dr.

Gilberto J. Escobar
Box 21317, L.S.U.

Stanford E. Groves, P.E.
P. O. Box 2591

Isaac M. Gurney, P.E.
866 Madeline Court

Robert L. McFall, P.E.
L.S.U.—Ag Engineering

Ulysse L. Pitre, Jr., P.E.
2324 Silverest Ave.

BAYOU

William C. Bethea, P.E.
343 Cleveland
Houma, La. 70306

Timothy N. Morrow, P.E.
106 Harding
Houma, La. 70360

Eugene A. Weber, Sr., P.E.
811 Teche Road
Morgan City, La. 70380

LAFAYETTE

Claude M. Begnaud, P.E.
118 Michael Allen

Majid Daneshmand
Box 1427, U.S.L.

Herbert J. Juneau, Jr., P.E.
120 Normandy Rd.

Robert J. Justice, P.E.
P. O. Box 3567

Frank Lipari, Jr., P.E.
118 Normandy Rd.

LAKE CHARLES

Charles H. LeDoux, P.E.
P. O. Box 1727

Jerry F. Replogle, P.E.
P. O. Box LL

MONROE

William G. Bartlett, P.E.
2213 Degwood Drive

Roddis C. Randall, P.E.
806 DeSoto St.
Tallulah, La.

NEW ORLEANS

Hugh L. Bracey, P.E.
305 N. Bengal Road
Metairie, La. 70003

George M. Irwin, P.E.
P. O. Box 24020

George R. Ketteringham, P.E.
P. O. Box 29100

Earl H. Lindsey, P.E.
805 South Front St.

Jack M. Simmons, Jr., P.E.
2310 Neyrey Dr.
Metairie, La. 70001

Harry E. Wilson, P.E.
U. S. Highway 90
Pearlington, Miss. 39572

LES Policy on Professional Planners

There has been much talk recently as to the qualifications needed to become Professional Planners. The Board of Direction of the Louisiana Engineering Society has studied this problem for some time and, during its May meeting, adopted the following policy:

"In order to provide a guide for the employment of Planners by Federal, State and Local Government agencies, the Louisiana Engineering Society hereby adopts the following Professional Policy: All Engineers duly registered by the Louisiana State Board of Registration for Professional Engineers and Land Surveyors, and who possess adequate experience in this field, are qualified to do planning and to serve as Professional Planners."

MEMBERSHIP CONTEST RESULTS

The Alexandria Chapter, with a total of 31 applicants and 281.82% of its goal, was the 1968-69 winner of the LES Membership Contest. The standings at the end of the contest were:

Rank	Chapter	Quota	Applications	Percent
1	Alexandria	11	31	281.82
2	Monroe	12	32	266.67
3	Shreveport	18	39	216.67
4	Lafayette	15	37	180.00
5	Baton Rouge	50	59	118.00
6	Lake Charles	13	15	115.38
7	New Orleans	79	83	105.06
8	Bayou	0	4	.....
	TOTALS	198	290	146.46

MINUTES - LES BOARD OF DIRECTION

JUNE 28, 1969
HOLIDAY INN, LAFAYETTE, LA.

President Odom called the meeting to order with the following Board members present: Farrell Adams, P.E.; Hoyt Brown, P.E.; David B. Fried, Jr., P.E.; T. J. Hogue, Jr., P.E.; A. G. McKee, P.E.; A. E. Meyer, Jr., P.E.; William H. Miller, P.E.; Sylvan J. Richard, P.E.; Ashby B. Stevens, P.E.; A. J. Szabo, P.E.; Jack Thigpen, P.E.; and John F. Vogt, Jr., P.E. Also present were: Charles P. Barnard, P.E.; Kenneth E. Deal, P.E.; G. R. Dyson, P.E.; Marshall B. Ewing, P.E.; Larry C. Grundmann; H. L. Henry, P.E.; L. C. Hill, P.E.; James L. Meyer, P.E.; Billy R. Rentrop; Richard M. See, P.E.; and Gerald A. Simmons, Executive Secretary.

The minutes of the May 23rd Board meeting were approved as written. The motion for approval was made by Mr. Thigpen, seconded by Mr. Brown and passed.

Financial Report—The financial report of the Society for the period July 1, 1968, through May 31, 1969, was given by Mr. Hogue. Total receipts during this period have been $75,359.14 and expenses have been $77,847.39. He informed the Board that a deficit of $2,372.86 for the year ending June 30 is anticipated. He stated that an auditing firm will make the annual audit in July and we will know then our exact financial position for the fiscal year. Mr. Brown moved that the financial report be accepted. The motion was seconded by Mr. Fried and passed.

OLD BUSINESS

Mr. Odom read a letter addressed to a Baton Rouge engineering firm from the President of CEC in which the said President cited evidence of the firm's offering to perform engineering services for clients on a contingency basis. He reported that he had referred the matter to the PEPP Section for review and comment; that the Section had in turn sent the letter to the Committee on Ethics and that the Committee had written the Board asking for specific instructions.

Mr. Meyer moved that the Ethics Committee be instructed by the Board to review the matter and to make recommendations to the Board as to what position the Board should take regarding this matter and further that it make recommendations concerning the general subject of engineering firms offering their services to clients on a contingency basis. The motion was seconded by Mr. Vogt and passed.

FUNCTIONAL SECTION REPORTS

Professional Engineers in Education—Mr. Henry reported that the PEE Section had met and formulated a by-law change that will be submitted to the Board for approval at a later date. The Section recommended that the L.E.S. Board contact representatives of the newly created State Higher Education Council and offer the Society's assistance in the matter of planning for engineering education in State supported institutions. The committee also recommended that the Board take steps to achieve a closer working relationship between L.E.S. and A.S.E.E. Committee officers for the coming year have not been yet elected.

Professional Engineers in Government—Mr. Dyson, substituting for the chairman, reported for the Section. He congratulated Mr. Odom on a job well done this past year as president of L.E.S. He stated that the Section urges the Board to confer with the La. Civil Service Commission and attempt to convince them of the necessity of improving the relatively low salary scale of professional engineers in the employ of the State. To support this request, Mr. Dyson stated that a report containing information is being prepared and will be presented to the Board at its next meeting.

He reported that the Board of Governors of the NSPE-PEG section is meeting in Kansas City July 8-9 and that NSPE had offered to pay part of the expenses of a delegate from L.E.S. to the meeting; that the Section feels that it is important for a representative from the La. PEG Section to be present at that meeting; and that the Section therefore requests that L.E.S. defray the remainder of the expenses which he estimates will amount to $80.00. Mr. Brown moved that L.E.S. provide not more than $80.00 to help defray the expenses of a delegate from L.E.S. PEG Section to the said meeting, with the understanding that NSPE will pay half of the traveling expenses. The motion was seconded by Mr. Vogt and passed.

Mr. Dyson reported that the Section had elected the following officers for the coming year; Chairman—Frank M. Heroy, Jr.; Vice Chairman—G. R. Dyson. Secretary—Steve A. Nasca.

Professional Engineers in Industry—Mr. Richard, acting Section chairman for PEI, discussed the Industrial Professional Development Annual Award which is to be presented by NSPE to an outstanding engineer in industry. The Section will present to the L.E.S. Board at its next meeting its recommendations for a candidate for this award.

He reported that the Section favors the removal from the State Registration Law of all provisions for registration of Professional Engineers in branches of practice and that the law simply provide that an applicant be required to state in his application the field in which he is most proficient.

He moved that the L.E.S. Board take action in an effort to have the registration law so changed. The motion was seconded by Mr. Meyer. After some discussion a substitute motion was offered by Mr. Szabo and seconded by Mr. Vogt that the recommendation of the PEI Section be referred to the Society's Committee for Liaison with the State Board of Registration for discussion and recommenidation. The substitute motion passed, therefore, no action was taken on the original motion.

Mr. Richard reported that officers elected by the LES PEI Section for the coming year are as follows: Chairman—Sylvan Richard; Vice Chairman— ; Secretary—R. M. Singleton.

Professional Engineers in Private Practice — Mr. Meyer, chairman of the PEPP Section, reported that a committee of PEPP members had been formed to review the Manual of Practice for possible revision and the committee is to report on its findings at the Alexandria Planning Conference on September 19-20.

He discussed the policy statement concerning the qualifications of planners which was adopted at the May 23, 1969 meeting of the Board of Directors, on the basis of which discussion Mr. Szabo moved that copies of the said policy statement expressing the Board's opinion that duly registered professional engineers with proper experience are capable of performing planning services, be mailed to the La. Dept. of Public Works and to the Federal Dept. of Housing and Urban Affairs and that it be printed in the LOUISIANA ENGINEER. The motion was seconded by Mr. Meyer and passed.

Membership—Mr. Ewing, membership chairman, presented the following written report on the membership contest for the year:

Rank	Chapter	Quota	Applications	Percentage
1	Alexandria	11	31	281.82
2	Monroe	12	32	266.67
3	Shreveport	18	39	216.67
4	Lafayette	15	27	180.00
5	Baton Rouge	50	59	118.00
6	Lake Charles	13	15	115.38
7	New Orleans	79	83	105.06
8	Bayou Chapter	?	4	?
	Totals	198	290	146.46

The membership committee recommended that the 1970 quotas be set as follows:

Alexandria	13	Lake Charles	13
Baton Rouge	56	Monroe	15
Bayou Chapter	4	New Orleans	79
Lafayette	16	Shreveport	21

Mr. Vogt moved that L.E.S. congratulate the membership committee for its excellent accomplishment in that every chapter in the state had gone over its quota in the membership contest. Motion was seconded by Mr. Szabo and passed.

COMMITTEE REPORTS

Education — Mr. Brown, board sponsor of the Education Committee, reported that the Engineering Management Course is now a reality and the response has been excellent and classes will probably be taught two nights a week in New Orleans and that possibly the hours be increased to involve speed reading.

Emblem and Banner—Mr. Adams reported the committee is active and suggested the organization continue to use the emblem that has traditionally been used until recommendations are made to the Board. He said the committee is looking further into the design for an official banner and lapel pin for the members.

NEW BUSINESS

Chapter Areas—Mr. Adams discussed the boundaries of the Bayou Chapter. He pointed out that the Chapter's petition included all of the Lafourche, Terrebonne and St. Mary parishes, whereas the officers of the Lafayette Chapter stated that they had understood that only the portion of St. Mary Parish west of the Wax Lake Outlet would be included.

The matter of the boundaries of the new Chapter was discussed by the Board in which it was pointed out that other areas than those in the petition might be better served by being placed within the boundaries of the new Chapter. The president accordingly instructed the Committee to consider the feasibility of including within the boundaries for the new Chapter the Parishes of Lafourche, Terrebonne, St. Mary West of the Wax Lake Outlet, Assumption, the separated portion of St. Martin, St. Charles, St. John and St. James west of the Mississippi River and in Jefferson, the Town of Grand Isle.

Mr. Brown moved that the Baton Rouge, New Orleans, Lafayette and the Bayou Chapters be contacted to determine their reactions to changes in their boundaries as outlined in the instructions to the Committee. The motion was seconded by Mr. Szabo and passed.

New Sponsor Form—Mr. Adams presented a proposed new L.E.S. Sponsor Request Form 350 and moved that the new form be accepted. The motion was seconded by Mr. Meyer and passed.

A.I.A. Advertising Campaign—A letter from the Alexandria Chapter of L.E.S. was read and the following request contained in the letter was discussed: "We request the L.E.S. Board to take positive action to oppose the current drive by the A.I.A. which seeks to downgrade Engineers and make Architects the prime design profession on all types of construction." Mr. Adams moved that this matter be referred to the PEPP Section of L.E.S. for study and that the section recommend a plan of action for the Board of Direction in this matter. The motion was seconded by Mr. Stevens and passed.

Mr. Szabo suggested that L.E.S. contact N.S.P.E. and call this matter to their attention. The president stated that a letter would be written to N.S.P.E. for advice and counsel.

Membership Reports—Mr. Hogue tendered a list of the total membership as of the close of business of June 27 by chapters and classifications. He also informed the Board that the new membership roster has been printed and is ready for distribution. This roster contains the names and pertinent data on all members of L.E.S. as of April 1, 1969.

Mr. Simmons submitted a list of members who had resigned or died since the last Board meeting.

Ladies Auxiliary—Mr. Odom read a report from Mrs. Stokes, chairman of the Ladies Advisory Committee. The report cited the fact that the Auxiliaries of the Chapters had "raised a total of $2,000 for scholarships and awards during the past year that were given to students at five colleges and universities." Mrs. Sylvan Richard was selected as the chairman of

the committee for 1969-70. Mr. Szabo moved that the report be accepted and that the Women's Auxiliary chapters be congratulated on a job well done. The motion was seconded by Mr. Adams and passed.

Next Board Meeting—The next Board meeting will be held Friday, July 25th at the Sherwood Forest Country Club in Baton Rouge, La. at 3 p. m.

There being no further business Mr. Szabo moved that the meeting be adjourned. The motion was seconded by Mr. Thigpen and passed.

MAY 23, 1969
RAMADA INN, SHREVEPORT, LA.

President Odom called the meeting to order with the following Board members present: Farrell Adams, P.E.; Hoyt Brown, P.E.; Fred Culpepper, P.E.; T. J. Hogue, Jr., P.E.; Albert G. McKee, P.E.; A. E. Meyer, P.E.; S. J. Richard, P.E.; Ashby Stevens, P.E.; Jack Thigpen, P.E. and John F. Vogt, Jr., P.E. Also present were: R. O. Beckham, P.E.; M. B. Ewing, P.E.; John Livingston, P.E.; Richard See, P.E.; and Norman Ferachi, Executive Secretary.

The minutes of the April 25th meeting were approved as written. The motion for approval was made by Mr. Adams, seconded by Mr. Vogt and passed.

Financial Report—The financial report of the Society from July 1, 1968 to April 30, 1969, was given by Mr. Hogue. He informed the Board that a $1,500 deficit was anticipated and pointed out that this deficit was the result of several causes: viz (1) the Annual Convention failed to make the profit that was budgeted by $1,624; (2) approximately two hundred dollars not budgeted was spent in connection with establishing the Bayou Chapter; (3) Committee and Functional section expenses overran the budgeted amounts by $329; and (4) the unbudgeted printing of the Ladies Annual Handbook at a cost of $300. He said that there were two areas in which the Society could help trim this anticipated deficit: (1) he requested all chapter presidents to consider trying to raise some money for defraying the cost of entertainment at the convention; and (2) he requested chapter presidents to urge their members to pay their delinquent dues.

Mr. Vogt moved for acceptance of the report. The motion was seconded by Mr. Adams and passed.

OLD BUSINESS

Engineering Management Course—Mr. Brown outlined the proposed Engineering Management Course which is being sponsored by the Society and is being offered by LSU Schools of Engineering and Business Administration. He pointed out that it was important to obtain as many registrants as possible for this course. An article containing an outline of the management course will be printed in the June issue of the LOUISIANA ENGINEER.

President Odom congratulated Mr. Brown for his efforts in establishing this course.

FUNCTIONAL SECTION REPORTS

PEI Resolutions — Mr. Richard, acting section chairman, read the proposed PEI resolutions which had been sent previously to all Board members. The resolutions concerned changes to the present registration laws. Mr. Vogt moved that the proposed changes be referred to the Society's committee for Liaison with the State Board of Registration, with instructions that they report back to our Board with definite recommendations. The motion was seconded by Mr. Stevens and passed.

PEPP Policy Statement—Mr. Meyer, section chairman, read a proposed professional policy statement concerning Professional Planners. The proposal was slightly modified from the floor and reads as follows: "In order to provide a guide for the employment of Planners by Federal, State and Local Government Agencies, the LES hereby adopts the following Professional Policy. All Engineers duly registered by the Louisiana State Board of Registration for Professional Engineers and Land Surveyors, and who possess adequate experience in this field, are qualified to do planning and to serve as Professional Planners." Mr. Meyer moved for acceptance of the policy statement. The motion was seconded by Mr. Adams and passed by more than the required 2/3rds vote.

COMMITTEE REPORTS

Convention—Mr. Ferachi read a report of Mr. Al Adoue, general chairman of the 1969 convention, giving Mr. Adoue's comments on the convention and recommendations for future conventions. A copy of this report is attached to and made a part of these minutes.

Mr. Ferachi briefly outlined a report he had compiled at a critique meeting of the convention committee. A copy of this report is attached to and made a part of these minutes.

Mr. Brown played a tape recording made by David Fried, New Orleans chapter president, giving Mr. Fried's comments of the 1969 convention. The views expressed in this recording paralleled essentially the written reports by Mr. Adoue and Mr. Ferachi.

Following discussion of the three convention reports, the Board expressed concern for the procedure to be followed in planning future conventions. Mr. Odom stated that he would appoint a committee to review the reports with the intention of better planning of future conventions on a state and chapter level.

Membership—Mr. Ewing, membership chairman, presented the following written report on the contest standings as of May 21, 1969:

Rank	Chapter	Quota	Applications	Percentage
1	Monroe	12	31	258.33
2	Alexandria	11	26	236.36
3	Shreveport	18	37	205.56
4	Lafayette	15	22	146.67
5	Baton Rouge	50	54	108.00
6	New Orleans	79	73	92.40
7	Lake Charles	13	12	92.31
8	Bayou Chapter		3	
	Totals	198	258	130.30

Education Committee—Mr. Brown summarized a report of the Education Committee and read a statement approved by the Education Committee at its April 25th meeting. This statement expressed concern at the proliferation of engineering programs in the various institutions of higher education in Louisiana. It recommended that the Co-ordinating Council for Higher Education review the entire engineering education program in the state. Mr. Brown moved for adoption of the committee's statement as found in the committee's minutes. The motion was seconded by Mr. Adams and passed.

NEW BUSINESS

Committee for Selection of Executive Secretary—Mr. Odom asked Mr. Hogue to report on the findings and recommendation of the special committee to name an Executive Secretary. It was reported that nine applicants were interviewed for the position and that it was unanimously recommended that Mr. Gerald Simmons be offered the position vacancy. His background and qualifications were presented. Mr. Brown moved that the position of Executive Secretary be offered to Mr. Simmons at an annual salary of $10,400, plus hospitalization insurance for himself and the use of the automobile that is owned by the Society. The motion was seconded by Mr. Culpepper and passed.

Name Change of Ladies Advisory Committee—Mr. Odom read a letter from Mrs. Charles Stokes, chairman of the Ladies Advisory Committee, requesting the Board's permission to change the name of the Ladies Advisory Committee to the "Ladies Auxiliary Advisory Committee." This request was made so that the organization's name would be the same as used by the National Society. Dr. Thigpen moved that the ladies be granted permission to change the name of their organization. The motion was seconded by Mr. Culpepper and passed.

Letter from President of CEC/La.—President Odom read a letter which he had received from Mr. Lyman Elizey, president of the Consulting Engineers Council of Louisiana, concerning an engineering firm in the state offering to perform engineering services on a contingency fee basis. Mr. Odom referred the letter to the PEPP section for action by that section.

NSPE Southwest Regional Meeting—The Executive Secretary read several letters pertaining to the Southwest Regional Meeting to be held in New Orleans, Oct. 23-25. The letters indicated that the Mississippi Society of Professional Engineers would send representatives to this meeting because the conference would have discussions of several items of interest to the Mississippi organization.

Membership Report—Mr. Ferachi presented the list of members who had resigned or died since the last Board meeting. This list is attached.

He also presented a list of applicants for membership in the Society which had been printed in the April issue of the LOUISIANA ENGINEER, and reported that no objections had been received to these applicants. This list is attached.

Other Business

President Odom informed the Board that Dean Harry Simrall had been elected Presirent-Elect of NSPE. He reminded the Board members that LES had endorsed Dean Simrall's nomination.

Mr. Vogt expressed concern over the financial status of the Society. He recommended that a committee be appointed immediately to seek ways to improve the financial situation of the LES. Mr. Odom appointed Mr. Thigpen, Mr. Hogue and Mr. Culpepper as a committee to make this study.

There being no further business, Mr. Richard moved that the meeting be adjourned. The motion was seconded by Mr. Adams and passed.

The next Board of Direction meeting will be held on Saturday, June 28th at the Holiday Inn in Lafayette.

APRIL 25, 1969
NEW ORLEANS, LA.

President Odom called the meeting to order with the following Board members present: Farrell W. Adams, P.E.; Fred C. Culpepper, P.E.; Ken Daspit, P.E.; David Fried, Jr., P.E.; Carl E. Heck, Sr., P.E.; T. J. Hogue, Jr., P.E.; A. G. McKee, P.E.; E J McNamara, PE; A E. Meyer, P.E.; Bill Miller, P.E.; Waldemar S. Nelson, P.E.; Sylvan J. Richard, P.E.; Ashby Stevens, P.E.; A. J. Szabo, P.E.; Jack Thigpen, P.E.; and James F. Williams, Jr., P.E. Also present were: Roger Battle, P.E.; Louis Duclos, P.E.; M. B. Ewing, P.E.; Charles Hair, Jr., P.E.; Frank Heroy, Jr., P.E.; Lee H. Johnson, P.E.; Richard See, P.E.; Albert Repscha, P.E.; Rod Singleton, P.E.; Charles W. Stokes, P.E.; and Norman Ferachi, Executive Secretary.

The minutes of the March 7th meeting, after being corrected, were approved. The motion for approval was made by Mr. Thigpen and seconded by Mr. Adams and passed.

Financial Report—The financial report of the Society from July 1, 1968 to March 31, 1969, was given by Mr. Hogue. He informed the Board that income to March 31 had exceeded budgeted anticipations by some $3,000. This was due mainly to the early billing system. Expenses as of that date had also exceeded the budgeted amount by $671. Mr. Hogue noted that the financial outlook of the Society was not particularly bright and that the financial outcome depends greatly on the results of the Annual Convention. Mr. Nelson moved for acceptance of the report. The motion was seconded by Mr. McNamara and passed.

OLD BUSINESS

Report of Nominating Committee—The Nominating Committee, consisting of Mr. McNamara, Dean Bogard and Mr. Duclos had completed its report. Mr. McNamara, committee chairman, presented the nominees for the offices for the administrative year 1969-70 as listed:

President-Elect—A. J. Szabo
Vice President—T. J. Hogue, Jr.
Secretary-Treasurer—Jack Thigpen
National Director (NSPE)
Term of 2 years 1969-1971—Charles Stokes
State Directors (2) 2 Year terms—Charles Barnard, Malcolm Hurstell

Mr. McNamara moved that the nominations be accepted. The motion was seconded by Mr. Nelson and passed.

Mr. McNamara stated that there will be blank spaces on the ballot for write-in candidates. He also pointed out that two envelopes are to be included with the ballot—a small blank envelope in which the completed ballot is to be placed, and another envelope in which the smaller envelope containing the ballot is to be placed.

Continuing Education—Mr. Odom reported that Mr. Hoyt Brown had created quite a bit of interest in the subject of continuing education for engineers, however, since Mr. Brown was absent from the meeting, the Board was asked to defer consideration of his report until a later meeting.

Replies from Mr. Fromherz's letter—Mr. Ferachi reported that in compliance with instructions given him at the last Board meeting, he had sent copies of Mr. Fromherz's letter containing his suggestion relative to proposed use of the title "Engineer," to the deans of the engineering colleges in the state; and that replies had been received from Deans Richardson, Johnson and Bogard. He stated that copies of these replies had been sent to Mr. Fromherz. He then read the replies. The Board acknowledged Mr. Ferachi's report and no action was taken at this time.

Letter to Legislators—Dean Lee Johnson read a letter to the Board which he proposed be sent to state legislators prior to the 1970 Regular Session of the Legislature. The letter would seek support of legislators to prevent passage of legislation introduced on behalf of architects that would be detrimental to engineers. Dean Johnson proposed that the letter be signed by the deans of all accredited colleges of engineering in Louisiana, as well as the President of the Louisiana Engineering Society. Mr. Hogue moved that the Board instruct the President to join the deans in signing the letter. The motion was seconded by Mr. Fried and passed.

PRACTICE SECTION REPORTS

Education—Dr. Thigpen reported that the Education Section had a fine meeting this morning. The nominating committee, consisting of Dr. Jesse Coates, Dr. Felix J. Boudreaux, Professor Dan Vilet, and Professor Grover J. Trammel, had presented the following nominees for offices for the Professional Engineers in Education Section for the coming year: Chairman—H. L. Henry, Jr.; Vice Chairman—F. L. Larue; and Secretary—F. R. Gross. These officers will be voted on at the Annual Meeting. The above officers will draft a set of Bylaws for the section and submit them for review by the Board of Direction at the Annual Meeting. Mr. Odom thanked Dr. Thigpen for getting the section started.

Government—Mr. Heroy, representing Mr. Cresap, the chairman of the Section, reported that the meeting of the Professional Engineers in Government Section had run out of time at the meeting before official action could be taken on proposed motions.

He reported that a rumor is going around that a Collective Bargaining Bill for Public Employees may be presented at the upcoming session of the Legislature. The PEG section feels that LES should prepare for this. The section also feels that LES should: (1) establish contact with an attorney and make arrangements for his services; (2) call a joint meeting of the various enigneering societies in the state to formulate a plan to unify our actions, and (3) contact all legislators prior to the opening of the Legislature to apprise them of our feelings on this matter.

During the PEG meeting the salary scale of public employees was discussed. It was pointed out that the scale for federal employees is considerably higher than the scale for state employees. The new salary scale has been presented to civil service.

Mr. Hogue moved that an ad hoc committee be appointed by the president to contact Mr. Tom Phillips concerning his services during the coming session. The motion was seconded by Mr. Nelson and passed.

Industry—Mr. Richard, acting chairman of the Section in the absence of Mr. Steele, reported that the PEI section had passed several resolutions which are to be presented to the Board for its action at its next meeting. Copies of these resolutions are to be sent with the notice of the meeting. He also noted that the section's nominating committee will give its report and that officers will be elected at the Annual Meeting. He stated that a committee had been appointed to study the possibility of revising the registration law so as to provide for registration without designation of "branches."

Private Practice—Mr. Meyer, chairman of the section, gave the following report of the nominating committee: Chairman—Lamon Moody; Vice Chairman—Fred Culpepper; and Secretary—Jim Odom.

Mr. Meyer asked the Board to make a policy statement regarding professional planning. He will draft a statement and have it sent with the notice of the next meeting.

Mr. Meyer moved that LES endorse U.S. Senate bill No. 1532 and oppose U.S. House bill No. 100 and that a resolution for each of these bills be sent to the congressional delegation and to NSPE. The motion was seconded by Mr. Daspit, and passed.

COMMITTEE REPORTS

Engineering Technicians—Mr. Battle, who is a member of the committee, was requested by Mr. Duclos, the committee chairman, to present the committee's report. He reported that the first Chapter of American Society for Certified Engineering Technicians in the state had been organized at Delgado and had held its first meeting. There were 41 charter members, and a total of 75 people in attendance. The committee is now in the process of trying to organize chapters throughout the state. Mr. Ken McManis of Delgado is sponsoring the unit and five other faculty members are acting as advisors. Mr. Raymond Kerr will make a survey and the committee will try to come up with recommendations for locations at which tests for the purpose of determining eligibility of technicians can be given in Louisiana. This survey will also be used in selecting locations of chapters.

Mr. Duclos reported that the committee is handicapped because several chapters have not appointed members to this committee. He requested that the State Society allocate some funds to help the committee with its expenses. He reported that New Orleans had donated $100 and that Lake Charles and Baton Rouge are willing to help out.

Mr. Thigpen moved that this committee be allotted $100. The motion was seconded by Mr. Miller and passed. It was agreed that this appropriation would be placed in next year's budget.

Mr. Fried moved that the Board give a vote of thanks to Mr. Battle for all his participation with this committee. The motion was seconded by Mr. Hogue and passed.

Education—Mr. Repscha, the committee chairman, stated that he did not have his report ready but he will have it sent with the notice of the next meeting.

Liaison Committee—Mr. Stakes reported that his committee had studied the changes to the registration law as proposed by La. Land Surveyors Association at length and makes the following recommendations: (1) that no effort be made to change the law prior to the next regular session of the Louisiana Legislature. (2) that the number of members of the Board of Registration not be increased. (3) that the definition of land surveying remain as it is in the existing law. (4) that all nominations to the Governor continue to be made through the Louisiana Engineering Society. (5) that at least one member of the Board of Registration shall be a registered professional engineer who is also a registered land surveyor, one of whose principal activities is land surveying. (6) that interested professional societies and the Board of Registration be invited to delegate representatives to work with representatives of LES on further details of the proposed changes to the law.

Mr. Szabo moved that the report be accepted. The motion was seconded by Mr. Daspit and passed.

President Odom pointed out that the study of the La. Land Surveyors proposed changes to the law made as the result of a letter he had received from Mr. Lamon Moody. He stated that he would ulse the committee's recommendations in replying to Mr. Moody.

Membership—Mr. Ewing, chairman of the Membership Committee, reported that the committee recommends that LES not participate in Project 72/70 for the year 1969.

He reported that the committee is trying to secure a list of EIT's from the State Board of Registration in order that a letter inviting them to become members may be sent to them.

Mr. Ewing reported no changes had been made in the contest rules for the coming year. Mr. McNamara moved to accept the report. The motion was seconded by Mr. Thigpen and passed.

Young Engineers—Mr. Hair, chairman of this committee, reported that this committee has not received representatives from all the chapters. The committee will try to find out who the young engineers are in the chapters and encourage them to attend the meetings more frequently.

Publications—Mr. Nelson, chairman of this committee, said he would like to have more advertisers from around the state, as well as more articles of general interest for the magazine. He urged the chapter officers to try to get ads and thus earn the advertising commission for their chapters.

Petition for establishment of a new chapter—A petition was presented to the Board with the appropriate number of signatures for the formation of a new chapter in the Thibodaux-Houma-Morgan City area, to be known as the BAYOU CHAPTER. Mr. Nelson moved that this petition be accepted. The motion was seconded by Mr. Daspit and passed.

A committee of the proposed Bayou Chapter had also prepared suggested Bylaws. The Bylaws were studied by Mr. Nelson and Mr. McNamara, members of the Bylaws Committee. Mr. McNamara moved that the Bylaws be accepted. The motion was seconded by Mr. Nelson and passed.

Mr. Richard, president of the Lafayette chapter, moved that the portion of the rebates of dues from the State Society to the chapters thru the end of this fiscal year, that are taken from the Lafayette and New Orleans chapters for the Bayou Chapter, be based on a pro rata share to the chapters involved. The motion was seconded by Mr. Meyer and passed.

Mr. Adams moved that the chapter be presented a charter certificate. The motion was seconded by Mr. McNamara and passed.

Southwest Region Meeting—Mr. McNamara, who is chairman of the Southwest Region Meeting committee, called attention to the fact that the dates of the NSPE Southwest Region Meeting are October 23-25 and that the meeting will be held at the Fontainebleau Hotel in New Orleans. This is a meeting of the Society's officers of the seven states in the Southwest Region of NSPE. He pointed out that he will need the cooperation of the Society and the New Orleans Chapter in order to make this meeting a success.

Administrative Matters—Mr. Adams had written a letter to Mr. Odom requesting that a committee be appointed to study the Society's official emblem, banner, and jewelry and determine what the standard designs and sizes are and if none exist to recommend new ones. Mr. McNamara moved that the president appoint an ad hoc committee to look into this matter. The motion was seconded by Mr. Thigpen and passed. President Odom appointed Mr. Adams as chairman, with Mr. John Fernandez and Mr. Richard See as members of the Committee.

Membership Report—Mr. Ferachi presented a list of members who had resigned or died since the last meeting. This list is attached.

Convention Chairman—Mr. Fried moved that the Society present a suitable plaque to Al Adoue, general chairman of the 1969 convention, for his work on the Annual Convention. The motion was seconded by Mr. Adams and passed.

There being no further business Mr. Richard moved that the meeting be adjourned. The motion was seconded by Mr. Daspit and passed.

The next Board of Directors meeting will be held on Friday, May 23rd in Shreveport.

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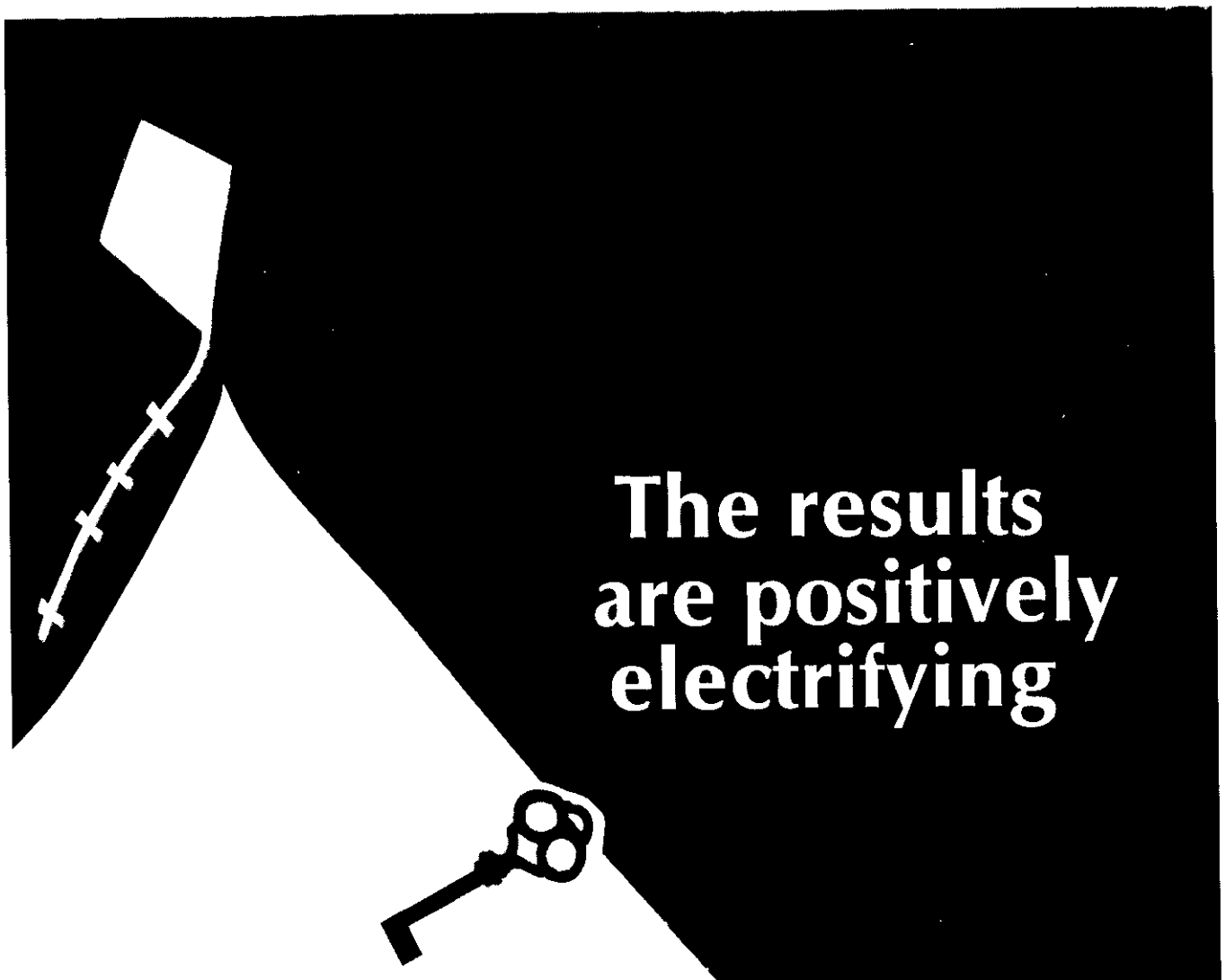

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LOUISIANA ENGINEER

Vol. 55 No. 5, October, 1969

There are places where the thought of investor-owned, free enterprise companies is hardly appreciated.

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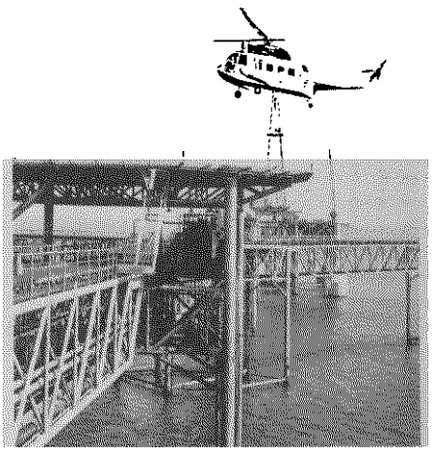

Cover: A Freeport Sulphur Company helicopter prepares to land on Freeport's offshore sulphur mine, Grand Isle, located seven miles off the Louisiana Coast in 50 feet of water. Read the complete story beginning on Page 8.

LOUISIANA ENGINEER

TABLE OF CONTENTS

Presidential Privilege 6
Freeport Sulphur in Louisiana 8
Boh Brothers 11
A.S.C.E.T.—A Space Age Asset 14
Engineering Students Keep Their Cool 17
Court Rules on Usage of Word Engineer 18
Dr. Thomas Leary 20
EngiLENS 22
Graphics Competition 24
EngiNEWS 26

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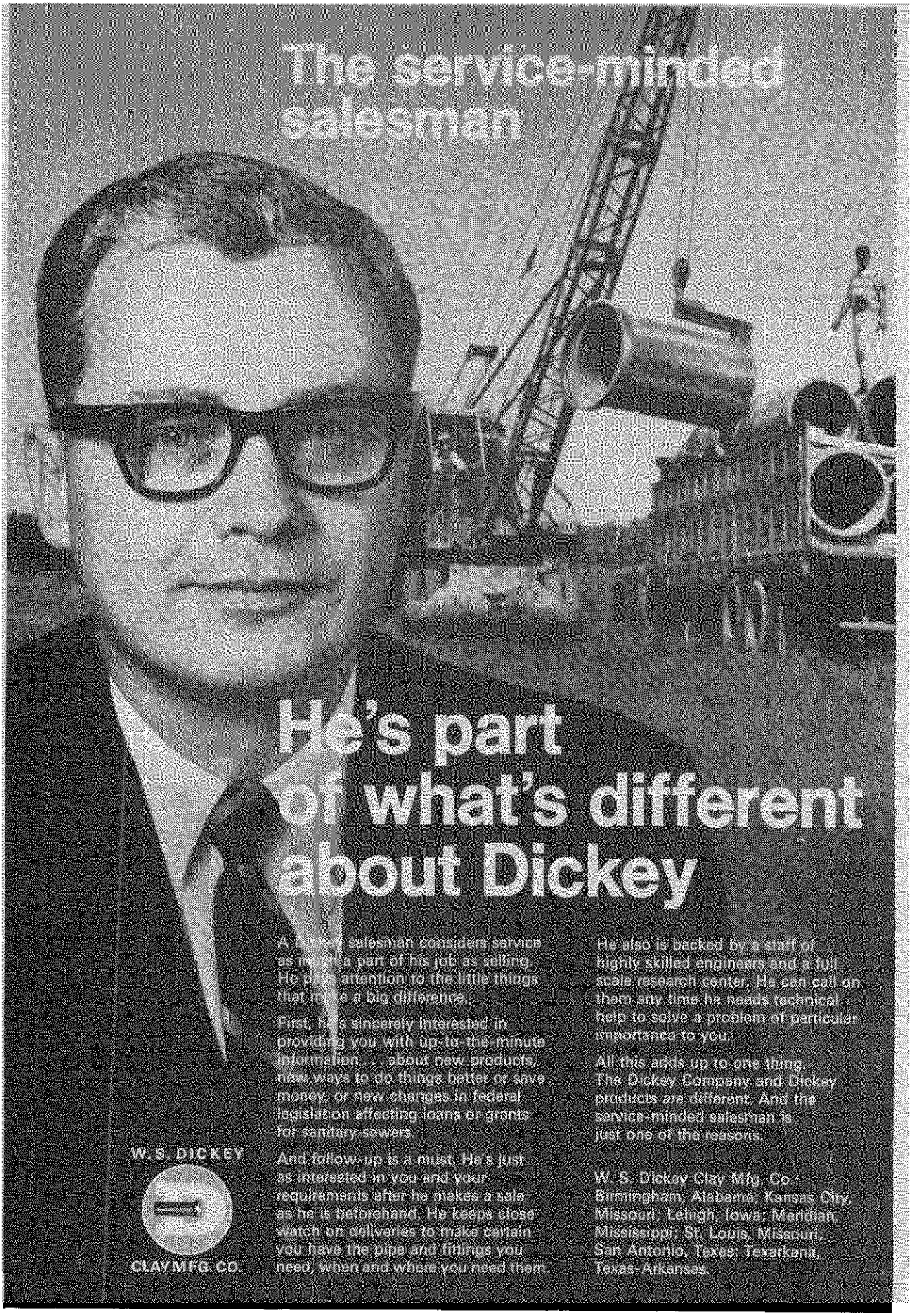
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PRESIDENTIAL PRIVILEGE

A duly executed petition has been submitted to the Secretary-Treasurer to amend the Constitution of the Society to materially increase the annual dues. Since I elected to be a sponsor to this petition, I hope to have the opportunity during the next few months to appear before each Chapter in the State and personally review the importance to the profession of soliciting additional income at this time and in this manner.

Despite such considered action, it is probable that many more members can be reached through this issue of the LOUISIANA ENGINEER and therefore I shall use this Presidential Privilege to discuss in some depth the financial position of the State Organization.

Reference to Chart 1 will indicate that on June 30, 1965, at the end of the first fiscal year as a State Society, the net worth of the Louisiana Engineering Society was $34,658, exclusive of its equity in equipment (office furniture, etc.). Throughout the years this net worth has gradually declined as indicated by the curve, such that at the end of the last administrative year (6/30/69) a comparable figure would be $16,925, or approximately 49% of the original amount. All annual figures are directly from our auditor's reports with exception of the fiscal year of 1969. (In prior years our audits were on a cash basis of accounting and last year we changed to an accrual basis; it is necessary, therefore, to adjust the last audit so that a proper comparison can be made with the previous figures). Considering the effect of net outstanding liabilities at the end of the last fiscal year as indicated in the accrual audit, our net worth as reported is $11,470. This point is also shown on the chart. Unless something can be done to curb our loss of net worth, it becomes obvious that the Society will be out of operation in short order. You may recall that a dues increase of $3.00/member was authorized in 1967 and this effect can be seen by the shift in the direction of the curve in 1968 which helped no doubt in carrying the Society for about one additional year.

Ironically, an investigation of the membership of the Society indicates that we have grown from 1893 members as of 6/30/65 to 2343 members as of 6/30/69—an increase of 24%, which is truly a remarkable gain, a fine tribute to our past membership committees, and certainly no reason for financial decline.

An analysis of Society expenditures by basic categories is illustrated in Chart 2. For all intents and purposes, we can approximate our average disbursements as 25% for dues rebated to our Chapters and to N.S.P.E., 27% as the cost of publishing the LOUISIANA ENGINEER, including a pro-rata portion of salary expense, 10% as the cost of Statewide Meetings, and 38% as the cost of All Other Services to our members.

Regarding dues rebated, as you know, we collect dues for N.S.P.E. members in Louisiana and these (100%) are sent to national headquarters. Chapters are usually rebated $4.00 per Member and $2.50 per Junior Member from LES dues collected. This is at the discretion of the Board of Direction and has been authorized each year. At the recent Alexandria meeting of the Board, in view of our current financial position, rebates to Chapters for this year were reduced to $3.00 per Member, $2.50 per Junior Member with a minimum annual rebate of $500 per Chapter.

The cost of our publication is basically offset by advertising and by a contribution from the State Board of Registration for use of the ENGINEER to publish the names of the newly registered engineers. Cost of statewide meetings is a controllable item and is based on the premise that such meetings must pay for themselves. Since we are a non-profit organization and therefore exempt from payment of income taxes, we are limited in the amount of income from sources other than dues income.

This leaves only the category of expenditures labeled "Other Services to Members" or about 38% of our expenditures to be considered—the area shown as shaded on the chart. Included in this category are costs associated with maintaining a state office, rent, salaries, utilities, mailing costs, etc.; cost of operating such committees as membership, legislative and others; the bi-monthly newsletter; travel expenses of the Executive Secretary in servicing the Chapters; society awards and for outside professional services (legal, etc.) as required. To attempt to reduce these services, which at present are considered minimal, would be in essence to eliminate many of the reasons for having a State Society. I think most of you will agree that in order to attract membership, to strengthen our public image, and to properly represent the Engineers of the State of Louisiana means increasing these services rather than giving consideration to curtailment.

On Chart 3, the cost of Other Services on a per member basis for the last four fiscal years is plotted, as well as the dues retained by the State Office on a per member basis. It is obvious that we cannot exist very long under this program even if all other major expenditure programs are self-supporting; it cost the State Society during our last fiscal year $4.35 per member **more** than the average dues per member that were retained!

There are thirty-three state societies of N.S.P.E. that engage an executive secretary and

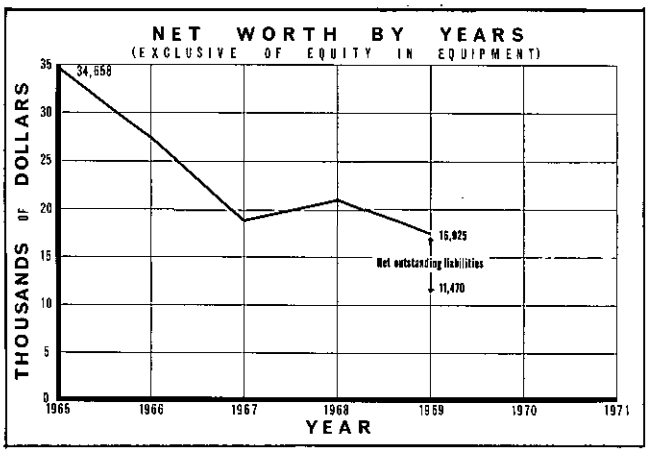


CHART 1

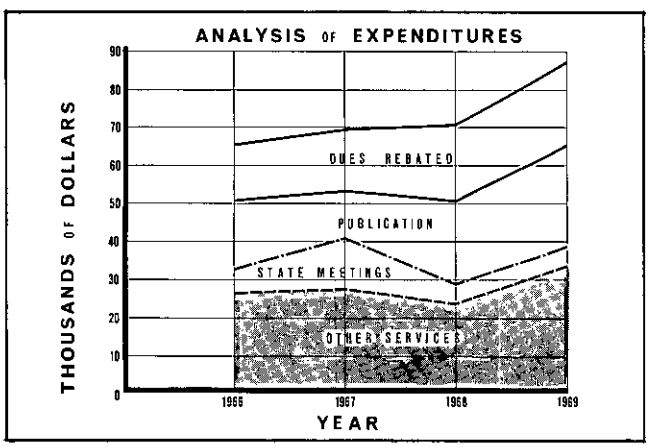


CHART 2

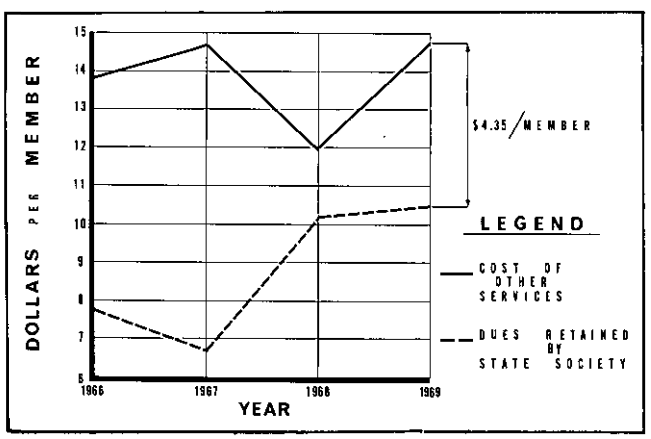


CHART 3

have a central operating office. Annual state dues in these societies range from $9 to $45 per Member with the average being $18.60 per member, and many of these have dues increases authorized and about to go into effect. The petition mentioned earlier provides for an increase of $10 in the annual dues for a regular Member and Affiliates, $5 for out-of-state Members and Affiliates, and $2.50 for Junior Members, which is considered necessary to extricate us from the $4.35 per Member deficit and bring us into the black and keep us there without having to go back for any additional funds for a reasonable period of time!

Only you can authorize a dues increase and this only by an amendment to the Constitution of the Society, which must be passed by an affirmative vote of two-thirds of all ballots cast. Before the amendment can be voted upon it must be sent by letter to all members of the Society and placed in order for discussion at a general meeting of the Society called for this purpose. At this general meeting the amendment may be **approved** by a majority vote, may be **amended**, or may be referred to Committee for **further consideration.** Should the latter action take place, the committee must report at the next regular meeting whereupon the amendment shall be acted upon as before.

From this you can see an amendment can be kept in committee almost indefinitely should this be the wish of the members. The petition for constitutional amendment initially referred to will not come before a general meeting until the spring of 1970, presumably at the Spring Convention meeting in New Orleans. Even if acted upon favorably at this time this would mean that any approved dues increase would not be put into effect until the dues year 1971, unless some special action is taken to make the increase effective sooner. I refer you once again to Chart 1 and suggest that you carefully study this and realize from the effects illustrated that 1971 may well be the year of final judgment.

It is not easy in these times of economic inflation to levy upon ourselves any additional dues burden. This will not be easy to sell to our membership, particularly to our younger members. I entreat each of you therefore to unite with me in this crucial crusade for funds, to see that this financial message is brought to all our members in the next few months, so that when we are soon faced with balloting for a dues increase all will realize that we will be truly voting the survival of the Louisiana Engineering Society and that any further procrastinating action made possible by our constitution can be a mortal blow to its existence.

Freeport Sulphur in Louisiana

Freeport's first venture into Louisiana was at Lake Grande Ecaille in Plaquemines Parish. Grande Ecaille began producing in 1933 and is still in operation today.

Freeport Sulphur Company's history in Louisiana has been a succession of unique engineering challenges and its success is largely attributable to the mastering of these challenges. This success enabled the company to rise to leadership as the world's largest producer of the valuable yellow mineral called sulphur or brimstone.

From 1932 when Freeport began construction of its Grande Ecaille mine ("The Mine That Couldn't Be Built") until the moving of a 1,600,000-pound offshore drilling platform in July, 1969, the company has established a long string of pioneering "firsts" in many technical fields and has diversified into oil, gas, chemicals, kaolin, and potash production.

One of Freeport Sulphur Company's major achievements has been its solution of the problem of how to operate successfully in the most difficult and formidable terrain Louisiana has to offer. The magnitude of this feat is indicated by William Haynes in his history of the American sulphur industry. Haynes said, "Imagination could hardly picture a less inviting site for a Frasch operation than Grande Ecaille."

Grande Ecaille is located in a desolate expanse of tidal marshland within four miles of the Gulf of Mexico. Most discouraging also was the fact that it was

miles from a highway or railroad and was ten miles from the fresh water a Frasch plant needed at that time.

These and other factors prompted the first Freeport engineer who studied the site in 1928 to conclude, "In my opinion, this would prove to be an impossible sulphur-mining proposition."

Many Surprised

Many Freeporters, and practically all outsiders, were surprised when the company announced in 1932 that it had acquired the sulphur rights to Grande Ecaille and would build a hot-water mining plant atop the salt dome that lay beneath the marsh in Plaquemines Parish.

A short 22 months following the lease signing, Freeport produced its first sulphur from Grande Ecaille. The mine some said could never be built went on to become the world's second largest sulphur mining operation. To date, it has produced in excess of 30 million tons of sulphur, and is still producing.

Freeport's development of a process whereby seawater could be heated and used as mining water was another significant engineering achievement. Necessity, as with most other innovations, also mothered this achievement.

In the late 1940's oil companies prospecting south of Houma near the Gulf of Mexico had encountered sulphur in moderate quantities and Freeport was interested in these sulphur prospects. However, they were 40 miles from the nearest fresh-water supply and it would not be economically feasible to pipe the large quantities of water needed this distance. In 1951 Freeport's management, confident that a seawater mining process its engineers were working on would prove successful, acquired the sulphur rights at Bay Ste. Elaine and three other locations.

The search was pressed to fruition in 1952 when the seawater process was initiated on a large scale at the Bay Ste. Elaine property. During the seven-year life of Bay Ste. Elaine, the seawater process was proven feasible and led the way to development of other mines using this process.

Bay Ste. Elaine also contributed another milestone in Freeport's engineering accomplishments. For it was at this site that the first portable power plant and relay facilities were used in sulphur mining. The facilities (probably the most compact constructed to that time) were built on a large steel barge. When outfitted, the barge was towed 65 miles through bayous, canals, and lakes and was sunk on a prepared bottom.

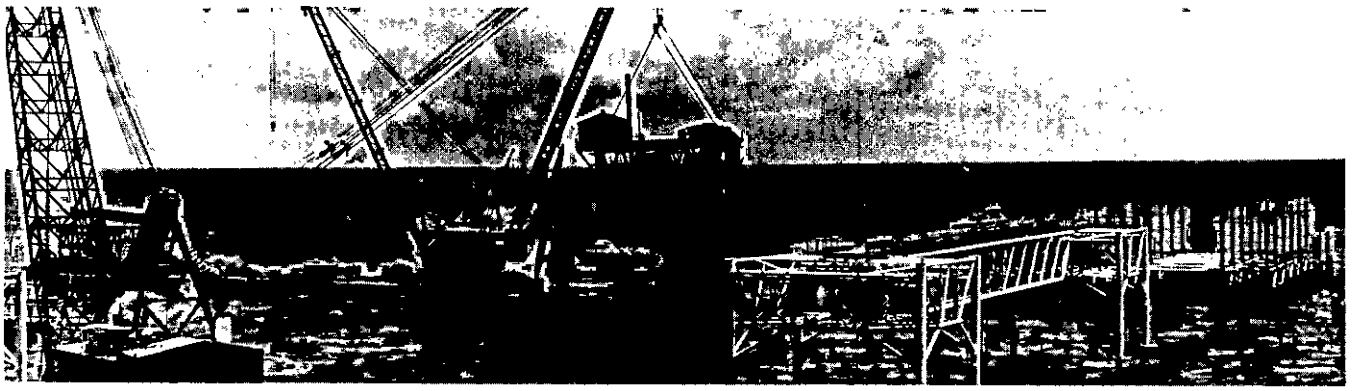
This achievement provided the engineering background for Freeport's two offshore mines and also enabled the company to mine some deposits which had previously been inaccessible.

Illustrating this is the fact that the barge and all of its equipment was later refloated in 1957 and moved to the Lake Pelto mine, six miles away and where it is still being used today.

Another pioneering achievement credited to Freeport's engineering staff was the transportation and terminaling of molten sulphur. Since 1947, Freeport's staff has provided the engineering "know how" to largely change shipments from a bulk to a liquid basis.

Although this undertaking was difficult and involved millions of dollars, the returns have proven worthwhile. Reduced handling costs, higher product purity, elimination of melting, ease of inventory, reduced maintenance, and economics in transportation costs are some of the benefits which accrued from the transition. Exemplifying the effect this change has had on the sulphur industry is the fact that over 90 percent of today's domestically used sulphur remains as a liquid from well to customer, whereas 10 years ago less

The height of engineering achievement was realized with completion of the world's first offshore sulphur mine. Freeport's Grand Isle mine is located seven miles off the coast of Louisiana.



An offshore crane recently moved an 800-ton lift in 50 feet of water when one of the drilling platforms was relocated at Freeport's Grand Isle mine. The facility was designed so that it could be raised and extended when necessary.

than 25 percent was shipped as a liquid.

Grand Isle Mine

Perhaps the greatest challenge to Freeport engineers was the development of the Grand Isle mine seven miles offshore in the Gulf of Mexico. The quality of engineering, the variety and originality of the problems, and the ingenuity of the solutions provided by the engineers are unsurpassed in the annals of Freeport history.

When Freeport acquired the mining rights to the sulphur deposit off Grand Isle the problems were legion—and naturally, most of them were given to its engineers for solution.

Among the most formidable problems were: (1) How to construct in 50 feet of water a power plant capable of heating 5,000,000 gallons of seawater daily to mining temperature; (2) How to control corrosion on the largest steel island in the world; (3) How to compensate for subsidence caused by settling and shifting of the Gulf's floor due to the removal of the sulphur; (4) What is the best method of getting the sulphur back to shore; and (5) What provisions must be made for the extremes of weather encountered seven miles offshore.

Freeport accepted these challenges. Following acquisition of the sulphur rights, structural contracts were awarded and actual offshore construction began seven months later.

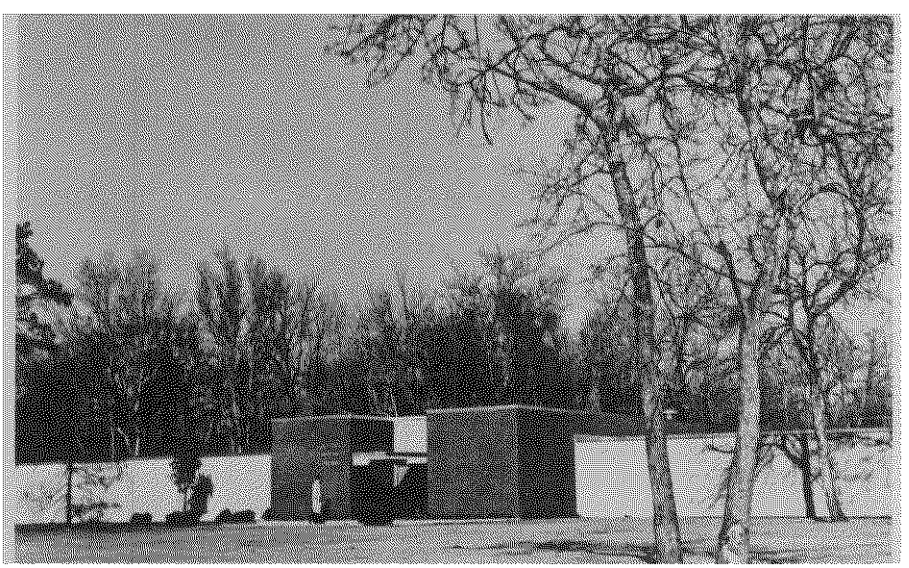
In April, 1960, less than two years after construction began, the world's first offshore sulphur mine was producing. Freeport's engineers had mastered all of the problems presented, and sulphur's most challenging venture was proving successful.

During the past nine years, the Grand Isle mine has had two additional drilling platforms added and one recently relocated.

Experience gained at Grand Isle helped to pave the way for construction of Freeport's newest mine, Caminada. This mine, like Grand Isle, is located in the Gulf of Mexico off the Louisiana coast. It began production in 1968 and was operated one year when it was temporarily shut down due to a shift in the sulphur supply and demand picture.

The major difference between Caminada and Freeport's other mines is in the location of the power plant and related facilities. In all previous mines, including Grand Isle, the power plant with all of its critical parts had been located some distance from the ore body so that it would not be influenced by subsidence. At Caminada, however, Freeport engineers traversed another uncharted trail when they constructed the entire mining facility directly atop the sulphur deposit. Thus the company realized a substantial savings in the cost of the facility.

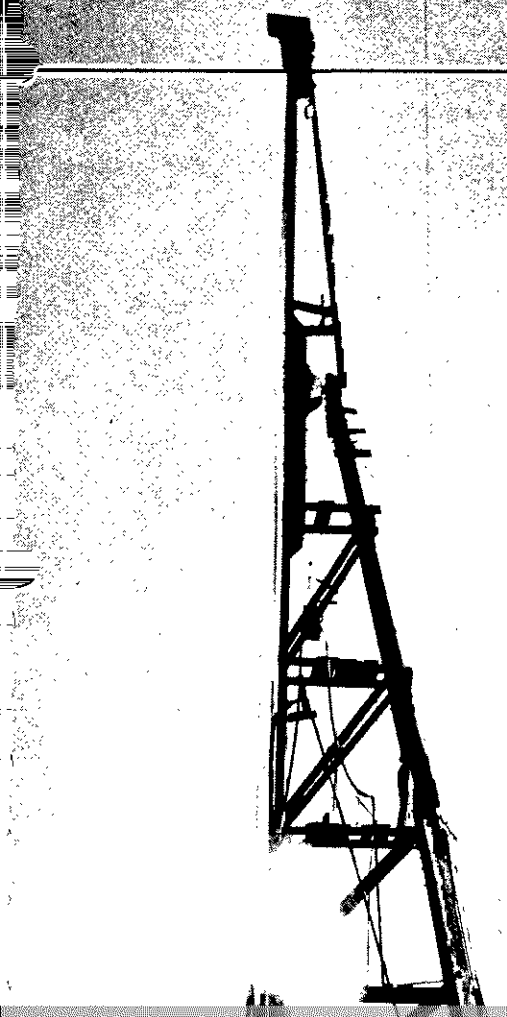
Freeport's engineers have played a vital role in the company's history, and as the search for nature's brimstone becomes more difficult, there is little doubt that the future will bring equally challenging assignments for this group.



Freeport's Research and Development Department is located at Belle Chasse and plays a vital role in the Company's operations.

Boh Brothers—Those First 60 Years

Robert H. Boh, President, Boh Bros. Construction Co., Inc.



New Orleans was a crowded city in the summer of 1909. It had been years since any major construction had taken place, and now more than 500,000 persons were jammed into less than 300 square miles. So congested was the city that a physician, hauled into court for violating the building code, protested that he could find no space for his practice other than the barroom in which he had opened it.

But there were signs that year that New Orleans was beginning to awaken to her opportunities for residential growth. Thus, when Arthur P. Boh, a former draftsman for the city's Sewerage and Water Board, opened a one-room general contracting office in downtown New Orleans, his first successful bid was for home construction. This initial contract called for erecting four double residential buildings at the corner of Banks Street and Hagan Avenue. The total cost for the entire project was only $16,500.

By 1912 the still-new A. P. Boh Construction Company had moved to larger quarters, and a year later Henry Boh joined his elder brother's firm and set the stage for a partnership which would later develop.

World War I did much to stimulate the construction industry in New Orleans. For awhile the city seemed to pulsate with new life and vigor as vast land areas were drained and cleared for military installations, and new industrial and port facilities came into being. By 1917 a massive project was under way to extend the sewerage and water systems to virtually every corner of the city. At the same time, heavily used thoroughfares were scheduled for shoring or

Boh Brothers (Continued)

The first contract undertaken by the A. P. Boh Construction Company was this residential project at the corner of Banks Street and Hagen Avenue in New Orleans. These four buildings are standing today, sixty years after they were built.

rebuilding, and additional drainage canals and pumping stations were planned to reduce dangerous flooding.

Turning its attention away from competitive residential construction, the firm began concentrating on storm drain projects, on sidewalks and curbs, and on gutter-bottom construction. It was an easy transition to make, for Arthur Boh, being a former employee of the city's S&WB, was already familiar with utility construction and understood well the problems facing the city.

The company had again outgrown its quarters by 1920 and moved into larger offices. Later the same year Henry Boh began to take an active part in the management of the firm, and under the dual guidance of the two brothers the company continued to bid successfully on an increasing number of utility projects.

As the decade of the Twenties approached its end, an economic cycle was also nearing completion. The nation had come full circle from depression to recovery to prosperity, and now the forces that regulate the movement of men had reached their zenith and were moving rapidly forward. No one really expected the crash, but it came, nevertheless. Construction work throughout the city slowed gradually, then came almost to a complete halt.

Those sweeping programs to improve the streets and drainage and to extend the city's water system all became casualties of the Great Depression. In the construction industry it was a time of little profit, or no profit at all; a time for waiting . . . for hoping . . . for hanging on.

But as the Thirties rolled around, several new factors were emerging, among them Franklin D. Roosevelt with his New Deal, his "pump priming" principle and Works Project Administration. Generally, the WPA was established to administer federal funds and create projects for relief in public works. In New Orleans this meant, specifically, a drainage program.

A Sewerage and Water Board contract availed to the firm was a direct result of WPA funds. It called for the construction of a suction basin for one of the city's drainage pumping stations. It was awarded to the A. P. Boh Construction Company and constituted the largest project the firm had thus far attempted.

At the same time, the new contract meant an end to the years of uncertainty for the Boh firm, for other contracts followed close on the heels of this one. Within two years the company found it necessary to purchase its first piece of heavy equipment—a steam-driven pile driver. Now the firm was no longer merely a general contractor; the new pile driver represented the nucleus for an established, self-contained construction facility.

In 1935 Arthur and Henry Boh formed a partnership under the name of Boh Bros. Construction Company.

As the 1930s drew to a close, it was clearly evident that both the city of New Orleans and the construction industry were rapidly recovering from the doldrums of the Depression. Construction contracts awarded in New Orleans in one particular month during 1939 totaled $925,000—an increase of nearly three hundred percent over the pre-

vious high monthly figure. Indeed, money was flowing back into the city.

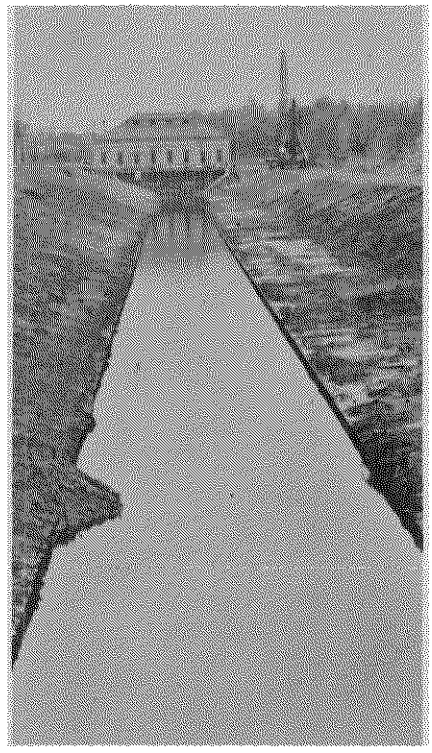
On Saturday, December 6, 1941, columnist Walter Lippman wrote in the Times Picayune: "For the first time the country is now really on the verge of actual all-out war . . ."

The following day everything changed. Across the nation the pace of living quickened, and soon wherever one looked were signs of new construction: great shipyards, sprawling defense plants, hundreds of new barracks to house military personnel. Fortunately, the years of experience and growth had equipped Boh Bros. to meet the demands of an industry suddenly shifted into high gear.

Although municipal improvements slowed substantially during the World War II years, in other ways the old city had outdone itself by spreading into areas once believed too marshy to support anything "heavier than a stunted cypress."

In the early years of the "Fabulous Fifties" the company opened an office in Shreveport and extended their activities to north Louisiana, then into Arkansas, Texas, and Mississippi. Boh engineers and tradesmen tackled ever-larger and more sophisticated projects. Highway approaches and long, sweeping bridges were built, and along the Mississippi River and on the outskirts of New Orleans giant electric power plants rose against the horizon.

In 1960 Boh Bros. Construction Company was reorganized under Louisiana's laws of incorporation, with many of its key personnel becoming stockholders. In this manner, Arthur and Henry Boh better assured the permanent operation of the firm that each had so painstakingly nursed through the years, and molded into one of the nation's largest and more versatile construction firms.



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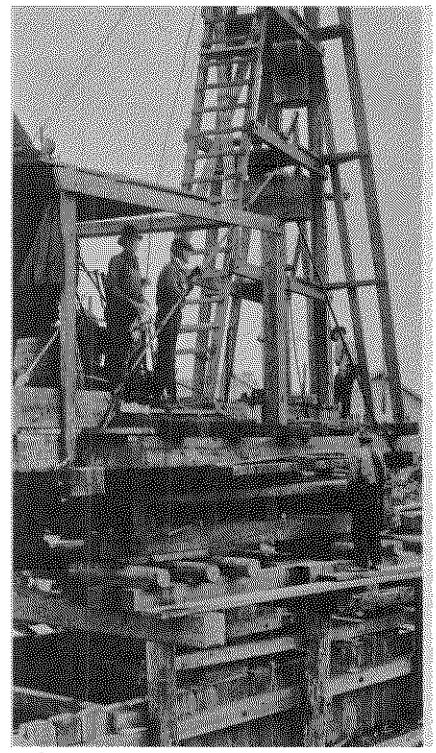

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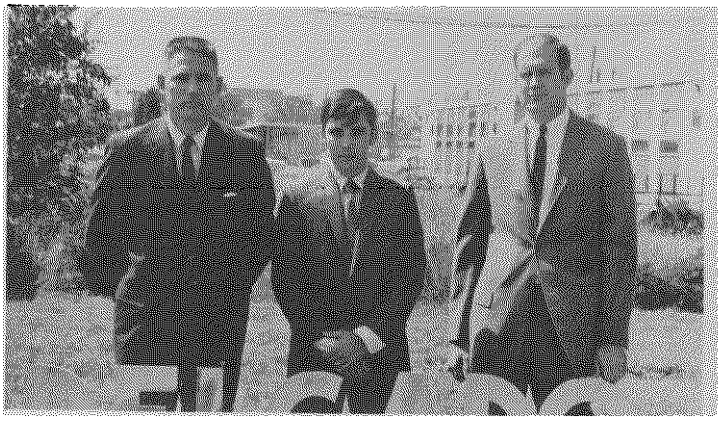
1. A Boh Bros. machine, seen in the distance, completes work on a drainage canal leading directly into one of the S&WB pumping stations.

2. Contract 212-D is important in Boh Bros. history because it enabled the firm to begin recovering from the Depression. The contract called for construction of a suction basin for drainage pumping station No. 7.

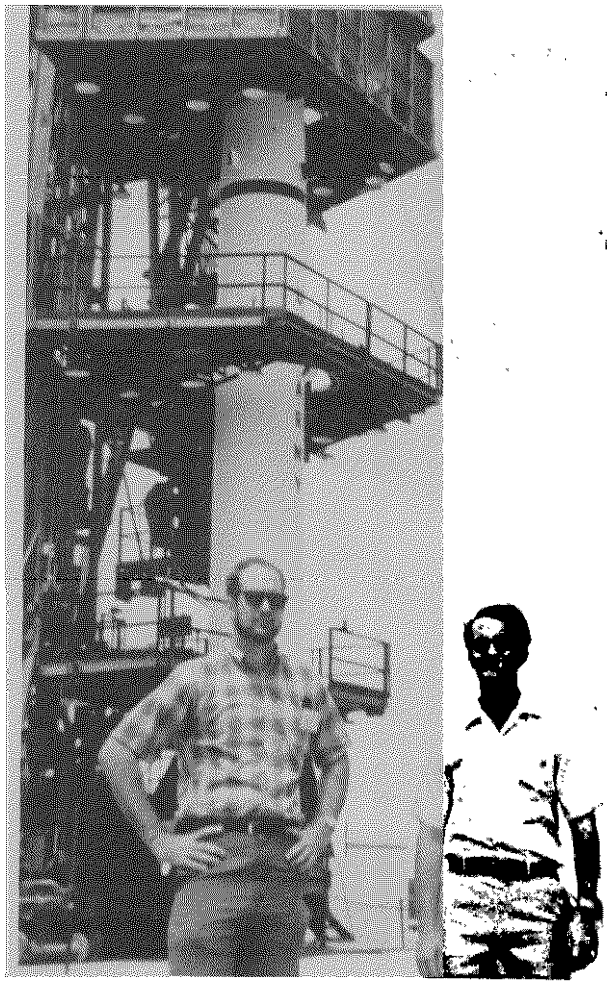
3. An example of the equipment in general use around the turn of the century was this pile driver, engaged in driving sheet piling along the South Claiborne Canal at State Street.

A.S.C.E.T.–A Space Age Asset



Standing in front of the College of Engineering Technology on the Delgado College campus are three men active in ASCET affairs. From left to right are Roger K. Battle, P.E., chairman of the L.E.S. Engineering Technicians Committee; James Vairin, president of the ASCET student chapter at Delgado; and Ken McManis, P.E., assistant professor of civil engineering technology.

Displaying the ASCET student chapter charter for Delgado are Ken McManis, P.E.; Dean Frank Carrol of the College of Engineering Technology; James Vairin; and Roger K. Battle, P.E.



Visiting the Kennedy Space Center are Ken McManis, P.E., and John Noggerath, a Delgado student.

Why, with all the different professional and specialized organizations in existence today, would a group of men dedicate themselves to the founding of a new organization? What could have been in the minds of those who met in Kansas City, Missouri in 1964, as they sat down to found the American Society of Certified Engineering Technicians (ASCET)? The whys and wherefores were varied and many, but mainly one idea was prominent in everyone's thinking. That idea was that this Society must be for now, and all time, a professional organization of the highest calibre.

Today's society is a moving, dynamic entity all its own. There has never been another era like today. The men and women who contribute their time and talents to today's startling advancements are the scientists, engineers, and technicians who conceive, produce, and operate those machines and ideas which are producing advancements in an era that will go down in history as a time of unparalleled achievement.

American industry today is beating the bushes looking for the personnel required to produce their product, whether it be a light bulb or a nuclear reactor. One basic question is asked by all prospective employers and employees, "What's in it for me?" This has led to a situation today of those who have and those who have not.

It seems that no matter what a company or corporation is willing to pay a man for his services, there is always someone who seems to have a greater need and will pay more. In this time of searching for manpower and finding little or none, one group of professionals are yet to be fully recognized for their achievements. They are those individuals who seem to be in that gray area between the craftsman and the engineer. This is what this article is all about, and this then is the engineering technician. What, or better who, is the engineering technician? He is a relatively new breed of engineering personnel created in the hurry-up world of our fast paced scientific advancements.

Michael J. Jung, CET, Vought Aeronautics Division, LTV Aerospace Corporation

In order to explain the whys and wherefores of the engineering technician let us digress a bit and review the history of this type of engineering personnel, then describe the functions and duties so that everyone may be able to appreciate this "special breed."

During World War II, America's manpower was "sent to the front." Those who were able enlisted to save our country. But what of the arms makers? They were faced with a problem of manpower shortage, thus was born the practice of giving high school graduates an accelerated two year college education. After graduation, with an Associate Degree, they were put to work under the supervision of a qualified engineer. They were required to be the extra hands and eyes of the engineer, and after a short period of training, these men were able to take a greater work load than anyone dreamed.

After the war the economy slowed down while it changed directions, then it started its present upward spiral of advancements, and once again we have a manpower shortage. And once again the promise of quick money is luring thousands into industry away from higher education; therefore, the engineering technician is once again being put to the test. But at the same time industry is being put to the test, can it now recognize and appreciate the unique usefulness and functions of an engineering technician and channel these qualities into productive work? In order to awaken industry to this unrecognized reservoir of "manpower with excellence," the National Society of Professional Engineers established the Institute for the Certification of Engineering Technicians (ICET). ICET was formed "to perform the functions of determining the competency of those who voluntarily apply for certification."

The Institute is comparable to registration boards in the various states for professional persons. The Institute is a national examining board, and while it is not a legal certification (there is no law that says it has to be), it is now being recognized by government, industry, private practice, and educational institutions. It is hoped, by providing three grades of certification, that there will be created a real incentive for a technician to get as much experience and knowledge as possible.

By being able to demonstrate, to an outside independent examining body, that he has achieved a certain level of proficiency the technician may help himself to obtain recognition within his own company. Companies should be interested in having their employees certified since this does indicate, by an outside evaluating agency, that their personnel meet certain minimum qualifications. The Board is not primarily concerned with how a person achieves his proficiency, but simply that he has acquired it. This then is the engineering technician — his job title may vary greatly, but in the long run, he is the man who is the liaison between the skilled craftsman and the theorists.

ASCET is the next logical step for every engineering technician who believes in striving for those higher plateaus which are available to those individuals who have the drive and enthusiasm to continue to advance.

ASCET is a society made up of individuals of diversified activities banded together to achieve recognition for the engineering technician. The Society was formed to expose its members to engineering philosophies, other than their own, in order to keep the engineering technician stimulated to achieve the highest possible position in his chosen field of endeavor.

In order to be effective, ASCET must be dynamic and stimulate individual thinking. ASCET is obligated to the purpose of stimulating new ideas in all fields and of disseminating any knowledge gained from these ideas. It is to this end that ASCET is working.

In order for ASCET to become completely effective, it needs the support of all industries, regardless of the field of endeavor in which a company is engaged. Already many companies across the nation recognize ICET and ASCET. There are many engineering technicians today who are not as efficient as their company would like them to be. Here is the one good reason that membership in ASCET should be encouraged by all those industries who employ engineering technicians. Once a man gets to know others in his local chapter who are not in his company, it tends to awaken him to the fact that he may have been lax, and is not "on the ball" as much as he should be. Through speakers, discussions, and seminars at the local chapter level, new ideas are presented to technicians who are then able to apply this new-found knowledge to their own jobs. When this knowledge is applied by the engineering technician, it is applied also toward the benefit of the company.

Recognition of ASCET by a company and the encouragement of their employees to join, shows to these employees that their company is not a mindless machine that cares nothing about them. These are only two reasons why a company should recognize the only national organization in existence for the engineering technician.

The purpose of ASCET, which

operates independently of ICET and NSPE, is:

A. To obtain recognition of its members as a vital component of the engineering and scientific team in service to the national and public welfare.

B. To establish cooperative relations with engineering and scientific societies.

C. To develop methods to improve the utilization of engineering technicians.

D. To develop and disseminate information and services to constantly increase the technical competence of engineering technicians.

E. To promote the educational, social, economic, and ethical responsibilities of engineering technicians.

What are the capabilities of an engineering technician?

The ultimate plateau in leadership and professional achievement that can be attained by the engineering technician are limited only by the desire and ability of the individual technician.

Today's technicians have the responsibility to take those ideas "parts and pieces" conceived in the minds and laboratories of today's scientists and engineers, and mold them into the realm of practical applications to benefit mankind today.

These are the things that make up the life work of those dedicated people who are today's engineering technicians. Some work in the realm of pure research to try and prove the ideas of the scientist while others work for those engineers whose jobs vary from the problem of road and highway construction to the detail design and fabrication of the sophisticated electronic systems of today.

The advanced engineering technician often independently plans, and organizes complete blocks of work, without extensive supervision, consulting with the professional engineer relative to advice, solutions, and approval, on broad initial assignments and overall objectives. Any possible complex features such as special conditions, policy matters, schedule dates, priorities, unprecedented problems, or controversial matters are discussed with professional engineers and courses of action determined. He often works with freedom from direct technical supervisory control in determining or establishing proper methods, procedures, techniques, and personnel selections, relative to particular assignments.

The engineering technician must have a sense of responsibility toward his work. Case after case could be listed demonstrating the important part played by the technician in various engineering ventures.

The most exacting work performed by the professional engineer may be jeopardized by the lack of a professional attitude on the part of the technician. The engineering field places more reliance on the competence and professional attitude of the technician than any other profession.

Since its conception, the Society has pursued its goals of establishing the engineering technician as a part of the national and local community utilizing sound, professional practices.

While ASCET fully recognizes the importance of unionism in specific areas of labor-management relations, and acknowledges that many significant benefits and improvements in the labor climate of the United States have been the results of union efforts, ASCET is not now, nor ever intends to be, a collective bargaining unit. ASCET will never resort to collective bargaining, representation, strikes, or coercion to enforce its will or further its objectives. The Society subscribes to the theory that collective bargaining for engineering technicians is in conflict with the basic principles of the professional individual, and the individual responsibility and independent judgment required of an engineering technician are incompatible with the regimentation that is a requisite of unionism. Harmonious relations between the technician and management, and the full development of the technician can best be accomplished with the full cooperation and mutual respect of both.

ASCET recognizes the engineering technician's position to trust, and resolves in all activities to be guided by the highest ideals; to establish, practice and promote professional standards, and to be ethical and understanding in all our business associations.

We resolve to promote the interest of the business in which we are employed; to exemplify loyalty and conscientiousness at all times, and to maintain dignity and poise under all circumstances.

We resolve to encourage our membership to provide any technical assistance to any company or customer organization, which will aid in the economical production of products that will satisfy their contractual obligations.

We further resolve to share knowledge, to encourage ambition and inspire hope, and to sustain faith, knowing that the eternal laws of God are the ultimate laws under which we may truly succeed.

Engineering Students Keep Their Cool

A thick curtain of words, woven by the communications media, is hiding the real tragedy of our college campus riots. With characteristic uncertainty, the words try to explain why, sputters one alumnus, "moral and academic cretins are sacking our institutions of higher learning."

But the explanations, which vary from the simplistic ["they riot because they don't want to go to school"], to the wretchedly complex ["they are really rebelling against the vacuous middle class values of their parents"], only add to the confusion. Probably because these negative explanations attempt to analyze a form of madness—which, after all, is the real tragedy of our college campus riots.

A much greater good could be gained if the communications media turned from their morbid fascination with destructive rebellion, and focused their curiosity on those students who have hired universities to educate them, and cooperate in allowing these institutions to do so. There are indications that interest is growing in this type of student, who has, we suspect, always been in the majority.

Which brings us to the engineering student, who seems to show no interest in either blowing up or burning down buildings, s l a n d e r i n g professors, breaking furniture, going limp, lying down, or exhibiting other signs of infantile rebellion. Even though college campuses of all kinds have been "barbarized," with few exceptions, engineering students and schools have remained free of the appetites that drive the liberal arts students.

The next question is, of course: Why? And when we get to the *why*, it is there that many will make the error of using the old, well-known vilifications of the engineer to justify a lack of understanding of his motivation, or dedication to his work, which is, by definition, for the betterment of mankind. We've heard them all before. They are the blank verse of the ignorant: The engineer is more concerned with things than people. The engineer is socially unaware. The engineer is narrow minded.

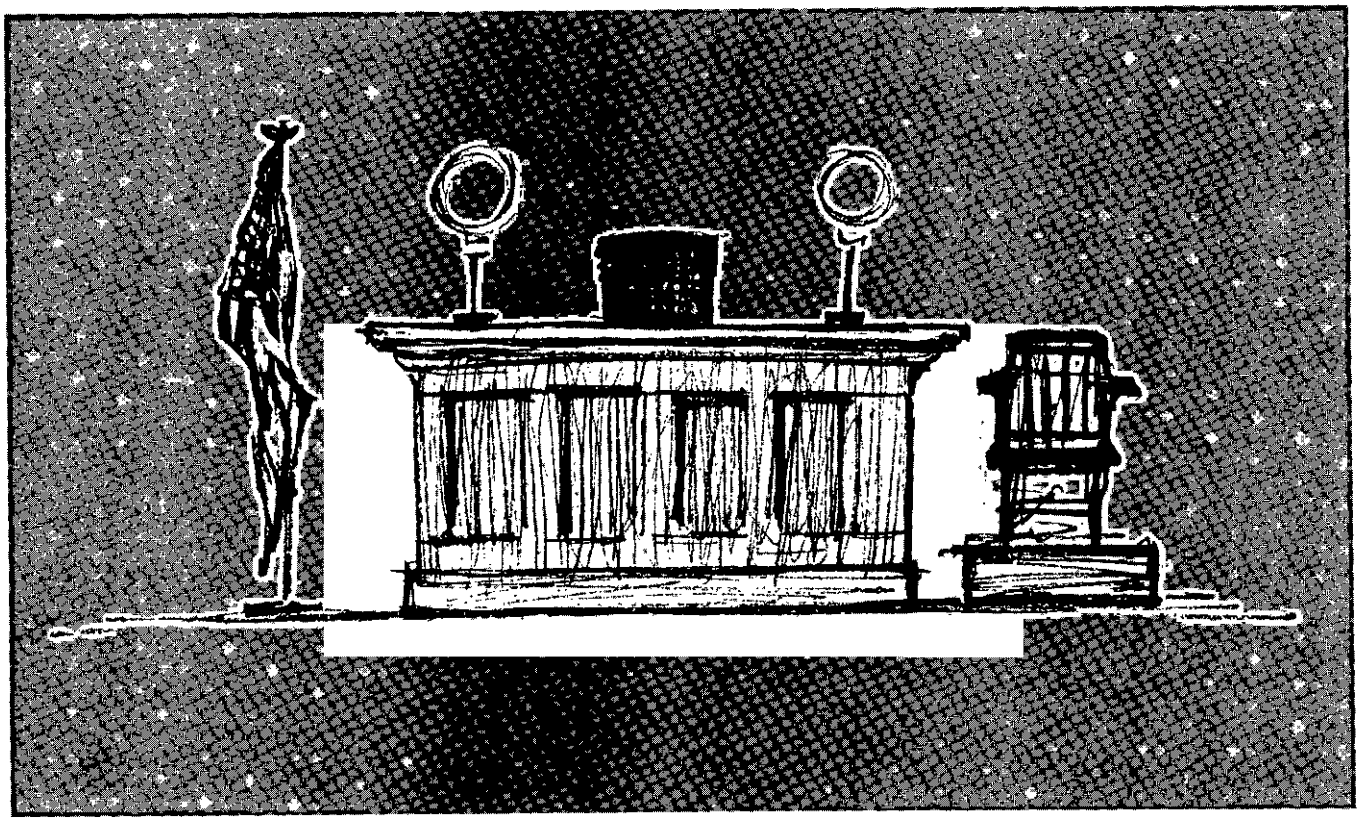
Even some segments of the engineering profession don't seem to understand why engineering students don't go on a rampage. For example, one magazine, which is mailed to engineers, recently asked its student and professional audience: "Are engineers concerned about university affairs? Do they want only to obtain their degrees with a minimum of distraction? Are they, simply, apathetic about matters outside engineering?"

They are, simply, too busy to riot. Engineering students work and study up to 60 hours a week, under the tutelage of professors who have "their feet on the ground," in a *discipline* whose very e s s e n c e is objectivity. What's more, the engineering student knows where he is going [he picked out the route long ago], and he is doing what comes naturally to him: He is taking the logical steps to get there. In addition, the engineering student has to be in the classroom for his work. By contrast, the liberal arts student doesn't put in half as much study or work as the engineer. He frequently has a professor who is not a "pro." He doesn't exactly know where he is going, and is often floating in a university that is steeped in the utter emptiness of relativism.

There is one more point to consider, however. It concerns the student engineer. It is in his nature to build—not destroy.

(Reprinted from Electrical World)

Court Rules on Usage of Word 'Engineer'



The Fourth Circuit Court of Appeal of Louisiana, sitting in New Orleans, rendered in June 1969 a decision in a case which should be of great interest to professional engineers, and which should be of substantial assistance to the Boards of Registration in their protection of the profession and of the public.

The case is Louisiana State Board of Registration for Professional Engineers and Land Surveyors vs. Herman J. Young, doing business as Air-Flo Engineering Co.

The substance of the case is that the Court determined that the use of the word "engineer" or "engineering" in the title of a firm or corporation (without modifying or explanatory words such as "Engineering Supply & Sales Co." or "Stationary Engineers, Inc.") would, to the average person, constitute an offer to provide professional engineering services. It would, therefore, be in violation of the regulatory statute forbidding a non-engineer to offer professional engineering services to the public in all cases where there was not a professional engineer who was an integral part of the firm.

The circumstances in this case were that Herman J. Young was a heating and air conditioning contractor and dealer. The Court found that he was not a professional engineer nor did he, in fact, engage in professional engineering.

> "However, he conducts his operation under the trade name of 'Air-Flo Engineering Co.' and maintains a display advertisement in the yellow pages of the New Orleans Telephone Directory which reads in part as follows:
>
> 'AIR-FLO ENGINEERING CO.
> Our experience, your assurance
> CENTRAL AIR CONDITIONING & HEATING'
>
> The sole question presented for our consideration is whether defendant's use of the word 'engineering' in his trade name and his advertisement violates the provisions of the regulatory statute." (Quotation from Court's Opinion.)

The Court finds as a fact that apparently Mr. Young's business was confined to the sale and installation of package jobs of central air conditioning and heating units in small buildings. The Court then goes on to say:

"Defendant argues that the use of the word 'Air-Flo' in his trade name, 'Air-Flo Engineering Co.' modifies the word 'engineering' and effectively shows that defendant is not holding himself out as a professional engineer, particularly since the word 'Air-Flo' is used instead of 'Air-Flow.' In our opinion the use of the word 'Air-Flo' in defendant's trade name is not such a modification of the word 'engineering' as would negative the inference that he is engaged in professional engineering. 'Air-Flo Engineering Co.' connotes to us a firm of professional engineers specializing in air-conditioning.

It is clear to us that defendant is using in connection with his name and is advertising a title which tends to convey the impression that he is a professional engineer. This is a violation of the provisions of LSA-R.S. 37:681 and tends to deceive the public regardless of defendant's intention in that respect."

Based on this, the Circuit Court of Appeal decided that an injunction should be issued directed against Mr. Young, prohibiting him from using the word "engineering" in the title to his firm.

In reaching its decision, the Court relied on an opinion of the Louisiana Attorney General of March 16, 1964 in which the following appeared:

"It is true that in some respects the word 'engineer' is a generic term and it is equally true that there are certain vocations such as 'stationary engineers,' 'locomotive engineers' or 'marine engineers' which could in no sense be considered as professional engineers within the scope of the statute above referred to. From this, it is necessary to conclude that where the title of the firm or corporation contains the word 'engineer' or 'engineering' **with modifying or explanatory words** which would, in their ordinary meaning, negative the inference of the practice of professional engineering, the title would be unobjectionable. Examples of this would be, for example, such a title as 'Marine Engineering Corporation' or 'Engineering Supply & Sales Company.' It is reasonable to conclude that no person would be likely to be misled by such titles into the belief that an offer was being made to practice professional engineering.

It must be remembered that the regulatory statute above referred to (R.S. 37:681, et seq.), in undertaking to regulate the practice of professional engineering in the state, is clearly a valid exercise of the state police power and was enacted by the Legislature for the protection of the public. Among other things, the statute clearly intended to prevent the victimizing of any member of the public by any person offering (without prior registration) to perform professional engineering services."

In concluding his opinion, the Attorney General made the following trenchant comment which goes to the heart of the matter:

"Without indulging in semantics, it seems plain that the average person who encounters the title or name of a firm or corporation containing the word 'engineer' or 'engineering' (without any modifying or descriptive words to negative the presumption) would presume that this firm was engaged in one branch or the other of professional engineering such as civil engineer, electrical engineer or mechanical engineer. In the eyes of the average person, the use of a title such as 'Systems Engineering, Inc.' or 'U. S. Engineering, Inc.,' would necessarily imply an offer to perform professional engineering services. Indeed, it is difficult to imagine why the word 'engineer' or 'engineering' is inserted in such a title if the purpose is not to mislead the public into the belief that professional engineering services were offered. This conclusion is strengthened by the definition of the word 'engineering' as it appears in the first subparagraph of R.S. 37:682. (See above.)"

This is the first opinion of an appellate court in Louisiana, or indeed in the entire South, squarely passing on this point, namely, that the use of the word "engineering" without explanatory or modifying terms would imply to an average member of the public that the person advertising under such a title had the special qualifications of a professional engineer.

There are only a few decisions throughout the country touching on this point, and this case should be of substantial interest and assistance both to the profession and to the Boards of Registration in their efforts to protect the public and the profession.

Dr. Leary Appointed McNeese President

Dr. Thomas S. Leary, a member of the Louisiana Engineering Society and former head of the Department of Engineering at McNeese State College in Lake Charles, La., has been appointed president of McNeese State College, to succeed Dr. W. N. Cusic.

Of his appointment as president of McNeese by the Louisiana State Board of Education, Dr. Leary says: "They could have paid me no higher honor."

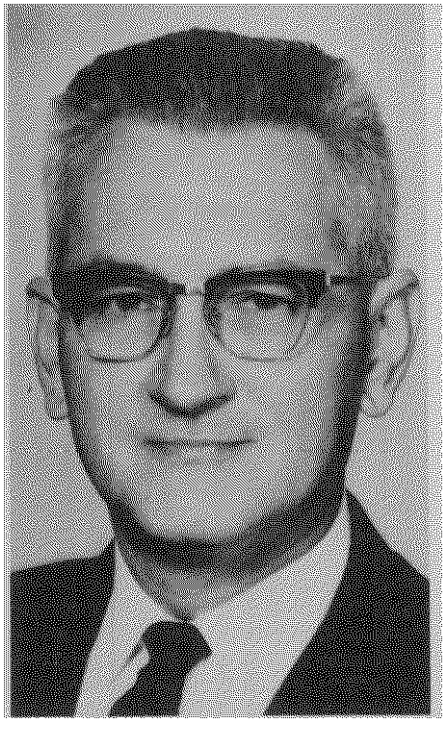
He plans to bring his talents for building and fund-raising to the job, benefitting the entire college.

"McNeese State College's potential for growth and influence in the community is one of the most valuable assets of Southwest Louisiana," he says.

"Giving the best education possible to our young people and being of service to the area and state will be the motivating forces in my aim to accelerate the harmonious growth of the entire college in order to establish McNeese State College as the center of academic excellence in Southwest Louisiana."

Dr. Leary came to McNeese from the Cities Service Research and Development Co., for which he was manager of the Lake Charles Process Research Laboratory from 1955-61. Prior to Cities Service, he had been associated with American Cyanamid Co. During World War II, he was engaged in defense work as department superintendent with Holston Ordnance Works and responsible materials engineer for the Stromberg-Carlson Co.

He spent 19 years in industry before joining the McNeese faculty as an associate professor of physical science in May 1961. He was appointed chairman of the college engineering curricula in 1963 and was promoted to



professor and head of the Department of Engineering in 1965, the year it was established as a separate department.

When Dr. Leary came to McNeese, the college offered a degree program only in general engineering. Since 1963, he has administered and developed an embryonic engineering facility into an established, well-equipped department, turning out civil, chemical, electrical, and mechanical engineering graduates who are eagerly sought by some of the largest local and national industrial organizations.

At the 1969 summer commencement, the 100th engineering graduate received his degree from McNeese. A master of engineering degree program was established in September 1968.

Dr. Leary played an active role in securing facilities at the vacated Chennault Air Force Base for McNeese and in obtaining state and federal funds for the refurnishing of buildings and equipping laboratories and classrooms. The Department of Engineering is located on the Chennault Campus in buildings renovated to the tune of $1 million.

Through his efforts, the William T. and Ethel Lewis Burton Foundation Computation Center was established at McNeese in May 1968. The center is equipped with more than $2 million worth of computers, all donated to the college. During the past two years, he has obtained grants totaling approximately $100,000 from local industries, in addition to numerous donations of equipment, books, and supplies.

Dr. Leary was born in Rochester, N. Y., on May 8, 1915, and attended primary and secondary schools in that city. He received his bachelor of Chemical Engineering degree from The Rensselaer Polytechnic Institute in 1938, and a Master of Science degree there in 1939. He earned his PhD. degree in Chemical Engineering at Iowa State University in 1942.

Dr. Leary has been elected to membership in several honorary societies, including the Society of the Sigma Xi, Phi Kappa Phi, and Phi Lambda Upsilon.

He is a member of a number of professional organizations and has held numerous local and national offices in the American Institute of Chemical Engineers, including program chairman for 1963 and 1964 national meetings.

A professional engineer registered in Louisiana and Texas, he is listed in "American Men of Science," and in "Who's Who in Education."

His wife is the former Geraldine Ruth Kempnick of Evanston, Ill. She is a graduate of Iowa State University. They have two married daughters, Mrs. John E. Savant and Mrs. James Patrick Briggs, and five grandchildren.

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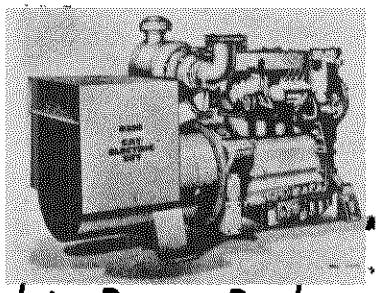

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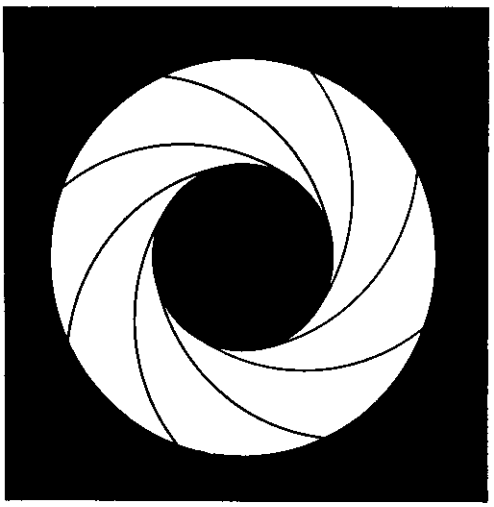
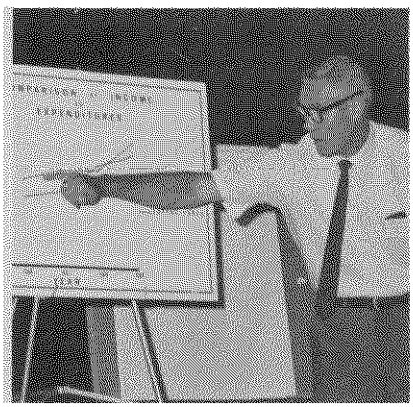
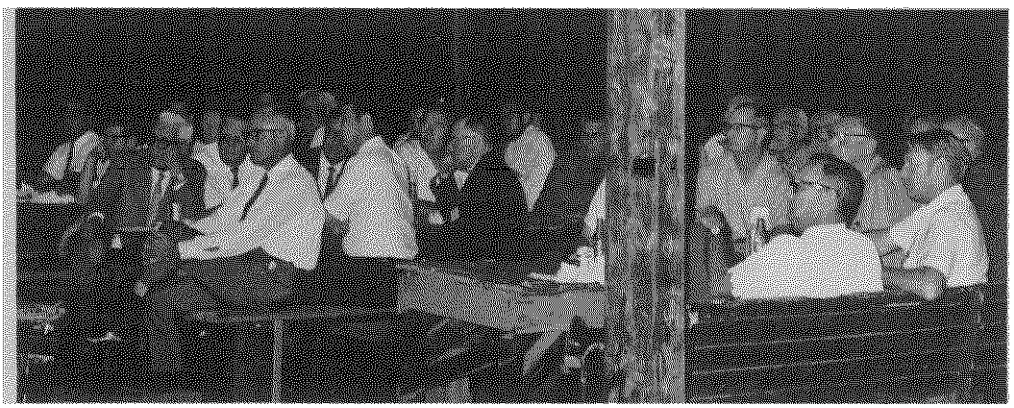
1. LES President John F. Vogt, Jr. points to a poster during his visit to the Monroe Chapter. With him, from left to right, are Willie E. McGough, chapter president; Gerald Simmons, LES executive secretary; and E. E. Moncla, chapter secretary-treasurer.





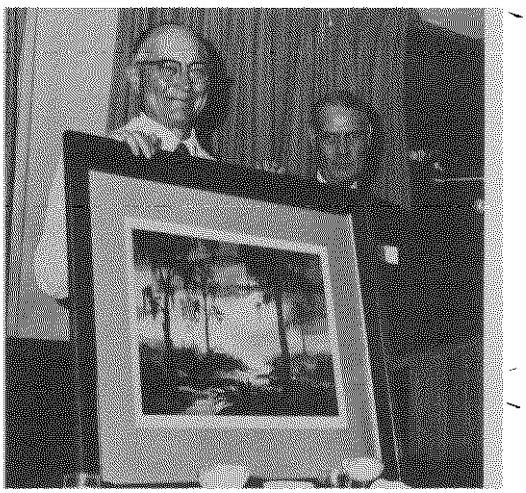
2. President Vogt explains to the Monroe Chapter the need for an increase in dues.



3. Some of the members present at the Monroe meeting.

4. Congressman John Rarick, center, jokes with Doug Latimer, left, Baton Rouge legislative committee chairman, and Lamon Moody, right, state legislative committee chairman, during a meeting in Baton Rouge.

5. Past-President Leo M. Odom, left, displays the painting presented to him in Lafayette in appreciation of his service as state president as President Vogt looks on.



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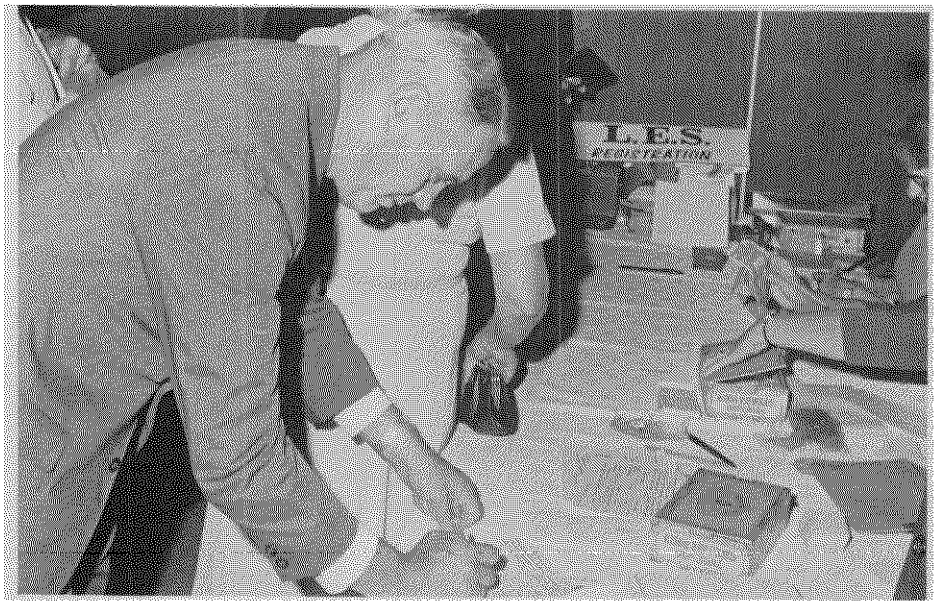

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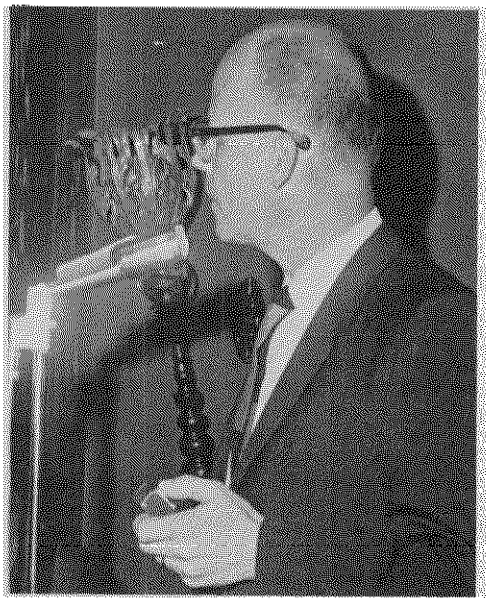


7.

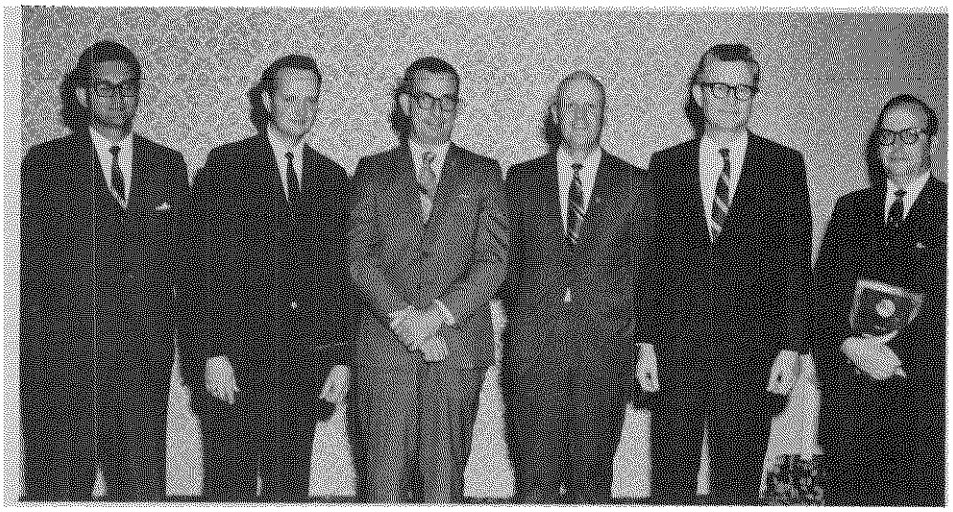
8.

6. Among the early registrants at the Society's Planning Conference in Alexandria was LES President John F. Vogt, Jr.

7. Main speaker for the Planning Conference luncheon was Dr. Peter Koch, project leader, forest products research, U. S. Forest Service.

8. A partial view of the crowd in attendance at the Early Bird party of the Planning Conference.

9. Officers of the Baton Rouge Chapter for 1969-70 are, from left, Glen Gautreau, executive committee; Charles Barnard, president-elect; Ken Daspit, president; Raymond Pillow, vice president; Charles Hair, secretary-treasurer; and Harry Richardson, past president.

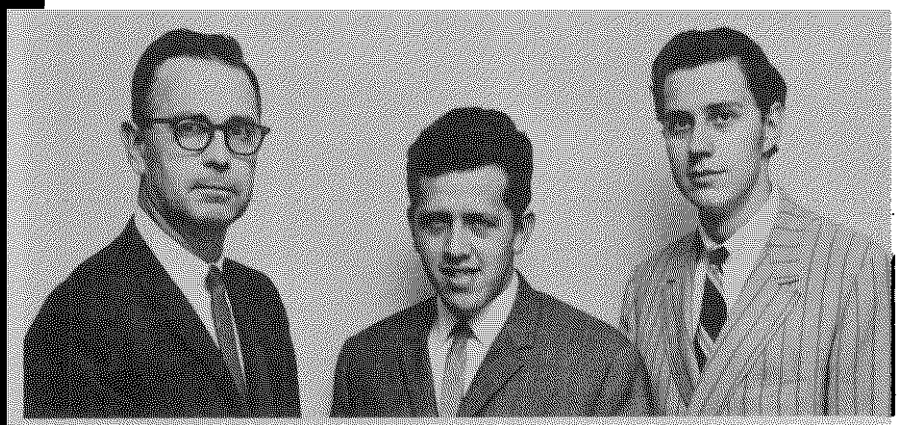


9.

LSU Students Win Graphics Competition

Two Louisiana State University students won one of the five first place awards in the Second Creative Design Display of Engineering Graphics during the Annual meeting of the American Society for Engineering Education at Pennsylvania State University recently.

The engineering graphics students took top honors with their design of a "snake conveyor" for handling 160-pound sacks of coffee. Both students are from coffee producing areas of Latin America.

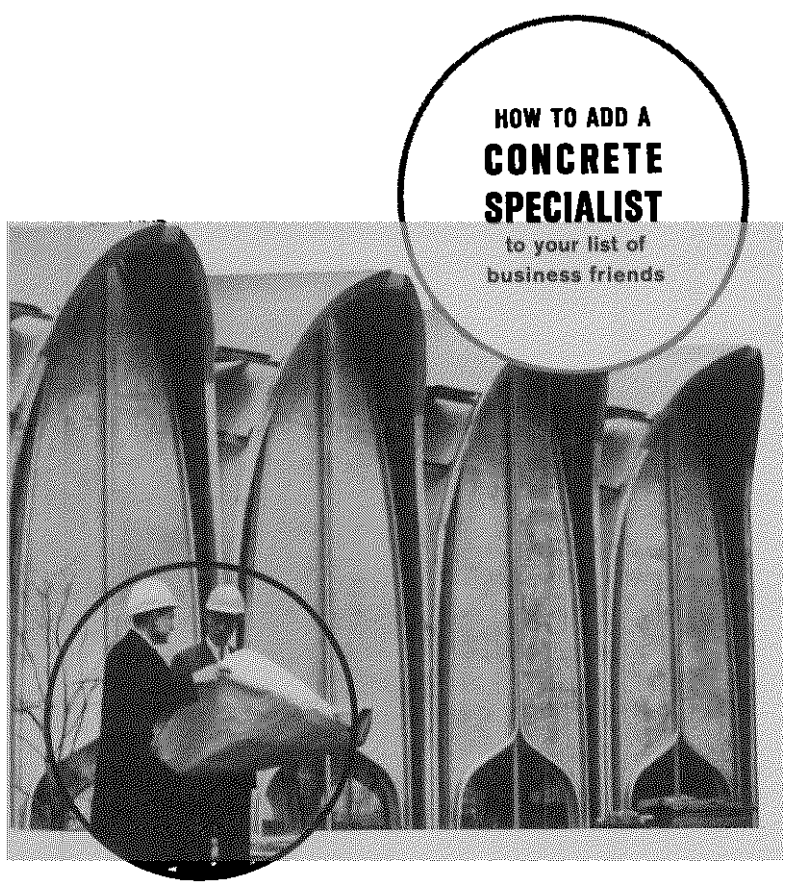


Dr. Clarence E. Hall, Associate Professor of Engineering Graphics, is shown with Ernesto V. Solera and Santiago Torrijos, winners of a first place certificate from the Second Creative Design Display of Engineering Graphics at Pennsylvania State University.

The creative design activity is a recent innovation which was introduced into the engineering graphics classes in an attempt to enhance the program and, at the same time, establish a more meaningful rapport between the freshman engineering student and his newly chosen profession.

In preparation for the creative design assignment one class period is used to motivate the students for this type of classroom activity. The motivation period consists of a brief discussion by the instructor concerning the purpose of the assignment followed by a "brain storming" session wherein the class compiles a listing of subjects or topics which may be developed into creative design projects.

Prior to finalizing the creative design, project assignments arrangements are made whereby practicing professional engineers visit each engineering graphics class and discuss how they treat various engineering problems peculiar to their industry. Two professional engineers visit each class. Following the general discussion the students are encouraged to ask relevant questions pertaining to the discussion and in particular about the possible problems which may be encountered when they undertake the development of certain types of projects. The visiting engineers are also encouraged to submit suggestions concerning projects which students may undertake to develop in the alloted time.



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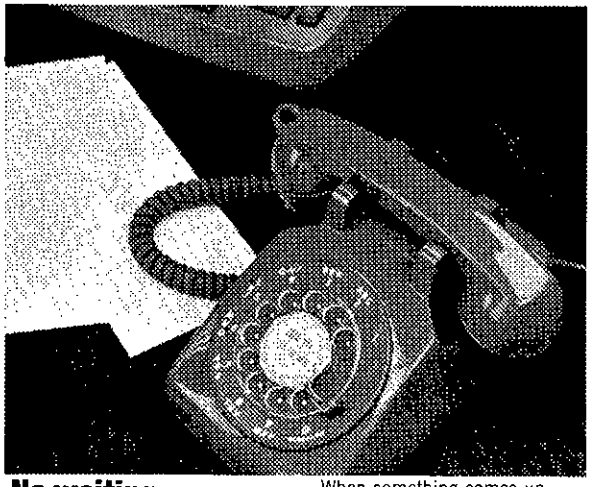

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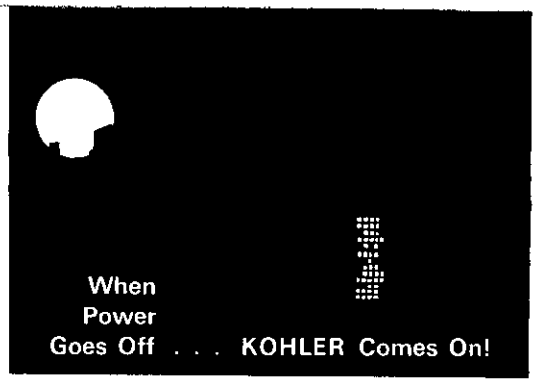

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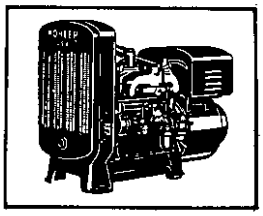

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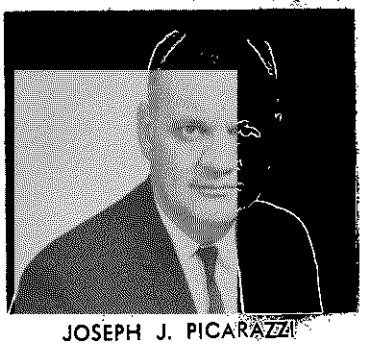

JOSEPH J. PICARAZZI
DIED JULY 27, 1969

Joseph J. Picarazzi, age 48, registered professional engineer, mechanical engineer and member of the Louisiana Engineering Society, died July 27, 1969.

Mr. Picarazzi resided at 1914 18th Street, Lake Charles, Louisiana.

Mr. Picarazzi was a native of Corning, New York, where he received pre-college education. He graduated from the University of Michigan, College of Engineering, with a B.S. degree in Mechanical Engineering in 1943. Upon graduation he entered the military service during World War II, serving as Army Engineering Unit Commander on the Island of Guam.

While stationed at Lake Charles Air Force Base prior to going overseas, he married Mary Jane Kimball of Lake Charles, Louisiana.

After returning from military service, Mr. Picarazzi started to work for Cities Service Oil Company, Lake Charles, Louisiana, as an engineering draftsman, advancing through engineering and inspection to his final position as Supervisor of Metallurgy and Inspection at the Cities Service Lake Charles Complex.

Mr. Picarazzi was active in many technical groups in the field of engineering, inspection and metallurgy, and was well known throughout the oil industry. In addition to the Louisiana Engineering Society, he was a member of the National Society of Corrosion Engineers, API Sub-committee of Refinery Inspection Supervisors and the American Society of Non-destructive Testing. One accomplishment which demonstrated his ability as a professional engineer was the organization of and presiding over a symposium on refinery corrosion for the South Central Region of NACE held at Dallas, Texas in 1964.

He also wrote an article on corrosion which was published in the Oil & Gas Journal on March 17, 1952.

Mr. Picarazzi is survived by his wife; one daughter, Mrs. Thomas Ward of Jackson, Mississippi; and one son, John Picarazzi, with the U. S. Navy on Guam. One brother, five sisters and two grandchildren also survive.

ENGINEERS IN THE NEWS

Carl H. Thomas, a member of the Louisiana Engineering Society and a Louisiana State University faculty member noted for his research in cotton mechanization, has been appointed head of the university's department of agricultural engineering.

Thomas, who also holds the rank of associate professor, succeeds Prof. Harold Barr who retired from the university.

Dr. Oscar W. Albritton, LSU professor of engineering mechanics, was elected director-at-large of the American Welding Society. He is a past chairman of the local welding society and has written several articles for the society's journal.

David B. Fried Jr., past president of the New Orleans Chapter of the Louisiana Engineering Society, was elected president of the Temple Sinai Brotherhood in New Orleans.

William H. Carter, member of the agricultural engineering faculty at LSU, has been named a recipient of a $1,000 Standard Oil of Indiana Foundation Award for excellence in undergraduate teaching. He was president of the Baton Rouge Chapter of the Louisiana Engineering Society in 1961.

Calvin T. Watts, Acting Director of the Louisiana Department of Public Works, has been appointed to the Advisory Committee for the Coastal Engineering Laboratory of Texas A&M University.

Several members of the Louisiana Engineering Society have been appointed to serve on committees of the National Society of Professional Engineers. They are **Waldemar S. Nelson**, Professional Engineers in Private Practice; **Leon M. Odom**, PEPP Committee on Relations with Engineering Boards; and **Farrell Adams**, Membership Committee.

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MEMBERSHIP CONTEST STANDINGS

RULES OF THE CONTEST

1. A Chapter must reach its 10% quota to qualify as the Contest winner.

2. The Chapter with the greatest percentage increase, based on application and reinstatement requests received by the state LES Office through the week prior to the June annual meeting will be the winner. Transfers into a Chapter or grade changes will not be counted as part of the quota. Students upon graduating will be counted for a Chapter only if the Chapter gets them to fill out an Application form with up-dated information and, also, if they reside in the Chapter's Area.

Standing	Chapter	Quota	Applications	Percent
1	Bayou	4	2	50.000
2	Shreveport	21	6	28.571
3	Alexandria	13	3	23.077
4	Monroe	15	3	20.000
5	Lake Charles	13	2	15.385
6	New Orleans	79	12	15.190
7	Lafayette	16	2	12.500
8	Baton Rouge	56	4	7.143
	TOTALS	217	34	15.668

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AIA "BASIC CONCEPTS" REPORT DRAWS NSPE FIRE

In response to the "Report of the Basic Concepts of Architectural Registration and Licensing" statement adopted by the American Institute of Architect's Board of Directors the NSPE Board of Directors adopted the following statement at the annual meeting in Kansas City, July 11.

"NSPE deplores the unilateral action of the AIA's Board of Directors on April 15, 1969, in adopting the "Report of the Basic Concepts of Architectural Registration and Licensing.'

"NSPE considers that the AIA action is arbitrary in proposing a redefinition of 'architect' and 'architecture' to encompass the legal and traditional functions of professional engineers and other design professions.

"This action without consultation with other elements of the design professions is corrosive of the continuing efforts of all design professionals to establish cooperative relations.

"NSPE calls on AIA in the spirit of harmony to rescind its action and to submit to the Interprofessional Council on Environmental Design for resolution and advice to all concerned societies. A principal function of ICED is to resolve interprofessional differences without recourse to legal and legislative conflict, which will surely result if AIA persists in its present course."

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Two NSPE Regions To Hold Joint Meet In New Orleans

The Southwest Regional meeting of the National Society of Professional Engineers, of which Louisiana is a part, will hold a joint meeting with the Southeast Region, October 23-25 at the Fontainebleau Motor Hotel in New Orleans.

Attending the meeting will be Presidents, Presidents-elect, National Directors, Vice-Presidents, Secretary - Treasurers, Executive Secretaries and Functional Section Chairmen of all state societies in the NSPE Southwest Region.

Leaders of state societies will discuss other items such as membership, engineering foundations, committee activities and other topics.

NSPE President Pierce G. Ellis is scheduled to attend.

The Southeast Regional meeting was to be held in Biloxi, Mississippi, but, due to the devastation of Hurricane Camille, the meeting has been rescheduled to coincide with the Southwest meeting.

Co-chairmen of arrangements for the meeting are Waldemar S. Nelson and Edward J. McNamara.

Engineering Technicians Committee News

The Engineering Technicians Committee of the Louisiana Engineering Society has recently been in contact with Bernard Riggs, Executive Secretary of the Institute for the Certification of Engineering Technicians. The Committee has offered its assistance to the Institute in administering an examination for the certification of Engineering Technicians. Riggs commended the committee for their offer and for their "considerable interest and efforts in behalf of the engineering technicians advancement and stature."

The recently established student chapter of the American Society of Certified Engineering Technicians at Delgado college in New Orleans sent several delegates including Ken McManis, P.E., Engineering Technicians committeeman to the Fifth Annual meeting of ASCET at Daytona Beach, Florida. After the establishment of this student chapter, the committee is seeking to form two new senior chapters in Louisiana as part of its goal for the coming year.

Federal Engineers Given Full Salary Increase

The Civil Service Commission finally decided last month to give all engineers in grades GS-5 through GS-12 the full amount of the latest Federal pay increase, averaging about nine percent. The Commission had delayed its final decision to be absolutely certain that above-scale rates were still needed to permit the Government to compete at the entrance levels. The delay was blamed primarily on the difficulty of comparing this year's vacancy level with that of last year, when stringent employment level cutback rules were not yet in effect. Having finally sorted out the data, CSC concluded that less than the full increase would hamper the Government's recruiting and retention.

Not so fortunate were physical scientists, geologists, mathematicians, and others formerly paid at the same rate as engineers. This time CSC cut them back one step level in each grade, so they now receive between $200 and $400 less than engineers in equivalent grade and step levels. The comparison of the rates for the affected grades is shown below.

FEDERAL PAY SCHEDULE

Effective First Pay Period After July 1

	Per Annum Rates and Steps									
Grade	1	2	3	4	5	6	7	8	9	10
ENGINEERS										
GS-5	$8030	$8236	$8442	$8648	$8854	$9060	$9266	$9472	$9678	$9884
GS-7	9934	10189	10444	10699	10954	11209	11464	11719	11974	12229
GS-9	11186	11497	11808	12119	12430	12741	13052	13363	13674	13985
GS-11	12729	13103	13477	13851	14225	14599	14973	15347	15721	16095
GS-12	13835	14281	14727	15173	15617	16065	16511	16957	17403	17849
PHYSICAL SCIENTISTS, MATHEMATICIANS, ETC.										
GS-5	$7824	$8030	$8236	$8442	$8648	$8854	$9060	$9266	$9472	$9678
GS-7	9679	9934	10189	10444	10699	10954	11209	11464	11719	11974
GS-9	10875	11186	11497	11808	12119	12430	12741	13052	13363	13674
GS-11	12355	12729	13103	13477	13851	14225	14599	14973	15347	15721

PEPP NEWS

The recently established Cost Consultants Committee of PEPP, the private practice sector of the National Society of Professional Engineers, announced the appointment of several subcommittees.

The Cost Consultants Committee has embarked on an aggressive campaign to identify registered professional engineers involved in the area of cost consulting. PEPP's national chairman, Billy T. Sumner, P.E., of Nashville, Tennessee, noted: "It is perfectly obvious that cost consultants have problems which are unique to their area of practice and they are in need of an organizational base from which to attack those problems. PEPP, representing all facets of the consulting engineering practice, is attempting to provide that base."

The following subcommittees were announced: Professional Qualifications, Uniform Fees, Education, Standard Terminology, and Research and Development.

New Orleans Woman's Auxiliary

The Woman's Auxiliary to the New Orleans Chapter of the Louisiana Engineering Society opened its 37th year with a luncheon and fall fashion show.

Receiving with Mrs. Ronald P. Cressy, President, were Mesdames Samuel K. Landry, Wanner L. Potin, James S. Janssen and Lawrence C. Grundmann.

A business meeting preceded the luncheon.

A Christmas Tea will be held Tuesday, December 9, 1969, by the members of the Woman's Auxiliary to the New Orleans Chapter of the Louisiana Engineering Society in the Lamplighter Club. Christmas greenery will adorn the tea tables. Christmas readings will be presented by Mr. Edward Kearney, New Orleans Repertory Theatre.

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MINUTES - LES BOARD OF DIRECTION

July 25, 1969 Sherwood Forest Country Club, Baton Rouge, La.

President Vogt called the meeting to order with the following Board members present: C. P. Barnard, P.E.; Hoyt W. Brown, Jr., P.E.; Kenneth J. Daspit, P.E.; Kenneth Deal, P.S.; H. L. Henry, Jr., P.E.; Frank H. Heroy, Jr., P.E.; T. J. Hogue, Jr., P.E.; Malcolm Hurstell, P.E.; John H. Livingston, P.E.; James L. Meyer, P.E.; Waldemar S. Nelson, P.E.; Leo M. Odom, P.E.; Richard See, P.E.; A. J. Szabo, P.E.; and Jack Thigpen, P.E. Also present were: Farrell Adams, P.E.; Billy R. Rentrop; William J. Rountree, P.E.; and Gerald Simmons, Executive Secretary.

The minutes of the June 28, 1969 Board Meeting were corrected and approved. The motion for approval was made by Mr. Hurstell, seconded by Mr. Deal and passed.

Financial Report—The Financial Report of the Society for the period July 1, 1968 through June 30, 1969, was given by Mr. Thigpen. Total receipts for the year were $77,353.57 and expenses of $79,909.89, for a total of $2,556.32 expenses over income.

Mr. Nelson noted from the report the Society did not receive the income budgeted in the areas of Membership dues, advertising in the LOUISIANA ENGINEER, and from the statewide meetings. He encouraged the Board to work harder next year in these three areas to bring the Society's income to the level needed for a complete program. Mr. Nelson moved the report be accepted. The motion was seconded by Mr. See and passed.

Audit Report—Mr. Vogt introduced Mr. Gustavo Gonzalez, Certified Public Accountant, who had audited the Society's books for fiscal 1968-69. Copies of the audit report were distributed to the Board members. The report showed the society ended the year with a deficit of $5,866. Mr. Gonzalez recommended (1) rebates to the chapters be made monthly; (2) eliminate pro-rated rebates of new member dues the first year or have a flat amount stated for all new member rebates; (3) work with chapters to expedite collection of dues overdue 90 days; and (4) study the dues structure of the Society to provide the necessary funds for existing programs and new services needed for members.

Motion by Mr. Nelson, seconded by Mr. Szabo that "the finance committee study the recommendations of the auditor and present a written report to the Board members prior to the next Board meeting." Motion carried.

Finance Committee Report—The Finance Committee composed of Mr. Fred Culpepper, Mr. T. J. Hogue, Mr. Jack Thigpen and Mr. Vogt, submitted the 1969-70 budget which reflected anticipated receipts of $83,600 and anticipated expenditures of $86,511.50. Mr. Nelson suggested the budget be reworked to reflect a balanced budget. Motion by Mr. Szabo, seconded by Mr. Nelson that "the expenditures for statewide meetings be reduced to $4,688.50, for Professional services to $600 and that the $1,200 special account for future replacement of the Society's automobile be eliminated to present a balanced budget at this time and that these three items be reconsidered in the future as necessary." Motion carried. By unanimous consent, the amended budget was accepted.

Special Society Income Committee Report — Mr. Hogue, chairman of the special committee studying society income, reported the commttee was not ready with a final report. The committee had reviewed the history of the Society's finances and found a deficit has existed in prior years that has caused the society to use monies in savings. At the present time, the savings account is not considered adequate to absorb another deficit.

In studying expenses incurred over prior years, the committee found that expenditures made were basically necessary to provide needed programs to promote the welfare of professional engineers. The committee will continue to meet in an effort to solve the problem of adequately financing the society, and will submit a definite recommendation at the next board meeting.

Committee Appointments—Mr. Vogt recommended that the following state committee chairmen and members be appointed for 1969-70:

Committee	Chairman	Board Sponsor
Membership	Larry Grundmann	Malcolm Hurstell
Public Relations	Ronnie Cressy	Fred Culpepper
Ethics & Pro. Conduct	Earl Dobbs	Charles Barnard
Legislative	Lamon Moody	Leo Odom
Vocational Guidance	Claude Elkins	H. L. Henry
Inter-Soc. Relations	John W. Roach, Jr.	Guy Seghers
Young Engineers	George Heller	Charles Stokes
State Meetings	T. J. Hogue	
Constitution & Bylaws	Farrell Adams	

Finance—Jack Thigpen, chairman; Fred Culpepper, T. J. Hogue

Liaison with State Board—J. S. Janssen, Chairman; Wayne Wallace, J. Roach, R. J. Simmons, Ben Hogard

Engineering Technicians—Roger Battle, Chairman; Rod Singleton, Roger Guissinger

Honors & Awards—E. J. McNamara and Leo Odom

Motion by Mr. Szabo, seconded by Mr. Hurstell that "the recommendations submitted be accepted." Motion carried.

SECTION REPORTS

Professional Engineers in Education—Mr. Henry, chairman of the newly organized Engineers in Education reviewed the origin of the section and submitted proposed bylaws for adoption by the Board. The proposed bylaws were referred to the Constitution and Bylaws Committee of the Society for review.

Professional Engineers in Government—Mr. Heroy, Chairman of the Section, reported on the PEG Section meeting recently held in Kansas City. He stated: (1) the Regional meeting of PEG will be held in New Orleans Oct. 23 & 24, 1969. (2) A kit is being distributed for an action program to provide a professional development award to the outstanding government agencies for each state. Each state winner will be eligible to compete for a national award to be given one state. (3) Membership in N.S.P.E. for Land Surveyors was discussed and will be a topic of discusion at future PEG Board of Governors meetings. (4) Executive order 10988 is rumored to be in a state of possible change by President Nixon. (5) Engineering Registration for Federal Engineers on a national basis by means of changing Federal Civil Service requirements or through legislation by Congress, either directing Civil Service changes or by establishing a National Board of Registration for Professional Engineers was discussed as a committee report.

After Mr. Heroy's report, a motion was made by Mr. Brown, seconded by Mr. Nelson that "the rules be suspended to consider a resolution to N.S.P.E. in opposition to federal registration of engineers." Motion was defeated. A motion by Mr. Brown, seconded by Mr. Livingston, "that at the appropriate time L.E.S. notify N.S.P.E. and the PEG Board of Governors of the Society's opposition to federal registration of engineers. Due notice that this policy statement is to be considered at the next board meeting will be given to the Board of Direction according to the Constitution." Motion passed.

Professional Engineers in Industry—In the absence of Mr. Richard, Mr. Deal stated there would be no report at this meeting.

Professional Engineers in Private Practice—Mr. Nelson stated he had attended the N.S.P.E. meeting and the PEPP Section meeting in Kansas City. At the section meeting a report was given on the progress made toward consolidating the American Institute of Consulting Engineers, the Consulting Engineers Council and the Professional Engineers in Private Practice of N.S.P.E. All organizations involved agreed that a single organization representing all consulting engineers in independent practice should be formed. A study committee is working on details and will report back to the organizations involved.

A motion by Mr. Szabo, seconded by Mr. Odom that the policy statement concerning qualification of planners adopted at the May 23rd, 1969 meeting of the Board of Direction be amended to be the same as the N.S.P.E. policy statement was passed.

Membership—Mr. Adams reviewed the updated admissions procedure to be used by the chapters and state office. Motion by Mr. Nelson, seconded by Mr. Meyer that "the report be accepted and the admissions procedure as outlined be used in admitting members to the Society." Motion passed.

Mr. Simmons reported there were no resignations for the month. He reported the death of Dr. Felix Boudreaux, a past president of the Lafayette chapter.

The membership certificates for new members since the last board meeting were distributed to chapter presidents for presentation at their next meetings.

NEW BUSINESS

Chapter Areas—Mr. Adams reviewed the new boundaries for the Bayou Chapter, as contained in the June 28, 1969 minutes. Motion by Mr. Brown, seconded by Mr. Meyer, that "the boundaries of the Bayou Chapter shall be the parishes of Lafourche, Terrebonne, St. Mary east of the Wax Lake Outlet, Assumption, the separated portion of St. Martin, St. Charles, St. John and St. James west of the Mississippi River and in Jefferson, the town of Grand Isle." Motion passed.

1970 Summer Meeting—Mr. Vogt reported on his meeting with the Board of Directors of the Mississippi Engineering Society at which time the MES voted to offer an invitation to meet jointly in 1970 in Biloxi, Mississippi. MES had tentatively arranged for facilities and suggested the dates of July 30 and Aug. 1 for the meeting. Should LES meet with MES in Biloxi in 1970, then the MES would be willing to meet in Louisiana the following year. Motion by Mr. Nelson, seconded by Mr. Hurstell that "the LES meet jointly with MES in the summer of 1970 in Biloxi, subject to a mutual date agreeable to both societies." Motion passed.

Plan Review Board—Mr. Nelson discussed the possibility of LES establishing a Plan Review Board to be composed of engineers who volunteer to serve the profession by reviewing plans of engineers at the request of an individual or firm. The report of this review board could not be used in legal litigation. Other state societies have such a board established and these boards are working well to serve the needs of the public and the engineering profession.

Motion by Mr. Nelson, seconded by Mr. Meyer that "LES consider the formation of a plan review board and that this matter be referred to the PEPP section for study with a report back to the Board of Direction." Motion passed.

Awards Committee—Mr. Heroy suggested the Honors and Awards Committee look into the possibility of presenting a state award similar to the NSPE award to the outstanding governmental agency. He stated the PEG section would work with the committee on details.

LOUISIANA ENGINEER—Mr. Nelson urged all chapters to contact businesses in their area and offer them the opportunity to advertise in the LOUISIANA ENGINEER if they are interested. Chapters would be eligible for commissions if they secured an advertisement for the magazine.

Status of Alexandria Conference—Mr. Meyer reported on the Planning Conference. There was a question as to the format of the meeting. This matter was referred to Mr. Hogue, chairman of the meetings committee for a resolution.

Signature Authorization—A duly seconded motion that the state officers, the Executive Secretary, and the president of the Baton Rouge chapter be authorized to sign checks was passed.

The next Board meeting will be held Saturday, September 20th in Alexandria, in conjunction with the LES planning conference.

There being no further business, Mr. Deal moved that the meeting be adjourned. The motion was seconded by Mr. Livingston and passed.

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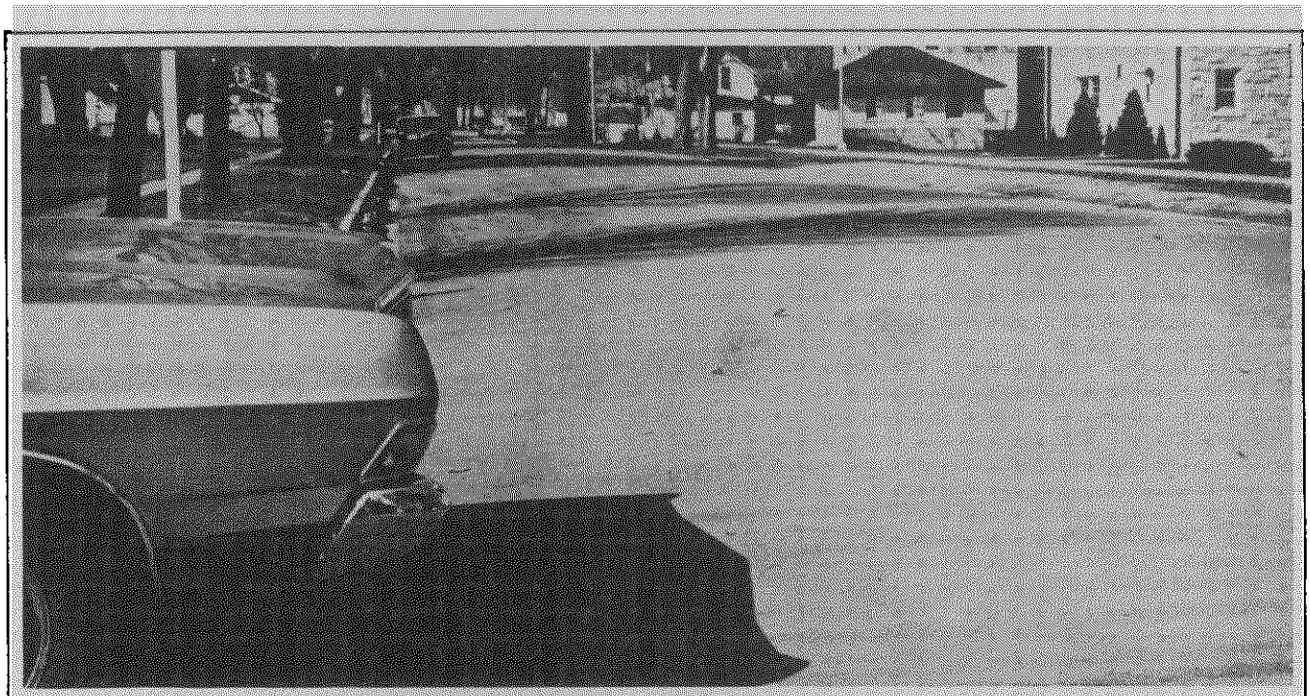

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The completed pavement is attractive, tough and durable... and capable of withstanding the severe weather extremes of Iowa (—32°F to 110°F). Moreover, de-icing salts used in winter will not harm the Asphalt pavement.

TYPE... Full-Depth Asphalt-paved residential and light commercial streets. 6.477 miles (1968), 1.629 miles (prior to 1968).

TERRAIN... Flat.

CLIMATE... Severe. Typical temperature extremes, —32°F to 110°F. Rain, 33"/year. Snow, 30"/year.

PRESENT TRAFFIC... Residential streets, 100 VPD max. Commercial, 400 VPD max.

ROADWAY... **Subgrade:** silty clay (CBR from 2 to 3) with varying mixtures of gravel, crushed rock, and old, pulverized sealcoats. **Base:** 2" or 4" of ¾" gravel (87%) and ⅜" crushed limestone (13%) treated with 85-100 penetration asphalt (4.25%). **Surface:** 2" of asphalt concrete (Iowa Highway specification Type B Base made with 85-100 penetration asphalt (6.1%) using ¾" gravel (80%) and ⅜" crushed limestone (20%).

DRAINAGE... Surface run-off via curb and gutters.

COMPACTION... **Subgrade:** To 95% of standard Proctor with sheepsfoot, pneumatic-tired and steel-wheel rollers. **Base:** To 98% of lab density with pneumatic and steel rollers. **Surface:** Same as base.

CONTRACTOR... E. C. Henningsen Company, Inc. of Atlantic, Iowa.

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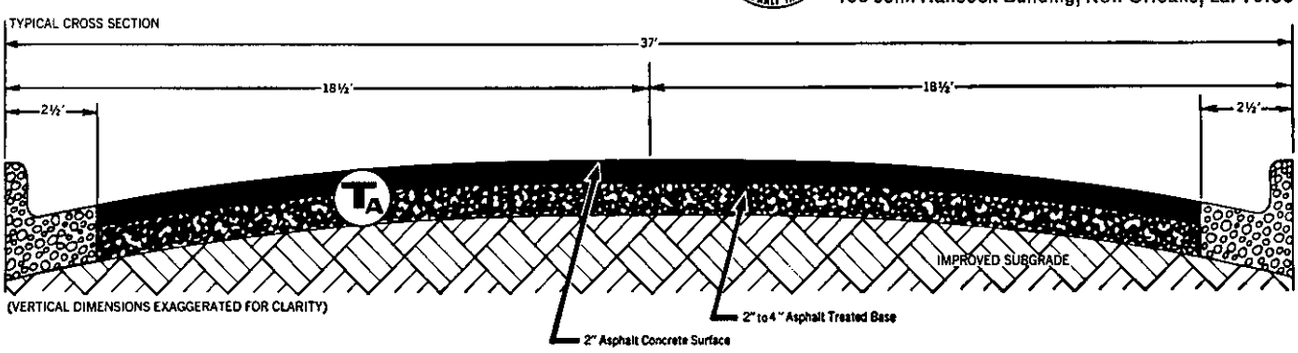

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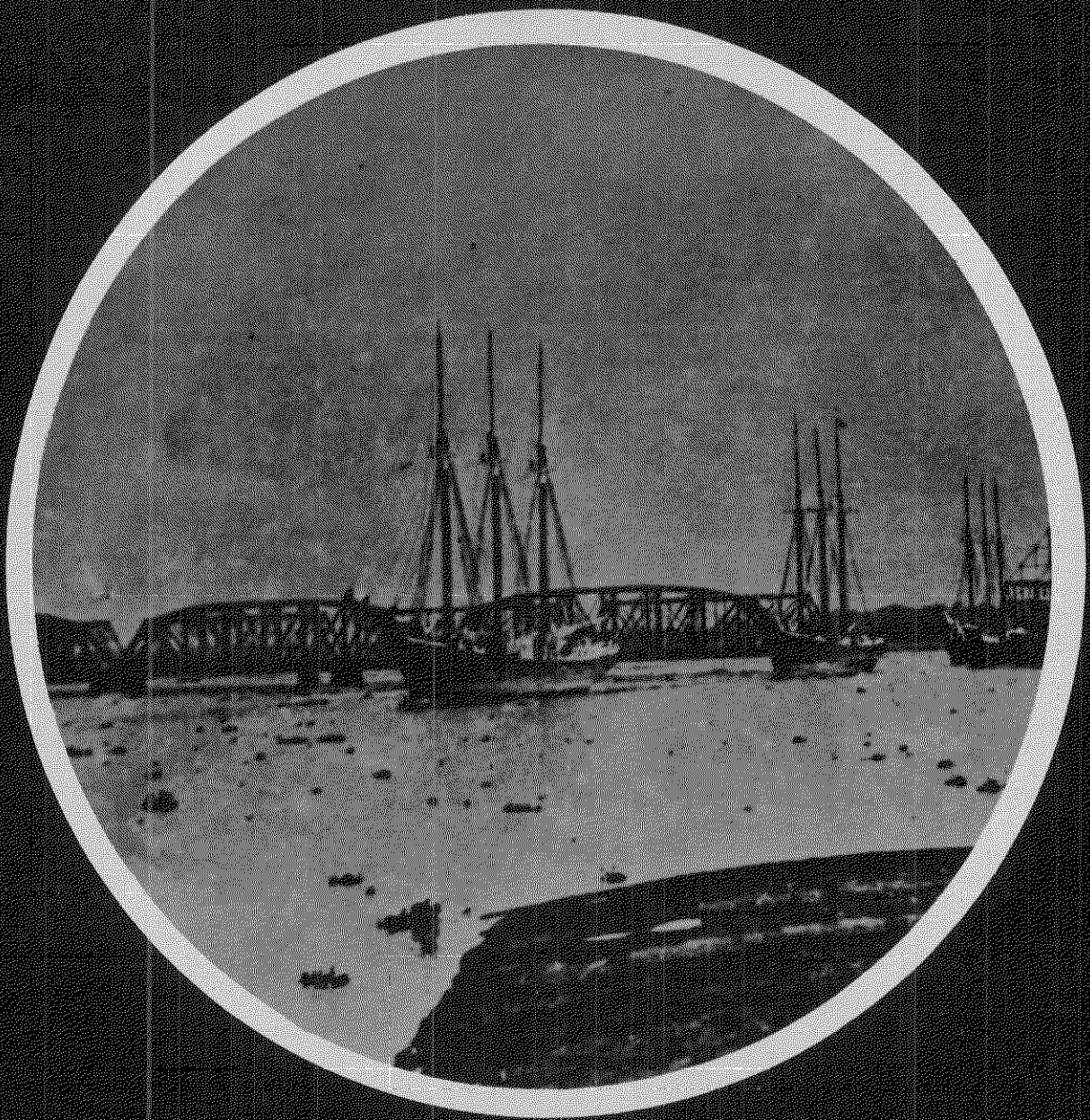

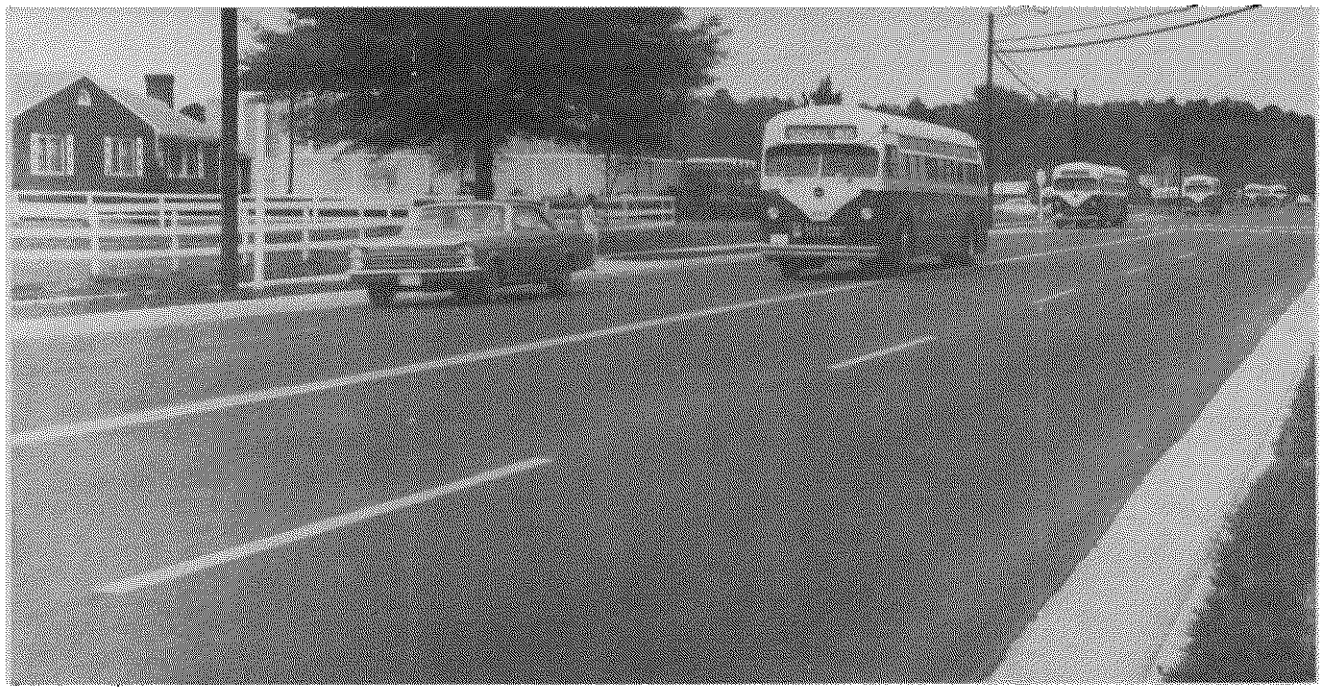

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The subgrade is a plastic silt-clay soil, only two feet above the water table. The subgrade was excavated to a depth of 18 inches. Then, 6 inches of this material was treated with lime and compacted in an attempt to bring the CBR up to about 35. On top of this was placed an 8-inch asphalt concrete base (two lifts) and a 1-inch asphalt concrete surface course.

In addition to obtaining a durable Full-Depth Asphalt pavement, substantial savings of time and money resulted. The old design, which used untreated aggregate-base, would have required more excavation, created a dust problem and needed special labor for watering, maintaining and repairing before the asphalt surface was placed.

BIG BETHEL ROAD PROJECT

TYPE... Full-Depth Asphalt paved four-lane, arterial street. Approximate length: 5,600 feet.

TERRAIN... Flat coastal plain 16 to 18 feet above sea level.

CLIMATE... Average minimum temperature 32°F... average maximum 86°F. Annual precipitation 43.37 inches.

TRAFFIC... 8,000 VPD (10% trucks).

ROADWAY... **Subgrade:** Unstable silt-clay. **Base:** 8" asphaltic concrete (5½" and 2½" lifts) Virginia Type B-3 (1½" maximum aggregate). **Surface:** 1" Asphaltic concrete Virginia Type S-5.

ASPHALT... 85-100 penetration for all mixtures.

DRAINAGE... Surface run-off via curb gutters to curb drop-inlets and piped to open ditches.

COMPACTION... **Subgrade:** Untreated material to 95% lab density and lime treated subgrade to 100% lab density (AASHO T-99a) with vibrator rollers. **Base and Surface:** To a 90% minimum of maximum theoretical density with 10- to 12-ton 3-wheel and tandem type rollers.

CONTRACTOR... Clyde R. Royals, Inc., Hampton, Virginia, a member of the Virginia Asphalt Association Inc. and the National Asphalt Pavement Association.

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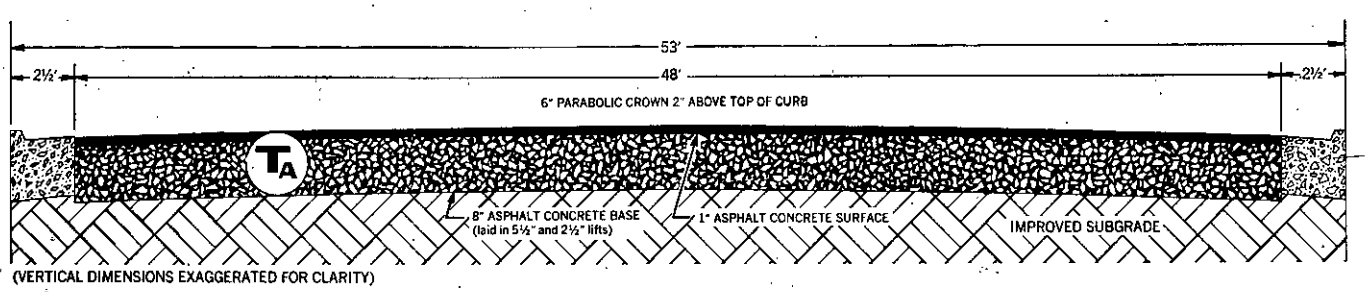

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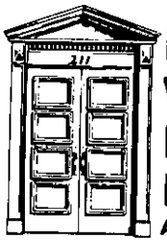

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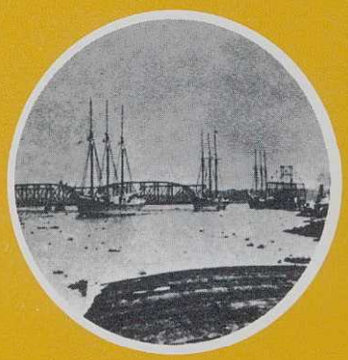

COVER

This photo, taken in 1907, shows three schooners passing through the drawbridge into Berwick Bay, La. Read this fascinating story on Page 8.

CONTENTS

Presidential Privilege 5

Engineering Management Course 7

Railroad Crossing at Berwick..... 8

Interstate Through the Swamps.. 12

Forensic Engineering 18

NSPE Regional Meet Photos..... 23

EngiNEWS 26

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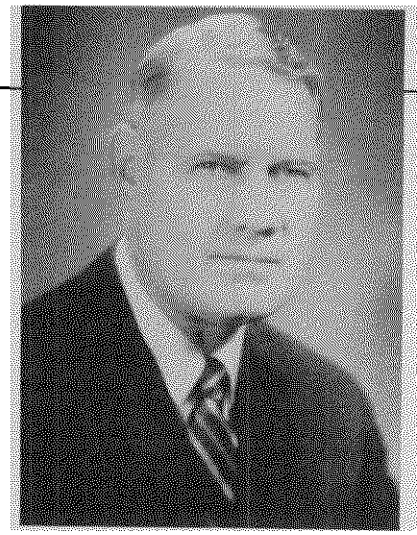

PRESIDENTIAL PRIVILEGE

LES President John F. Vogt, Jr.

Since there is no issue of the Louisiana Engineer during the month of November, which is set apart as Young Engineers Month by NSPE, I should like to use this month's privilege to direct a few words to this group of young professionals.

You represent to me an extremely important sector of the Engineering Profession—yet a segment that our more experienced engineers have been unable to induce into active participation in the Louisiana Engineering Society. I readily admit there are some exceptions to this statement as a few of our young men are finding fellowship and compatibility through the L.E.S. with their engineering counterparts of all ages. Unfortunately, this is not the rule.

I personally suspect that the opportunity has not been presented to you to be an independent enough group within the main body of the society, one that has been challenged with worthwhile responsibility to contribute to the effective well being of your chosen profession. Yet there is not a single member of this society, with whom I have been associated, who does not believe that the young engineer of today has excellent ideas relative to the conduct of our profession. You are eager, alert, viable, technically qualified and can communicate ably with other engineers and with people outside of our profession. With changing technology and increasing social involvements that face engineers, we find an extreme need for these characteristics in our planning to spread the Society's responsibilities to all engineers that can make useful contributions. I therefore offer you this invitation to membership on the basis that there is need in the L.E.S. for all of us!

Our recently formed Young Engineers Committee now provides an excellent sounding board to make your ideas heard at the management level and gives you a direct voice in the affairs of the entire Society. We frankly admitted that we have fallen short in our encouragement to young engineers. May I therefore request for your own protection, for your professional and economic welfare, that you react as frankly and answer for us—

> "What can the L.E.S. do to give the Young Engineer his time and money's worth?"

To all members and friends of the Louisiana Engineering Society, I wish to express my sincerest wishes for a happy, healthy and safe holiday season.

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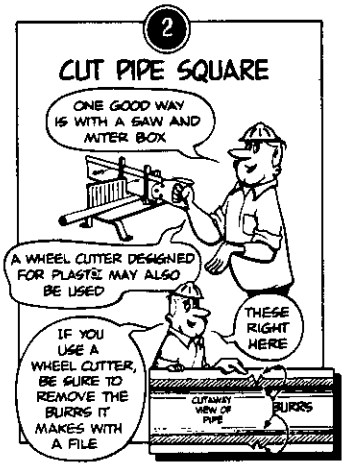

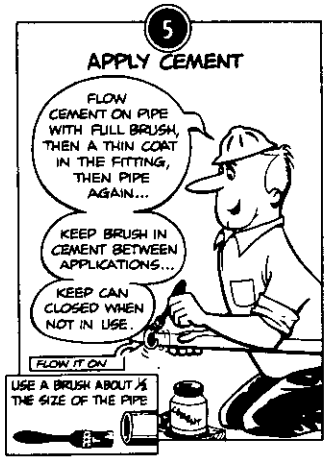

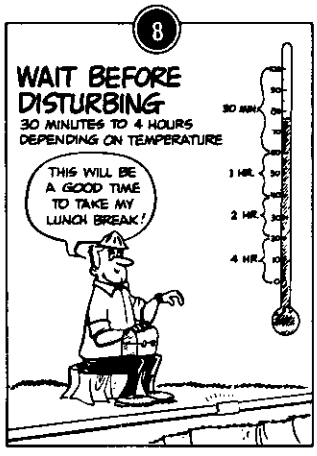

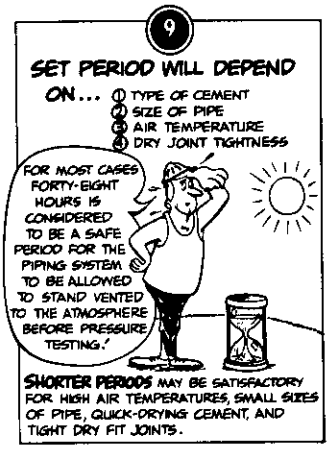

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Semester 1 — CONCEPTS OF MODERN MANAGEMENT

I. Understanding an organization
II. The individual in an organization
III. Organizational objectives
IV. Function of managers
  a. Creating
  b. Planning
  c. Organizing
  d. Motivating
  e. Communicating
  f. Controlling
V. Management thought in perspective
VI. Principles of management
VII. Improving productivity in your organization

Semester 2—ECONOMICS FOR ENGINEERING

I. Economic systems and functions
II. National income determination
III. Price theory
  a. Demand
  b. Cost
  c. Market structures
IV. Income distribution
  a. Wage Theory
  b. Interest and rent
  c. Profits
V. The money and banking system
VI. Economic policy

Semester 3 — ENGINEERING ECONOMY

I. Economics
  a. Planning engineering economy studies for decision making
  b. Interest—the time element in economy
  c. Dealing with multiple alternatives
  d. Dealing with uncertainties in forecast
  e. Incremental Cost
  f. Economic studies for retirement and replacement
II. Operations research
  a. Mathematical programming
  b. Queuing theory
  c. Inventory theory

Semester 4 — FINANCIAL DECISION MAKING

I. Money markets
  a. Money, credit, and banking
  b. US government obligations
  c. Interest rates
II. Financial management
  a. Form of organization
  b. Financial planning
  c. Working capital
  d. Fixed capital
  e. Bond financing and borrowing
  f. Corporate stock
  g. Dividends and surplus
III. Personnel investment planning
  a. Savings institutions
  b. Security markets
  c. Financial reports and analysis
  d. Security analysis

Classes started in New Orleans and Baton Rouge during September on the LSU-LES Engineering Management course. Participation exceeded our expectations 100 fold as four classes got under way in New Orleans and two in Baton Rouge. It is anticipated that new students starting in the spring will expand the program even further.

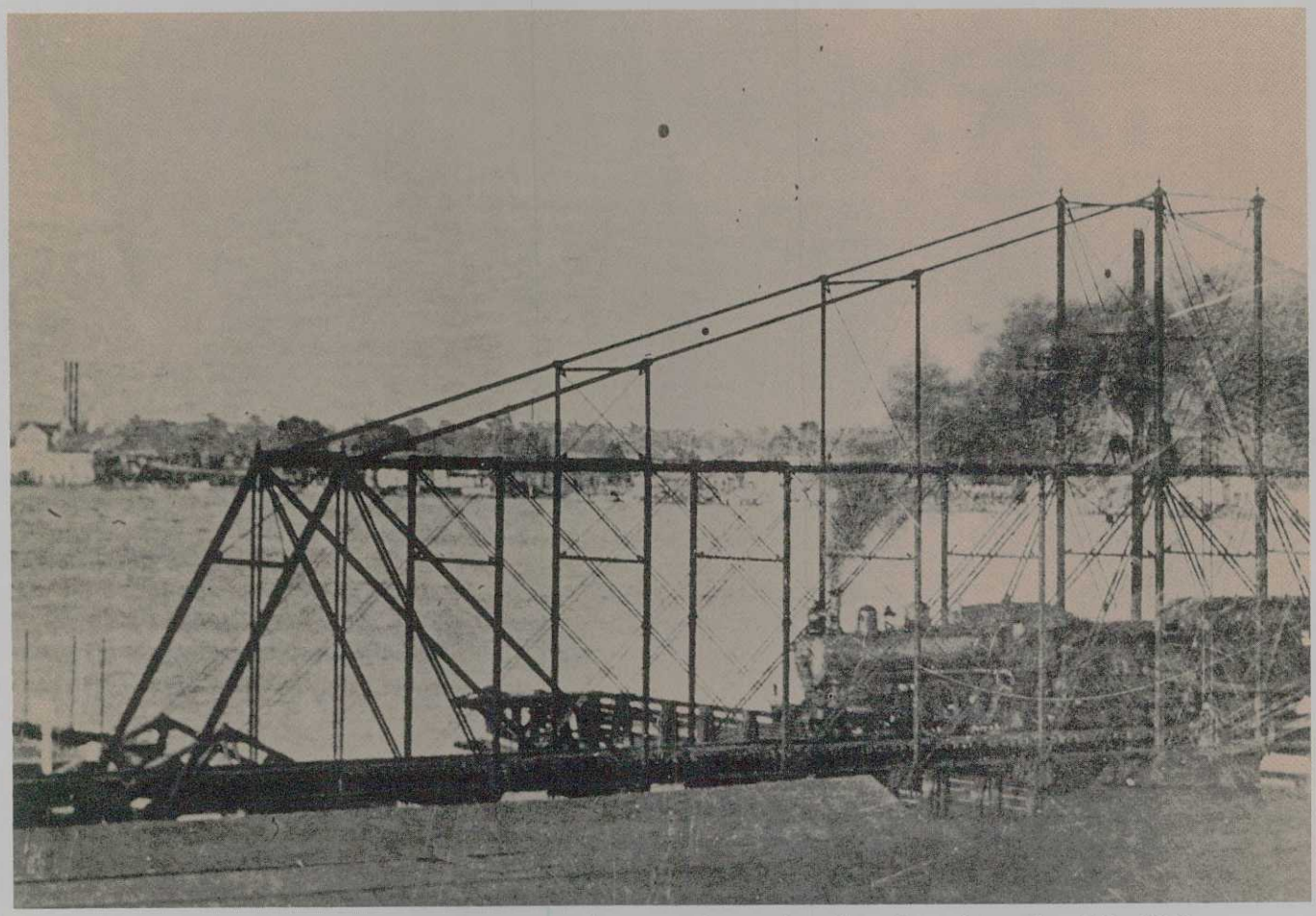
Other parts of the state are moving also. Alexandria has a full class for the spring with engineers from only three (3) companies involved. Alex will probably fill up two classes. Lafayette is actively organizing a class also for the spring. Monroe/Ruston are recruiting. Shreveport could easily form their own group or join Monroe/Ruston while Lake Charles and Opelousas could join Lafayette.

LSU has committed itself to go all over the state or help any other university set up the course. Just get 25 students and you have a class.

Several changes have been made by LSU that have further enhanced the course. College credit is now available if desired. The certificate will still be

(Continued on Page 24)

A Railroad Crossing at Berwick's Bay



Steam locomotive passing across swing span of old bridge. This may have been first train crossing of Berwick Bay bridge on February 4, 1882.

It may be a little known fact, but Louisiana was one of the first states to construct railroads. The Pontchartrain line, running for about five miles from the Mississippi River to Lake Pontchartrain, opened for public travel in 1831 using horse power. A steam locomotive, the fabled "Smoky Mary," was placed in service soon afterwards upon its arrival from England. It was only two years earlier in England that locomotive engines had proven feasible for use on railways. Other lines were started in the State, but these early efforts were disappointing. It was not until the 1850's that railroading in Louisiana was given serious concentration.

In October, 1852, the construction of a railroad to bring trade from the West to New Orleans was started across the river at Algiers. The route had been located from Algiers, to Berwick's Bay on the Atchafalaya, to Washington on the Courtableau, then to a point on the Sabine that would be most favorable to connect later with a route across Texas and on to California. What a dream, and what a story! But it did happen, thirty years later after interconnection of various lines, trains were traveling from New Orleans to San Francisco on a through route in February, 1883.

It is fortunate that a record of the construction of the early railroads in Louisiana was made by an engineer, George Willard Reed Bayley, whose articles may be found in the Louisiana Historical Quarterly. It is unfortunate, however, that no one continued the record in such detail after his death in 1873. In his articles we find the story of the New Orleans, Opelousas, and Great Western Railroad which built the railroad from Algiers to Berwick's Bay, located near the mouth of the Atchafalaya River, where it terminated for about twenty-four years due to lack of funds to construct a bridge across the river and continue the line westward. The railroad was constructed through some of the worse swampland known to man. The workers were plagued by mosquitoes, snakes, alligators, and yellow fever. The roadbed was placed across the unstable "trembling prairies" which in places required trestlework which was backfilled with shell brought from Algiers.

Floodwaters continually washed out sections of the track. But the line advanced regardless

of these obstacles. The track was laid on twelve inch square ties that were eleven feet long to provide stability due to the lack of suitable ballast material. The track gauge was five feet and six inches. By February, 1856, the line extended from Algiers to Bayou Boeuf, a distance of seventy-three miles. Here an agreement was made with Cornelius Vanderbilt to operate steamboats from this terminus to Galveston and other points in Texas. The terminus was later moved to Berwick's Bay, 80 miles from Algiers, where steamships brought the trade from the seaports of Texas, and from points along Bayou Teche.

The line contained five drawbridges where a system of signals were installed that were considered a "first." A definite signal was displayed to show the span was closed, if no signal was shown the span was open or something was wrong and the train was to stop. The old system of no signal meaning the span was closed was obviously dangerous.

The railroad line was mortgaged in 1859 to obtain funds, and work was commenced on the line west of Berwick's Bay using another "first" of constructing embankments with a steam dredge boat. This untried experiment resulted in a savings in cost over the use of piling or cribbing to cross the marshes.

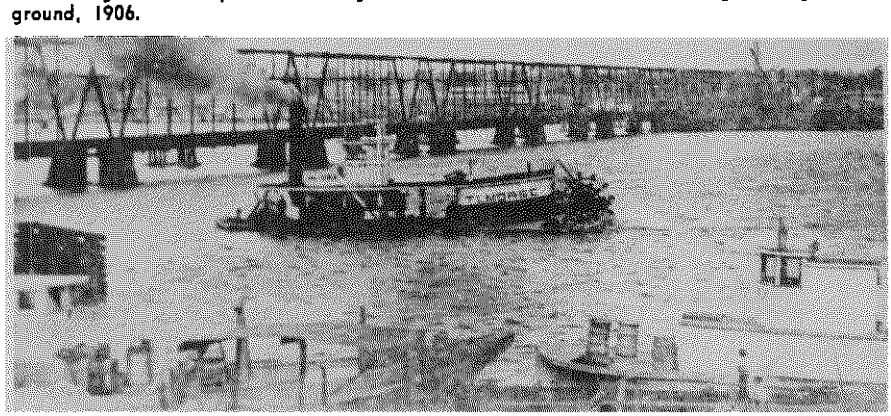
By 1862, when New Orleans was captured by Federal forces, the NOO&GN railroad had 12 locomotives, 21 passenger and baggage cars, and 209 freight cars; also the river ferry CERES, and three large barges for transporting freight across the Mississippi River at Algiers. Much of the line and rolling stock was destroyed during the Civil War, the channel at Berwick Bay had been obstructed by a barricade of timber and trees, and to top this the neglected levees broke, flooding the entire Atchafalaya valley to a higher elevation than ever before known. Then the yellow fever epidemic in New Orleans and Galveston with a resulting quarantine nearly destroyed business. The line was no nearer Texas than it was in 1857.

The railroad seemed to face a never-ending series of setbacks from its beginning. Now it needed help to continue to operate, but no one came to its rescue. Consequently, in 1869, the line was purchased at auction by Charles Morgan, who had brought Vanderbilt's steamship service to Texas and had started a shipping empire. The NOO&GN became Morgan's Louisiana and Texas Railroad, and a part of his great New Orleans and Texas steamship line. The operation of the railroad was greatly improved under Morgan's direction with huge wharves, cattle pens, and buildings being constructed to offload freight from the ships at the town of Brashear on the East side of Berwick Bay. It is no wonder that the town was renamed Morgan City in 1879 after its benefactor.

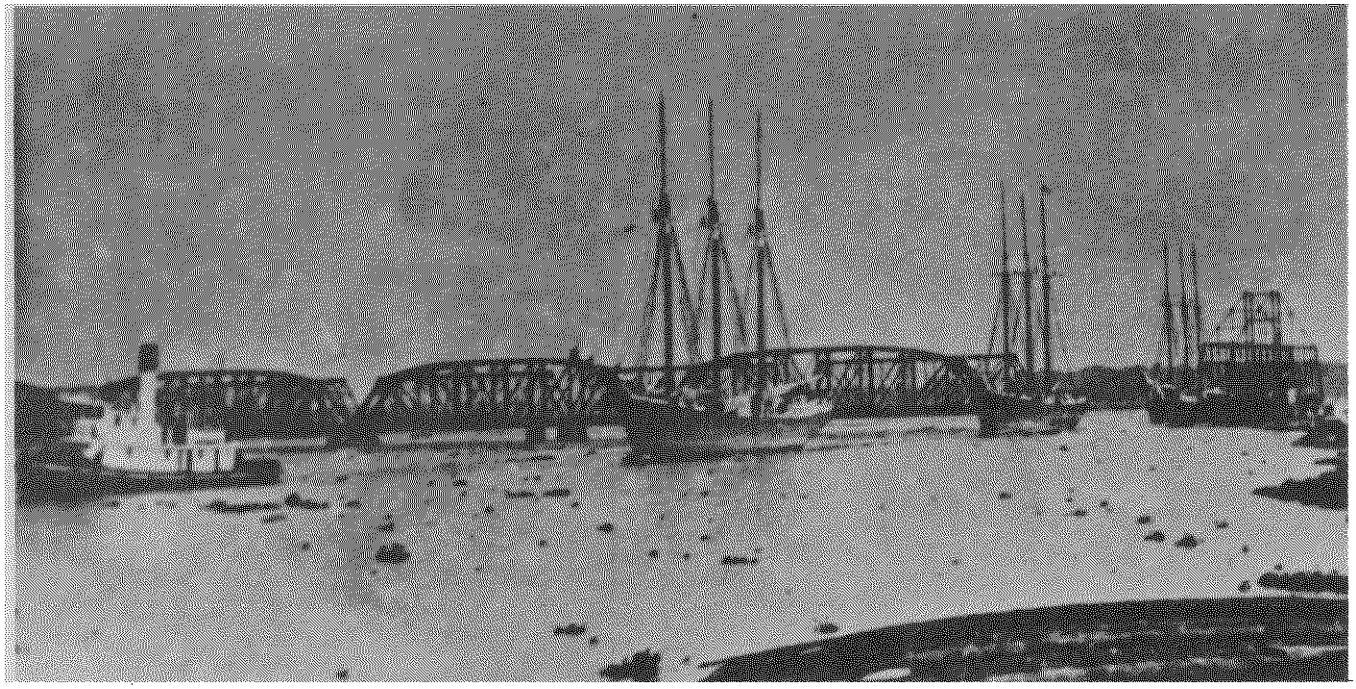
At this time there still was not a bridge across Berwick Bay, although the cost of a bridge had been included in a construction estimate for the westward extension of the lines in 1858 by Chief Engineer Bayley for the NOO&GN railroad. The road west of Berwick Bay, which was abandoned because of the Civil War, did not get started again until 1878 after Morgan had sold the line to a Louisiana company which named the line Morgan's Louisiana and Texas Railroad and Steamship Company. The grading and tracklaying was under the direction of a young engineer with great promise. He was Julius Kruttschnitt, whose career led him to the chairmanship of the Southern Pacific Company.

Very little information is now available on the construction of the bridge across Berwick Bay, but surely this was a tremendous undertaking in its day. The structure was supported on huge creosoted timber piling driven in up to 80 feet of water depth. This must have been one of the first uses of creosoted timber piling in the United States. A contract for construction of the bridge was contemplated in 1880, but funds were not available. In 1881, the railroad management had decided that ferry-transfer facilities at Morgan City was hindering operation of the road. A contract was let for construction of the bridge to Clarke, Reeves, and Company of Philadelphia and Putnam and Tobias of New Orleans. The price was $220,000, with construction to begin in June, 1881. It was also reported that a floating steam pile driver was nearly completed, that much of the ironwork was ready for shipment, and

Steam tug headed upstream through draw. Caisson work for new bridge in right background, 1906.



Berwick Bay Crossing (Continued)



Steam tug towing three schooners through bridge draw into Berwick Bay for loading, 1907.

that many of the creosoted piling would be delivered in time. In 1882, the bridge was reported to have been in operation since February 4th, although the approaches were not quite completed. The total cost had been $265,000. In this year the Mississippi River broke through the levees flooding the entire Atchafalaya basin, but the bridge held.

This structure was 1,763 feet long with steel through trusses supported on creosoted pile bents. There were eight 158 foot long trusses, one 141 foot long truss, a 270 foot long swing span, and several stringer approach spans. The base of the rail was 13 feet above mean water line. The Southern Pacific Company took over the operation of the railroad in 1885.

In 1902, the end of the swing span which connects with the west bank collapsed with a train passing across. The swing span was readily repaired and placed back into service. In 1907, a more substantial bridge which is presently in use was constructed about 50 feet downstream of the original bridge. This bridge was founded on concrete caissons sunk under air. After the new bridge was placed in operation in 1909, the older bridge was demolished after being in service for seventeen years. It had to yield to the increasing loads and size of the then modern steam trains.

Some sixty years after the demolition of the original crossing, the tips of the old broken-off creosoted timber piles have created an obstruction to the sinking of concrete caissons. The caissons are being constructed to support a vertical lift span being built into the present bridge to replace the swing span, and to give a greater clearance for navigation. While predredging one of the caisson areas, the contractor dug up numerous sections of the old pile heads, which were broken-off and lying on the river bottom. Some of these sections measure 80 feet long, which corresponds with the water depth at the time they were driven. The head sections measure about 24 inches in diameter, and are spliced with a metal sleeve formed of two half-round pieces of one-half inch thick plate with angle clips riveted to the edges and bolted around the pile with 21 one-inch bolts on each side. The sleeve is seven feet long and splices the piling with the pieces butt to butt for ease in matching the size and making a snug fit. A metal dowel was driven through the sleeve and each pile section.

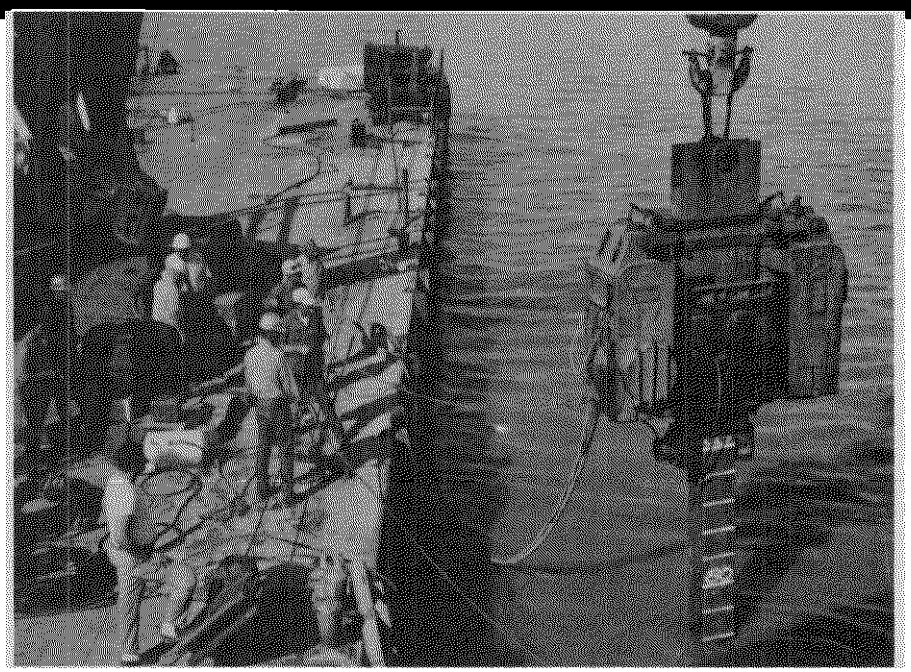
The removal of the broken-off pile tips proved to be a problem. There was no information available as to the number, size, or the length. From an old drawing, it was determined that one of the original bridge bents was within the area of a caisson. One of the existing bridge piers was located nearby and was found at 95 feet below water line. The scour around this pier was about 70 feet below water. A diver was sent down after cleaning out around the tops of the tips to locate and count the number to be removed. Location was made by noting the position of the crane line after the diver directed it over a tip. The depth of the tips was found to be 70 feet under water by the diver's depth gauge. An attempt was made to pull the piling tips with a crane line and jet, but this failed. The whole tip had to be removed or there would still be

an obstruction. The use of a bucket or a sling may break the tip off lower requiring a deeper excavation, and jeopardize the stability of the existing pier. A method of extraction had to be found that would least disturb the soil. Then there is also the problem of gripping a timber pile in seventy feet of water with assurance that the grip would hold enough to extract a tip of unknown length.

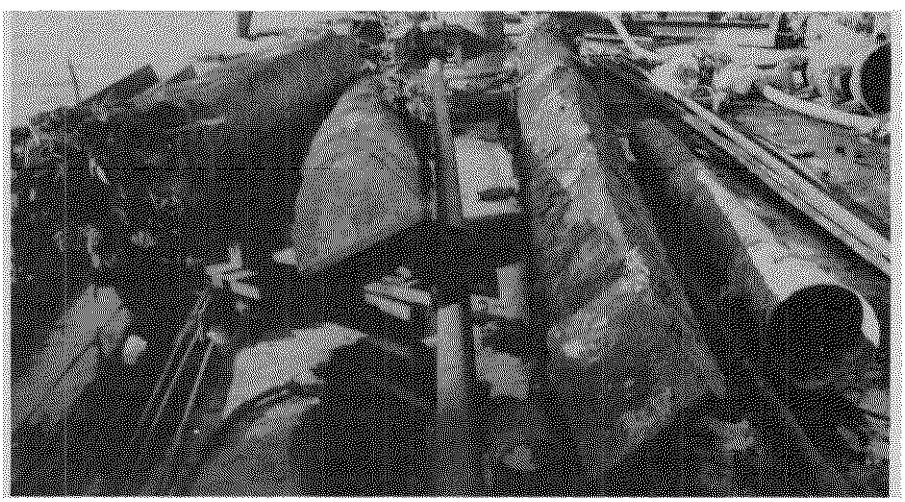
The contractor called on the services of the L. B. Foster Company, because of their previous experience in extracting wood piling under water. They had developed a pulling head to use with their vibratory driver, and had pulled many piling from underwater at various waterfront projects, but none at this depth and of this size. The Foster pulling head was enlarged, and an extension piece added making it 100 feet long to fit the conditions of this job. The pulling head had a single cam arm with a serrated shoe to press the timber tightly against the opposite side of the head to transmit the vibrations to the wood as effectively as possible. The head was guided over a pile tip by a diver, driven down over the tip, and the cam tightened. The vibro-driver was used to drive the tip down first in an effort to break it loose from the soil. A pull was then placed on the vibro-driver to extract the tip by overcoming the cohesion of the soil with the vibrations. There was a question as to whether the vibrations would be effective in the clay soil surrounding the pile, but the method proved satisfactory.

Fifteen tips were extracted from the caisson area by this method. The tips averaged only about 35 feet long. It was amazing that such a short pile would have such a resistance to extraction, but many times the gripping cam would shear the wood and strip off from five to six feet down from the top. The tips had only a slight taper to the point which was hewed to a chisel point. Some of the tips had the sides hewed, supposedly for symmetry. This extraction method was successful on this job, and the obstructions were cleared to allow the proper sinking of the pier caisson. Little did the piledriverman of 1881 know of the problems he would leave for the bridge builders of 1969, and how rapid are his achievements forgotten except for these small reminders that they too were here.

The 370 foot vertical lift span being added into the existing bridge to provide better clearance for the ever increasing waterway traffic along the Atchafalaya River was designed by Modjeski and Masters, Consulting Engineers—R. C. Holt, F. ASCE, resident engineer. Jack Johnson is superintendent for the contractor, Massman Construction Company of Kansas City, Missouri.

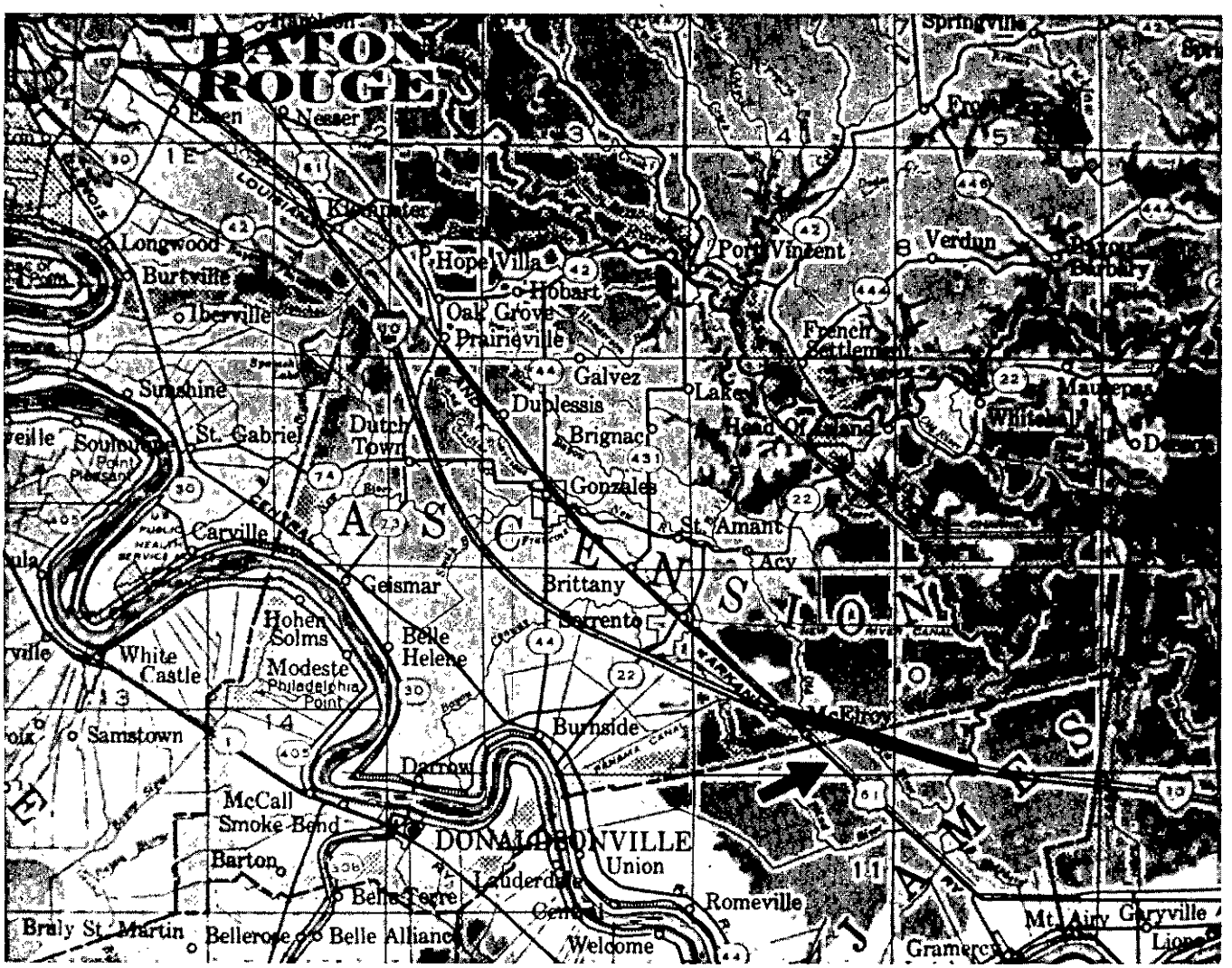


Vibro-driver connected to pulling head.



Timber pile tips extracted from river bottom. Note hewed chisel point and hewing along sides.

Interstate Through the Swamps—The Impossible Dream Achieved



A vicinity map indicating the project location with respect to Baton Rouge, Mississippi River, U. S. 61 and existing swamp.

Construction of an embankment supported roadway through swamps and marshlands, as found in southeast Louisiana, is truly a construction and design feat. The route chosen for Interstate 10, a southern route, traverses the state along the most optimum path that would adequately service traffic densities connecting population centers and adjoining states. During construction of this route, it will be necessary to cross many low-lying areas that contain very unstable surface soil conditions. One of these areas, Lake Maurepas, is located between Baton Rouge and New Orleans, beginning approximately 30 miles east of Baton Rouge. Interstate 10 within this area is presently under construction by the Louisiana Department of Highways and is representative of the construction techniques, design and existing conditions encountered within this marsh area as expected in other areas planned for future construction.

The methods employed during construction of this particular roadway, being the first of its kind for material transportation of this magnitude, have proven to be a step forward in highway construction and offers economic progress to the road building industry. The cost for construction of an embankment supported roadway of this kind will be approximately $2 million per mile as compared to an area of more favorable soil conditions which would be approximately one-half as much. This would seem excessive but as compared with structure supported roadways normally used in areas of this type, the cost would be approximately $4½ million per mile.

The Department's approach to the problem of building a roadway through the Lake Maurepas marsh area was to first gather the preliminary information necessary for feasibility studies thus determining the type of construction that would be most economical for this area. These studies considered stability of soil strata, economics and distortion of uniform water storage normal to the area. This particular swamp area stores tidal waters from

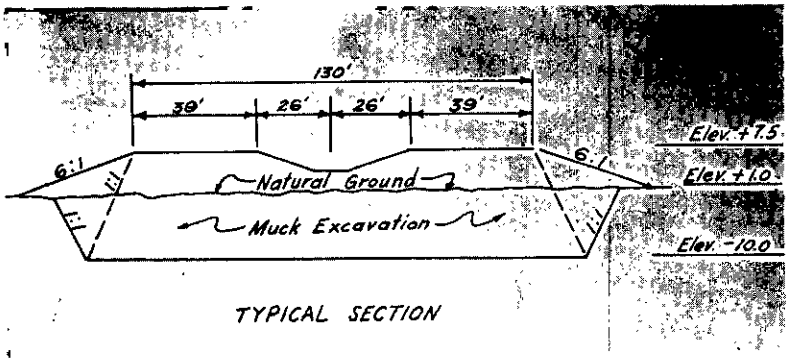
Typical swamp scene prior to highway construction.

the coastal area and is continually fluctuating in depth. The natural ground elevation is approximately 0 feet m.s.l. and has an average surface water elevation of +3 feet m.s.l.

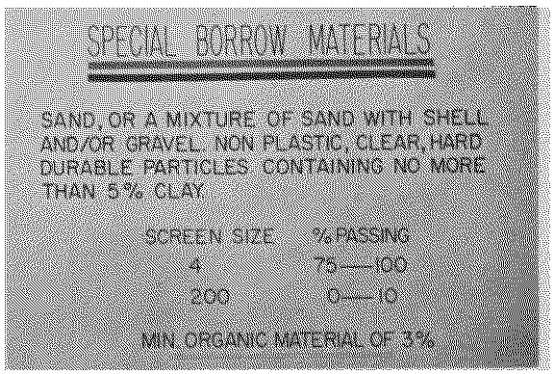
From the Department's studies, it was concluded that within the range of approximately ± 22 feet in depth we could remove unsuitable materials and replace them with a load carrying type soil at favorable cost. These studies considered two methods of roadway construction: soil replaced embankment or structure supported roadways. Beginning from the westernmost point of the swamp area, a stratum of dense clay containing a very high load support value was found to exist within the depth criteria established as feasible. Normally, a swamp area of this kind contains considerable unsuitable material that will vary in depth erratically and is a collection of those materials typifying an AASHO A-8 classification group.

The materials found within the Department's soil studies and represented by typical boring were found to be stable within the economic ranges of the established criteria for approximately 22 feet in depth. The clay stratum for roadway support was found to run on a gradual slope from the swamp edge eastward for approximately twenty miles. It was then determined that the Department could construct a soil supported roadway from the westernmost point of the swamp to its intersection with I-55, approximately twenty miles east of its beginning.

The typical section for this roadway was then developed, requiring unsuitable material to be removed down to an established clay stratum line that could support the intended loads. The unsuitable materials removed would be replaced with a stable material containing adequate load bearing characteristics. The Department recognized that the area excavated would be inundated and were left with the choice of using either a granular or shell material, as their final placement would require a water compacted type material and confined within the muck cavity.



Shows typical section of roadway to be constructed.



Gradation requirements for special borrow materials to be placed in muck cavity.

These were available within a thirty-mile radius of this route and materials could be transported along existing water routes through normal transportation methods.

River Was Source

The Department would require all replacement material to meet the following requirements: a sand or mixture of sand shell and/or gravel nonplastic, clean, hard, durable particles which contain not more than 5% clay nor 3% organic material; 75 to 100% passing the #4 screen and 0 to 10% passing the #200 screen. An ideal granular material source is located to the south of this route in the form of deposits from the Mississippi River. Generally the Mississippi River parallels this route to the south ranging in distance from 10 to 15 miles.

The project plans were then developed requiring the excavation of unsuitable materials and their replacement with sand deposits. The consulting engineering firm, Barnard & Burk & Howard, Needles, Tammen & Bergendorff, Baton Rouge, Louisiana, was retained by the Department to make the necessary studies and develop construction plans for this route. The first project of this type was ultimately awarded to the Bauer Construction Company of Port Lavaca, Texas, September 18, 1967 and October 1, 1968, being 6½ miles in length for a total cost of $7,735,492.00. The average cost per mile to perform construction requirements would be $1,190,075.69. This would include clearing, grubbing and removing of all unsuitable muck materials and replacing them with a stable load bearing material.

This project required all items of a normal highway contract in that clearing, grubbing, muck removing, etc., were necessary. The major difference from normal construction projects required that all equipment would be of the floating type as dictated by the existing soil conditions of this area. Clearing was accomplished by cutting heavy tree growth at the water line through manual methods, with all stumps to remain. A dipper dredge was then floated to the site through access canals and began excavating an access channel along the intended route of adequate depth to facilitate the draft of the mucking hydraulic dredges. The dipper dredge was of the dragline type and was able to cut this channel.

A mucking dredge then followed behind, in the access canal, and excavated all unsuitable materials. This dredge contained a cutter head powered by a 500 H.P. Diesel engine and a 1750 H.P. Diesel engine to power the centrifugal pumps. Excavation was made approximately four feet below the existing surface in order to free the stumps remaining from the clearing operations and to float this material to the right of way perimeter and muck deposit areas. Similar equipment was used to stack the trees within this same area for burning. All wood material was burned and covered with the muck materials removed from the excavation. The cutter head removed the material through use of an auger motion to suspend the soil particles in water for their deposit to right of way perimeter and muck disposal areas. Wood materials taken from the right of way and covered with muck material was placed along the right of way perimeters to form the necessary dike that would retain water and soil materials in suspension.

The dike formed would then serve two purposes: First, to retain the muck materials being pumped from intruding into the excavation and, second, to offer surface drainage within the right of way limits. After all materials were excavated, the site cleared and dikes constructed, we were then ready to receive the replacement sand materials and construct the final embankment.

Engineering estimates considered transportation of these materials through normal transportation methods.

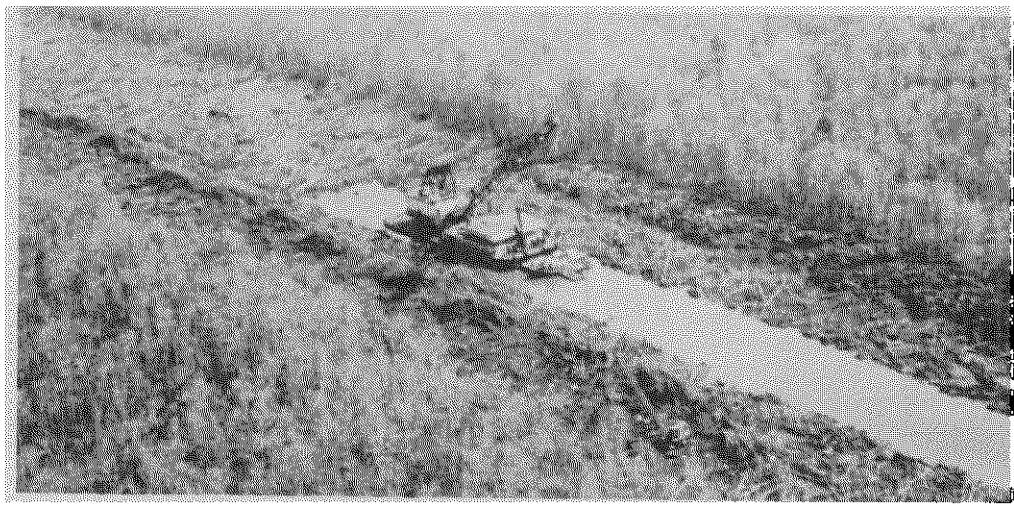
Unique Technique Used

The Bauer Construction Company developed a technique to transport replacement materials that was unique and common to this project; it included a dredge

piping and booster system that would transport the materials a distance of 10 to 15 miles. The dredge was placed in the Mississippi River to recover sand materials from a channel depth of 60 to 80 feet below water surface and required the borrow area to range up and down the river for approximately two miles and later approximately ½ mile from the original location. Silt deposits from the river were continually being replenished through river flow, allowing the Bauer Company to recover materials within the same location for long intervals.

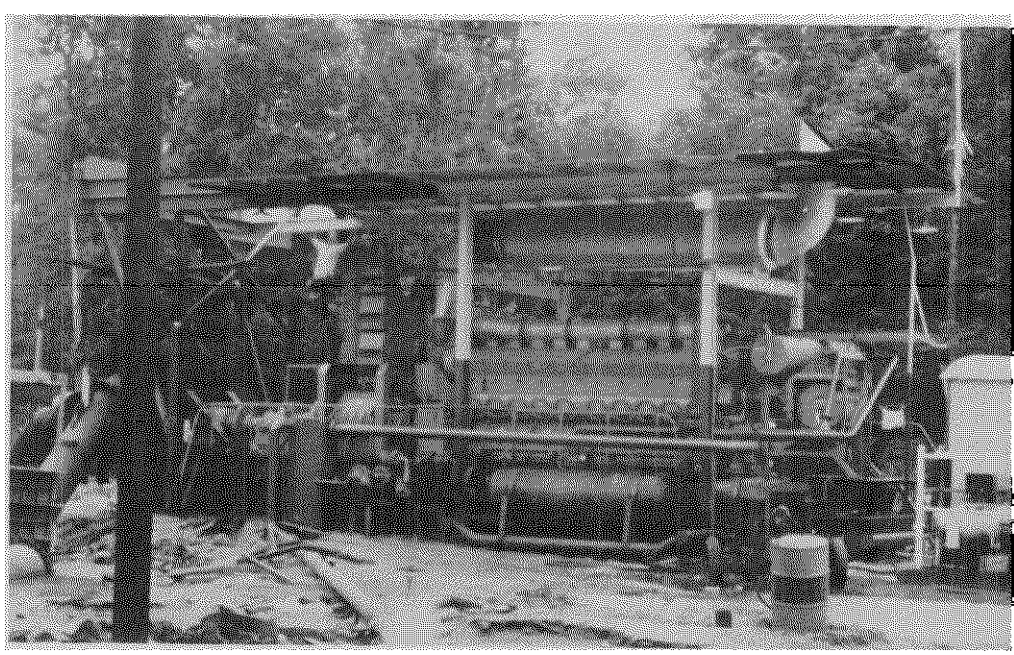
A 30-inch hydraulic dredge was placed in the river to recover materials. It consisted of a 4500 H.P. engine on a centrifugal pump that would lift the material placed in water suspension through the use of a suction head which contained a water jet system of sufficient capacity to erode the material in the river bottom. Particles were placed in suspension and excavated by the suction pump. The centrifugal pump then lifted material, in water suspension, from the river depths and transported it to a booster station that was located approximately one mile away.

The 30-inch capacity dredge, with a 24-inch pipeline, was of adequate capacity to transport the sand materials at a rate of approximately 1000 cu. yds. of solid materials per hour. The solid-water ratio for materials being transported varied from 14 to 18% depending on the pump capacity and the ability of the water jet system connected to the dredge intake to place materials to be excavated in suspension with water. The material was pumped through the pipeline system from the dredge boat at approximately 125 p.s.i. and received at the first booster station one mile away at 20 p.s.i. The booster would then increase this receiving pressure out toward the receiving booster at



Aerial view of dipper dredge and clearing operation. (Note retaining dike to left of picture.)

View of hydraulic dredge in Mississippi River with boom exposed.



Typical view of booster station. (Note cooling water, size of machinery and bypass connection.)

approximately the same pressure as discharged by the dredge boat and relayed similarly through six permanently located booster stations to a floating booster that pushed the material to its final location.

The six boosters varied in size and capacity and were synchronized to provide uniform material flow equaling the rate of recovery from the river. The permanent booster stations were placed at approximately two to three mile intervals, depending on booster capacity and pipeline elevation changes. The source of power for these boosters was either electrical or diesel.

Each booster site required a water supply of variable sizes in order to cool the enormous engines. Wells were dug from six to ten inches in diameter to provide the necessary water. The booster pumps were powered with diesel engines or electrical motors ranging in size from 1750 H.P. to 3500 H.P. and were synchronized through pipe pressures to provide the pumping capacity from one booster to the next. The last booster in the system was a floating booster and compensated for the increased outflow as the embankment was finished, either by moving through the waterways or increasing its pumping capacity. Placement of materials moves at a rate of approximately 200 linear feet of complete embankment per day. The pipeline was simply extended down the center of the roadway for this increased length.

On the effluent end of the pipeline an energy dissipator is used to spray the material upward, allowing the heavier particles to fall on the embankment with the lighter silt particles floating out into the open excavation. The silt material and any remaining muck is then removed from in front of the replacement operation with a small 10″ hydraulic dredge, this being a continuous process for 24 hours a day.

Slopes Covered

The material deposited is being done with a Y connection on the 24″ pipeline; each with gate valves that govern the flow on either side of the excavation. A tractor then spreads the material laterally and heaps a slight dike at the extreme side of the cut to retain the materials being pumped in the direction of flow and requires the material to move forward down the open channel. The Department plans to allow this embankment material to remain in place under a slight surcharge for a period of three years. It is expected that additional consolidation of underlying and lateral support materials will take place during this period; prior to receiving the final loading operation of a base, shoulder and roadway surface material.

Under the contract, a plastic material, 6″ in depth, will cover the sand slopes to deter soil erosion. This material will then be planted with a vegetation that will grow under the swamp conditions and will be an added protection for the embankment materials placed.

Construction of this roadway is another example of the ingenuity of engineers, contractors and equipment producers meeting a challenge and producing a finished product within an area once considered impossible.

View of plastic cover material (clay, humus) and denotes completed section.

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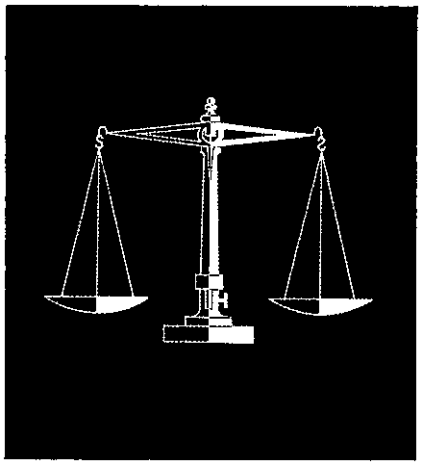
Forensic Engineering = Product Liability



Editor's Note: This article was presented as a speech before the October meeting of the New Orleans Chapter of the Louisiana Engineering Society by the author, who is both a registered engineer and a practicing attorney. The views expressed are those of the author who welcomes discussion on the subject.

Forensic engineering — legal engineering or technical law—is something of a new term. Most people assume it probably means expert witnessing for lawyers, and they're right—to a point. Forensic engineering usually deals with the legal consequences of negligence in the field of product safety, or, as it's called by attorneys, "products liability."

Now, let's agree on one thing at the start. The safety and reliability of a product are basic objectives in any design. Every manufacturer says so, in all his literature. The codes of ethics of the engineering society say so. Every engineer includes a factor of safety: It's part of the design process. There isn't one design organization that doesn't have its checking group; not one manufacturer that doesn't have a quality control organization of some sort. Their only function is to catch mistakes.

But we, as engineers, find our designs and our judgments, our processes and our products constantly under attack today.

Why all these attacks on the integrity of one of the learned professions? Why these accusations of sloppy workmanship against a scientific discipline?

Accidents will happen. You can make anything 99% safe, if you spend enough time and money on it. But nobody can make anything 100% safe, no matter what you do, what time you invest, what money you spend. You can't foresee everything. We are doing—and have done—everything we really can do.

Let's look a little closer with several examples.

A punch press failure resulted in the partial amputation of a man's hand, when the ram descended unexpectedly. The press was equipped with a 2-button control device, so designed that both buttons, head high and away from the ram, must be pushed before the press could be cycled. A valve was improperly assembled, malfunctioned and overrode the control buttons. According to the court, the valve should have been designed so that it wouldn't function at all, if improperly assembled. Damage award: $300,000.

A fireman wearing a gas mask died of inhaling poisonous fumes. The mask's filter was only good for 2 hours in the poisonous atmosphere, and the mask's time gauge re-cycled after the two hours were up. There was no way of knowing how many two-hour periods the filters had been used. Award: $200,000.

A worker out on the rigs fell to his death. His foot slipped, he fell into his safety belt, and the D-ring broke. The manufacturer's engineer showed that **every** ring was tested to twice the man's weight, so the belt must not have been fastened properly. But the test requirements called for a gradually applied load, not a shock load. Award: $350,000.

Be Prepared

I'm not trying to scare you. I am trying to warn you. Whether you're a project engineer for a billion-dollar company, or have just converted your den into a combined office and drafting room — you **must** do your job thoroughly. "Let the buyer beware" no longer applies. The buyer is in a suing mood—and he's backed up by the courts, as nationwide concern for consumer protection grows. You can look for more and more and more legal questioning of your professional skill, so you'd better become prepared.

Since those products liability actions come generally within the field of tort law, let's start out with a tort definition. Somewhat oversimplified, a tort is a breach of the duty to exercise due care.

In Louisiana, the Revised Civil Code wraps up the basic law, and the basic duty, in two articles. Article 2315: "Every act whatever of man that causes damage to another obliges him by whose fault it happened to repair it"; and Article 2316: "Every person is responsible for the damage he occasions, not merely by his act, but by his negligence, his imprudence, or his want of skill."

Please note one major and important omission. No place is your **judgment** being questioned. Every place, your "negligence, imprudence, or want of skill" is in question.

What's the difference?

"Judgment" — you had your choice between two equals, and — for whatever reason — chose one. The question, then, becomes one of fact: Were the two alternatives **really** equal? Specifying three wire-rope clips to dead-end a hoisting rope, to be tightened in the field by laborers, is not the equal of specifying a single swaged fitting. At least, to me—as an engineer—it isn't. And as an attorney, I can find — and quote to the judge—innumerable industry sources that would agree with my engineering opinion that this is a negligent de-

sign, and not that special application of training called "judgment."

We're not talking of errors in judgment, then. As long as you exercise the same standards of skill and judgment as do the other professionals in your locale, you'll be found liable only if you're negligent.

So, what is negligence? Legal negligence, that is.

Let me lead up to that with some history that may help to clarify.

To an attorney, Winterbottom v. Wright (decided back in 1842) stands for "privity of contract." Wright rented mail coaches to the Queen's Postal Service, and contracted to keep them in repair. Winterbottom's employer contracted with the Queen's Postal Service to provide coachmen to drive coaches supplied by the Postal Service. One of the coaches broke, laming Winterbottom, the coachman, for life. He sued Wright for nonperformance of the contract of repair. The court held that the only safe rule is to confine the right to recover to those who enter into the contract. Winterbottom hadn't, himself, contracted with Wright to keep the coaches in repair; he couldn't sue Wright if they broke down, no matter how badly he was injured by the breakdown.

For quite a few years, this was the law. Oh, there was a chip taken here and there, but, essentially, if the plaintiff wasn't privy to the contract—one of the direct parties to the contract—the defendant was home relatively free.

One of the major exceptions to the privity doctrine was the inherently dangerous product. The manufacturer of a poison was held liable to the ultimate consumer when the poison was mislabeled. Because the danger was obvious, the manufacturer owed a duty to everyone, not just to the druggist to whom he sold the product, to properly label the contents. If you used dynamite, you were responsible for every accident, and all damages, caused by the blasting, even though the person hurt was a trespasser. You owe a duty to the world to use dynamite carefully.

Strict privity, however, wasn't —and isn't—completely dead. It is still applied in the case of the breach of an express guarantee, or warranty. Depending on the type of product, and who made what statements, the buyer cannot take action against the original manufacturer. The express warranty is considered part of the inducement to signing the contract of sale, and the seller and the buyer have to thrash that one out themselves. Of course, if the statements were made by the manufacturer in nation-wide advertising, the buyer may have relief on those statements, and he may have action against the manufacturer in that type of case. (But that's a different problem, which we'll go into later.)

Implied Warranty

Privity begins to break down when you consider the implied warranty. There is a warranty that runs with any product, from the manufacturer through any number of intermediates to the consumer, that the product is suitable and usable for the purpose intended. This is the "implied warranty of fitness" concept.

If it's food, or cosmetics, or furniture, there is an implied warranty that they are wholesome and fit for human consumption or use. Here, we have the mouse in a soft-drink bottle; or a substance in the hair dye that injures the scalp; or the chair leg that breaks when you sit on the chair.

There is the implied warranty of fitness that the product has been properly designed, fabricated, inspected, and assembled, and thus is not dangerous when properly used. Here, we've got the very famous — to lawyers, anyway — MacPherson v. Buick case.

In 1911, Donald MacPherson bought a Buick automobile from a dealer. You know the kind—leather upholstery, a lot of polished brass, beautifully grained wooden wheels. Unfortunately, one of the wheels proved defective, and Mr. MacPherson was rather unceremoniously dumped into a muddy street, with a number of injuries. He sued Buick, not the dealer. Judge (later Justice) Cardozo took a major step away from the strict privity concept of Winterbottom when he ruled that the exception to the requirement of privity was not to be limited to poisons, explosives, and things that were dangerous by their inherent nature. "If the nature of a thing is such that it is reasonably certain to place life and limb in peril when negligently made, it is, itself, then a thing of danger." Even though Buick had bought the wheel from a supplier, it had the duty to inspect the wheel, to prevent the imminent danger.

This, then, is the product that is imminently dangerous: It is not dangerous by nature, and, when properly constructed, is safe to be used for the purpose intended; but, when improperly made or assembled, it contains a defect which renders it dangerous, even when used properly and in the manner intended. The manufacturer was to be held to a standard of care, a duty, an implied warranty, such that he must answer to the consumer for improper manufacture, inspection, or assembly.

That was when the product was used as intended. What about misuse?

A farmer lost his eye when struck by a chip of metal that broke off from a hammer. He was connecting a manure spreader to his tractor, using a carpenter's

claw hammer, rather than a ball peen hammer, which he had bought at the local hardware store. Everybody agreed that there were no metallurgical flaws in the forged hammer, nor any defect attributable to the manufacturer. The hammer had merely become work-hardened with use. Nobody said this carpenter's hammer should be used to pound metal. How can you hold the manufacturer? The manufacturer, by offering his hammers for sale at a hardware store in a farming community, guaranteed by implication that they could be used for tasks natural and normal to a farming community. He had the duty to foresee that this type of misuse—pounding metal—would be natural and normal in this type of community.

Negligence Defined

What about protection for the user?

A manufacturer of fork-lift trucks sold several vehicles to a warehouse. Certain safety devices were available for the trucks, such as an overhead canopy guard and a load back rest, designed to protect the operator from falling cargo. They were optional equipment at extra cost. The buyer didn't insist on them, so the manufacturer didn't include them. A load shifted, the operator was injured, the manufacturer paid. Having foreseen a potential danger, and having designed specific equipment to guard against the danger, the manufacturer was guilty of negligence in selling an inherently unsafe product when he did not insist that the safety devices be installed.

Negligence, then, is improper design—the wire rope clips. Negligence is failure to test and inspect properly—MacPherson's Buick. Negligence is failure to foresee, even to foresee misuse, if the misuse is by the normal individual in that particular community—the work-hardened hammer. Negligence is the failure to insist on the safety devices designed to overcome the danger that was foreseen—the fork-lift trucks.

Negligence is also the failure to provide adequate warning of possible danger, even to warn of those latent defects which the manufacturer doesn't, factually, know about! For, you see, the law will presume that a man or a manufacturer, by reason of the profession he practices, must know of **any** defect in his product, even hidden defects. With this legal presumption that he knows of the defect, he has the legal duty to foresee the consequences of the use of his product in this defective condition, and he must warn the world of the consequences. Where the use, misuse, defect could have been foreseen, the law will presume that only the manufacturer's negligence prevented it from being seen!

Example:

Mr. Henningson bought a new automobile. Mrs. Henningson was driving it on a smooth highway, in clear weather. It suddenly went out of control. "Something" had gone wrong with the steering. There were no specifics as to what the "something" was. Just "something." The manufacturer was held liable. The doctrine of caveat emptor imposes a reciprocal obligation on the seller, and recovery of damages does not depend on privity, breach of express warranty, proof of negligence, or on absolute knowledge of the defect. Recovery rests solely on the existence of an injury-causing defect.

As you have seen, the courts are going out of their way to find a breach of warranty, or an actionable negligence—in effect, to relax the requirements of proof, where injury is caused by a defect. Their decisions are wrapped up in legalese, but—effectively—they are finding a strict liability on the part of the manufacturer to exercise not just "due care," but "care, period."

This is modern day products liability laws: strict liability. Without proof of negligence—merely show that the product was defective, and the defect caused the injury.

The Restatement of Torts, the general recommendations of the legal profession in this field of law, justifies the strict liability concept of negligence this way: The seller, by marketing his product, has undertaken a special responsibility to any member of the consuming public who may be injured. Public policy demands that the burden of accidental injuries be placed upon those who market the products, and that the financial burden of these injuries be treated as a cost of production.

Mississippi follows this policy. Texas follows this policy. Louisiana hasn't quite gotten there, but isn't very far away.

In a recent case, finally decided in April of this year, a Louisiana court ruled that, if a defect could have been discovered by the manufacturer by the exercise of **the utmost human skill and foresight**, the manufacturer is negligent for failing to have discovered it.

We've come full circle, to the original definition of a tort: "A breach of the duty to exercise due care." But we've expanded it. Now it reads: "A breach of duty to exercise due care, by the person who should know the degree of care which must be used." And it now defines "negligence," as the Courts are applying that definition.

Application to Engineers

Where does this leave us, as engineers?

For an architect or engineer to be found guilty of malpractice, positive proof has been required

(Continued on Page 22)

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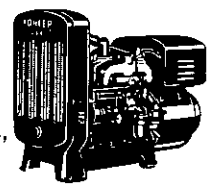

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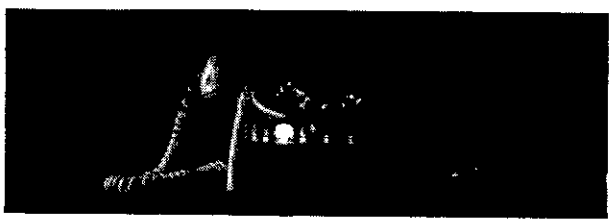

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of his failure to meet the standards of care and skill and judgment normal to his particular profession in the locality where the professional services were performed. But it doesn't take very much imagination to read "engineer" for "seller" in the Restatement, or "technical skill" for "product," so that it reads: The **engineer**, by marketing his **technical skill**, has undertaken a special responsibility to any member of the public who may be injured.

So—we're back to the Revised Civil Code's "negligence, imprudence, or want of skill." They're beginning to run together, and they don't leave very much room for the "judgment" we were talking about originally.

OK, now you've been warned. What can you do about it?

I think, first, that we, as engineers, must understand one fact —**product design safety is not product safety**. Product design safety, in this context, is a function of the factors we've built into the product, to permit it to do its job, to carry its share of the design load. Product safety, however, is the analysis of the product individually, as part of the total system in which it operates, and in conjunction with the operator and his environment, to determine its potential for harm in the very doing of its job, of carrying its share of the load—or by its failure.

Product safety is identified through a systems safety analysis. Now, let's get one thing straight. Just because you're an expert in assigning factors of safety, and calculating safe load and operating parameters, doesn't mean—of itself—that you are an expert in systems safety analysis. Systems safety analysis is a special discipline—and a special art—all of its own. It includes performing a gross-hazard systems analysis, to pinpoint—at the very early stages of a design—those areas which may develop into hazards with final design.

As design progresses, there would be a failure modes and effects analysis—to consider the kinds of failure that may occur, their probability of occurring, and their effect on the overall system. A fault-free analysis will trace the probable progression of the effects of a failure, and will identify failure modes that can cause catastrophic failure. An interface analysis, a maintenance hazard analysis, a packaging analysis, a transportation hazard, a human errors analysis—all facets of the basic systems safety analysis. These are the types of analyses that helped land two men on the moon and return them safely to earth on the first try.

And, yes, these analyses do require computer programming. As engineers, we have improved our analytical tools. We've boasted of our advances in analytical techniques. Everybody believes us. Most important for this discussion, the courts believe us. As long as these complex, long, involved computations could be brushed off with the standard: "It would take 17 men 10 years to cover everything," no one really insisted. Computer efficiency has cut that total computation down to, say, 2 men a day-and-a-half. And if computer time costs $500 an hour, the 36 hours of a day-and-a-half costs $18,000, plus salary. That's not much cost, compared to the awards I mentioned earlier.

But all these analyses, all this computer effort, is meaningless without some scale to measure performance.

Develop, establish, promote standards. Coordinated standards accepted by all of an industry, or all of a specific discipline. Standards against which performance can be measured. They'll not be insurance against a products liability or malpractice suit, but they'll at least give your attorney—and the court—a starting place from which to measure you, or your company, in relation to what the other professionals in your locality or your industry call normal care and skill. But they'll only establish a floor, not a ceiling. Your chances improve as you demonstrate and prove performance, and care, and consideration, above the floor of the standard.

Protect Yourself

How do you demonstrate this type of performance?

KEEP RECORDS! In big red letters! **KEEP RECORDS!** You can't demonstrate the analyses you've made, you can't demonstrate your compliance with standards, you can't **prove** anything without records. Accurate and complete records. From basic research through design trade-offs into the testing program. If you can develop checklists, develop them, and have them signed off and dated as each step is accomplished. If the product has ever failed, even in testing, especially in use, keep a case history—how, where, use, misuse, temperature, pressure, anything, even though it seems irrelevant. And what corrective action was taken on this specific failure. Service records, maintenance records, reject history, process changes, quality control records—I could go on and on. In legal context, they all have meaning. You probably won't have to present a complete, detailed history of all phases, but a selective history will be expected. Assemble the total product history, because you don't really know what will be relevant until you're questioned. This may seem like a lot of paper work, and it is. But the opposition is only trying to prove one thing—your prime concern, as an engineer or as a

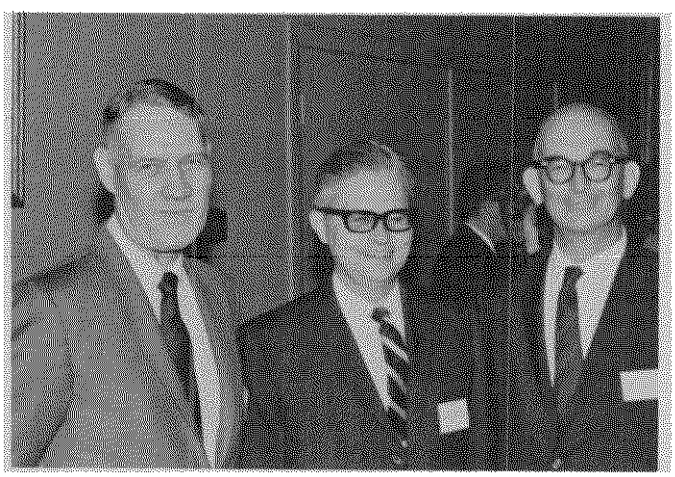
(Continued on Page 25)

NSPE Regional Meetings Photos

REGIONAL VICE PRESIDENT—LeRoy Culbertson, right, regional vice president of NSPE, was photographed during the Early Bird Party. Others, from left, are Guy Seghers, LES New Orleans Chapter President; John F. Vogt, Jr., LES State President; and Charles Smith, Louisiana Department of Commerce and Industry, a guest speaker.

REGISTRATION—Preparing to register for the National Society of Professional Engineers Southwest Regional meeting, above, is Frank Heroy, Jr. Attendance during the combined meeting of the NSPE Southwest and Southeast Regions, held in October in New Orleans, was termed excellent.

INDUSTRY GROUP MEETING—The Professional Engineers in Industry section held a general meeting during the Conference. A few of those attending are shown here.



ENGINEERING LEADERS—Shown above, from left, are John F. Vogt, Jr., LES State President; Pierce Ellis, NSPE President; and Waldemar S. Nelson, LES National Director.

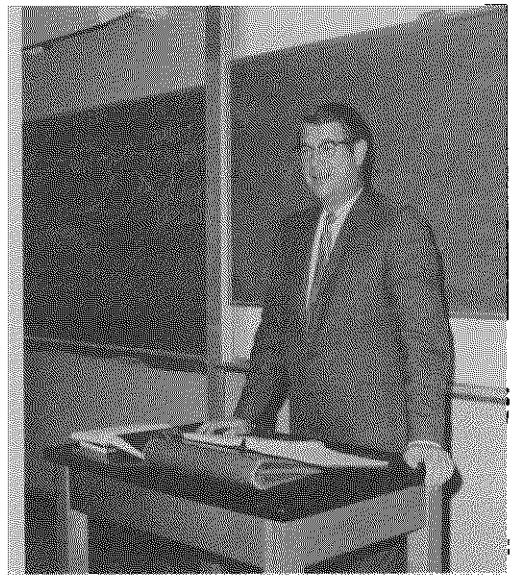
SOUTHWEST MEETING—LES Past President Charles Stokes is pictured addressing a general session of the Southwest Region of NSPE.

Engineering Management Course (Continued)

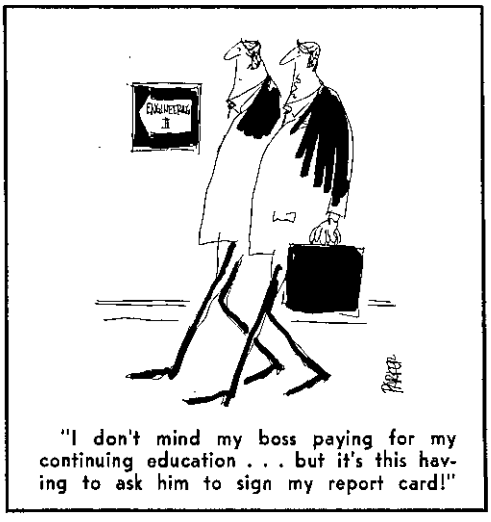
awarded, credit or not, but its value is strengthened by this upgrading of the course to credit standards. Classroom time is now 2 hours and 45 minutes per session, giving more time for discussion. Enrollment per class is limited to 30 students so each student has ample opportunity for personal participation.

The cost is a very nominal $100 tuition, plus text books (about $15 to $20) per semester. Just complete the form and mail it to Hoyt W. Brown, Jr., 513 John Hancock Building, New Orleans, Louisiana 70130, regardless of the area you live in, and we will see that it gets to the proper people for processing.

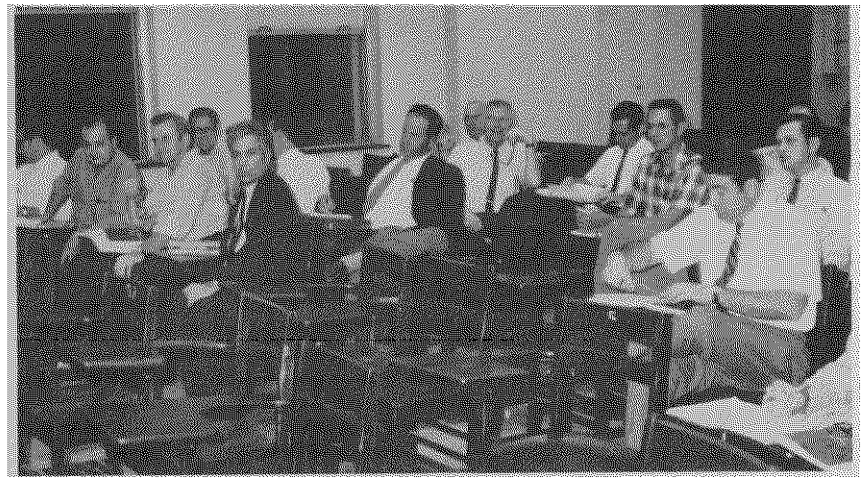
Hoyt Brown, Jr.



Dean Reddoch, the instructor



"I don't mind my boss paying for my continuing education . . . but it's this having to ask him to sign my report card!"



A few of the students

Mail to:

Hoyt W. Brown, Jr.
513 John Hancock Bldg.
New Orleans, La. 70130

I am interested in the LSU-LES Engineering Management Course to be taught in (circle one)

New Orleans — Baton Rouge — Alexandria — Lafayette — Lake Charles — Monroe/Ruston — Shreveport — Thibodaux

I prefer _____ night.

Name: _____

Address: _____

City: _____

Phone Number: _____

company, was your cost, not the public's safety. Let your attorney have the final say as to what's relevant.

One thing of absolute relevance is your language. I don't mean the language you use when you hear you're being sued. I mean your quality and reliability language. Consider the typical juror. He's always known that manufacturers made everything safe—oh sure, there was some minor problem on the car, but the service man took care of that. Then, he heard about the auto recall programs. Now, in court, someone says he has been hurt by a defective product. Hmmm. The plaintiff's attorney questions the engineer, who attempts to explain why no safety analysis was run, why certain variables were not identified as safety critical. And why a sample rate of 50% is adequate. And so forth. And so forth.

Now, the poor juror is lost—almost hopelessly. All he has really heard is "consumer risk," and something about the warranty not requiring 100% reliability. And he's off to the races. Juror translations: "Only certain variables were considered." Their design didn't consider everything! "A sample rate of 50%." They only look, even a little bit, at half the products! And "consumer risk" becomes the "user has to take chances"! And "90% reliability" translates into "10% unreliability." Even a reliability rate of 0.999—1 in 1000—sounds bad to the jury. Which one is unreliable? The first—the 50th—the 879th? So this poor man was hurt by that one—and their production rate was—! ! ! You can see what's coming. Just don't you be there alone when it arrives. At least have a knowledgeable attorney holding your hand.

If you're a manufacturer, watch your advertising. Madison Avenue does a good selling job, but you must admit their enthusiasm sometimes infects even them! Unfortunately, when you don't live up to their claims, you're the one who gets sued. **Don't** use terms like "accident-proof," "fool-proof," or "absolutely safe." "Fail-safe" means that the product won't fail, or is safe even when it fails. If you've simplified the product, don't say that the trade which usually handles such equipment isn't necessary for this version. In all these cases, with all this language, an express warranty has been established between you and anyone who can prove he read the ad. It's hard enough for your attorney to explain the failure itself without having that type of language slapped into the jury's consciousness.

Then—human-type p e o p l e ! Make your instructions simple—by the numbers. You may joke about the instructions for the Christmas toy requiring a Ph.D to interpret, but let the kid get hurt when Pop didn't put it together right because the instructions were poorly written, and see who gets sued!

A warning note will not take the place of safe design—too many people don't read, and the rest all too often misread. Most people won't remember having read your warning, if they read it at all, or even be really aware of the point you're trying to make. Anyway, your warning won't mean anything to the court if a simple alternative would have made the warning unnecessary.

People don't always act as they've been instructed to act, or as the designer wants them to act. They'll frequently not have required training, let alone special training. So, expect your equipment to be misused. Foresee its misuse. You can complain all you want to that television aims its program to the mind of the 10-year-old. But anticipate that as the general level of the people who will use your machine. If their level of intelligence was higher, they'd be the designers, not you! But, if you don't foresee the misuse, I hope you're articulate enough to explain, convincingly, why the misuse was unforeseeable.

Special Warning

For the professional engineer in private practice, a couple of special warnings.

Stay within your own field. If the problem is outside your training and experience, you're not going to become an expert by reading a book the night before. The cost of an expert for consultation is considerably less than the cost to your reputation — and your wallet — for the wrong, or for incomplete, information. And, if you're not an expert in that field, you won't really know whether the information is wrong or incomplete, will you? But an attorney can surely make you pay for the education.

Make sure that your responsibilities are clearly defined. Just what you are expected to do, and what you are not expected to do. Your estimates are just estimates, not firm price figures. You'll review drawings for compliance with the design specs, not to guarantee that the fabrication will be complete and correct. You'll inspect and supervise the work in progress, but as the owner's representative, not as contractor's engineer. You will not be responsible for the construction or installation techniques and procedures employed by the contractor and his subs—your only concern is that the finished product complies with the plans and specs. Have your attorney check the language of the contract to make sure it says what you think it says. The owner has his own attorney to protect him, not you, and he'll have the court tell you what the contract says, if there's any doubt.

(Continued on Page 26)

JEWELRY DESIGN CONTEST

Win your free dues for LES next year!

Any grade member can submit an entry.

Submit a sketch of what you think would be a distinctive lapel emblem. Your sketch should be large enough for clarity; however, keep in mind that when it is reduced to small lapel size it will lose considerable detail.

The sketch must be received in the state LES office, Box 2683, Baton Rouge, Louisiana 70821, not later than April 10, 1970.

The Board of Direction will decide if any of the sketches submitted warrant the award of the free dues.

Your Society has at present an emblem that is about ⅝" in diameter with blue background and gold lettering. This size is considered to be too large and the design non-distinctive to be in style for today's wear. You may not remember having ever seen one of these emblems. Therefore, it is thought that someone may come up with a clever or distinctive emblem that would be worn by more of our members.

GET TO WORK ON YOUR ENTRY NOW!

Forensic Engineering con'td

Finally, for all of you—manufacturer, rep, and consultant.

Get to know your attorney. He'll try to keep you out of trouble, or he'll try to get you out of the trouble you're in — which you probably wouldn't be in if you'd seen him in the first place. You're only complicating your life and his job if you hit him with a cold, disembodied problem.

Legalities aside, the entire problem in the products liability field of law, gentlemen, is simply that we are engineers. We, and our works, are always on display. The public knows us, and, generally, trusts us. That's why they're harder on us if we fail them. A former president said it more eloquently than I can ever hope to:

"The great liability of the engineer is that his works are out in the open where all can see them. His acts, step by step, are in hard substance. He cannot bury his mistakes in the grave like the doctors. He cannot argue them into thin air, or blame the judge, like the lawyers. He cannot, like the politicians, screen his shortcomings by blaming his opponents and hoping the people will forget. The engineer simply cannot deny he did it. If his works do not work, he is damned."

TULANE ENGINEERING

A newly established board of advisors has been appointed for the Tulane School of Engineering.

The board, composed of 21 alumni of the school, will advise in programs to strengthen the financial position of the school, assist in establishing a separate professional school of engineering, and promote closer liaison between industry and the school.

Waldemar S. Nelson, president of the Waldemar S. Nelson Inc. engineering firm of New Orleans, and a National Director of the Louisiana Engineering Society, has been named president of the board.

Serving as vice president is Henry F. LeMieux, president of Raymond International, Inc., New York. Robert H. Boh, president of Boh Brothers Construction Co., New Orleans, has been named secretary-treasurer.

Dr. Lee H. Johnson, dean of the Tulane School of Engineering, said the school has begun implementation of its plan for reorganization as essentially a self-contained unit.

Under the plan, the school will administer its own graduate program, develop further relationships with industry, and teach with its own faculty the required courses engineering students have normally taken in the College of Arts and Sciences and Newcomb College for women.

Pigeon Used To Transport Computer Data

RUSTON—Although computer scientists today talk about information processing time in terms of nanoseconds (billionths of a second), the Penta Computer Associates, Inc., New York City, recently used an information method older than Biblical days to communicate with the Computer Science Department at Louisiana Tech.

Penta Associates shipped a carrier pigeon by air express to Professor H. L. Henry, head of Tech's Computer Science Department, with a request for certain information about computer science at Tech.

The information was recorded on a piece of very lightweight paper and placed in a tiny capsule attached to the leg of the pigeon.

The pigeon, taken outside of Bogard Hall on the Ruston campus and released, promptly flew right back to Bogard Hall, and only after considerable effort by several faculty members was the pigeon persuaded to go outdoors and begin its flight to New York.

Whatever the final conclusions of the computer, Tech engineering students are betting their bird will reach New York ahead of any mail headed in that direction.

But the faculty members who had trouble persuading the pigeon to leave the safe confines of Bogard Hall are reported less confident about its final destination.

(Reprinted from MORNING ADVOCATE, Baton Rouge, La.)

NEW MEMBERS

BATON ROUGE

Tommie A. Purifoy, P.E.
3421 Warren Drive

Gerald L. Ray, P.E.
10150 Oliphant Rd.

BAYOU

Michael G. Burke, P.E.
204 Harding Dr.
Houma, La. 70360

LAFAYETTE

Joseph J. Dillenkoffer
408 Holden Ave.

LAKE CHARLES

Nix O. Bodden, P.E.
4712 Pine Bluff Dr.

NEW ORLEANS

Gerard J. Becker
3316 Purdue Dr.
Metairie, La. 70003

Eugene A. Brian, P.E.
2396 Beck St.

Roy A. Giangrosso
317 Baronne St.

Frederick P. Glassman, P.E.
5208 Green Acres Ct.
Metairie, La. 70003

Carl W. Mangus, P.E.
232 Cottonwood Dr.
Gretna, La. 70053

SHREVEPORT

S. H. Edwards, Jr.
1547 Summers
Harold T. Holland
746 Navaho Trail
Ellis D. Rustand, P.E.
176 Chelsea Dr.

IN MEMORIAM

Dwight L. McCray, age 46, Registered Professional Engineer, Electrical, a member of the Louisiana Engineering Society, died November 4, 1969.

Mr. McCray, a native of Kentucky and a graduate of University of Kentucky, had resided in New Orleans for the past 13 years.

He had worked many years in South Louisiana in sales and service to the oil companies.

Mr. McCray was active in many professional groups.

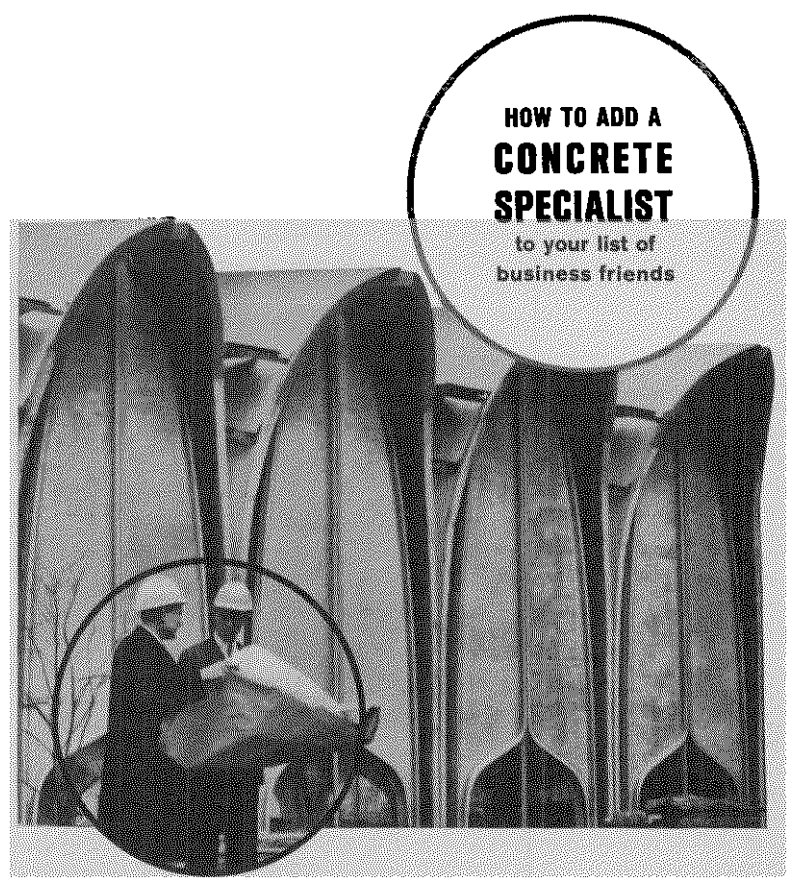
He is survived by his wife, Jean Mossman McCray, one son, Bill, a student in engineering at Tulane and a daughter, Sandra, a freshman at L.S.U., Baton Rouge.

NEW ENGINEERS

PROFESSIONAL ENGINEERS GRANTED REGISTRATION
October 21, 1969

By the Louisiana State Board of Registration for Professional Engineers and Land Surveyors

Anderson, Walter E.—Mechanical
Tyler, Texas
Baker, W. J. B.—Civil
Jackson, Miss.
Baldini, Richard F., Jr.—Mechanical
New Orleans, La.
Becker, Robert J.—Civil
Metairie, La.
Boatwright, Eddie C.—Civil
Holly Springs, Miss.
Broadus, Billy J., Sr.—Civil
Beaumont, Texas
Brown, Perry S.—Electrical
New Orleans, La.
Bugg, John C., Jr.—Civil
New Orleans, La.
Burchard, Robert E., Jr.—Mechanical
Baton Rouge, La.
Carrillo, Edwin F.—Civil
New Orleans, La.
Chaney, William R.—Civil
Kansas City, Missouri
Chang, James K.—Civil
Houston, Texas
Cohen, Eli W.—Civil
Evanston, Illinois
Colson, Stanley R.—Mechanical
New Orleans, La.
Cox, Eugene R., Jr.—Chemical
Baton Rouge, La.
Culpepper, Charles E., Jr.—Mechanical
Violet, La.
Dobbs, Roy E.—Mechanical
Beaumont, Texas
Edington, Donald M.—Civil
Ruston, La.
Elmer, S. Lewis, Jr.—Mechanical
St. Louis, Missouri
Eustis, Joseph Bres, Jr.—Mechanical
New Orleans, La.
Flower, Harry W.—Mechanical
Dallas, Texas
Gates, William F.—Civil
Carthage, Texas
Gill, Robert L.—Chemical
Salisbury, North Carolina
Green, Kenneth F.—Mechanical
Houston, Texas
Gross, Thomas J.—Electrical
Shreveport, La.
Hager, James W.—Mining
Carlsbad, New Mexico
Hampton, Thomas J.—Electrical
Baton Rouge, La.
Harrison, Otto R.—Petroleum
New Orleans, La.
Hildebrandt, Warren—Petroleum
Lafayette, La.
Holmes, Harlan T.—Electrical
Little Rock, Arkansas
Hudson, Gary L.—Civil
Morgan City, La.



To help builders, engineers, and architects who face special problems in concrete technology, the Portland Cement Association maintains a staff of more than 375 field engineers. They work out of 38 district offices, serving the U.S. and Canada. Each is a specialist on the use of concrete. They are close at hand to any jobsite—available whenever you need technical information or guidance in any phase of concrete construction. Their own broad experience is backed by the PCA headquarters organization and the world's largest facilities for concrete research. More than 500 PCA publications and over 100 films are available for study. The job of the PCA field engineer is service, and it is available to every cement user, large and small.

PORTLAND CEMENT ASSOCIATION
1130 International Trade Mart, New Orleans, La. 70130
An organization to improve and extend the uses of portland cement and concrete

Johnson, Glenn—Civil
New Orleans, La.
Jureit, John C.—Civil
Coral Gables, Florida
Kauffeld, Theodore J.—Mechanical
Convent, New Jersey
Kimbel, John F.—Civil
Chappaqua, New York
Kispert, Merland B.—Mechanical
St. Paul, Minnesota
Kleinpeter, Sidney H.—Electrical
Greenville, Texas
Lanier, E. Sorrell, Jr.—Civil
New Orleans, La.
Lara, George A.—Chemical
Duncan, Oklahoma
Lazarre, R. Adrian—Chemical
Houston, Texas
Leachman, George S.—Chemical
Houston, Texas
Lindsey, Stanley D.—Civil
Nashville, Tenn.
Logan, Richard T.—Civil
Natchez, Miss.
Longo, Salvador E.—Electrical
Metairie, La.
McClintock, David C.—Electrical
Barrington, Illinois
McCue, John M.—Civil
Springfield, Illinois
McRay, Thomas N.—Civil
Baton Rouge, La.
Meacham, James R.—Mechanical
Monroe, La.
Needham, Clyde A.—Civil
Birmingham, Alabama
O'Flaherty, Hugh P.—Civil
Jackson Heights, New York
Peterson, Nikolai—Civil
Metairie, La.
Rappaport, Robert—Electrical
Houston, Texas
Reed, Robert R.—Civil
Alexandria, La.
Ribas, Jorge J.—Agricultural
Baton Rouge, La.
Richardson, John W.—Agri. & Mech.
Colfax, La.
Robb, Kenneth A.—Civil
Sulphur, La.
Rollins, Albert W.—Civil
Arlington, Texas
Russell, Robert M.—Civil
Alexandria, Virginia
Schuck, Kenneth L.—Civil
Little Rock, Arkansas
Smith, Homer W.—Mechanical
Arabi, La.
Smith, Lester H., Jr.—Electrical
Nashville, Tenn.
Sorensen, Svend A. K.—Civil
Canoga Park, Calif.
Taliancich, D. Paul—Electrical
Chalmette, La.
Tan, Tiong Siew—Civil
New Orleans, La.
Wagner, Gerald C.—Mechanical
South Euclid, Ohio
Webb, H. Dale—Civil
Marietta, Ohio
Weber, Eric K.—Civil
Bel Air, Maryland
Webre, Desire J., Jr.—Civil
Baton Rouge, La.
Wester, W. Addison, Jr.—Civil
Waller, Texas
Worrell, James D.—Civil
Baton Rouge, La.
Crow, Billy D.—Land Surveyor
Baton Rouge, La.
Gallup, John E.—Land Surveyor
Jonesville, La.
Stelly, C. J. Jack, Sr.—Land Surveyor
Lafayette, La.

PROFESSIONAL ENGINEERS GRANTED REGISTRATION

November 18, 1969

By the Louisiana State Board of Registration for Professional Engineers and Land Surveyors

Askins, James A.—Chemical
Baton Rouge, La.
Bonner, Joseph C.—Mechanical
Meraux, La.
Chisholm, Daniel—Mechanical
Pampa, Texas
Christenson, Carl E.—Civil
Gretna, La.
Edwards, Stacy W.—Civil
Dallas, Texas
Garretson, Malcolm M.—Chemical
Baton Rouge, La.
Jackson, John W., Sr.—Civil
Decatur, Georgia
Valeur-Jensen, Werner—Civil
Stamford, Connecticut
Judd, James H.—Mechanical
Birmingham, Alabama
Krupp, Gerald J.—Mechanical
Florissant, Missouri
Lang, Marlon C.—Electrical
Lugoff, South Carolina
Miller, Dick M.—Civil
Houston, Texas
Phillips, Glenn F.—Electrical
Metairie, La.
Smith, John S.—Civil
Baton Rouge, La.
Smyser, Craig—Civil
Dallas, Texas
Spencer, Thomas H., III—Civil
Jackson, Miss.
Stapel, Melvin G.—Civil
Menomonee Falls, Wisconsin
Terrell, Walter L., Jr.—Mechanical
Baton Rouge, La.
Zack, Allen L.—Civil
Baton Rouge, La.

MEMBERSHIP CONTEST STANDINGS

RULES OF THE CONTEST

1. A Chapter must reach its 10% quota to qualify as the Contest winner.

2. The Chapter with the greatest percentage increase, based on application and reinstatement requests received by the state LES office through the week prior to the June annual meeting will be the winner. Transfers into a Chapter or grade changes will not be counted as part of the quota. Students upon graduating will be counted for a Chapter only if the Chapter gets them to fill out an Application form with up-dated information and, also, if they reside in the Chapter's Area.

Standing	Chapter	Quota	Applications	Percent
1	Bayou	4	6	150.000
2	Lake Charles	13	8	61.538
3	Alexandria	13	5	38.462
4	Shreveport	21	8	38.095
5	New Orleans	79	28	35.443
6	Monroe	15	4	26.667
7	Baton Rouge	56	14	25.000
8	Lafayette	16	2	12.500
	TOTALS	217	75	34.562

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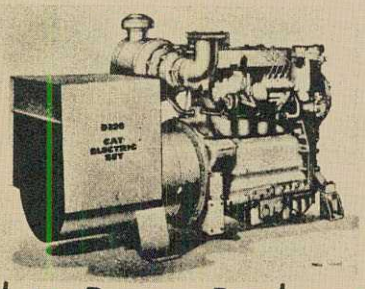

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Minutes of the LES Board

September 20, 1969, Holiday Inn, Alexandria, La.

President Vogt called the meeting to order with the following Board members present: C. P. Barnard, P.E.; Hoyt Brown, P.E.; Fred C. Culpepper, P.E.; Kenneth E. Deal, P.E.; Willie E. McGough, P. E.; H. L. Henry, Jr., P.E.; T. J. Hogue, Jr., P.E.; John Livingston, P.E.; James L. Meyer, P.E.; Lamon L. Moody, Jr., P.E.; S. J. Richard, P.E.; Richard See, P.E.; Guy J. Seghers, Jr., P.E.; A. J. Szabo, P.E.; and Jack Thigpen, P.E. Also present were: Farrell W. Adams, P.E.; R. M. Clawson, P.E.; Ronald P. Cressy, P.E.; John Dengel, P.E.; Earl S. Dobbs, P.E.; O.J. Futch, P.E.; Larry Grundmann; George Heller, P.E.; Dudley Hixson, P.E.; James S. Janssen, P.E.; F. L. Larue, Jr., P.E.; Don Metzger; Thurman C. Morgan, P.E.; John W. Roach, Jr., P.E.; Rod M. Singleton, Jr., P.E.; T. C. Stagg; Robert B. Sylvester, P.E.; George A. Vollman, P.E., and Gerald A. Simmons, Executive Secretary.

Minutes of the Board of Direction meeting of July 25, 1969 were corrected and approved. The motion for approval was made by Mr. Culpepper, seconded by Mr. Deal and passed.

Financial Report—The financial report for the months of July and August was given by Mr. Thigpen. Total receipts through August, year to date, were $3,299.56 and expenses $10,808.79. Mr. Hogue moved the report be accepted. The motion was seconded by Mr. Szabo and passed.

COMMITTEE REPORTS

Public Relations—Mr. Ronnie Cressy, chairman, reported his committee would concern itself this coming year with increasing the advertising for the LOUISIANA ENGINEER. The committee plans to assign quotas to each chapter and urge them to do all possible to reach their quota of advertising. Each chapter that sells an ad will be paid 15% commission to help defray chapter expenses.

Legislative—Mr. Moody, chairman of the legislative committee, reported chapter legislative committees were in the process of meeting with the congressmen from each district to discuss issues pending in the Congress of interest to engineers. Some chapters have already met with their congressmen and others have tentatively scheduled meetings.

The committee discussed the possibility of a study of the state registration law for engineers. Some members of the committee expressed a feeling that the whole law should be reviewed. Mr. Vogt stated the Liaison Committee is the clearing house for all recommendations of the committees.

Mr. Vogt reported the deans from four colleges and universities have a letter drafted for state legislators expressing their opposition to the encroachment of architects into the engineering profession. The Legislative Committee may wish to discuss this issue when they meet with legislators in the future, and perhaps include the deans when discussions with the legislators take place.

Ethics and Professional Conduct—Mr. Earl Dobbs, chairman of the committee, reported an excellent attendance at the meeting. He discussed the use of competitive bidding on projects and reported that after further study a report would be made to the board. The matter of engineers performing work on a contingency basis was discussed. No decision was reached; the committee will attempt to report back at the next board meeting.

Honors and Awards—The committee urged all chapters to become more active and make recommendations for the five L.E.S. awards available to eligible engineers and engineering firms. The committee will also encourage participation in NSPE award programs.

Engineering Education—Mr. Hoyt Brown reported the committee met with representatives present from engineering schools in the state and charged them to give the committee the needs of the schools. Represented were Frank Graves, L.S.U.; Ed Williamson, Tulane University; Bob Price, La. Tech and Richard See of Lake Charles.

Mr. Brown reported that the Engineering Management courses are in full swing. The reception has been excellent. L.S.U. will now give credit for the completed course, another incentive to encourage engineers to participate. Mr. Brown stated the program is available to all chapters in the state and if any were interested, to contact him or the L.E.S. office.

The committee extended their congratulations to Dr. Tom Leary, former Dean of the College of Engineering, recently appointed President of McNeese State College.

Membership Committee—Chairman Larry Grundmann stated there were five chapters present to discuss membership activity of L.E.S. He reported the following contest standings:

Position	Chapter	Quota	Applications	% Quota
1	Bayou	4	2	50.000
2	Shreveport	21	6	28.571
3	Alexandria	13	3	23.077
4	Monroe	15	3	20.000
5	Lake Charles	13	2	15.385
6	New Orleans	79	12	15.190
7	Lafayette	16	2	12.500
8	Baton Rouge	56	4	7.143
	Totals	217	34	15.668

Mr. Grundmann urges chapter membership chairmen to activate their committees and get new members.

Vocational Guidance—Mr. Henry, acting chairman, reported Dr. Holstead has agreed to accept the chairmanship of this important committee. Mr. Henry discussed the need for vocational guidance. He encouraged the establishment of JET programs throughout the state.

Inter-Society Relations Committee—Chairman John Roach reported he will be contacting all of the committee members since they were not able to attend the Alexandria meeting. He reviewed the responsibility of the committee with the Board and stated he would be working with other existing committees to coordinate activities of each.

Engineering Technicians—Mr. Rod Singleton reported for Chairman Battle. The National Organization of Certified Engineering Technicians now has 208 members in Louisiana. The committee is working to have the exam necessary to become a Certified Engineering Technician given in Louisiana. A number of areas have offered their facilities for the testing program but to date no action has been taken. Shreveport is interested in forming an ASSET chapter of engineering technicians. Twenty-five members are needed to form such an organization.

Young Engineers—Chairman George Heller reported on last year's activities in encouraging young engineers to become active in L.E.S. He urged all chapter presidents to activate a Young Engineers Committee in their area and work with the young engineers.

Liaison with State Board—Chairman James Janssen reported his committee did not meet but will be discussing in the near future nominations to be submitted to the Board of Directors for appointment to the State Board of Registration by the Governor. He also reported his committee would concern itself with a report to the Board on the study committee activities of the committee studying the land surveying changes to the registration law.

Statewide Meetings—Mr. T. J. Hogue reported he had met with representatives of the Mississippi Society of Professional Engineers to discuss the possibility of a joint meeting. They were most receptive and would be pleased to be the guests of L.E.S.

Motion by Mr. Hogue, seconded by Mr. Livingston, "that M.E.S. be invited to meet with L.E.S. as our guest at the Spring Meeting in New Orleans in 1970." Motion passed.

SECTION REPORTS

Professional Engineers in Education—Mr. H. L. Henry discussed the bylaws of the Education section and asked approval of the Board so that the section will have an operating procedure. Mr. Adams, chairman of the Constitution and Bylaws committee, suggested further study on the proposed bylaws before acceptance by the Board of Directors.

Mr. Henry stated his section would be working with the P.E.I. Section to attempt to find a solution to problems in education as it relates to providing engineers with employment in industry.

Professional Engineers in Government—Mr. Frank Heroy reported their meeting was well attended. The following recommendations were made: (1) a $2.00 annual fee would be assessed each P.E.G. member to cover expenses. (2) If the engineering registration law is to be revised for land surveyors, then the entire law needs to be revised. (3) The section is opposed to the Land Surveyors bill as it is presently written.

Professional Engineers in Industry — Chairman Sylvan Richard encouraged all chapters to submit recommendations to L.E.S. for the NSPE Industrial Professional Development Award.

The section urged the Liaison Committee to report to the State Board on the question of changes in the registration law as recommended by the P.E.I. Section at its last meeting.

Chairman Richard stated the P.E.I. and P.E.E. Sections will meet jointly at the October 23rd meeting of NSPE in New Orleans. The purpose of the meeting will be to discuss the educational needs of engineers preparing for employment in industry.

Professional Engineers in Private Practice—Chairman Moody reviewed the issues discussed by the Section and recommended the policy statements attached be considered by the Board of Directors at its next regular meeting.

Finance Committee Report—Mr. J. J. Thigpen, Secretary-Treasurer of L.E.S., reviewed the financial state of the Society since 1965. He presented charts that showed a downward trend in member net worth. Even though the membership has increased 24% from 1965 through mid 1969, the net worth of the society has decreased. Expenses have exceeded income each year during the above-mentioned period with the exception of one year. This was the year of the dues increase. For this reason, the Society has had to use funds over the years to meet operating expenses.

He reviewed an analysis of expenditures showing cost of services to members, rebates to chapters, publication expenses, statewide meeting costs and other services.

In the fiscal year ending June 30, 1969, the cost per member for all services rendered by the Society, not including statewide meetings, publications, and rebates, was $4.35 per member above funds received for dues.

The committee recommended the following steps be taken:

(1) Dues for members and affiliates be raised in accordance with the following schedule:

Member	$25.00
Jr. Member	12.50
Affiliate	27.00
O.S. Member	13.00
O.S. Jr. Member	7.50
O.S. Affiliate	13.00
Priv. Member	5.00

(2) A careful analysis of profit for the publication be watched and if it falls below $2,000 per year, that cost of advertising be increased to maintain this level of profit.

(3) Beginning with the next dues year, rearrangement of rebates to chapters as follows: $3.00 per full member and affiliate member instead of $4.00 per member, which is now being paid, with a minimum rebate of $500.00 per chapter. No change in Junior member rebates. (This recommendation will result in a reduction of rebates of approximately $1,600.00 to the chapters and an equal increase to the State Office.)

(4) Eliminate rebates to chapters for the first year of membership on new membership only to eliminate pro-rating of dues to chapters in accordance with the recommendation of the auditor.

It was moved by Mr. Thigpen, seconded by Mr. Culpepper, "that the report of the finance committee be accepted."

Mr. Barnard questioned the recommendation changing chapter rebates. He stated this money was used by his chapter to communicate with members and may work a hardship.

Mr. Deal suggested chapters could collect dues from members for chapter use over and above L.E.S. dues for support of chapter programs.

Mr. Thigpen stated the recommendations on chapter rebates is for a one year period only and could be revised again next year.

Mr. Culpepper suggested each chapter study the financial situation of L.E.S. and assist in informing the members of the need for additional funds. Question was called for on the motion. Motion passed.

Mr. Szabo moved, seconded by Mr. Brown, "that recommendation No. 4 of the finance committee report be instituted immediately." Motion passed.

A motion by Mr. Brown, seconded by Mr. Culpepper, "that recommendation No. 3 be adopted effective this coming membership year." Motion passed.

Mr. Vogt stated the society had received the necessary petition to begin implementation of recommendation No. 1.

Policy Statement—Mr. Vogt reviewed the policy statement mailed to all board members in accordance with the Constitution.

Motion by Mr. Brown, seconded by Mr. Moody, "that at the appropriate time L.E.S. notify N.S.P.E. and the PEG Board of Governors of the Society's opposition to federal registration of engineers." Motion passed.

NEW BUSINESS

Mr. Simmons reviewed two applications for membership reinstatement. Motion by Mr. Culpepper, seconded by Mr. Henry, "that the two nominees applying for reinstatement into the Society be accepted." Motion passed.

Mr. Simmons stated that the new members as published in the August issue of the LOUISIANA ENGINEER have been accepted into the Society.

Mr. Vogt requested action by the Board on an expenditure by the Ladies Auxiliary for printing cost of the yearbook.

Motion by Mr. Culpepper, seconded by Mr. Brown, "that the expenditure of $299.88 be approved for the yearbook, but in the future such expenditures be submitted in time for consideration by the budget committee and included in the next year's budget." Motion carried.

Mr. Vogt read a letter suggesting New Orleans be the site of the 1973 N.S.P.E. Annual Convention. The Board of Directors suggested action be deferred until the next board meeting.

The next board meeting of the Society will be held October 24th at the Fontainebleau Hotel in New Orleans in conjunction with the Southwest-Southeast Regional Meeting.

There being no further business the meeting was adjourned.

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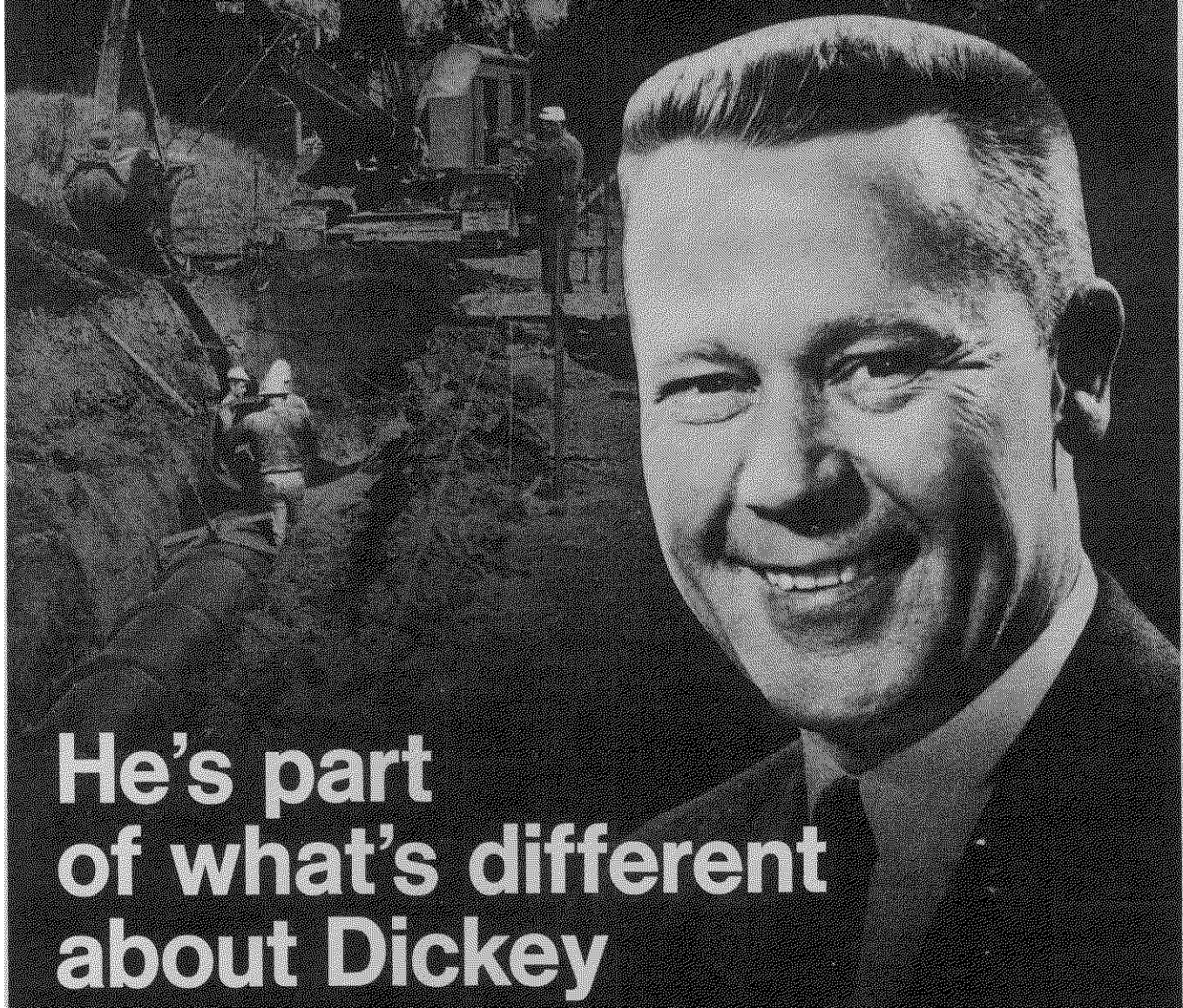
The field engineer with mud on his shoes



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