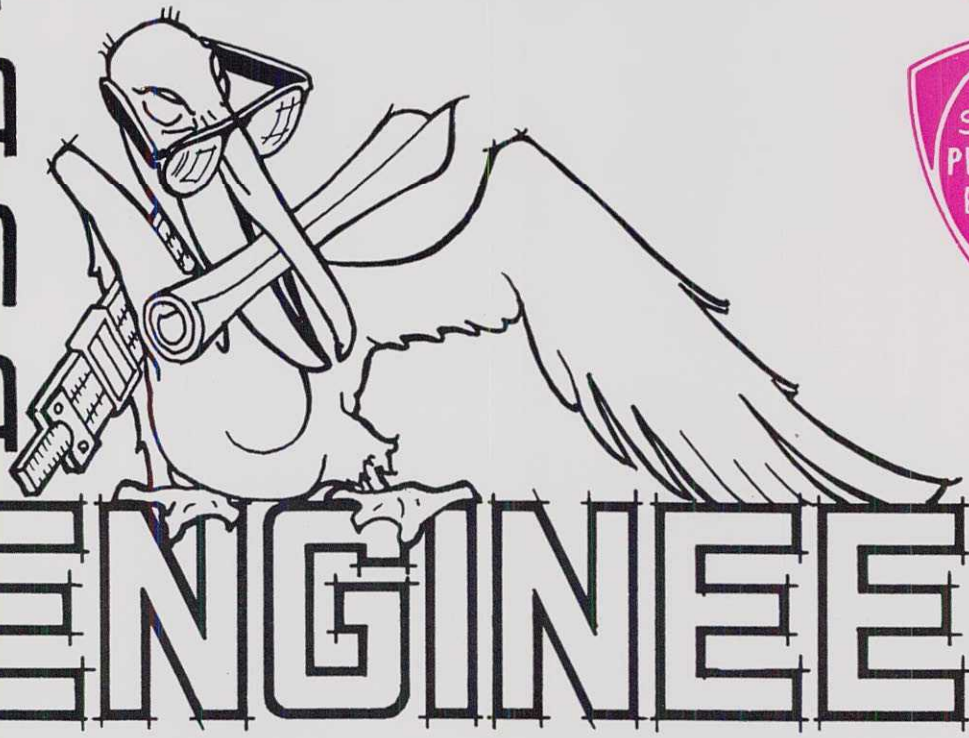
the LOUISIANA ENGINEER





LOUISIANA ENGINEERING SOCIETY 1898

LOUISIANA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

ENGINEERS JOINT COUNCIL EJC

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

Vol. 46 No. 1
February, 1960

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THE LOUISIANA ENGINEER

Vol. 46 February, 1960 No. 1

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William H. Rhodes ..... ***Editor***
Warren K. Bankston ..... ***Business Manager***

Publication supervised by
ALLEN JOHNSON & ASSOCIATES
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The Louisiana Engineering Society and the Louisiana State Board of Registration for Professional Engineers and Land Surveyors do not guarantee the accuracy of statements made or necessarily concur with opinions expressed in this publication.

OUR COVER: Edward A. McLellan (left), newly-installed president of LES, is shown at General Interest Program of Annual Meeting, one of many occasions at which he will preside during coming year. Here he introduces Stephen S. Roszel, Jr., J. Ray McDermott & Co., Inc., who presented a color film before a capacity crowd at the Engineers Club (For other Annual Meeting photos, see pages 7, 16-18).

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We feel that you, as a reader of The Louisiana Engineer, are entitled to a measure of service beyond the mere presentation of engineering articles and news.

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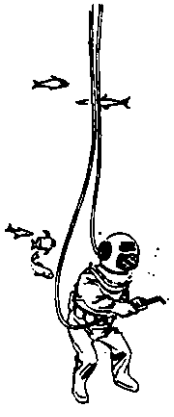

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Louisiana Engineering Society

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Ben T. Bogard, First Vice-President, 36 University Drive, Ruston.
James S. Janssen, Second Vice-President, 317 Baronne Street, New Orleans 9.
John P. Fernandez, Secretary-Treasurer, 522 Crystal St., New Orleans 24.

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Louis Duclos, 4328 Hyacinth Avenue, Baton Rouge.
Frank Riess, 1222 State Street, New Orleans 18.
Roy T. Sessums, P. O. Box 1520, New Orleans 5.
Calvin T. Watts, 506 Centenary Drive, Baton Rouge.

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La. Engineering Society

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, Monday, November 9, 1959

The meeting was called to order by President Sessums with Messrs. Alexander, Bogard, Duclos, Durning, Janssen, McLellan, Riess and Fernandez present. Messrs. Andrew M. Moore of Alexandria and Allen Johnson, Public Relations Counsel, also were present by invitation. Dean Bogard moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Alexander and carried.

A report from Mr. W. S. Nelson, Chairman, Honors & Awards Committee, was read, after which Mr. Duclos moved that the report be accepted and the society's medal awards for 1960 be made as follows:

Civic Activities—Andrew M. Lockett Award to Mr. Franklyn G. Hornsby.

Technological Accomplishment Award to Mr. Robert J. Kuhn.

A petition to present Honorary Membership to Mr. William H. Rhodes was presented and Mr. Durning moved that it be approved and referred to the Honorary Membership Committee for final action. Motion seconded by Mr. Riess and carried unanimously.

Mr. Riess, Chairman of a special committee appointed for the purpose, submitted the names of possible appointees to fill a vacancy on the State Board of Registration. Mr. McLellan moved that the entire list be submitted to the Governor after determining the willingness of the persons named to serve. Motion seconded and carried.

The secretary reported that 484 ballots had been received in the last membership election and that all candidates named therein had been elected to their respective grades. (Copy of ballot is attached to these minutes.) However, since Mr. Gail Reininger cannot be located at the address given, his election is hereby considered void.

Mr. Allen Johnson, Public Relations Counsel, briefly outlined the proposed Engineering-Law Seminar to be sponsored jointly by the society and the Louisiana State Bar Association.

The treasurer presented a financial report for the 1st three quarters of 1959. Dean Bogard moved that it be accepted, seconded by Mr. Riess and carried. The secretary then read the following correspondence:

Note from Mrs. Allan Dusenbury thanking the society for flowers sent.

Letter from Mr. J. M. Fourmy informing the board of the current status of a pending lawsuit.

Correspondence between President Sessums and the firm of Helm, Simon, Caffery and Duhe concerning corporation practices under the Louisiana Engineering Registration Act.

Letter of thanks from L. R. Tinto, Jr., the L.E.S. scholarship recipient at Tulane University.

The matter of NSPE Functional Sections was discussed and Mr. Duclos moved that the following be appointed to study the feasibility of forming such sections:

Tom C. David	A. C. Thigpen
E. M. Freeman	John P. Tucker
Z. L. Loflin	Calvin T. Watts
W. S. Nelson	M. G. Zervigon

The motion was seconded by Dean Bogard and carried, whereupon President Sessums appointed Mr. Duclos to sponsor the committee and serve as liaison with the board.

Discussion followed on implementation of the resolution passed by the Board in September. President Sessums reported that he had met in Baton Rouge with Messrs. Watts, Jackson and McDougall, representatives of the State Department of Public Works, Highway Department and Civil Service Department respectively, to discuss the possibility of establishing a sub-professional Grade 5 in the state civil service system. Mr. McDougall advised that such a grade could not be established until its need has been proven and that it is neither the purpose nor the function of civil service to establish new grades to relieve pressure on other boards.

Mr. McLellan moved that the election of Mr. C. W. Robertson be declared void since he has not accepted his membership by a payment of dues. Motion seconded by Mr. Riess and carried.

Messrs. William H. Rhodes and Charles Bittenbring III were appointed chairmen of committees of their own choice to prepare memorial resolutions honoring our lately deceased members, Allan T. Dusenbury and Alfred J. Roth, Jr., respectively.

The matter of selecting a recipient for the society's annual Certificate of Appreciation was discussed and Mr. Janssen moved that a committee consisting of the first and second vice-presidents be named to select a recipient for this honor. Motion seconded by Mr. Riess and carried.

Mr. Duclos moved that the constitutional amendment raising annual dues of local and state members to $25.00 and $23.00 respectively be presented at the society's general meeting and, if favorably received, be submitted to the membership at large for vote by means of letter-ballot. Motion seconded by Mr. Riess and carried.

It was decided that the next board meeting would be held at 4 p. m. to allow more time to dispose of business. The meeting then adjourned so that the society's regular meeting could begin on time.

Minutes of Meeting of the Board of Direction held on Monday, December 12, 1959, at the Engineers' Club, New Orleans

The meeting was called to order by President Sessums with Messrs. Bogard, Duclos, Durning, Janssen, McLellan, Riess and Fernandez present. Messrs. William A. Baker and Pierre Stouse of the Committee for Engineers' Week, and Mr. Allen Johnson, Public Relations Counsel, also were present by invitation.

The order of business was dispensed with so that Messrs. Baker and Stouse could be heard. They proposed the publication of a newspaper supplement in commemoration of National Engineers' Week, to appear on the Sunday preceding the scheduled observance. They advised that the local newspaper would be willing to prepare the supplement provided a letter is mailed to the membership stating that the society has requested its publication. The newspaper would handle solicitation of advertising matter, and if sufficient ads were obtained there would be no cost to the society.

After some discussion Mr. McLellan moved that Messrs. Baker and Stouse be commended for their suggestion, which has much merit, but that the proposal be declined for the reason that it would be financially detrimental to the efforts now being made to secure advertising for THE LOUISIANA ENGINEER. Motion seconded by Mr. Janssen and carried.

Mr. Duclos moved that minutes of the November meeting of the Board be accepted as corrected, seconded by Mr. Riess and carried.

The secretary announced that 391 ballots had been received in the constitutional amendment vote and that the proposed increase in dues for NSPE members had been carried by a vote of more than 2 to 1 (67½%)

President Sessums reported that the Honorary Membership Committee had been polled by letter-ballot and more than 90% of the ballots mailed had been returned in favor of the election of Mr. Wm. H. Rhodes to Honorary Membership. Since the board previously had approved his nomination, Mr. Rhodes' election was acknowledged and the secretary was instructed to prepare a certificate for presentation at the Annual Meeting.

The secretary then read a report of the Nominating Committee proposing the following slate of officers for 1960:

For President.....Edward A. McLellan
For First Vice-President.....Ben T. Bogard
For Second Vice-President.....James S. Janssen
For Director for 2 Years.....Chris Demopulos
For Director for 2 Years.....Calvin T. Watts

Mr. Duclos moved that a position of Assistant to the Secretary-Treasurer be established and that the Secretary-Treasurer be authorized to fill same. Motion seconded by Mr. McLellan and carried. Mr. Janssen moved that the Nominating Committee's report be accepted and presented to the membership at the regular meeting to follow. Motion seconded by Mr. Bogard and carried.

The secretary read letters from Messrs. Robert J. Kuhn and Clayton L. Nairne acknowledging the Technological Accomplishment Medal award and Life Membership award respectively.

The secretary read a letter from Engineers' Joint Council requesting that the society recommend candidates to serve on the Board of the National Science Foundation. Dean Bogard moved that the following recommendations be made:

Murrough P. O'Brien, Dean Emeritus of Engineering, University of California, recommended for renomination, and
Eric A. Walker, president of Penn State University and
A. B. Kenzel, Vice-President for Research, Union Carbide and Carbon Company

The motion was seconded by Mr. Riess and carried.

Mr. Duclos moved that the resignations of the following be accepted with regret, seconded by Mr. Durning and carried:

R. L. Barnes, Fordoche	John F. Mallette, Monroe
Gayle K. Broussard, B. R.	Haywood B. Miles, Jr., Buras
William E. Evans, S'port	John H. Paine, Mass
John M. Green, Florida	E. M. Schwartz, Lake Charles
Chas. B. McCarthy, Florida	M. E. Youngs, Georgia

Mr. Riess moved that Messrs. Frank Stewart and Paul R. Courrege be dropped in accordance with their requests, seconded by Mr. Janssen and carried.

The secretary read a letter from the Tulane Law School announcing an Institute on the Labor-Management Act of 1959 to be held at the university on Saturday, December 19. It was decided to announce this forthcoming event at the society's regular meeting to follow.

At this point Mr. Alvin M. Fromherz arrived and the order of business again was dispensed with so that he might be heard. Mr. Fromherz announced that a serious problem has arisen as a result of the court decision against the architect in the case of the boiler explosion at Denham Springs. Mr. Duclos moved that the matter be referred to the Professional, Civic and Industrial Affairs Committee and that the committee contact Mr. Fromherz for particulars. Motion seconded by Mr. Bogard and carried.

Announcement was made of Dr. Frederick zur Burg's reappointment to the State Board of Registration.

A letter from Mr. Robert H. Grehan, Chairman of the State-wide Engineers' Week Committee, concerning funds for his committee's operations, was read. Mr. Bogard moved that Mr. Grehan be instructed to plan his budget with the understanding that it will not exceed last year's expenditure, also that Mr. Grehan be advised to call on Allen Johnson, Public Relations Counsel, to handle the publicity. Motion seconded by Mr. Duclos and carried.

Since the following Junior Members are over 32 years of age, Mr. Bogard moved that they be transferred to Affiliate grade in accordance with the constitution, seconded by Mr. McLellan and carried:

James B. Boulet	Wm. M. Howe
J. E. Clement, Jr.	Wm. L. Lewis
F. H. Deckbar	J. D. Russell
James W. Eldred	L. Roydon Sibille
Eugene A. Frisch, Jr.	Joseph L. Smilie
W. C. Gaddy, Jr.	Charles F. Smith
J. E. Hassinger, Jr.	

It was decided that the matters of Functional Sections for NSPE and renewal of public relations contract would be discussed at the annual board meeting to be held on January 8.

There being no further business the meeting adjourned.

John P. Fernandez,
Secretary-Treasurer

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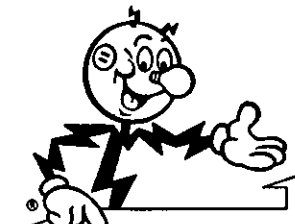

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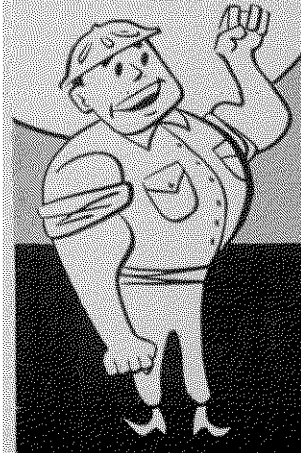

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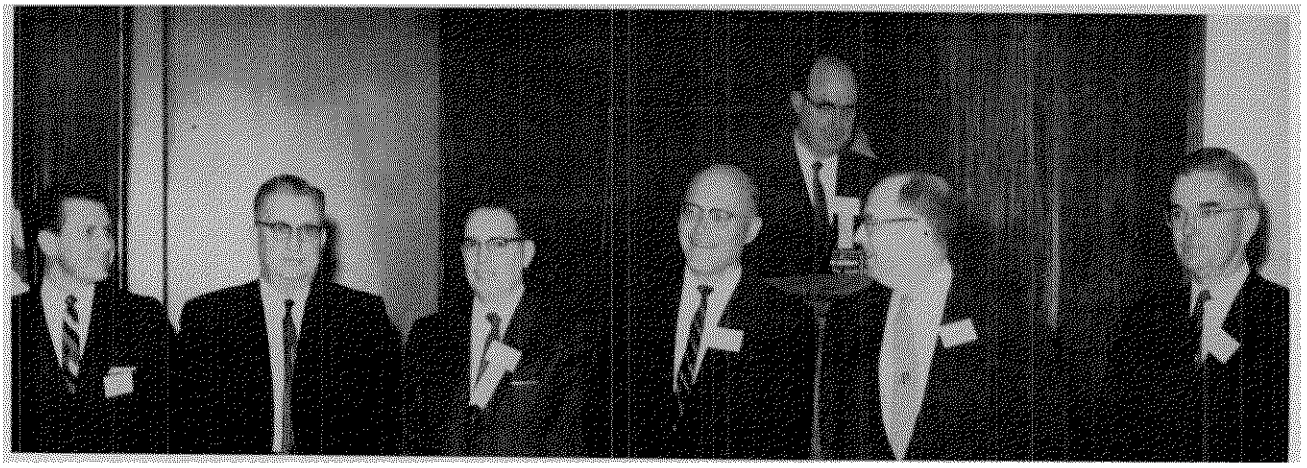


MEMBERS OF THE 1960 BOARD OF DIRECTION of the Louisiana Engineering Society are (from left): Chris Demopulos, Shreveport; Calvin Watts, Baton Rouge; John P. Fernandez, New Orleans, secretary-treasurer; James S. Janssen, New Orleans, second vice-president; Ben T. Bogard, Ruston, first vice-president; Edward A. McLellan, New Orleans, president, and (rear), Roy T. Sessums, New Orleans, immediate past president. Not shown are Louis Duclos, Baton Rouge, and Frank Riess, New Orleans.

President's Report - Year 1959

By ROY T. SESSUMS

As a retiring President, it is my duty to report to you the activities of the Society for the past year—the 62nd of the Society's lifetime.

This past year has been one during which changes have been made in several aspects of the Society's activities. It is the first full year of affiliation with the National Society of Professional Engineers and the Engineers Joint Council. It is my feeling that the membership of the Louisiana Engineering Society as a whole has not participated to the extent desirable with the National Society of Professional Engineers. I am suggesting and urging that we as individuals should whenever and wherever possible take an active interest in the National Society. I believe that attendance at national meetings, which are held two or three times a year, would enlighten our membership more fully of the extent of professional activities in which our National Society is engaged.

Our Society has moved into an area of closer contact and cooperation with the State Board of Registration for Professional Engineers & Land Surveyors of Louisiana. This was brought about by a genuine desire not only of our Board of Direction, but also by the members of the Board of Registration. This has resulted, I believe, in a much stronger effort in support of the status of the engineering profession which should be of concern not only to the general public, but to the engineer himself. Efforts are under way to cooperatively assist in the proper strengthening of our engineer licensing law.

Our publication, The Louisiana Engineer, has reflected another constructive change in our Society's activities. This publication has been changed in format and is being published bi-monthly with a circulation of approximately 7,000 in comparison with a circulation of 2,000 for the previous year.

This change in the publication and the increased circulation are largely the results of the concerted efforts of our Society and the Board of Registration. The Louisiana Engineer will be used as one of the media of informing the profession of the activities, duties and responsibilities of the engineer. It is now received by not only the membership of the Society, but also all engineers, land surveyors and the state employees registered in the State of Louisiana as well as the members of the state legislature and other government officials.

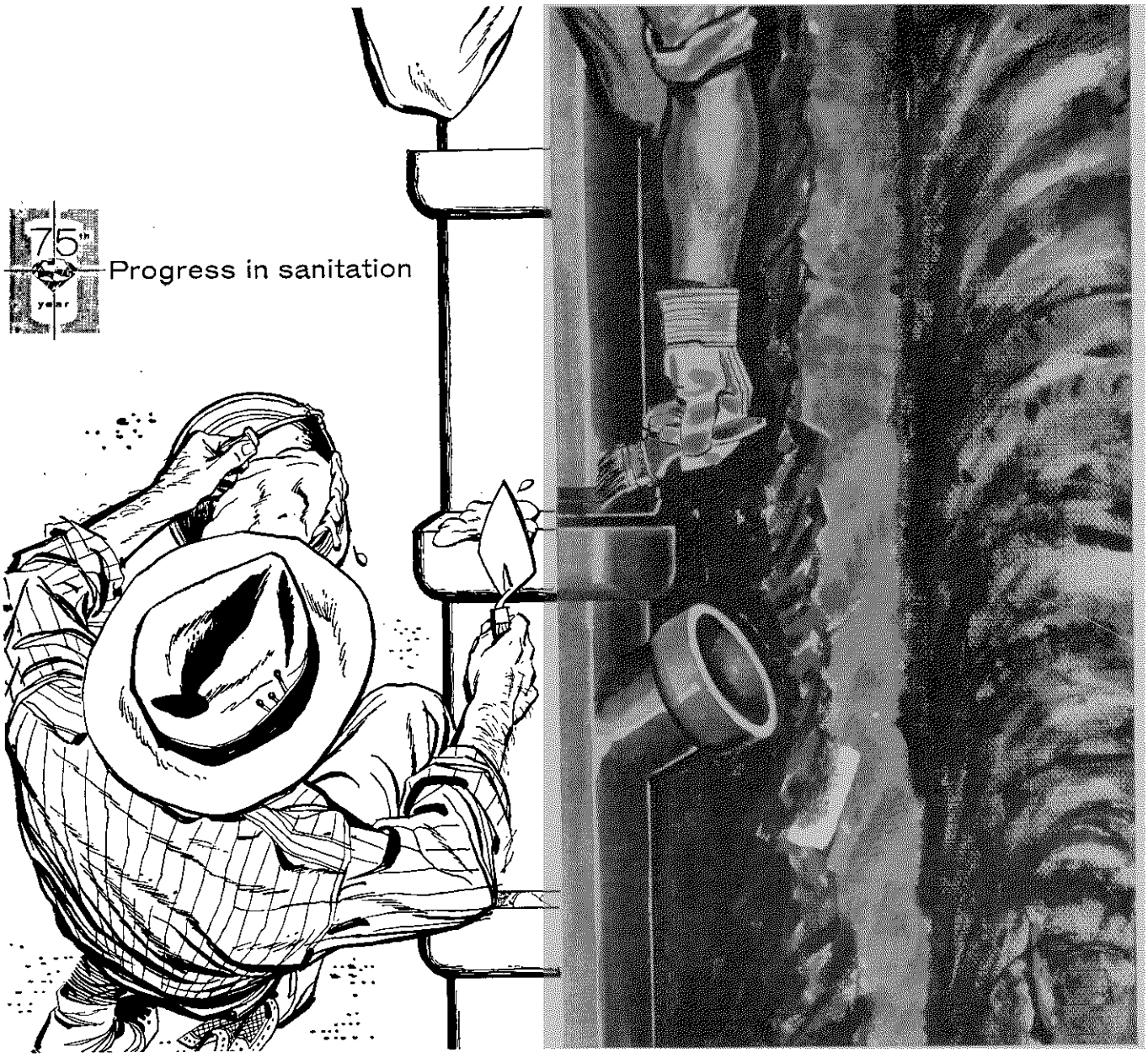
Continued and sustained effort has been exhibited with respect to our JETS Program and other activities of the Society. The annual state planning or section coordination conference was again held in Alexandria, Louisiana, and is likewise scheduled for 1960 at the same location. This, as you know, is in reality a working session which is of genuine benefit to the membership of the Society.

Detailed statements could be made about various other activities of our Society. However, I will not take your time in so doing, but I would be remiss if I did not give full credit where credit is due, and that is to the various committees, both state and local, the membership of which has rendered yeoman service far beyond the call of duty in carrying on the affairs of our Society. Also the officers and Board of Direction have been most diligent in services rendered.

In closing I would like to express my personal thanks to each and every member of the Society for his active support during the past year, and to express my pleasure to the membership for having had the privilege of serving you as President during 1959.

75th year

Progress in sanitation



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Financial Report - Year 1959

STATEMENT OF CASH RECEIPTS AND EXPENDITURES
For the Year 1959

RECEIPTS:		
Advertising	$ 6,222.65	
Annual Meeting	3,366.53	
Annual Outing	1,527.00	
Certificates	37.50	
Dividends	340.00	
Dues	19,156.25	
Frozen Assets Recovered	301.33	
Lapel Emblems	70.50	
Monthly Meetings	100.01	
Publication Subscriptions	9.25	
State Board of Registration	5,481.00	$36,612.02
EXPENDITURES:		
Addressograph Equipment	$ 843.95	
Addressograph Plates	166.35	
Advertising Commissions	2,531.98	
Annual Board Meeting	131.97	
Annual Meeting	3,853.45	
Annual Outing	1,752.98	
Auditor's Fee	150.00	
Dues Paid to Other Organizations	137.00	
Dues Rebated	7,019.63	
Engineers' Week Expenses	487.36	
Floral Offerings	94.10	
Headquarters Rental	180.00	
Medals, Awards and Gifts	208.00	
Miscellaneous Expenses	94.96	
Monthly Meetings, Cost of	433.22	
Office Supplies	101.65	
Postage	248.85	
Public Relations	3,015.45	
Publicaiton, Cost of	7,505.91	
Salaries	4,920.00	
Scholarships	300.00	
State Planning Conference	74.90	
Stationery & Printing	1,783.40	
Taxes	126.13	
Vocational Guidance	86.83	36,249.06
Increase in Cash		$ 362.96
Bank Balance January 1, 1959		1,041.24
Bank Balance December 31, 1959		$ 1,404.20

STATEMENT OF LIQUID ASSETS
December 31, 1959

Cash in Bank Account		$ 1,404.20
U. S. Savings Bonds:		
June 1950, Series F	$ 1,828.00	
June 1950, Series F	789.00	
March 1955, Series J	789.00	3,406.00
Homesteads:		
Columbia	$ 2,000.00	
Commonwealth	2,000.00	
Greater New Orleans	688.91	
Security	1,500.00	
State	1,500.00	
Union	1,500.00	9,188.91
Value of Lapel Emblems on Hand		276.59
Total Liquid Assets December 31, 1959		$14,275.70
Total Liquid Assets January 1, 1959		13,860.49
Net Increase in Liquid Assets		$ 415.21

1959 Membership Report

GAINS:			
Elected:			
Members	48		
Affiliates	21		
Juniors	20	89	89
LOSSES:			
Deceased:			
Life Members	3		
Members	10	13	
Resigned:			
Members	14		
Affiliates	3		
Juniors	9		
Students	30	56	
Dropped:			
Members	25		
Affiliates	2		
Juniors	13	40	109
Net Loss			20
SUMMARY:			
Charter Member			1
Honorary Members			15
Life Members			74
Members			1,384
Affiliates			139
Juniors			291
Students			0
			1,904

John P. Fernandez,
Secretary-Treasurer

Planning— Field Notes
By Allen Johnson

The Louisiana Engineering Society State Planning Conference for 1960 will be held at the Bentley Hotel, Alexandria, March 25-26, according to Wiley Poole, LSU professor of Agricultural Engineering.

Roy E. Johnson has been installed as the new president of the Engineers Club of New Orleans, succeeding Rudolph B. Roessle. The teller's report giving the results of the election was read by Ole K. Olsen.



ROY E. JOHNSON

Other new officers include W. Stone Leake, first vice-president; John F. Vogt, Jr., second vice-president; T. Edward Ernst, treasurer, and Allen Jensen, secretary.

Elected directors for three-year terms were Paul Andry, Erwin O. Dykes and Robert Rombach. Two-year terms as director remain to Roy E. Johnson, Ernst, Albert F. Lusch, R. P. Lockett, Jr., Jensen, Paul Merritt and DeWitt Morris. Directors with a year yet to serve include Ben Louviere, Leake, Vogt and Roessle. Executive secretary is Mrs. Kathryn Pool.

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Thirteen leading engineering figures will act as sponsors for the 1960 National Engineers' Week, Feb. 21-27.

They are: Wernher von Braun, director, Development Operations Division, Army Ballistic Missile Agency; Allen B. DuMont, chairman of the board, Allen B. DuMont Laboratories, Inc.; T. Keith Glennan, president-on-leave, Case Institute of Technology, and administrator, National Aeronautics & Space Administration; James R. Killian, Jr., chairman of the Corporation, Massachusetts Institute of Technology; Clarence H. Linder, vice president, General Electric Company; Granville M. Read, chief engineer, E. I. du Pont de Nemours and Company; Royal W. Sorensen, California Institute of Technology; Philip Sporn, president, American Electric Power Company; David B. Steinman, consulting engineer; Bertram D. Tallamy, Federal Highway Administrator; Charles Allen Thomas, president, Monsanto Chemical Company; John L. Burns, president, Radio Corporation of America, and A. V. Wiebel, president, Tennessee Coal & Iron Division, United States Steel Corporation.

The theme for the 1960 observance is "Engineering's Great Challenge . . . The 1960's." The Week is under the general sponsorship of the 52,000-member National Society of Professional Engineers.

—o—

ENGINEERS JOINT COUNCIL EJC

Augustus B. Kinzel, vice president-Research, Union Carbide Corp., and Cecil Boling, president of Dunham-Bush, Inc., West Hartford, Conn., were installed as 1960 president and vice president, respectively, of Engineers Joint Council, federation of 21 national engineering societies, representing 300,000 engineers, at EJC's Annual Meeting Jan. 22.

Dr. Kinzel, a native New Yorker, is a research metallurgist, pioneer in the theory of stainless steels and ferroalloys, and responsible for major advances in welding. He led research in a modern process for making titanium metal. A member of the original Manhattan District Committee, he has long been active in atomic energy. He is a member of the Defense Science Board, the Naval Research Advisory Committee, member of the M.I.T. Corporation and chairman, Engineering and Industrial Research Division, National Academy of Science. He is past president of the American Institute of Mining, Metallurgical and Petroleum Engineers.

Dr. Herbert F. York, Director, Defense Research and Development, United States Department of Defense, was the principal speaker at the Annual Meeting of Engineers Joint Council Jan. 22.

Professional Engineers and Land Surveyors Granted Registration

December 15, 1959—Robert L. Anderson, Houston, Tex.; Daniel G. Bell, New Orleans; Louis V. Busenlener, Metairie, La.; Tullio D. Carnesciali, Norridge, Ill.; Billy Cassity, Bastrop; Lee R. Denman, Baton Rouge; David H. Duke, New Orleans; Richard C. Faust, New Orleans; C. B. Ferguson, Jr., Dallas, Tex.; Judah S. Fink, Atlanta, Ga.; L. J. Hays, Jr., Oklahoma City, Okla.; Robert D. Holstead, West Monroe; James W. Hudson, Birmingham, Ala.; Robert P. Johnson, Lexington, Ky.; Henry A. Kallsen, Ruston; Homer W. Key, Tyler, Tex.; Gary G. Levert, Gretna; Robert W. Lockhart, Lafayette; Harry A. Mackie, Birmingham, Mich.; Robert F. Miller, Algiers (L.S.); P. T. Olson, New Orleans; Howard O. Reeves, Crossett, Ark; John W. Riggins, New Orleans; Percy P. St. Amant, Jr., New Orleans; William D. Skillern, Lafayette; Jerry R. Smith, Baton Rouge; E. J. Terrebonne, Jr., Baton Rouge, (L.S.); E. A. Watkins, Houston, Tex.; O. B. Woods, (L.S.) Longview, Tex.; Harald Wyss, Metairie, La.

January 6, 1960—James W. Carr, Monroe; Aaron Y. Cohen, New Orleans; Rudolph F. Duelfer, Jr., Jacksonville, Fla.; Glen R. Gates, West Monroe; Harry L. Gray, Ft. Worth, Tex.; Clarence E. Hilton, Baton Rouge; Charles D. Levy, Baton Rouge; Richard I. McDonald, Shreveport; Allen V. Muska, Ardsley, N. Y.; Emeterio I. Ramirez, Rio Piedras, P. R.; Louie C. Reinberg, Baker; Aubrey W. Saucer, New Orleans; William J. Savage, Dallas, Tex.; Henry K. Schott, Baton Rouge; Johnson B. Sutherlin, Shreveport; Donald E. Weaver, Baton Rouge.

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What Every Louisiana P. E. Should Know

This is the fourth of a series of articles prepared by the Editorial Staff of the LOUISIANA ENGINEER in which an attempt will be made to answer questions of interest to professional engineers in this area. Where, in certain instances, it becomes necessary to answer questions of a controversial nature, it must be re-emphasized that the opinions expressed are those of the Editorial Staff and do not necessarily reflect the feelings of the Louisiana Engineering Society nor the Louisiana State Board of Registration for Professional Engineers and Land Surveyors.

For obvious reasons, no attempt will be made to go into legal interpretations since, in such matters, ethics dictate that we respect the boundaries of our sister profession. Any other questions our readers might wish to submit, pertaining to the Engineering Profession, will be welcomed by the Editorial Staff.

QUESTION—Is registration under the Louisiana Law recognized by other states?

ANSWER—In general, "Yes," but for a specific group of registrants, "No." While Louisiana was the second state to require registration of professional engineers (at that time civil only), unfortunately our State law has not kept pace with the laws of other states. A marked deficiency in the Louisiana law is the lack of the four years' experience requirement for the college engineering graduate before he may become registered. Practically every state in the nation has this requirement, but Louisiana registers young engineers immediately upon graduation. Registrants in this group, are not then eligible for registration through reciprocity with other states until the requisite years of experience have been gained. However, since the majority of engineering registrants in Louisiana have four or more years of experience, registration may be gained in nearly all other states through reciprocity.

QUESTION—How many states provide for registration of engineering college graduates as "Engineer in Training"?

ANSWER—Thirty-seven states, **not including Louisiana.** Among these states, the fee for "Engineer in Training" ranges from twelve dollars to fifteen dollars per year.

QUESTION—What are the practices among the various state professional engineering registration boards with regard to frequency of examinations for new registrants?

ANSWER—Twenty-two boards hold two examinations per year. Eight boards, including Louisiana's, hold four examinations per year. Two boards hold six examinations per year and eight boards hold one examination per year.

DID YOU KNOW THAT

Louisiana and thirty-five other states have no minimum age requirement for engineering registration board members.

Nineteen states, including Louisiana, require that an engineering registration board member have 12 years experience in the practice or teaching of engineering.

Louisiana, in addition to requiring that an engineering registration board member have a minimum of 12 years of experience, also requires that at least five of these years shall have been in responsible charge of important engineering work or of important engineering teaching.

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Details New Miss. River Gulf Outlet

By COLONEL G. M. COOKSON

The Mississippi River-Gulf Outlet is one of the largest projects in the U. S. Army Engineer District, New Orleans, and more importantly, is one that will make a substantial contribution to the growth and progress of the Port and the Mississippi Valley as a whole. I need not dwell long in explaining to you the vital position of New Orleans as a marine and inland waterways port. As an essential transfer point, it must serve to facilitate a high flow of goods from and to the interior.

The project consists essentially of about 75½ miles of channel excavation, including an eased entrance at the Gulf, protective jetties at the entrance, a retention dike across Chandeleur Sound, a turning basin, and a bridge across the channel near the New Orleans end of the project. The location of the channel, a seaway canal, 36 feet deep and 500 feet wide, is as indicated on this map.

The channel commences at the intersection of the existing Gulf Intracoastal Waterway with the Inner Harbor Navigation Canal approximately 7,500 feet north of the existing lock and about 11,000 feet from the Mississippi River. From this intersection, the channel, utilizing a one degree entrance curve, follows the existing Intracoastal Waterway in a generally easterly direction for a distance of 5½ miles to a point about ½ mile below Highway 47 (Paris Road). The channel then leaves the Intracoastal Waterway via a one degree curve and continues approximately 63 miles in a southeasterly direction to and along the south shore of Lake Borgne, and thence through the marshes and across Chandeleur Sound along a line running about midway between the North Point of Breton Island and Gosier Island, to the –38 foot contour of the Gulf of Mexico. In the outer 5 miles, the channel gradually increases in width from 500 to 600 feet, and in depth from 36 feet to 38 feet.

In order to protect the channel in the shallow open waters of Chandeleur Sound, retention dikes will be constructed on both sides of the channel from the shoreline to the –6 foot contour in Chandeleur Sound.

The project also provides for a dike across Chandeleur Sound, extending from the –6 foot contour, at the end of the retention dikes, to the –20 foot contour. Construction of this dike will be deferred until experience indicates that maintenance by dredging alone is more costly, impracticable, or unduly obstructive to navigation.

Near the New Orleans terminus of the channel a suitable bridge for State Highway 47 (Paris Road) will be provided. This is to be a semi-high level, 4-lane bridge, having a horizontal clearance of 400 feet and a vertical clearance of 156 feet in the open position. Vertical clearance in the closed position is to be 50 feet above mean high water. This type of crossing has been approved by all interested Federal and State agencies, and a reimbursable contract has been entered into with the Louisiana State Department of Highways. Preliminary design work is now in progress on this feature.

The authorizing Act included the provision for a future lock in the vicinity of Meraux, with necessary connecting channels to link it to the turning basin. The lock is to be 760 feet long, 110 feet wide, and will have a depth of 40 feet over the sills.

A turning basin 1,000 feet wide and 2,000 feet long will be constructed at the junction of the Gulf Outlet Channel with the channel connecting to the authorized lock near Meraux. Since the lock will not be built until economically justified, the turning basin construction will be delayed until the location of the connecting channel becomes firm.

Shortly after authorization in March 1956, Congress made funds available to commence planning on the project during fiscal year 1957. Work began immediately on surveying the route, making reconnaissance soil borings, and collecting data for use in planning of the project.

A location survey of the channel was undertaken along the traverse line indicated on this slide. This consisted of staking the proposed centerline running a profile and taking cross sections through approximately 42 miles of marshland and 35 miles of open water. Wood towers designated "A", "B", "C", "D", and "E", were con-

(Continued on Page 22)

COL. GEORGE M. COOKSON was graduated from Montana State College in 1936. In July, 1958, he was assigned as District Engineer, U. S. Army Engineer District, New Orleans, by the U. S. Corps of Engineers. He spoke on the above topic at the LES Annual Meeting in January.

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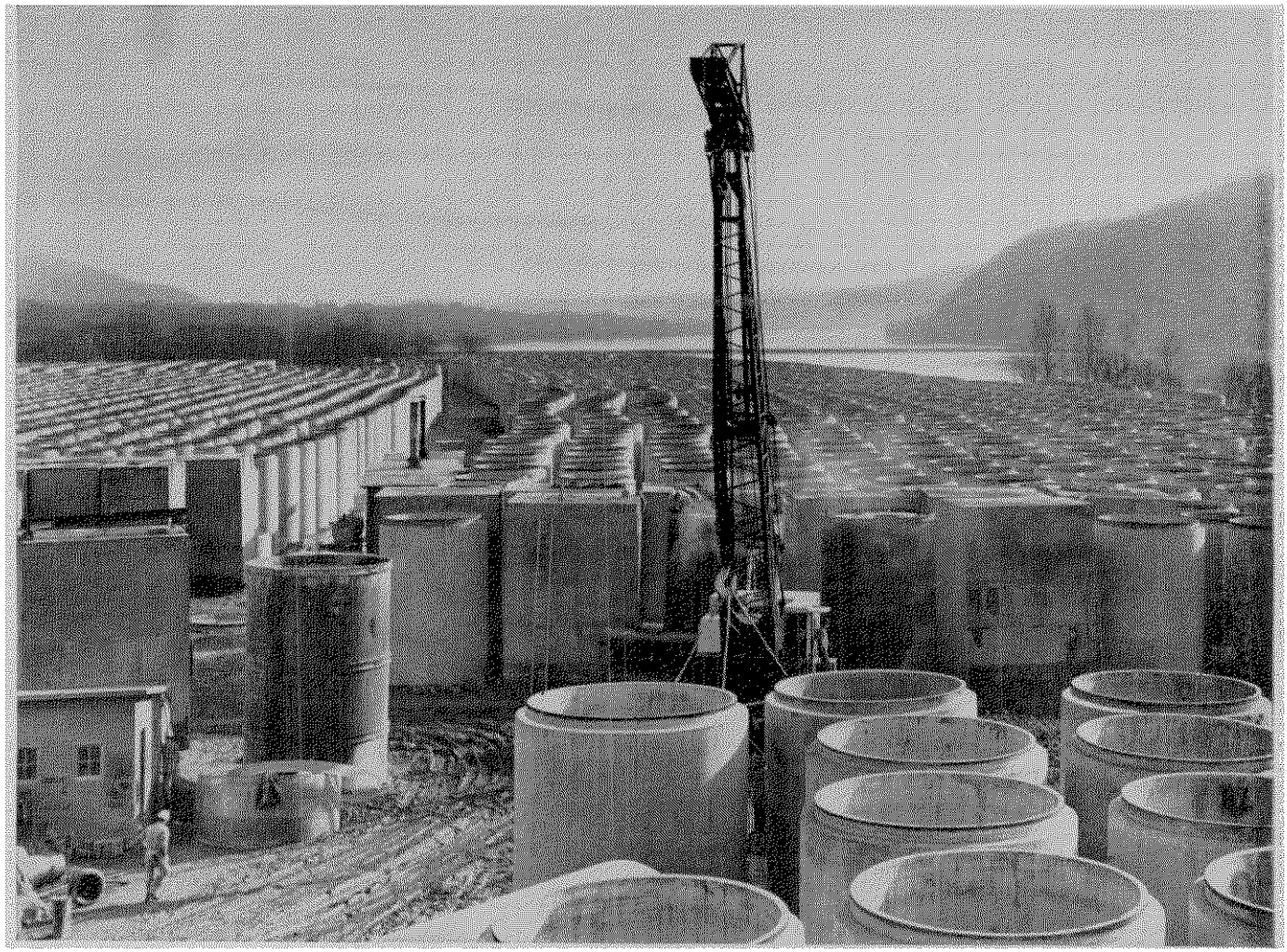

Some of the 69 miles of 24- to 126-inch reinforced concrete pipe needed for the Pittsburgh sewer project

Pittsburgh chooses concrete pipe for sewer system designed to last 100 years!

The 70 communities of the Allegheny County Sanitary Authority have planned 100 years ahead for their new intercepting sewer system. This big project involves 69 miles of sewers—30 miles in tunnels and the rest open trench construction.

Needed strength, durability and watertightness are assured by concrete pipe. Extensive testing proved these qualities. Total infiltration into the first 31 miles completed was less than 3 gallons per minute. In many contract sections infiltration was found to be zero.

Other communities everywhere are also finding that concrete pipe can be designed precisely to solve their sewer problems. And concrete pipe are readily available. For the giant Pittsburgh project, special casting yards—including all test equipment—were set up at convenient close-in locations to speed up schedules, keep costs low.

For helpful information on modern concrete pipelines of all kinds, write for free literature. Distributed only in the United States and Canada.

For the Allegheny County Sanitary Authority: John F. Laboon, Executive Director and Chief Engineer; Lawrence M. Gentleman. Deputy Chief Engineer; Richard J. Dougherty, Construction Engineer.

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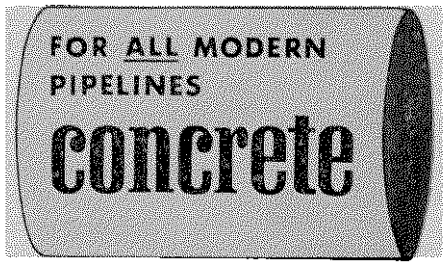

Annual M

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Annual reports . . . Awards . . . New Officers . . . Technical Sessions dealing with Design Considerations, Public Works, Corrosion and Automation . . . Student Papers . . . the keynote speaker flying in from Washington and a "State of the Union" talk with President Eisenhower . . . special awards to Robert J. Kuhn and Franklyn G. Hornsby—and John P. Fernandez, longtime Secretary-Tre . . . the Annual Banquet (for Banquet Chairma Lockett, his first) and a successful 62nd Annual M under the capable guidance of J. Bres Eustis . . . Sheraton-Charles Hotel in New Orleans January 7-9,



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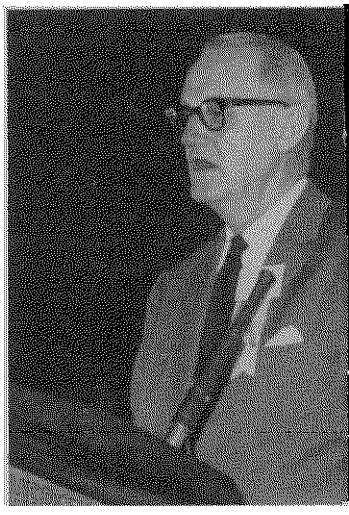

R. M. SEAGO (for E. M. Freer
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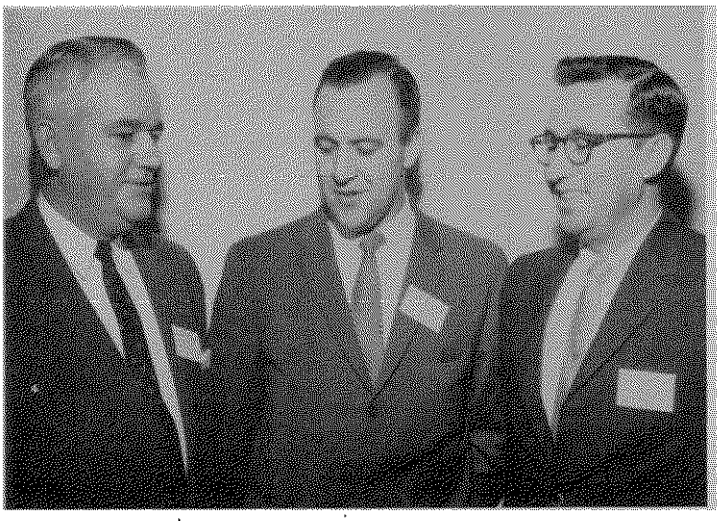

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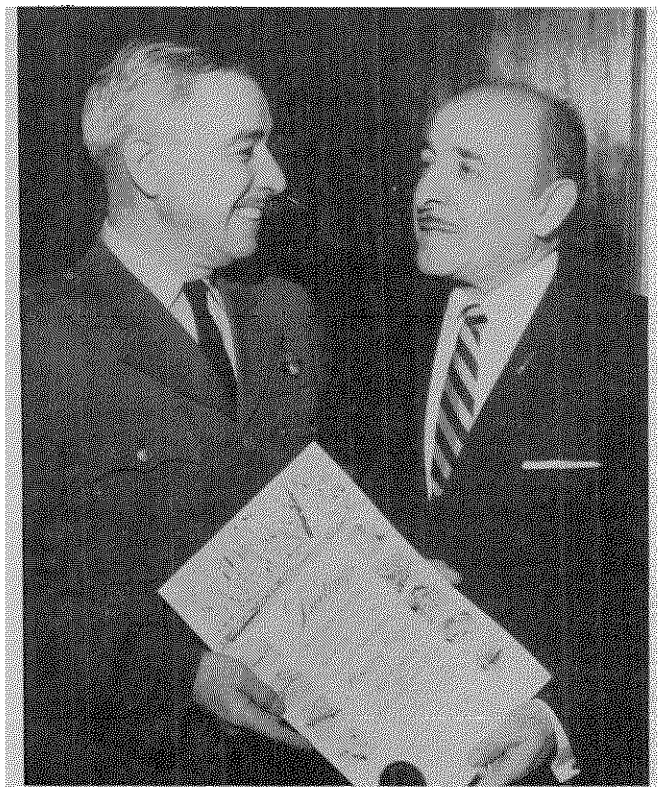
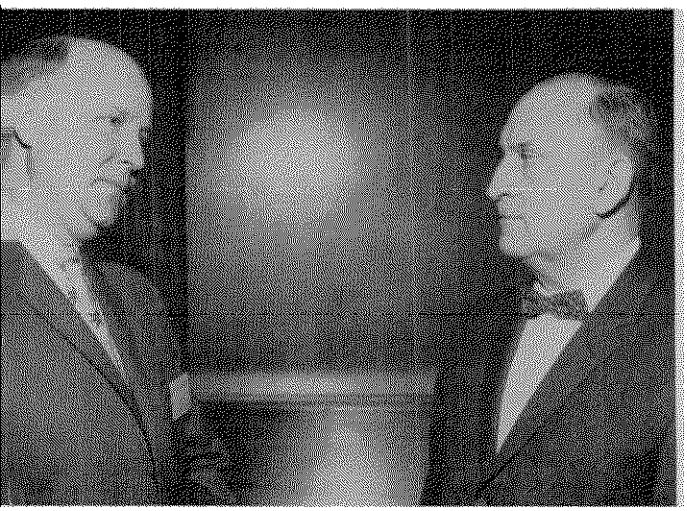


MAJ. GEN. D. N. YATES (left), VICTOR H. SCHIRO
. . . keynote speaker, acting mayor



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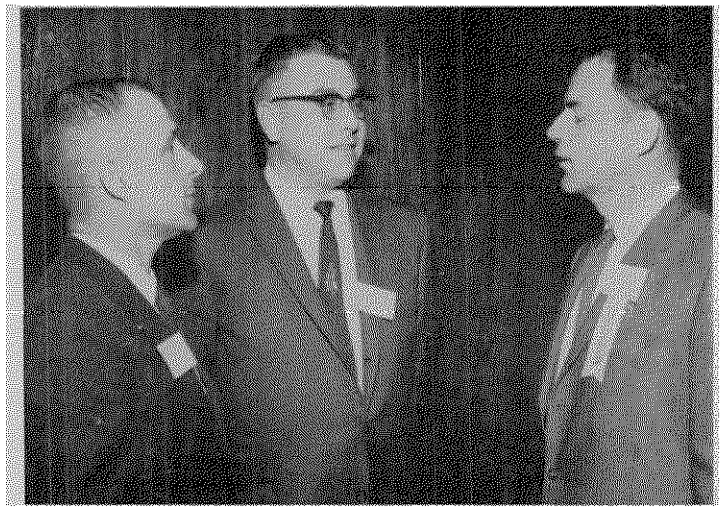
. . . corrosion



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Annual Meeting

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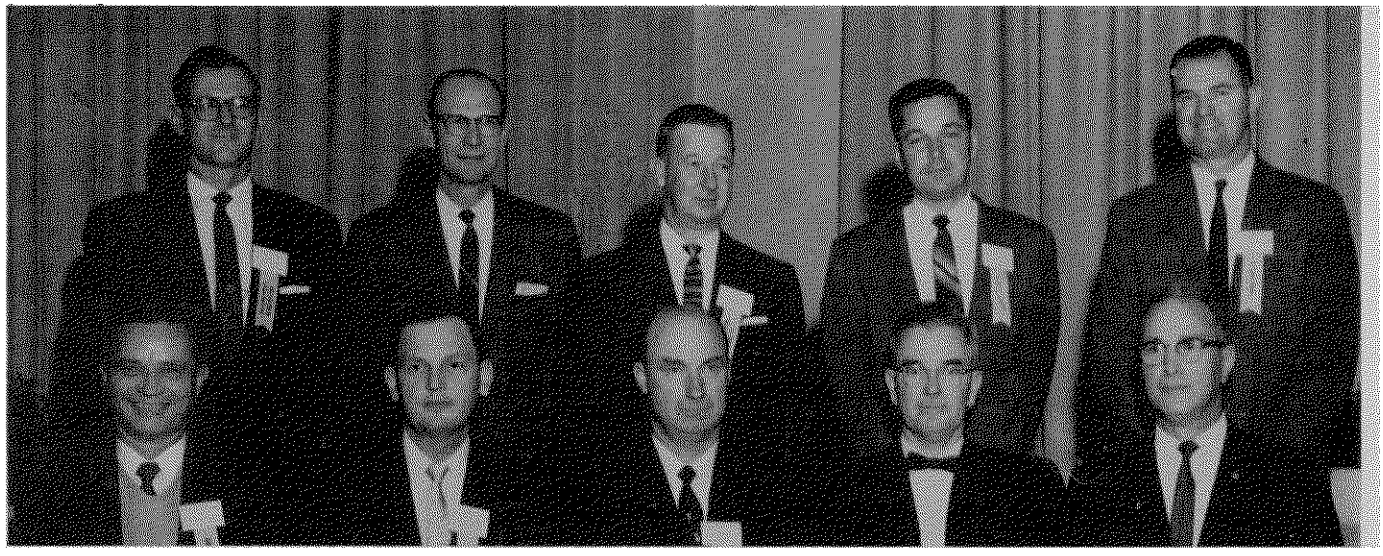
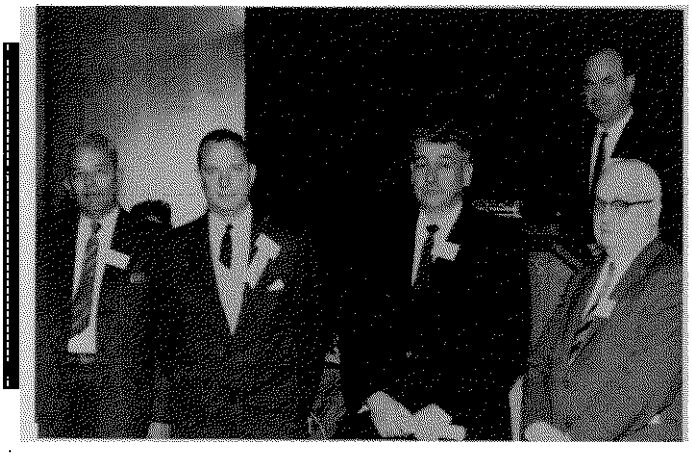


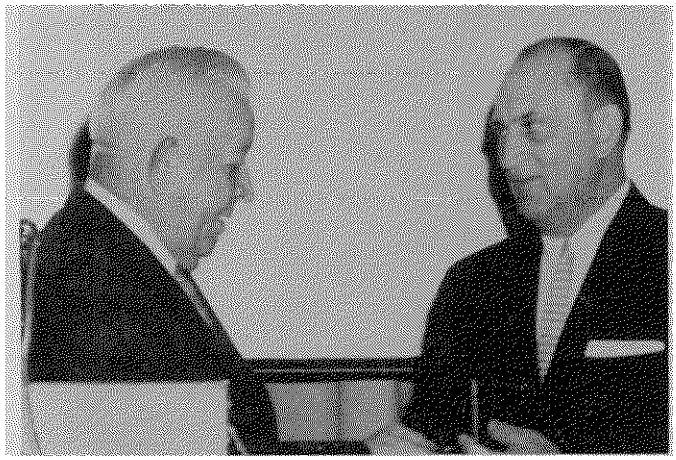
(Front) Warren K. Bankston, J. Bres Eustis, Roy T. Sessums, Edward A. McLellan, Henry L. Landry; (Rear) L. L. Denson, Lee H. Johnson, D. L. Morris, Herbert A. Schaeffer, Jr., T. Benbury Lockett, officials active in Annual Meeting planning.



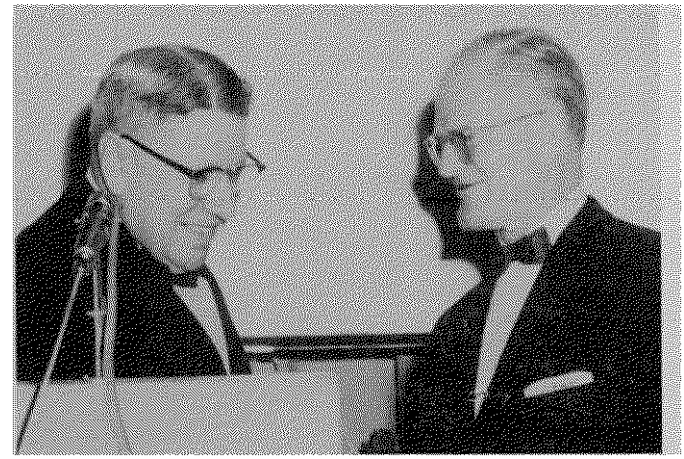
Life Members Leonard R. Kirst, Clayton L. Nairne, Brister B. Pierce, Walter H. Scales (Not shown, R. E. Gosa, H. B. Henderlite)



John H. O'Niell, Honorary Member William H. Rhodes



Tulane Dean Emeritus James M. Robert, LES Technological Accomplishment Medal winner Robert J. Kuhn.



LSU Dean Emeritus Dr. Leo J. Lassalle, LES Civic Activities Medal-Andrew M. Lockett Award winner Franklyn G. Hornsby

La. Engineer Visits N.Y. Chemical Show

(Special To The Louisiana Engineer)

New York — Engineers looked forward to greater achievements in remodeling the atom at the recent 27th Exposition of Chemical Engineers in the New York Coliseum, the largest chemical exposition ever held. Great interest was shown in the turnout of new chemical substances, improved materials and more efficient machinery.

Parent organizations of the leading "families" of chemicals were well represented and their approach to the 1960 market was voiced by a representative of one of them, who said, "Resins offered designers of these products just the combination of properties they had been looking for. The result you see is eight new plastic products that never existed before."

Plastics are contributing to the evolution of design and several new varieties, with their derivatives, were introduced at the Exposition. Evidences of the changes that plastics have wrought were numerous.

Among displays, in addition to plastic pipe, valves and fittings, were pumps, blowers, mixers and other equipment featuring plastic components. Plastic coating materials were much in evidence, as were linings and working parts of similar equipment having plastic impregnations of fabrics and laminates.

Predict Breakthrough

Plastics are commonly regarded as intermediates rather than structural materials, but a number of exhibits suggested that a breakthrough into the wider field of structurals may be soon forthcoming. In addition to the familiar pipe and fittings of rigid plastics, an air washer was shown fabricated entirely of the polyvinyl chloride, as were plastic reinforced tanks and shipping drums without reinforcement. A line of laboratory sinks in cast epoxy resin also made its appearance.

Brand new was a line of flexible plastic pipe and a high pressure hose without metallic or other reinforcement, which was demonstrated in flexure-testing rotation at high speed, under pressure of 2,000 pounds per square inch.

New, too, were a number of applications of ceramic linings and working parts for pumps, exhausters, reaction pressure vessels and valves. Similar equipment was shown with impervious graphite linings and parts, also fans made of polyester fiberglas.

In the kindred field of glass were exhibits of further interest. One, a lining for vessels, reactors, storage tanks and rotary dryer-blenders, is said to be the most corrosion-resistant glass ever applied to steel products for the chemical industry. Another introduced a new boro-silicate glass lining for steel pipe, more than twice the thickness of glass linings previously produced.

Metal Extractions Pay Off

The various methods of protecting chemical processing equipment from the ravages of corrosive and eroding materials reflect the present position of chemical engineering in its course of evolution. Chemical processing is pressing toward extremes and being well repaid, but at considerable cost.

Only by going into very high pressures and temperatures have the new metal extractions paid off. Petrochemistry has also made what seemed to be extravagant demands on equipment manufacturers.

These demands could be met only by insulating non-resistent metals with such of the non-metallics as are resistant to high temperatures and pressures, as well as the mordant acids and alkalis; or else redesigning equipment with sufficient economy of material to justify the use of such costly metals as titanium, zircaloy, molybdenum, tantalum and columbium. These have desirable properties, but not always in the required combinations, and they are believed by the scientists to be on their way to adoption. There is doubt about when.

Presents Equipment

In spirit and experimentally, the chemical process industries are far out in front of even this year's newest products. Evidence in point was the presentation at the Exposition of laboratory and pilot plant equipment for work in the extremely high pressure range. Few except nuclear and missile activities are in that realm at present.

High pressure equipment on view included valves, pumps and other items. One manufacturer has turned out a four-stage compressor for work in nucleonics that will raise a pressure of 35,000 pounds per square inch, and another to produce equipment to handle 100,000 pound pressures—on order.

At the opposite extreme, work is being done in cryogenics, heretofore more or less an abstraction familiar to scientists, but limited in application. As the properties are modified under high heat and pressure, so also they change in the absence of heat and pressure.

One cryogenerator at the Exposition was designed to operate in a range of 330 degrees Fahr, below the ambient temperature. Some of its applications, it was said, might be in accelerated aging and stabilization of metals, cold machining of soft materials, which could not be worked at normal temperatures, or research in solid state devices—such as infrared detectors, masers and cryotrons—in food storage, preservation of biologicals, and, of course, in the further reaches of cryogenic research.

Another exhibitor of similar equipment offered as one of the more important phases of the cryogenic technique the separation of gas mixtures containing two or more major components into separate high-purity products of commercial value.

New Instrumentation

Because the chemical industries are never far from the laboratory, the Exposition offered many displays of new and improved instrumentation, as well as laboratory equipment. The impact of the instrument displays, however, was more directly in line with the current trend toward teaming instruments of laboratory quality with sensing devices, on the one hand, and controlling devices, on the other, to accomplish automation.

Automation reached its peak in the display of the first computer ever designed to exercise completely automatic control over a petro-chemical plant. This display represented a major project in itself and a landmark in industrial development.

Design In Bulk Materials Handling

By ANGUS L. LYONS

The failure of a conveyor system to operate in the manner anticipated is generally the result of: poor engineering judgment, insufficient information, or unforeseen circumstances or conditions.

The purpose of this paper is to provide guides for use in reducing the chances of a system failure.

The sections which will be covered are:

(1) Design factors in bulk materials handling
(2) Guides for equipment selection
(3) Format for writing materials handling requests for quotation or request for purchase

Design Factors

The design factors which should be considered prior to the selection and/or design of bulk materials handling equipment are:

Processing. Can transportation of material be combined with processing? Examples are screening, size reduction, measurement, proportioning, mixing, aging, drying, cooling, heating, reaction, etc. As an illustration of "processing" what conveyor or combination of conveyors should be used to convey a hot, moist chemical product where it is essential to elevate, cool from 55 to 35°C and not expose the product to carbon dioxide? This problem was solved using a recirculating pneumatic conveyor with a filter bag receiver and a cooling coil in the return line.

Storage. Will there be transfer points or locations in the system which will require temporary storage due to surges or change over shutdowns? What are the storage requirements?

Loading. Is the loading to be uniform or in surges? The loading of products into or onto a conveyor can be by volumetric feedser (star feeder, screw feeder, etc.), gravametric feeder (Omega belt, Wallace and Tiernan Belt, etc.), or by regulating gates. Free flowing products which tend to fluidize require feeders.

Receiving and Discharge. Are there multiple pickup and/or discharge points? Do points of pickup and discharge change periodically? Is the material to be transported horizontally, vertically, or both? Is the product movement to be reversible or recirculating?

Layout. Can rearrangement or changes in elevation of process equipment be considered to eliminate conveyors and use gravity flow. In the redesign or alteration of a conveyor system, has consideration been given in the design to downtime caused by changeover shutdowns.

Contamination. Is the system to be dust-tight, purged, under pressure or under vacuum? Are special materials of construction required?

Capacity. What is the maximum, minimum and average amount of material to be conveyed in pounds per hour or cubic foot per hour?

Physical and Chemical Characteristics. Has consideration been given to the following?

(1) Is the bulk density known and does it vary?
(2) What is the particle size and screen analysis?
(3) What is the moisture content and does it vary?
(4) What is the operating temperature and the melting point of the product?
(5) Is the product abrasive?
(6) Is the product cohesive?
(7) Is the product friable?
(8) Is the product corrosive?
(9) Is the product dusty and is dust a problem?
(10) Is the product explosive or gives off fumes?
(11) Does product change state due to temperature?

Economics. What are the economics of the system?

(1) Equipment costs
(2) Operating costs
(3) Predicted life

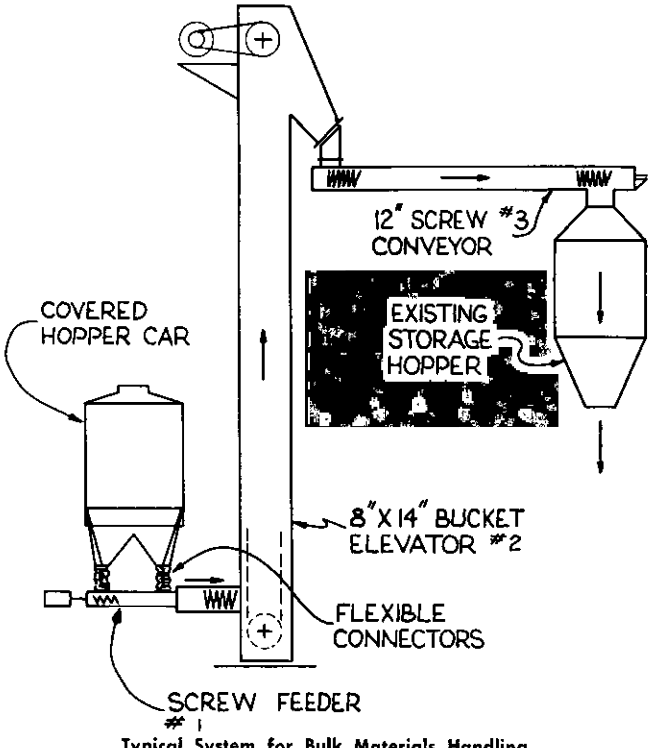
Selection Guides

The following are guides for use in the selection of the basic types of bulk materials handling equipment. The guides are primarily based on the author's experience gained through association with the chemical industry.

Screw Conveyor. The most versatile and inexpensive short distance straight line bulk conveyor.

Accepted practice in the chemical industry has been the use of an external pillow block bearing, a necked drive shaft, a split collar and a split seal. The split collar rides against the race of the bearing and contains thrust. The split seal allows the packing to be replaced without disturbing the bearing and, most important, it isolates the bearing from the conveyor trough end.

TYPICAL SYSTEM



Typical System for Bulk Materials Handling
(Drawing, Courtesy Barnard & Burk, Inc.)

ANGUS L. LYONS, a graduate mechanical engineer from West Virginia University, is the materials handling specialist for Barnard and Burk Inc., Consulting Engineers of Baton Rouge. His article is abstracted from a paper read at the Annual Meeting of LES in New Orleans last month.

For a more complete discussion of this design refer to ASME paper 59-SA-5.

Consideration should be given the following:

(1) Capacities of screw conveyors inclined over 20° can drop off appreciably unless reduced pitched flights, shrouds or pipe troughs are used.
(2) A minimum of one horsepower should be used for any screw
(3) Cohesive products require higher factors of safety in horsepower calculation and design of components.

Pneumatic Conveyor. The basic considerations in the selection of pneumatics as a conveying method are:

(1) Degradation can occur during conveying.
(2) Abrasive products can cause excessive wear with resulting frequent replacement of lines.
(3) Some products which pack under pressure and cling to most surfaces will not convey pneumatically.
(4) Products with a high moisture content require pilot plant testing.
(5) Pilot plant or full scale testing is required if there is any question about the product's ability to be conveyed pneumatically or the extent of the particle breakdown.
(6) Pneumatic conveyors require relatively high horsepower compared to mechanical systems.

The principal advantage of the pneumatic conveyor is the layout flexibility not available in straight line mechanical systems.

The basic systems to consider when anticipating this handling method are:

Vacuum (negative pressure) used primarily for single or multiple point pickup to a single discharge.
Pressure (positive pressure) used for single point pickup to a multiple point discharge.
Vacuum-Pressure, used for multiple pickup, or nozzle pickup to multiple point discharge.
Recirculating, used when conveying with inert gases to minimize gas loss or when fines carry over is a problem.

Belt. The belt conveyor is unequaled for high capacity and long distance conveying. Steel belts "Sanvik Type" have recently been used for processing while conveying applications.

Consideration should be given the following:

(1) Recent trends have been the use of grease sealed for life bearings to eliminate maintenance greasing.
(2) Belting improvements have been made using nylon and rayon carcass plus combination of other fibers for wrap and fill.
(3) Special beltings are required for hot service conveying (temperatures above 200°F.).
(4) Belting and idlers make up the principal costs of the belt conveyor.
(5) The use of feeders improve performance and add to belt life.

En Masse: The "Redler" and "Bulk Flow" are en masse type conveyors. These units are adaptable to horizontal and vertical conveying and combinations of these movements.

Consideration should be given to the following:

(1) En masse conveyors are not completely helf cleaning.
(2) The en masse conveyor is adaptable to handling wet products and the use of air jets at the drive sprocket facilitate product discharge.
(3) Motion switches should be used on screw take ups.
(4) Friable products and those that smear are not generally conveyed in this type of unit.
(5) Corrosive and abrasive products require special materials of construction for chain and casing.

Vibratory. There are two basic types of vibratory conveyors; mechanical and electromagnetic. The mechanical types are low frequency high amplitude as opposed to electrical types which are high frequency, low amplitude.

Consideration should be given to the following:

(1) Not generally used for inclined service.
(2) Vibratory conveyors are practical for handling hot materials.
(3) Carrying surfaces are isolated from driving mechanisms and therefore are adaptable for processing while conveying, cooling, screening, etc.
(4) Special designs required when mounting on elevated structures to isolate vibration. Isolation is generally accomplished by dynamic counterbalancing or by mounting on coil springs.
(5) Materials which aerate and fluidize readily do not convey satisfactorily.

Bucket Elevators. The bucket elevator is a vertical conveyor composed of two basic types — centrifugal and continuous.

The centrifugal type combines centrifugal force developed from buckets travelling at a relatively high speed over the head pulley and gravity to obtain the proper discharge.

The continuous type is used to prevent spilling and to obtain a more nearly continuous discharge. As buckets pass over the head pulley the material flows over the preceding bucket whose front and sides form a chute to the discharge spout.

Chains are used on bucket elevators when conveying materials which tend to pack between the buckets and belt or between the belt and pulley. Depending on capacity and the type of elevator used the chain can be single or double strand. Chain is generally used for hot service conveying (200°F. or over).

Belts are used when the material is dry, free flowing, and abrasive. Belts are usually rubber covered or treated fabric and should be prepunched and cemented by the belting manufacturer.

Consideration should be given the following:

(1) Gravity type takeups should be used on all hot service elevators.
(2) On belt elevators wing type pulleys should be used when handling abrasive or lumpy material.
(3) Tall elevators should be laterally sway-braced at the casing joints.
(4) When handling products which tend to fluidize holes punched in the bottom of the buckets allow trapped air to be displaced and permit buckets to fill completely.

An important consideration after a conveyor system has been designed is the problem of communicating to a potential supplier the specifications and requirements.

A format for writing material handling request for quotation or request for purchase is a handy engineering tool. The format that has gained wide acceptance is one composed of four basic parts. The four parts are:

The **Scope of Operations** section tells the vendor quoting what is expected of the conveyor system. It is a description of the flow of the products to be handled.

The **Materials Handled and Capacities** section gives the complete product description, chemical and physical characteristics, capacities, etc.

The **Detailed Specifications** section is a listing of the equipment piece or item numbers and detailed specifications and quantities involved in the design.

The **General** section is a listing of items required for the request for quotation which are not applicable to the other three sections.

Channel

(Continued from Page 14)

structed at 6-mile intervals across Chandeleur Sound for survey purposes.

Two alternate routes, designated "B" and "D", below Bayou LaLoutre, were considered in refining the project plans.

The towers were spotted by timing the travel of a boat running at a constant speed and being directed on line by an instrument mounted on the last previously constructed tower. Radio communication was used between the tower and the boat. In addition to serving as instrument platforms, the towers were used for mounting current meters and water level recorders.

The distance between towers was determined by triangulation, using a portable tower barge consisting of a steel pontoon on which a 20-foot high aluminum tower was mounted. The barge was towed to a point approximately 6 miles perpendicular to the row of towers, and opposite the first offshore tower, and sunk.

The portable tower and the first centerline tower offshore were tied into existing USC&GS stations along the shoreline by triangulation, and with this accomplished, the distance between centerline towers No. A and No. B was determined by using the distance computed from the difference in geodetic positions between tower No. A and the portable tower, as the known side of the triangle, and triangulating in tower No. B. The portable tower was then refloated, towed to a point opposite centerline tower No. B, and the triangulation extended to include tower C. This process was repeated until the distance between each centerline tower had been determined.

The marsh land through which the channel crosses has many lagoons and small streams, and is difficult to travel even with a marsh buggy, making surveys difficult and expensive.

The marsh land portion of the survey was performed by constructing 15-foot wooden instrument towers at intervals of about 6 miles, and using a marsh buggy equipped with a short-wave radio, receiving instructions from the instrumentman stationed on the tower. The marsh buggy towed a small steel pontoon lashed immediately behind the buggy, and towing an aluminum skiff 200 feet back of the pontoon. The head chainman rode on the pontoon and the rear chainman rode in the aluminum skiff. In addition to acting as a means of transportation for the head chainman, the small pontoon performed the clearing by mashing the vegetation so that the mainmen were able to stretch the chain without interference.

A network of hydrologic instruments was installed special investigations performed in Chandeleur Sound, Breton Sound, and vicinity, to provide the basic data required to supplement existing meager information on current directions and velocities, salt and silt contents of the water, tides, wind, waves and littoral currents.

Analyses of the data collected indicate that volicities of 0.1 to 0.7 feet per second prevail in Breton Sound. The highest velocities, 1.5 to 4.5 feet per second, occurred in June 1957 when Hurricane Audrey struck the Louisiana Coast.

In Breton Sound the salinities generally fall within the range of 8,000 to 15,000 parts per million chlorides in the Point Chicot area, and from 12,000 to 19,000 parts per million in the area near the Chandeleur Islands. The lowest salinities occur during the period of March through November.

Suspended sediment concentrations vary between 50 to 150 parts per million during normal flow conditions; however, concentrations of approximately 500 parts per million were experienced at Point Chicot during abnormal flow conditions. The least variation in sediment concentration occur in the vicinity of the Chandeleur Islands due to the prevalence of high salinities.

The water temperature in the sound ranges from 42°F. to 87°F., the highest temperatures occurring in the months of June and July, and the lowest during December and January.

Tides in the Breton Sound area are diurnal, with one high and one low water each tidal day, and have a normal range of 1 foot to 2 feet in height. Water surface elevations of approximately 3 to 4 feet have been observed along the marsh shortline during periods of passing storms or other disturbances.

In general, the prevailing winds exert a definite influence on the current velocity and direction patterns developing in Breton Sound.

These data were needed in project studies to provide estimates of the frequency of severe disturbances, force and effect of waves, movement of sediment, importance of tidal action, implications attendant to the overtopping of jetties and dikes, and other factors affecting the engineering design and evaluation of the project.

Studies of past storms along the Louisiana-Mississippi coast indicate that maximum tides of from 10 to 15 feet may be expected. The various factors contributing to or attending such tides must be evaluated and specific design criteria developed for each factor or interrelated series of factors.

The possible influence of the deep channel on salinity problems in the interior has not been neglected. Salinity samples were taken and analyzed for stations located in the vicinity of New Orleans, in the marsh near Hopedale and in Chandeleur and Breton Sounds. Comparative salinity data taken before, during and after construction, should indicate and serve to evaluate any changes that may result from the construction of the project. After considering the data, it was determined that a series of 5 test pits should be excavated on the 2 routes ("B" and "D") considered to have the most promise for the least annual cost within the scope of the authorized project. These test pits provided data for evaluating the necessity for dikes, the location of dikes, and further to provide a basis of comparison between lines under study. As a result, Route B was selected as the more desirable.

From the Inner Harbor Navigation Canal to Paris Road, the channel has been excavated to project dimensions. From Paris Road to Chandeleur Sound, the channel will be excavated in three stages. The first stage will be excavating an access channel, or barge channel, 18 feet by 140 feet. The second stage will be the enlarging of the access channel to an interim channel, 36 feet by 250 feet, which will permit its use by ships. The third and final stage will be the enlarging of the interim channel to the full project channel of 36 feet by 500 feet.

The first contract for dredging 2½ miles of the chan-

nel to full project dimensions, 36 feet deep over a bottom width of 500 feet, was awarded on 12 March 1958. This was for approximately 10,159,000 cubic yards of excavation at a total price of $1,777,189, or about 17.1¢ per cubic yard. The first contract was completed on 29 December 1958.

The second contract called for excavation to full project dimensions beginning at the eastern limit of the first contract, and extending to Paris Road Bridge.

The area between the channel and Bayou Bienvenue is to be used later for development of Port and industrial facilities, and deposition of spoil has raised the ground surface elevation by from four to six feet. The second contract was awarded on 11 June 1958, and called for excavation of 10,285,000 cubic yards at a total price of $1,635,315, or about 15.9¢ per cubic yard. Completion of the contract was on May 7, 1959.

In mid-December, work was under way on the third contract. This contract, for an access channel 18 feet deep over a bottom width of 140 feet, extends from the Gulf Intracoastal Waterway southeasterly for a little more than seven miles, down to Bayou Dupre. This section of the access channel is scheduled to be complete in May of this year at a cost of $1,068,000.

The fourth contract, awarded last July, is to extend the access channel from Bayou Dupre to Bayou Ysscloskey, a distance of about 11½ miles. Both of these Bayous, incidentally, as well as Bayou Bienvenue and Bayou Villere, are to be left open for drainage and other puropses. The contract price here was $1,622,000. With the job scheduled for completion in August of this year, the contractor has been working steadily on construction of the retaining dikes.

Plans call for extending the access channel, under a fifth contract, from Bayou Ysscloskey to Bayou LaLoutre. Following this will come the beginning of the useable channel, 36 feet deep and 250 feet wide, extending from the Gulf Intracoastal Waterway at Paris Road down to Bayou Dupre. As a part of this contract, about 1200 feet of the channel at the location of the new highway bridge will be excavated to full project dimensions, and the tie-in line between highway 47 and the bridge location will be mucked out and filled with good material.

A reimbursable contract for construction of the bridge has been entered into with the Louisiana Highway Department. They have been making surveys and soil borings, and are proceeding with preparation of the plans for the bridge. This is to be a structure about 2,500 feet long, including the approaches. The lift span will be 480 feet long. In the closed position, the span will have a vertical clearance of 50 feet above mean high water. In the open position, clearance above mean high water will be 156 feet. Horizontal clearance is to be 400 feet. By the end of this year, the plans should be complete and the contract for construction awarded.

This fiscal year it is expected that contracts for extending the access channel from Bayou LaLoutre to Bayou Pointe-en-Pointe, and from there to land's end. Also planned for this fiscal year is the award of a contract for construction of the retention dike from Land's end to the –6 foot contour in Chandeleur Sound. Contracts for completing the interim, or useable channel, excavation of the project channel, and construction of the three remaining retention dikes will follow in logical order as funds become available.

Plans for the highway bridge on Highway 47 last December 1 were 93 per cent complete, with construction scheduled to start in December 1960. The bridge is to be complete by the end of December 1962.

The channel between the Inner Harbor Navigation Canal and Paris Road has been completed to full project dimensions of 36 feet deep over a bottom width of 500 feet.

Plans for the interim channel, one that will be useable by ships, from Paris Road to the Gulf of Mexico beyond Chandeleur Sound, are 56 per cent complete, with construction scheduled to begin within the next two or three weeks. This useable channel, 36 feet deep and 250 feet wide, should be completed near the end of 1963, just prior to completion of the bridge.

Plans for enlarging the useable channel to full project dimensions below Paris Road are 53 per cent complete. Beginning about September, 1963, dredges will begin to enlarge the interim channel while it is in use by shipping. The enlarged channel should be complete by the end of June, 1967.

Planning for the retention dikes in Chandeleur Sound stands at 25 per cent complete. Dike construction is to start right away. These dikes are scheduled for completion at the time the channel is completed.

Planning and construction schedule is based upon our best estimate of what we can do. Maintaining the schedule will depend on the timely appropriation of construction funds with which to complete the project.

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Plotting Post Office Progress

By GUS G. QUINN

During the war years and the years of readjustment following, no post offices or federal buildings were constructed in this country. Shortly after settlement of the Korean conflict, the government turned attention to the increasing need for a number of federal buildings in the United States.

In the early part of 1955, the Federal Government proceeded with its plan of constructing about 10 federal buildings in the United States which carried top priority. These buildings were to be constructed under lease-purchase agreements and would involve no capital outlay on the part of the government. Private capital would supply the money and the government would pay back under a 25-year lease-purchase agreement. The Lake Charles Post Office and Court House was one of the buildings included in this program.

Our firm on June 26, 1955 contracted to furnish professional services for the design of the facilities under consideration for Lake Charles, La.

General Service Administration is the constructing and housekeeping agency for all agencies of the government except the military and it was with the Public Building Service of GSA that the contract was negotiated. Our contract stipulated that we were to perform all professional services necessary for planning and designing the project and included:

(a) Diagrammatic sketches and documents.
(b) Tentative sketches and documents.
(c) Perspective sketch.
(d) Intermediate working drawings and estimate of cost.
(e) Final working drawings.

In addition we were to furnish time and progress schedules, furnish originals of all work to be submitted and we were to prepay all shipping charges of charts, drawings and documents sent the commissioner.

Our contract was later amended to include the usual architectural and engineering supervision after award of contract.

After execution of contract, we were provided with a space directive dated April 1, 1955, in which was outlined in detail the various agencies of the government which would occupy the building, the total area required for each and the number of employees both male and female:

The areas and agencies were given as follows:

Post Office	37,987 S.F.
District Court (including Attorney and Marshal)	11,045 S.F.
Justice (not including Attorney and Marshal)	1,050 S.F.
Agriculture	830 S.F.
Civil Service	500 S.F.
Defense	850 S.F.
Health, Education and Welfare	1,500 S.F.
Housing and Home Finance	225 S.F.
Treasury	2,380 S.F.
Veterans	400 S.F.
General Services	3,800 S.F.
	60,567 S.F.

The above areas do not include corridors, service areas, toilets, machine rooms, etc., which must be arranged in the best manner to obtain an economical building.

The gross square-foot area of the building as finally approved is 83,645 square feet.

We were told that the building would be two story and that embellishments and excess floor space tolerated in federal buildings constructed in the late Thirties would not be permitted and that the building would be economical and functional. The building would be designed exactly as if we were designing it for a private corporation.

Unfortunately, we were not able to proceed with our work immediately upon execution of contract, because difficulty was encountered in obtaining a site. It was not until March 30, 1956, that we were notified that a site had been selected and we were to proceed with the planning. We then submitted this schedule:

A. First submission, diagrammatic sketches, etc., on or before May 1, 1956.	
B. Second submission, tentative sketches, etc., within	20 days
After approval of previous documents.	
C. Third submission, perspective within	10 days
D. Fourth submission, intermediate working drawings, etc.	60 days
E. Fifth submission, final working drawings, etc.	60 days
TOTAL	150 days

This schedule was essentially maintained throughout our planning, although the time consumed between submissions sometimes ran into months, due to correcting comments and discussions of the project at the various stages.

Graphic Analysis

On May 2, 1956, we submitted to Washington our first submission consisting of a Graphic Analysis Chart and Diagramatic Sketches.

Our Graphic Analysis showed all of the agencies with the square footage as given in the space directive.

After all GSA comments had been complied with, we were authorized on Aug. 9, 1956 to proceed to the next or tentative stage of the planning and on Oct. 27, tentative drawings representing the second submission together with the project directive were submitted.

The drawings at the tentative stage represented a complete set of drawings for the project at small scale and except for details of structure, mechanical and electrical, were almost working drawings.

The project directive set forth in detail all materials to be used and where. It scheduled interior finishes,

GUS G. QUINN, of Lake Charles firm of Quinn and Quinn, Consulting Engineers, delivered this paper before the Lake Charles Section of LES on Dec. 14, 1959.

established ceiling heights, and scheduled all items to be included in the construction contract. When this directive was approved, it became firm, and no variation was permitted. Similarly when the tentative plans were approved, no changes could be made at the next or working drawing stage. Complete tentative documents were submitted on Jan. 26, 1957, and after some correspondence and corrections the documents were approved on March 21; we were directed to proceed with working drawings.

Estimate of Cost

All working drawings, structural, architectural, mechanical and electrical drawings proceeded smiultaneously in order that prints could be made when drawings were about 75 per cent completed, estimates of cost made and the whole submitted as the fourth submission. The fourth submission was submitted on June 1, 1957. Our estimate of construction cost at this time was $1,461,571.65. Although we previously had been given a budget of $1,592,000.00, G.S.A. estimating section figured we were out of the budget and we were summoned to Washington to explain things. In Washington we were directed to change the framing from steel to concrete and this seemed to please everyone although we could see very little savings in cost. We came back to Lake Charles and proceeded with our final drawings.

Describes Foundations

After considerable study of different types of foundations it was decided that the structure would be carried on grade beams and spot footings. The footings would be underreamed to the required area in the "Beaumont" clay at about elevation 1.0 M.G.L. The clay at this depth was found to have a bearing capacity of 4,000 pounds per square foot and the total anticipated settlement of the structure estimated as not to exceed ½". Footings are balanced for a dead load only. At a lesser depth, the footings would have to be designed for 2,000 pounds per square foot, and the structure would be subject to differential settlement in excess of ¾" total settlement.

The structure of the building is reinforced concrete, ribbed slab or "pan" construction with proper concrete beams and girders. Moments for design were calculated by moment distribution and full advantage of continuity taken. Results were checked by moment coefficients.

A typical floor framing plan had live loads as follows:

Corridors, lobby, stairs, work room	100 p.s.f.
General office areas	80 p.s.f.
Vaults	250 p.s.f.
Roof	25 p.s.f.

Concrete is designed for 3,000 psi reinforced with intermediate grade reinforcing steel bars.

The column spacing as finally established typically is 25'-8" east and west and 26'-10" north and south.

Air Conditioning

The air conditioning system consists of low velocity air distribution with ceiling type diffusers. Air handling units are located on the mezzanine and the air conditioning pent house on the roof. Chilled water is circulated to the coils of each unit to provide cooling and humidity control. Low pressure steam is supplied to air handling unit coils for heating and reheat.

Summer Design Conditions:

95°F. D.B. outside 78°F. D.B. inside

80°F. W.B. outside 45% relative humidity inside

Refrigeration for air conditioning is provided by a centrifugal water chiller having a capacity of 303 TR. This chiller delivers 930 gallons of water per minute at 45°F. and has the ability to smoothly modulate to 25 per cent of capacity.

Condensing water is cooled by forced draft cooling tower located on the roof and has a capacity of cooling 1,212 g.p.m. from 95½°F. to 88°F. when WB of entering air is 80°F.

All motors of A. C. system are operated at 480 V.A.C. three phase.

Steam is provided by two horizontal fire tube low pressure boilers each having an output of 8,340 square feet of steam EDR. The boilers operate at 7 psig and are equipped with induced draft fans.

Final Submission

Our fifth and final submission went off to Washington on Feb. 7, 1958. All drawings were transferred to sensitized linen for this submission. After final corrections were made we received, on Mar. 27, a letter from the Director, Architectural and Structural Division approving our work and stating in part "your cooperation in the development of this project is appreciated. Your efforts in expediting the completion of the drawings and specifications will permit us to release this project for bidding as scheduled."

The work was advertised Mar. 19, 1958 and construction bids received April 23, 1958, at 11:00 a.m. in the Regional Office of GSA, Dallas, Texas.

As a result of the bidding, Construction Contract in the amount of $1,375,923.00 was executed between Lanza Enterprises, Inc., Lake Charles, La., and the Contracting officer for the government in this case the Commissioner, Public Buildings Service and the Financier, in this case, the First National Bank, Atlanta, Georgia.

Notice to proceed with the work was issued on May 23, 1958 with the construction scheduled for completion Jan. 3, 1960.

On May 21, 1958 our contract was amended to include supervision of the job. We manned the job with a construction engineer supplemented by other architectural or engineering personnel from our office as required.

Construction work progressed according to schedule and we are happy to report no accidents of any consequence. Work proceeded uneventfully which indicated good planning on the part of the contractor. Final inspection of the construction work was scheduled for Dec. 17, approximately three weeks ahead of schedule.

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Registration Cited As Sign Of Status

Registration and Society participation are "signs of professional status," Lt. Gen. Emerson C. Itschner, F. ASCE, Army Chief of Engineers, believes.

Gen. Itschner, speaking at a luncheon at the Washington Convention of the American Society of Civil Engineers recently, said, "Even though professional registration is not a prerequisite for employment as an engineer by the Corps of Engineers and has no official influence over career development of either the engineer officer or civilian engineer, it is my policy to encourage registration and to foster it to the utmost.

"I do this for several reasons," said the general.

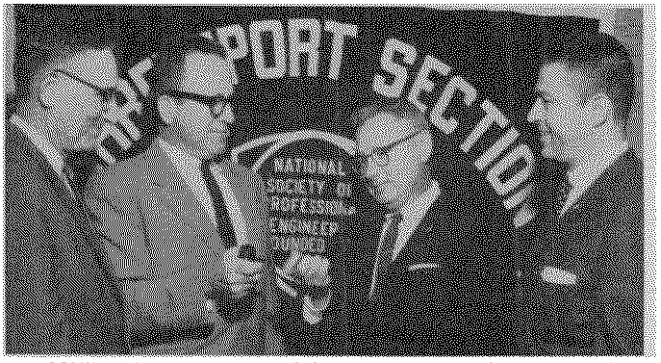
"Registration reflects an element of professional prestige that encourages a man to do his best work. It gives him a sense of responsibility to inspire and guide him.

"It gives him a mark of stature among other members of the profession that can be gained by no other means.

"It gives him personal satisfaction in the practice of his profession that comprises one of its inherent rewards.

"In sum total, it makes him a better engineer—it requires him to measure up."

Gen. Itschner continued, "As a matter of policy, I encourage our personnel to join and participate actively in professional engineering societies.



ORVILLE T. ICE, JR. (second from right) is installed as President of the Shreveport Section of the Louisiana Engineering Society by Outgoing President Quentin W. Hargrove (second from left) while First Vice President Tom Ruffin (right) and Second Vice President Marion C. Bubenzer (left) look on. Not shown is Frank Irland, the Section's new Secretary-Treasurer. First Vice-President Ruffin, incidentally, was recently named Shreveport's Outstanding Young Man of 1959 for his work as national vice-president of the Junior Chamber of Commerce, vice-president of the Louisiana Motor Transport Assn., and in other civic groups.

"Corps representation is rotated to promote the maximum participation of qualified personnel. Personnel who do not qualify for authorized attendance as a matter of official duty will find the Corps liberal in the granting of leave for professional meeting attendance."

Gen. Itschner concluded, "I believe that every professional engineer in the Corps should be a member of and actively support the engineering society appropriate to his field. He will be a much better engineer and a more valuable employee for doing so."

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Memorials

ALLAN THEODORE DUSENBURY

The Louisiana Engineering Society records with deep regret the death of one of our highly esteemed older members, Allan T. Dusenbury, who died early Wednesday, October 23, 1959. Funeral services were held in New Orleans, burial was in Oak Hill Cemetery, Battle Creek, Michigan.

Allan became a member of the Louisiana Engineering Society in 1909 and was elected President in 1917. He became a life member in 1940. During the years he was an enthusiastic worker for the Society, serving on many committees where his wide experience and excellent judgment was most valuable.

In 1913 he joined, as a full member, the American Society of Civil Engineers and participated very actively in the affairs of the local Section. From 1930 to 1933 he served as District Director on the national Board of Direction of that Society, representing the Sections in Louisiana, Texas, New Mexico and southern Mississippi. As Director, he visited various Sections in his district, and attended all the nationwide meetings of the national society, holding membership on on many important committees, where his wide knowledge of engineering and public affairs was of great value. At his death he was a Life Fellow of the American Society of Civil Engineers.

Allan T. Dusenbury was born January 6, 1878, at Homer, Michigan. In 1880 he moved with his parents to Mt. Pleasant, Michigan, where he attended the public schools. In September 1900 he entered the University of Michigan and was graduated in June 1904 with the degree of B.S. in Mechanical Engineering. From 1904 to 1906 he was employed as engineer by the Advance Pump and Compress Company of Battle Creek.

In January 1908 he came to Louisiana and became associated with the late Edward Wisner, the owner of over one million acres of marsh land. Allan soon became manager of this large property, and as engineer designed and built the projects for drainage and reclamation of many thousands of acres of wet lands, transforming them into wonderfully fertile farm areas.

On January 8, 1910 he was married in Battle Creek to Miss Helena Eldred.

Owing to the untimely death of Edward Wisner in 1915, and due to financial difficulties caused by World War I, the reclamation activities came to a halt and although every effort was made to hold the vast project intact, this failed and during 1917 and 1918 it became the property of other interests, the largest of which was the Louisiana Land and Exploration Company. Up to 1919 no oil or gas had been discovered in South Louisiana. In 1919 Mr. Dusenbury became a consulting engineer in private practice in New Orleans. In addition he maintained an active business in real estate and cattle raising.

Allan Dusenbury was one of the founders of the Jefferson Parish water works system and designed many of the drainage and reclamation systems in Jefferson, Lafourche and St. Tammany parishes.

While active as a consulting engineer Allan took time to also serve on many projects of a public nature. From 1932 to 1935 he was director of the U. S. Coast and Geodetic Survey for South Louisiana. The maps made and the information reported has been invaluable to engineers in later years. In June 1942 he was appointed Louisiana Manager for the U. S. War Production Board, and as such was in charge of all the planning and execution of the innumerable projects this Board initiated and supervised. These activities closed at the end of World War II.

Allan was active in 4-H Club work among the young people. He was a member of the Pickwick Club, the Recess Club, The Sons of Colonial Wars, and participated extensively in the functions of the New Orleans Chamber of Commerce, serving on many committees relative to engineering and agriculture subjects.

Surviving are Mrs. Dusenbury, two daughters, Mrs. John Morse Culver, and Miss Morna Dusenbury; two brothers, Col. Ralph W. Dusenbury, Carlsbad, California, and Philip G. Dusenbury, of Tryon, North Carolina, and three grandchildren.

Whereas, the members of the Louisiana Engineering Society feel a great sense of loss in the death of this esteemed and greatly respected member who has always been very generous in his active participation, in giving of advice, serving the Society in many official capacities, working on committees, and helping in all manner possible, and believing that his engineering and public service of many natures complete a record of great importance to the engineering profession and well being of this community.

Therefore, be it resolved, that the membership of the Louisiana Engineering Society express hereby its feeling of great loss in his passing: that these resolutions become a part of the Minutes of the Society, published in the LOUISIANA ENGINEER, and that a copy be sent to Mrs. Dusenbury and to each of his daughters, Mrs. Culver, and Mrs. Morna Dusenbury.

William H. Rhodes
Fred N. Billingsley

COMMANDER ALFRED J. ROTH, JR.

Commander Alfred J. Roth, Jr., was called to his heavenly home on November 2, 1959 after a very short illness. He had only recently assumed the duties of Public Works Officer for the United States Navy Amphibious Base at Little Creek, Virginia. Death came at the U. S. Naval Hospital at Portsmouth, Virginia, where he was taken for treatment after being stricken ill on Oct. 28.

Al was born in the City of New Orleans on Dec. 3, 1909. He spent his early youth here in the City of New Orleans and attended St. Aloysius High School from which he graduated in 1927. He attended Tulane University for a period of time where he studied engineering

and then transferred to the Louisiana State University from which he graduated in 1934 with a degree of Bachelor of Science in Civil Engineering.

After graduation from LSU Al was employed as a Field Engineer for the Louisiana Board of State Engineers and later as a Resident Engineer for the Louisiana State Department of Public Works.

Al was commissioned as a Lieutenant Junior Grade in the Civil Engineering Corps of the United States Naval Reserve on May 7, 1942. He was immediately called to active duty and assigned to the 11th United States Naval Construction Battalion, and the 2nd U. S. Naval Construction Regiment. For three years Commander Roth was in the Pacific with the Navy's Construction Battalion forces, and he participated in the Campaign of the Admiralty Islands.

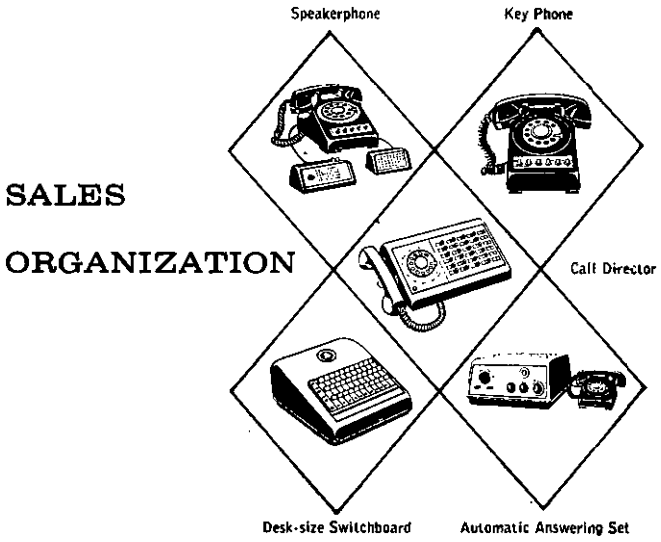
From Mar., 1945, until July, 1945, he was assigned to the U. S. Naval Construction Battalion Training Center at Davisville, Rhode Island, for duty under instruction. In July, 1945, he was transferred to New Orleans where he was assigned as Public Works Officer with collateral duty as Resident Officer in Charge of Construction, U. S. Naval Air Station, New Orleans, located at that time on the shores of Lake Pontchartrain near Elysian Fields. From Aug., 1951, until Sept., 1953, Commander Roth was assigned to duty at Roosevelt Roads in Puerto Rico as the Commanding Officer of Construction Battalion Detachment 1516, and with additional duty as Public Works Officer and Resident Officer in Charge of Construction of the Naval Station. In Sept., 1953, he was transferred to Washington, D. C., and was assigned to the Bureau of Naval Personnel in the Field Activities Administrative Unit. He was detached from this duty in Dec. of 1956 and was assigned to duty with the Commander in Chief, Eastern Atlantic and Mediterranean at Middlesex, England. He had just returned from this duty and reported to his duty as Public Works Officer at the Amphibious Base at Little Creek when he was stricken ill.

Al had a distinguished career both as an engineer and as a Naval Officer. He will be greatly missed by his engineering friends in Louisiana and by his many friends of the Civil Engineer Corps of the United States Navy. He was a member of Sigma Phi Delta Fraternity, The American Society of Civil Engineers and the Louisiana Engineering Society. The naval decorations which he earned include the Asiatic Pacific Campaign Medal with One Star for his participation in the Admiralty Islands Campaign, the American Area Medal, the World War II Victory Medal, the National Defense Medal and the Naval Reserve Medal.

Commander Roth is survived by his father, Mr. Alfred J. Roth of 1502 Governor Nicholls Street, and by his widow, the former Heloise Olivier, to whom he was married on July 1, 1936.

Be It Resolved, that this Memorial be read at the meeting of the Louisiana Engineering Society, entered into the minutes, published in the Louisiana Engineer and copies be sent to the members of his family.

Charles Bittenbring and Walter E. Douglas, Jr.



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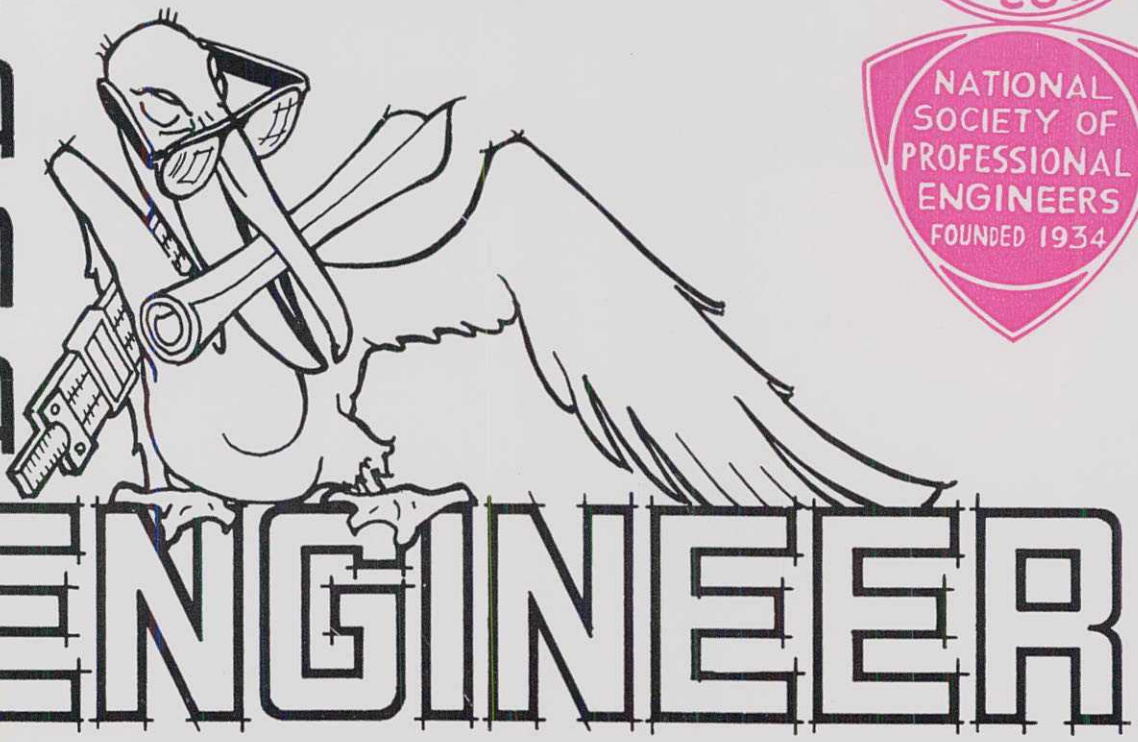

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THE LOUISIANA ENGINEER

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The Louisiana Engineering Society and the Louisiana State Board of Registration for Professional Engineers and Land Surveyors do not guarantee the accuracy of statements made or necessarily concur with opinions expressed in this publication.

Alexandria Engineers Write Up Profession

A 12-page supplement in the Alexandria Daily Town Talk was a special feature of National Engineers' Week in Alexandria.

The supplement was published by the Alexandria Section of the Louisiana Engineering Society and copies were distributed to all LES members. Nine hundred copies were ordered by NSPE for national promotion.

Articles in the supplement were written by engineers and the section was compiled under the supervision of Andrew Moore.

OUR COVER: A highlight of the New Orleans meeting of the American Society of Civil Engineers March 7-11 was press conference. Queried were (from left), Dr. Frank W. Macdonald, executive secretary, State Board of Registration; Miss Diane Newman, a sophomore in the Tulane School of Engineering, and Mr. Frank A. Marston, Boston, president, ASCE.

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We feel that you, as a reader of The Louisiana Engineer, are entitled to a measure of service beyond the mere presentation of engineering articles and news.

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La. Engineering Society

Minutes of Meeting of the Board of Direction and State Section Officers Held at Arnaud's Restaurant on Friday, January 8, 1960

The meeting was called to order by President McLellan with Messrs. Alexander, Bogard, Cook, Demopulos, Duclos, Garrison, Ice, Janssen, Jenkins, Latimer, Pounds, Sessums, Stokes and Fernandez present. Messrs. Warren Bankston, W. L. Sutton and J. Bres Eustis also were present by invitation. Reading of minutes of the preceding meeting was dispensed with upon motion duly made and seconded.

President McLellan announced that the matter of the society's public relations and publication contracts with Allen Johnson & Associates was a most important item on the agenda. Both contracts expired January 1 and the society holds an option to renew each for another year. After discussion by various board members Mr. Alexander moved that the society's officers be authorized to work out a suitable agreement with the Public Relations Counsel. Motion seconded by Mr. Jenkins and carried.

Discussion followed on Concurrent Resolutions Nos. 1 and 4 passed by the State Legislature at its 1959 session. Copies of a resolution adopted by the LES Board of Direction in support of the State Board of Registration's stand against the legislative resolutions were distributed to those present.

Mr. Duclos, the board's representative on the Special Committee for NSPE Functional Sections, announced that his committee had not prepared a report at this time. After some discussion it was decided that no action would be taken until the committee presented a report to the board.

The secretary relayed to the board a request that the society go on record in favor of the erection of a high-lift steam pumping engine (one of four scheduled to be scrapped by the Sewerage & Water Board of New Orleans) as a historical monument. Mr. Sessums moved that this request be referred to the Professional, Civic and Industrial Affairs Committee, seconded by Mr. Bogard and carried.

Mr. Ice, President of the Shreveport Section, read the following motion passed by his section at a recent meeting:

"The Shreveport Section now feels that in the best interests of the Louisiana Engineering Society as a whole, the New Orleans area should become a section the same as other sections. Therefore, the Shreveport Section is instructing its President to request at the January meeting of the Board of Direction that a state-wide ballot, excluding New Orleans, be made to determine the opinion of the members of all sections concerning this matter."

The secretary reported that this subject had been brought up in 1954 and that a state-wide committee had carefully studied it for a year. At the January 1955 meeting the suggestion was turned down for purely economic reasons. After a brief discussion it was decided that the results of the 1954 study would be reviewed by the secretary who would in turn acquaint the board members with its contents and the above motion would be placed on the agenda at the March 25th meeting of the Board of Direction to be held at Alexandria in conjunction with the State Planning Conference.

Mr. Stokes moved that a Finance Committee consisting of Messrs. Bogard, Chairman, Sessums and Fernandez be appointed and instructed to present a budget for 1960 at the next meeting of the Board of Direction. Motion seconded by Mr. Ice and carried.

Mr. Bogard moved that the President and the Secretary-Treasurer be authorized to sign checks for the society. Motion seconded by Mr. Sessums and carried. Mr. Alexander moved that the President and/or the Secretary-Treasurer have access to the society's safe deposit box, seconded by Mr. Stokes and carried.

Discussion followed on the matter of traveling expenses for officers of the society. Mr. Duclos moved that the budget be planned to cover traveling expenses for officers and that the society pay the expenses of any trips the Board of Direction may authorize. Motion seconded by Mr. Demopulos and carried.

President McLellan announced that the technical sessions of the annual meeting had been very well attended, after which a rising vote of thanks was given to Mr. J. Bres Eustis, General Chairman, for the splendid manner in which he and his committee handled the 1960 Annual Meeting.

Mr. Stokes recommended that the banquet be held at the end of the second day and thus eliminate a day of waiting for out-of-town members attending the Annual Meeting. Mr. Sessums stated that he believed the key-note address should be first on the program and not the student conference. Mr. Janssen suggested that, in accordance with Mr. Stokes' suggestion, it could be possible to hold the banquet on Friday and not disappoint the Catholic membership by holding the cocktail hour and dancing first and the banquet after midnight. Mr. Eustis stated he would incorporate all of these suggestions in his report for consideration by future committees.

The meeting then adjourned.

JOHN P. FERNANDEZ
Secretary-Treasurer

Minutes of Meeting of the Board of Direction Held at the Engineers' Club, New Orleans February 8, 1960

The meeting was called to order by President McLellan with Messrs. Bogard, Cresap, Duclos, Latimer, Riess and Fernandez present. Mr. Allen Johnson, Public Relations Counsel, also was present by invitation. Minutes of the preceding meeting were accepted as read.

Mr. Bogard, Finance Committee Chairman, presented a budget for 1960, a copy of which is attached to these minutes. After some discussion Mr. Riess moved that it be accepted, seconded by Mr. Latimer and carried. Mr. Johnson gave a brief report on the publication and public relations activities of the society.

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

Henry Bordelon, Alexandria	Stanton E. Huey, Jr., Monroe
Carlyle B. Doupe, New York	Richard P. Klopp, Baton Rouge
Albert Feldman, Baton Rouge	Z. L. Loflin, Lafayette
Gerald M. Gossen, Lafayette	Peter L. Mullins, New Mexico
Carl M. Hadra, Shreveport	Geo. L. Otis, Baton Rouge

Mr. Bogard moved that A. M. Richard of Opelousas be dropped from the rolls, seconded by Mr. Latimer and carried. Mr. Riess moved that James C. Ryan and Herman T. Schmitt be transferred to Affiliate member grade, seconded by Mr. Cresap and carried.

A letter from R. L. Phillips of Sterlington was read in which he inquired about a possible special dues status for members in retirement. Mr. Riess moved that the secretary advise Mr. Phillips that the matter would be studied for possible action at a later date. Motion seconded by Mr. Latimer and carried.

A letter from Engineers' Joint Council requested addressed labels of the society's membership list so that the EJC's newspaper "Engineer" could be sent to all members. Mr. Bogard moved that the EJC be furnished with these addressed strips, seconded by Mr. Cresap and carried.

A letter from Past President Roy T. Sessums thanking the board for its co-operation during his administration was read by the secretary.

Mr. Bogard moved to appoint a committee consisting of Messrs. W. S. Nelson, Chairman, R. M. Seago, Felix L. Alcus, Frank B. Grevemberg and Bernard A. Grehan to consider the proposed erection of a high-lift steam pumping engine as a historical monument in New Orleans. Motion seconded by Mr. Latimer and carried.

Upon the recommendation of the president, Mr. Riess moved to appoint standing committee personnel for 1960, seconded by Mr. Latimer and carried. (See committee list attached hereto).

An offer by The Times-Picayune to advertise Engineers' Week in the Sunday paper of February 21 was read by the secretary. Mr. Bogard moved that the newspaper be thanked and its offer declined because of lack of funds. Motion seconded by Mr. Duclos and carried. Mr. Cresap announced that the Alexandria Section was sponsoring a similar newspaper supplement on Engineers' Week and that the secretary had been asked to furnish mailing lists for same so that all members of the society could see what the Alexandria Section had accomplished. He then moved that the LES take a full-page ad in the supplement, the cost of which would be $140.00. The motion was seconded by Mr. Latimer and carried by a vote of 4 to 3.

It was announced that the NSPE would hold a meeting on February 18-20 at Wichita, Kansas. Upon motion by Mr. Bogard, seconded by Mr. Cresap, President McLellan was appointed the society's Director for NSPE. Upon motion by Mr. Latimer, seconded by Mr. Riess, the Secretary-Treasurer also was appointed. Mr. Bogard moved that the president's expenses be defrayed by the society if he should attend the NSPE meeting at Wichita. Motion seconded by Mr. Riess and carried.

There being no further business the meeting adjourned.

JOHN P. FERNANDEZ,
Secretary-Treasurer

—o—

A professional register listing experience by months is in the works at the Ground Systems Group of the Hughes Aircraft Co., Culver City, California. The register will include every member of the GSC technical staff and "will enable our engineering staff to record information which is vital to individual recognition and career growth." This new form will permit engineers to fully describe the many different functions performed in connection with prime specialties.

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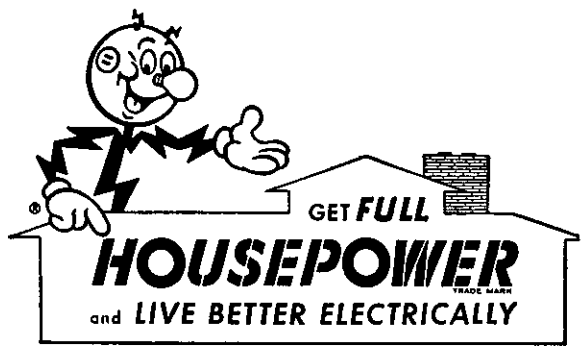

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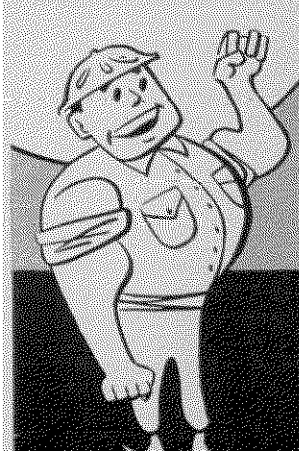

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Plan Engineering-Law Seminar

Plans are underway for an Engineering-Law Seminar, to be jointly sponsored by the Louisiana Engineering Society and the Louisiana State Bar Association, at Tulane University during the latter part of May.

Co-hosts for the seminar, designed to promote mutual understanding among attorneys and engineers in the pursuit of their respective professions for the ultimate benefit of the public, will be the Tulane Law and Engineering Schools.

Invited to attend the one-day seminar will be members of the Louisiana Engineering Society and the Louisiana State Bar Association, together with the senior classes of the Law and Engineering Schools.

An admittance fee will be charged, covering attendance at a morning and an afternoon session, and luncheon. There will be a reduced charge for students.

Preliminary plans for the seminar were made at a meeting at Tulane University. Attending that session were Edward A. McLellan, LES President; W. W. Thimmesch, executive counsel, LSBA; Dean Lee H. Johnson, Dean of the Tulane School of Engineering; Prof. Walter E. Blessey, head of the Department of Civil Engineering; Dean Ray Forrester of the Tulane Law School; Ralph Slovenko, director of Tulane Dept. of Professional Study; Horace C. Renegar, Tulane University Public Relations Director, and Allen Johnson, Public Relations Counsel for LES.

At that meeting, further aims of the proposed seminar were outlined:

1) To acquaint the student engineer and the graduate Professional Engineer with a working knowledge of the legal aspects of the engineering profession.

2) To provide the law student and the legal fraternity with a corresponding knowledge of the engineering profession and its problems which might entail legal assistance.

3) To broaden the arena of contacts between the legal and engineering professions.

4) To assist law and engineering faculties in developing studies within their respective curricula of current professional trends.

It was agreed at the planning meeting that the engineers would outline the subject matter for discussion at the seminar; at a later time, the topics for a second joint session may be selected by the attorneys.

Twelve topics were posed by an LES Agenda Committee composed of Mr. Frank Riess, LES Board Member, Chairman, American Marine Corp., representing Industry; Mr. Clayton Nairne, New Orleans Public Service Inc., Utilities; Mr. Waldemar S. Nelson, Bedell & Nelson Engineers, Inc., Consultants; Col. William H. Lewis, Board of Commissioners, Port of New Orleans, Government; Prof. Walter E. Blessey, Universities, and Mr. Robert Gosa, Williams-McWilliams Industries, Contractors.

The topics suggested for discussion included:

(1) University procedure to introduce student engineers to the legal responsibilities and other legal aspects of the engineering profession.

(2) Need for legislation or some method of restricting Owners from securing Engineering Services without fee and from securing Engineering Services from other sources than Consulting Engineers.

(3) Procedure to define the limits of liability for damages in the practice of Consulting Engineering.

(4) Administration of contractual clauses on major engineering and construction projects.

(5) Final decisions for interpreting specifications when dispute arises during progress of engineering work.

(6) Assessment and enforcement of liquidated damages clauses in cases of disagreement as to causes of contract delay.

(7) Recovery of estimating fees when submitting bids to restrict indiscriminate selection of bidders by Owners.

(8) Need for legislation to prevent the practice of bid peddling.

(9) Contracts with employee labor organizations.

(10) Contracts with customers to supply public utility services, including process for changes of rate schedules.

((1) Coordination with government to set rates, revise rates, and interpretation of agency rules such as F.C.C. and F.P.C. in connection with public utility service.

(12) Enforcement of Legislation to prevent practice of engineering by other than Registered Professional Engineers.

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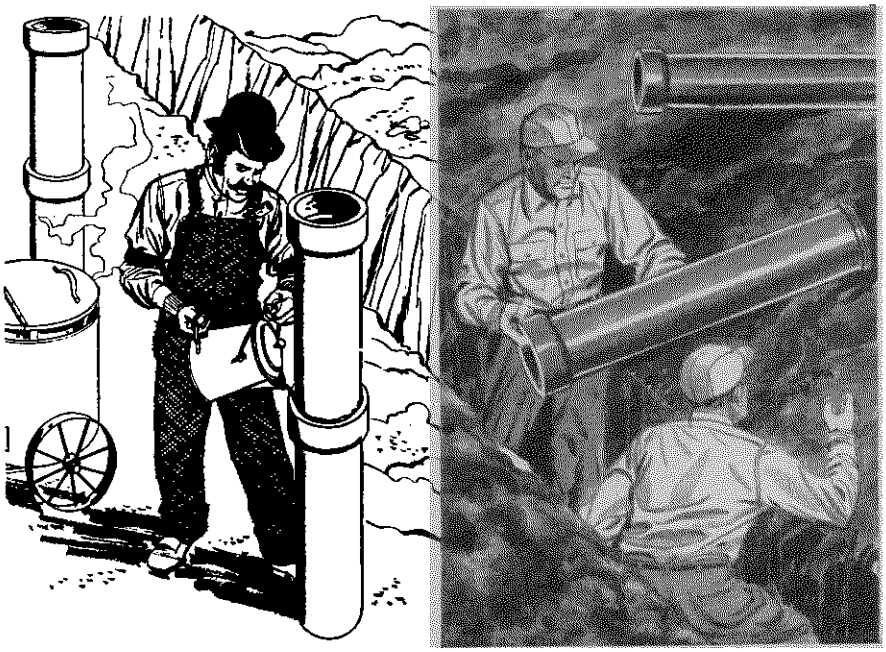

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Emphasizes More 'Professionalism'

Louisiana engineers must talk more about professionalism if they hope to win public acceptance, Edward A. McLellan, president of LES, told a luncheon meeting at the Fourth Annual State Planning Conference in Alexandria March 26.

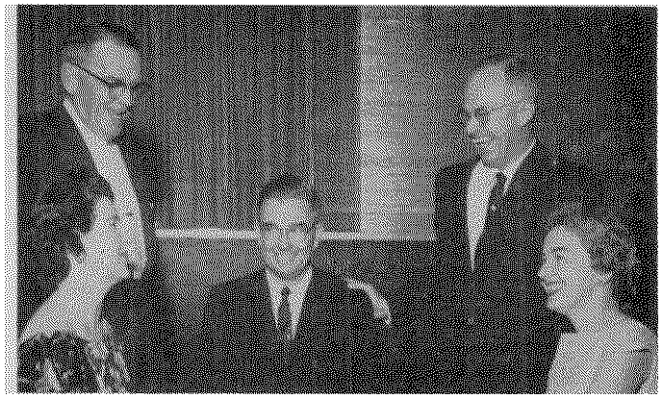
"People can usually tell easily who doctors or lawyers are and what they do," said McLellan. "It's more difficult with engineers. "Some work with metals, some with cement; they work at the North Pole, up in space or down in the ground."

He encouraged the use of the designation, "P. E." after the engineer's name where applicable, to denote "Professional Engineer."

He also called the attention of the membership to a forthcoming solicitation, on a voluntary basis, for funds to meet anticipated legislation and litigation needs of the engineering profession. A separate communication in this regard will be sent to LES members.

Francis B. Sessums, Baton Rouge, Legislation Committee Chairman, noted that the present professional engineering licensing law was deemed by his committee as "adequate to protect the public interest."

A special vote of thanks was accorded Prof. Wiley Poole, LSU, conference chairman; Daniel V. Cresap, president, Alexandria Section, and others of the host section for their outstanding planning of the event. A total of 108 attended from all parts of the state.



ATTENDING Fourth Annual State Planning Conference in Alexandria March 25-26, 1960, were (from left, seated) Mrs. Lee H. Johnson, president of LES Women's Auxiliary, Mrs. Leonard Bossier, president of Alexandria Auxiliary; (standing, from left), O. E. Barron, arrangements chairman; Edward A. McLellan, LES President, Daniel V. Cresap, Alexandria Section President.

Workshop meetings were held at the Hotel Bentley under the supervision of the following chairmen: Mrs. Lee H. Johnson, Woman's Auxiliary; Stanley G. Dinkel, Membership; Sessums, Legislation; Henry L. Landry, Annual Meeting; James B. Smith, Engineers' Week; George Elmer May, Vocational Guidance; John F. Fernandez, Secretaries' Workshop; J. Bres Eustis, Public Relations, Publicity; Bernard A. Grehan, Professional Civic and Industrial Affairs; Arthur C. Thigpen, Section Coordination.

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SRO—Field Notes
By Allen Johnson

A standing-room audience turned out for the paper on legal problems affecting engineers by Attorney R. E. Kerrigan at the New Orleans Convention of ASCE . . . Considerable press-TV interest was shown in a press conference on water pollution with Frank A. Marston, ASCE president, a sanitary engineer who had a hand in problems of pollution on the Potomac River, William H. Wisely, ASCE executive director, and Dr. Frank W. Macdonald, executive secretary of the State Board of Registration of Professional Engineers & Land Surveyors, who joined Messrs. Marston and Wisely in comments about recent cases of water pollution on the Mississippi . . . Bouquets to Mrs. Frank Fromherz for a successful ladies' program . . . Menge Pump & Machinery Co., Inc. of New Orleans has opened a Shreveport store manned by Elmer H. Groth and Cam Lowe, with F. M. Pomona Deep Well Turbine & Pump, Onan Electric Generators and Viking Rotary Pumps for industrial and municipal use.

Tom Ruffin, first vice-president of the Shreveport Section, has thrown his hat in the ring for national office with the Junior Chamber of Commerce . . . The O. T. Ice, Jrs. took their teen-age daughter to the State Planning Conference . . . Dan Cresap said the Alexandria Engineers Week conflicted with Swineherd Week. O. E. Barron added: "The speeches were interrupted by baa-a-as" Mayor Bowden's assistant O'Hearn Mathew had similar trouble with the mike while extolling the advantages of Alec . . . Ferdinand Larue, Jr. says the Lafayette Section keeps in close touch with civic affairs by providing its president with a Chamber of Commerce membership.

Tom Ory, president of Marshland Seaplane Service in Westwego, announces plans for the completion soon of a 5,000-foot airstrip in conjunction with his bayou landing area for seaplanes making regular trips offshore . . . Henry Landry, Doug Latimer, Calvin Watts and Francis Sessums talking up Baton Rouge as the next Annual Meeting site . . . John Fernandez describing a secretary's most important duty as "assistant to the president," to which President McLellan commented: "That's an understatement" . . . President McLellan will attend the NSPE Section Presidents Conference at Purdue University April 8-9.

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The NSPE Board of Directors, at the recent Wichita meeting, adopted significant policy statements concerning collective bargaining by engineers and engineering technicians, and the professional provisions of labor legislation.

The highlights of the three policy statements follow:

Past experience and experimentation have shown that the principle of unionism and professionalism conflict to an extent making unionization of professionals inconsistent with the best interests of either the profession or the general public.

Professional provisions of labor legislation should be governed by the following considerations: (1) No professional employee should be forced to join a labor union against his will; (2) professionals should retain the right to separate votes in collective bargaining determinations; (3) professionals should be able to vote separately in decertification proceedings; and (4) the right to form non-bargaining associations with professionals in the same employment should be guaranteed. The new policy statement also favors amendment of the present labor law to prohibit "union" or "agency" shop requirements for professional employees.

Because the unionization of engineering technicians could hinder the professional activiites of engineers, aid should be given engineering technicians in opposing unionization attempts in cases threatening the performance of professional employees.

—o—

Leroy K. Wheelock has been elected secretary of Engineers Joint Council, replacing Esworthy P. Lange who resigned to become executive secretary of the American Institute of Industrial Engineers, on March 1, 1960.

Wheelock has been assistant secretary of EJC since 1956 and, more recently, executive secretary of the Engineering Manpower Commission. A mining engineer, graduate of Iowa State College and holder of a masters degree from the Missouri School of Mines, in 1952, he practiced engineering until 1956. His activities included underground mining, mining equipment consultant, field geologist in uranium prospecting for such companies as C. Tennant Sons & Company, U. S. Mining Smelting and Refining Company, Eagle Pitcher Mining and Milling Co. and Ventures Limited.

He is a member of the AIME, ASEE, Committee on Specialized Personnel, Office of Civil and Defense Mobilization and the National Defense Executive Reserve.

Professional Engineers and Land Surveyors Granted Registration

February 9, 1960 — Clifton E. Baker, Rocky River, Ohio; Lewis Lee Barnes, Atlanta, Ga.; Bertram J. Bernstein, Shreveport; Melrose G. Bonner, New Orleans; George J. Bourg, Baton Rouge; Bryan W. Brabston, Jr., Baton Rouge; Donald E. Brown, Sulphur; Lewis F. Cheek, Hearne, Tex.; Burt W. Collins, Bastrop; Benjamin G. Couto Filho, New Orleans; Jackie B. Dixon, Lafayette; John R. Downes, Shreveport; Lester C. Draughon, Jr., New Orleans; James L. Evans, Jr., Baton Rouge; Arvold R. Fisher, Metairie; Floyd S. Fisher, Jr., Livonia, Mich.; Enoch M. Fox, Lake Charles; Clyde C. Franklin, Shreveport; David L. Fulton, Rolling Fork, Miss.; Archie T. Grant, Jr., Lake Charles; Ronald D. Guilbeaux, Lafayette; James E. Harris, College Station, Tex.; Donald L. Herbert, Houston, Tex.; Andrew B. Hill, New Orleans; William W. Hurst, Lake Charles; Clifford D. Journey, Jr., New Iberia; Max J. Kennard, Los Angeles, Calif.; Billy H. Kidd, Minden; Clarion J. Kjeldseth, Barksdale AFB; Robert E. Lane, Thibodaux; John S. Logan, Baton Rouge; James L. MacFarlane, Lafayette; John P. Marshall, Houston, Tex.; Fred H. Martin, Baton Rouge; Nicolas Matta, V. Palmeras, Puerto Rico; Samuel H. McAfee, New Orleans; Bob J. McDonald, Shreveport; Ralph J. McMahon, Dallas, Tex.; Ralph P. Nix, Shreveport; Pascal P. Paddock, Oklahoma City, Okla.; Morris R. Plunkett, Metairie; Ivo C. Pogonowski, New Orleans; James L. Power, Baton Rouge; John R. Prothro, North Little Rock, Ark.; William P. Raborn, Baton Rouge; Allen D. Reeder, Houston, Tex.; Merle H. Ruff, New Iberia; Robert A. Schauer, Largo, Fla.; Richard Steinhorst, Jr., Lafayette; Ferdinand J. Tate, Alexandria, Va.; Owen T. Tolson, Jr., Shreveport; William C. Touchstone, Jackson, Miss.; Charles T. Wells, Houston, Tex.; Richard O. Wornat, Houma; William J. Wright, New Orleans; Leopoldo R. Wulff, I., Lafayette; Luis M. Zervigon, New Orleans.

March 15, 1960 — Rodolfo J. Aguilar, Baton Rouge; Thomas M. Ashton, Baton Rouge; Raymond B. Aufmuth, South Euclid, Ohio; Robert E. Babcock, Baton Rouge; Leonard S. Baranski, Baker; Richard McG. Bigger, Metairie; Ernest J. Breaux, LaPorte, Tex.; John C. Broussard, Sr., Baton Rouge; Dwight B. Bullen, New Orleans; John P. Calmes, Plaquemine; Robert E. Champagne, Jr., Sorrento; William C. Clements, Houston; George C. Conrad, Reserve; Billy C. Daniels, Lafayette; Joseph T. Dunlap, Shreveport; Harlon R. Edmiston, Sterlington; William R. Finger, Baton Rouge; O. R. Fitz, Malibu, Calif.; Joseph D. Glidden, Houston, Tex.; Robert G. Graves, Baton Rouge; Walter M. Hamer, New Orleans; Willard R. Hancock, Monroe; Eugene B. Harry, New Iberia; Maurice O. Jordan, Shreveport; Ernest L. Levingston, Baton Rouge; John L. Marchese, Gretna; J. C. Martin, III., Houston, Tex.; James E. Mathews, New Orleans; Marvin L. Moncla, Shreveport; Ronald L. Ovenden, New Orleans; Charles T. Owen, Ruston; Daryl B. Patin, New Roads; Henry F. Peters, Brooklyn, N. Y.; Gerald G. Reaux, Lafayette; Carl A. Romero, Galveston, Tex.; Frederic R. Sawyer, Bunkie; Lonnie G. Shivers, Lafayette; John P. Smith, Morgan City; John A. Stevenson, Buras; Bobby F. Warren, Shreveport; Charles C. Wieder, Farmington, Mich.; John J. Wise, Shreveport; Arnold L. Windman, Hartsdale, N. Y.

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What Every Louisiana P. E. Should Know

This is the fifth of a series of articles prepared by the Editorial Staff of the LOUISIANA ENGINEER in which an attempt will be made to answer questions of interest to professional engineers in this area. Where, in certain instances, it becomes necessary to answer questions of a controversial nature, it must be re-emphasized that the opinions expressed are those of the Editorial Staff and do not necessarily reflect the feelings of the Louisiana Engineering Society nor the Louisiana State Board of Registration for Professional Engineers and Land Surveyors.

For obvious reasons, no attempt will be made to go into legal interpretations since, in such matters, ethics dictate that we respect the boundaries of our sister profession. Any other questions our readers might wish to submit, pertaining to the Engineering Profession, will be welcomed by the Editorial Staff.

QUESTION—What qualifications are required for registration as a Professional Engineer in Louisiana?

ANSWER — Excluding reciprocity, Louisiana's law specifies three ways that an engineer may presently become registered:

1. **Graduation plus experience**
2. **Experience plus examination**
3. **Long established practice**

During the first year after passage of the registration act (Act 73), public employees could be registered in civil engineering restricted to practice in public employ only. Also, during the first year, a grandfather clause was in effect covering each branch included in the act.

QUESTION—In general, what length of time is required for a professional engineering registration examination?

ANSWER—Louisiana and twenty-five other states give 16-hour written examinations. Seven states give 12-hour examinations; eight give eight-hour examinations and four give six-hour examinations.

QUESTION—What is the range of professional engineering registration fees?

ANSWER—Louisiana and 28 other states have a $25 registration fee for professional engineers. The range, among the balance of the states is from $10 minimum to $45 maximum.

Thirty states have an annual renewal fee of $5. While the Louisiana law states that the annual renewal fee shall not exceed $10, the Louisiana state board has fixed the fee at $5 for renewal in one branch and $10 for renewal in two or more branches.

QUESTION—What are the practices among the various states with regard to frequency of professional engineering registration board meetings?

ANSWER—Eighteen states, including Louisiana, require that four meetings be held each year. Ten states require six meetings per year; two require 10 meetings per year; five require 12 meetings per year; two require 20 meetings per year and one requires 26 meetings per year.

Invite Engineer Entries For Raymond Award

Practicing engineers, engineering faculty and undergraduates have been invited to submit papers in the $1,000 Alfred A. Raymond Award competition.

Entries in the third annual award contest must add to engineering knowledge as related to the "Foundation of Structures." The entry of manuscripts does not prevent publication.

Judges in the contest, sponsored by Raymond Concrete Pile Companw, a division of Raymond International Inc., are: Frank A. Marston, Boston, Mass., national president, American Society of Civil Engineers and Partner, Metcalf & Eddy, Consulting Engineers; William W. Moore, San Francisco, Calif., Partner, Dames & Moore, Consulting Engineers, and Ralph B. Peck, Urbana, Ill., Professor of Foundation Engineering, University of Illinois.

For details, write: Alfred A. Raymond Award, Dept. F., Room 1214, 140 Cedar Street, New York 6, N. Y. Phone: COrtlandt 7-7070.

Put Added Loads On New Structure

A new roof deck structure capable of taking loads far beyond normal requirements has been introduced by a New Orleans firm.

Proof load tests of the Spandeck structures developed by SpanDeck Corporation, 5501 Chef Menteur Hwy., were

(See Photo, Page 14)

conducted by Pittsburgh Testing Laboratory, said William E. (Bill) Moore, company president.

"In building within a budget," said Moore, "designers and builders must frequently face the problem of providing a load bearing floor or roof with an uninterrupted span at a low cost.

"The problem is sometimes compounded by the necessity of having to provide a wide overhang, which adds to the design complications and cast. SpanDeck, a steel structural unit with long span, light weight and broad width, economically and easily solves the problem by providing fast handling, easy installation and significant savings in field labor."

As an example of speed of construction, he cited the fact that 60 sections of SpanDeck totalling 2,400 square feet of roof deck were placed by three laborers, a crane operator and a light crane in approximately 210 minutes.

A performance report is obtainable from Pittsburgh Testing Laboratory.

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Introduces New Roof Deck Structure



CHECKING ability of SpanDeck structure to take load are (from left), Frank H. Walk, consulting engineer, and a representative of Pittsburgh Testing Laboratory (See related article on Page 12).

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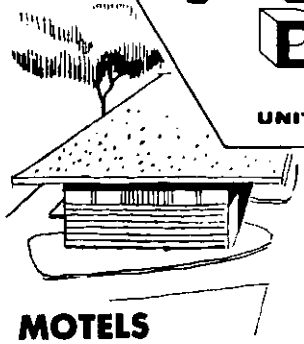
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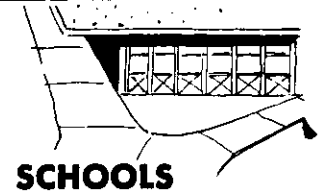
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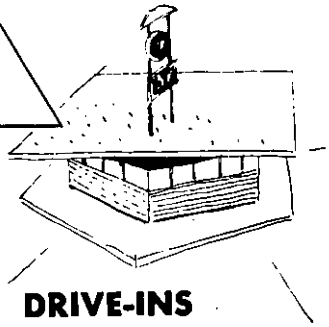
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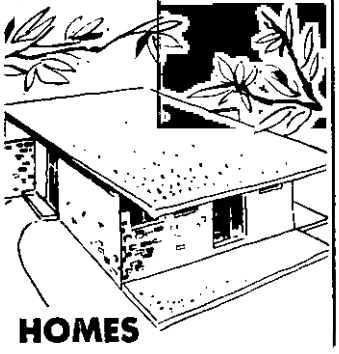
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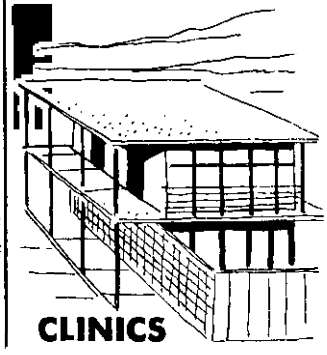
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WHEN AMERICA BUILDS FOR ECONOMY . . . IT BUILDS WITH CONCRETE



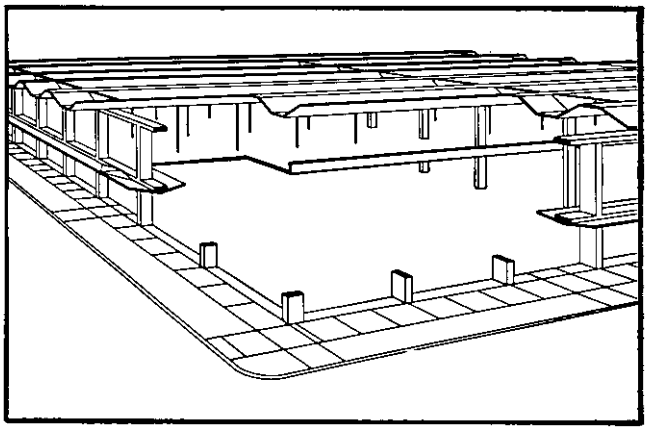
Sears, Roebuck & Company's Tampa store . . .

concrete folded plate roof achieves large, unobstructed floor area

One of the basic requirements here was to achieve unobstructed floor space with economy. Architects Weed, Russell, Johnson & Associates found the answer by using a concrete shell in the form of a folded plate. This construction made it possible to span the entire floor area with only one interior row of columns . . . and suspend the second floor from the roof. The result: 163,715 square feet of *fully flexible* floor space, so important to any retail selling operation.

Folded plate design is, in itself, unique and interesting. And only concrete can give the added boldness of the wide, cantilevered overhang.

It's one more example of the way new uses of concrete are bringing big economies and added vitality to both conventional and modern architecture.



Isometric view showing 125-foot c on c spacing of main columns. Floor slab is supported by 3-inch plates welded together to form a hanger. Hangers are spaced 25 feet c on c.

FOR STRUCTURES... MODERN **concrete**

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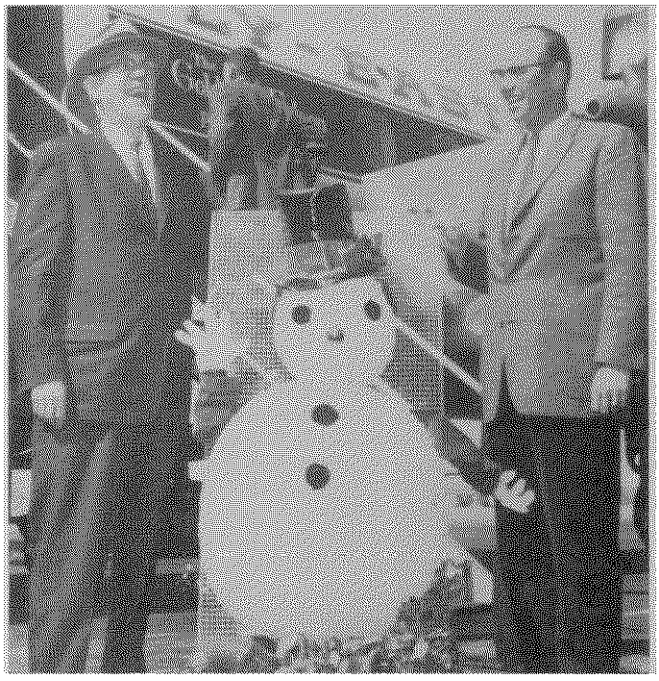
Louisiana Section Welcomes ASCE



FRANK A. MARSTON, Boston, president of ASCE, is met at Moisant International Airport by "Snowman" (to make him feel at home) and Frank C. Fromherz, President of Louisiana Section of ASCE, host of national meeting of ASCE.

By Frank A. Marston, President
American Society of Civil Engineers

How can Louisiana engineers assist in attracting the interest of the public, particularly the younger generation, in the science and profession of Civil Engineering?

We have found at ASCE that we must publicize our Civil Engineering accomplishments, such as super-highways, bridges and dams.

These accomplishments attract and challenge our youth with their great opportunities.

We have found that it is valuable for members of ASCE—and LES—to go to the high schools and talk about our profession to stimulate interest in engineering, and to work with students groups such as JETS.

By arranging to speak on current civil engineering topics before civic and community clubs, the Louisiana Engineer is showing a responsible attitude in behalf of his profession. The public will take note, favorably.

By FRANK C. FROMHERZ, President
Louisiana Section, ASCE

In response to President Marston's comments on the promotion of Civil Engineering, here are a few of the projects undertaken by the Louisiana Section:

One the occasion of the dedication of the Mississippi River Bridge, the Louisiana Section awarded a plaque to the work as an outstanding engineering achievement and gave certificates of achievement to the consulting engineer, the general contractor for the substructure and the general contractor for the superstructure.

Our Public Affairs Committee is continually on the lookout for other civil engineering projects worthy of such recognition.

The Louisiana Section has two representatives on the LES Vocational Guidance Committee handling the JETS program on a statewide basis, and is active in that regard.

We assist in providing speakers before various groups, particularly in connection with Engineers Week activities—under the sponsorship of LES.

Louisiana Engineering Society members played a prominent role in events of the New Orleans meeting of the American Society of Civil Engineers March 7-11, 1960.

Roy T. Sessums, immediate past president of LES, served as general convention chairman. Instrumental in arranging for the meeting were Bernhard Dornblatt, a national director of ASCE, and Frank C. Fromherz, president of the Louisiana Section of ASCE.

Some 45 papers dealing with subjects of immediate interest to Louisiana civil engineers were presented, many of them by LES members. Abstracts of a portion of these papers are presented below. It is anticipated that others will follow in subsequent issues of The Louisiana Engineer, as space permits. Those interested in details should contact the author or authors directly.

Local committee officials for the ASCE meeting are listed elsewhere in this issue.

(A special word of appreciation for their assistance in preparing this material goes to M. O. Chenoweth, New York, Public Relations Director for ASCE; Hal W. Hunt, Editor, CIVIL ENGINEERING, and W. S. Nelson, Public Relations Chairman, Louisiana Section of ASCE—Editor's Note).

The Old River Control Project was described as "one of the really big jobs of flood control engineering undertaken in the United States" at a convention session of the ASCE.

The basic purpose of the control project at Old River, which is a connecting channel for the Mississippi and Red Rivers, above Baton Rouge, is to prevent the adoption by the Mississippi River of the shorter route to the sea offered by the Atchafalaya River.

Details of the Old River Control Project were presented to the engineers by Frederic M. Chatry, an engineer connected with the U. S. Army Engineer District at New Orleans.

A success story of the operation of an offshore pipeline compressor station by remote control from microwave was related at a convention session of the American Society of Civil Engineers.

William E. Matthews IV, of Birmingham, Ala., described the operations at the Olga Compressor Station in the marsh regions bordering the Gulf of Mexico at a point about 50 miles south of New Orleans and five miles east of the Mississippi River. It is operated by Southern Natural Gas Company, of which Mr. Matthews is assistant superintendent of compressor stations.

An unusual story of how engineering skill changed a grass-clogged, unsanitary, stagnant and polluted Louisiana bayou into a clear, open stream was told at a convention session of the ASCE.

The bayou is the historic Bayou Lafourche, formerly a distributary of the Mississippi River, which from its head at Donaldsonville, La., flows in a southeasterly direction for a total distance of 107 miles into the Gulf of Mexico at Belle Pass.



Panel on Engineers Council for Professional Development featured talks by (from left), A. T. Granger, dean of engineering, University of Tennessee; C. H. Ax, St. Louis, ASCE representative; Lee H. Johnson, dean of engineering, Tulane University, and R. E. Stiemke, moderator, director of Georgia Institute of Technology engineering school. Panel dealt with ECPD accreditation of engineering curricula.

The author of the paper presented at the convention, Hu B. Myers, chief engineer of the Louisiana Department of Public Works, Baton Rouge, referred to Bayou Lafourche as the "longest street in the world," since people live side by side on both sides of the bayou for a distance of over 100 miles.

Details on the project for improving Southwest Pass to provide a dependable 40-foot deep ship channel connecting the main stem of the Mississippi River with the Gulf of Mexico, thereby permitting passage of deeper draft vessels, were outlined by Austin B. Smith, an engineer with the Lower Mississippi Valley Division, Vicksburg, Miss. He told a convention session of the American Society of Civil Engineers that the total estimated federal cost of the project is $8,300,000 and construction will require approximately three and one-half years.

The central problem is the elimination of heavy high water shoaling that forms near the mouth of Southwest Pass during each high water season.

Evolution in building design has led to a new kind of foundation problem for tall buildings on deep clay soils, a Houston, Texas, soil mechanics engineer told the ASCE.

This new problem is foundation heave, according to Bramlette McClelland, of the consulting firm of McClelland Engineers, Houston. But it is new only with relation to multi-story buildings, having been a familiar problem through the years in light construction, he said.

"It derives, strangely enough," Mr. McClelland noted, "from many things seemingly unrelated to soil mechanics: changing architectural styles, use of new building materials spiraling real estate costs, and increased dependance on the automobile for transportation."

The enormous weight of sediment brought down by the Mississippi River, through the ages, apparently has depressed the earth's crust at the river's mouth and may still be doing so, the ASCE learned at its convention.

According to Charles Senour, a consulting engineer of Coral Gables, Fla., deposits continue to increase the length of channel requiring dredging at the entrance to Southwest Pass, but no material increase in arable land by reason of natural delta advance seems to be taking place.

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ASCE (Cont.)

A report on the speedy construction of the world's longest bridge, the Lake Pontchartrain Causeway, in Louisiana, won the admiration of engineers attending the national convention of the ASCE.

The two-lane, prestressed, prefabricated concrete bridge across Lake Pontchartrain, connecting Jefferson and St. Tammany Parishes, required only 14 months and 12 days from the driving of the first pile to the construction of the last roadway section, A. D. Jackson, of Baton Rouge told the engineers.

The bridge is 24 miles in length, entirely over water, and the whole causeway is 31 miles, including bridge and approaches.

Mr. Jackson made reference to the Lake Pontchartrain Causeway in a paper devoted to a detailed account of the Interstate Highway in New Orleans.

"It is hoped, " Mr. Jackson said, "that all of the Interstate (Highway) in Jefferson Parish can be completed in the next five years."

Unusual features of design of the Old River Navigation Lock, a key element in the project for the control of Old River, a natural waterway connecting the Mississippi River with the Atchafalaya River at a point about 50 miles northwest of Baton Rouge were outlined at a session of the ASCE convention.

Addressing the session were Waldemar S. Nelson, President of Bedell & Nelson Engineers, Inc., and A. W. Thompson, senior partner, A. W. Thompson & Associates who jointly designed the lock structure and appurtenances under contract with the District Engineer, New Orleans District of the Corps of Engineers, builder of the lock.

Unusual features cited were: the extreme fluctuation in upstream and downstream river stages, soil conditions, a combination of geographical and topographical factors with a unique concept of emergency closure procedures and lock maintenance operations, criteria governing the design of guide walls at either end of the lock, and location of a highway bridge and embankment in conjunction with the navigation lock.

There are no "general rules and data" for the crossing of the Mississippi by pipelines, Leo M. Odom, Baton Rouge, La., engineer told the gathering.

Theories based on the actions of smaller streams are only misleading, he said, and to be able to design a crossing the study must be based on observations made on "the Old River itself."

He described the lower river as an alluvial stream having a great variation in discharge and flowing in a bed and within banks composed of its own alluvium. As such, he said, it displays the phenomena of meandering, bank caving, cyclical variation of the elevation of the bed and other characteristics.

"The relative stability of the river and, therefore, the cost of a dependable crossing changes greatly within a comparatively short length of the river due to variations in the erodibility of the banks, to the location of revetments and to the characteristics of the flow pattern."

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Mrs. Frederick H. Fox, Mrs. Louis M. Buja, Mrs. Alvin M. Fromherz, Mrs. Frank W. Macdonald

---

Design and construction of the revetment program on the 738 miles of the Mississippi River, from Cairo, Illinois, to Baton Rouge, Louisiana, are not pointed toward an impregnable bank covering which will hold forever against the full onslaught of the river, the American Society of Civil Engineers was told in a convention session here today.

However, the revetment project will be capable of resisting normal forces for many year, J. Ira Boswell, of Vicksburg, Miss., told the engineers. Mr. Boswell is chief of the construction and maintenance branch of the U.S. Army Engineer District at Vicksburg.

Morrough P. O'Brien, dean emeritus of the College of Engineering, University of California, Berkeley, told a luncheon session of the American Society of Civil Engineers' convention that the social sciences—psychology, economics, political science, sociology, etc.—will play an increasingly important role in the practice of civil engineering.

"So great (a role)," he said, "that I would include some applications of social science within the broad designations of engineering science.

"Engineers cannot ignore the social, political and economic environment in which they practice, and many important areas of engineering research will require teamwork between civil engineers and social scientists."

Dr. O'Brien deplored the viewpoint developed in many engineering schools that give the student the impression engineering problems are "closed in character and are susceptible to neat and unique solutions."

How "hot" sulphur is "mined" from the bottom of the Gulf of Mexico and then transported to shore by pipeline was told at a convention session of the American Society of Civil Engineers.

Details of this unusual engineering feat were described by E. J. McNamara, project manager of the Grand Isle Sulphur Mine, of the Freeport Sulphur Company. The Grand Isle Mine is located in the Gulf of Mexico, approximately seven miles off the coast of Grand Isle, Jefferson Parish, Louisiana. Depth of the water at this location is about 50 feet.

Sulphur mining under water is comparatively new. The sulphur deposit in the Gulf was discovered in 1949, and

Mr. McNamara said that mining of the deposit will be accomplished by a process which requires simultaneous heating of several wells by pumping in 325° F. seawater for melting the sulphur. As the liquified sulphur collects at the bottom of the well, it is then lifted by air to the surface.

Once the hot sulphur was on the surface, the problem was how to transport the sulphur if the mine was to prove successful, he said.

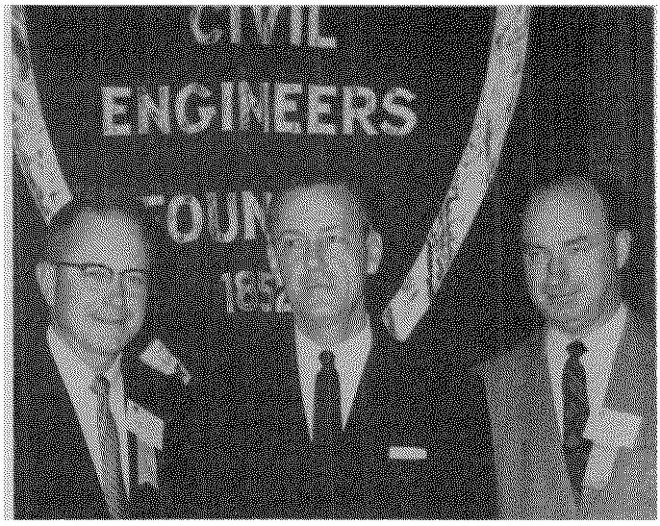
Studies indicated that the most economical, reliable, all-weather means of getting the sulphur to the terminus at Port Sulphur was to pipeline the sulphur to Grand Isle, load it upon liquid tank barges and tow the barges to Port Sulphur by an inland water route.

Pipeline design requirements included a provision for a capacity of 4500 tons per day, with a minimum sulphur temperature at the island barge loading point of 280°F. Since sulphur freezes at 240°F., steam was ruled out for heating the sulphur lines because of the long haul of the pipeline. Heated water, under pressure, was found to be the solution.

"The closure of Old River is the crucial feature of the project for flood control and improvement of the Lower Mississippi River," Col. George M. Cookson told the Waterways and Harbors Division, ASCE.

Col. Cookson, District Engineer of the U. S. Army Corps of Engineers in New Orleans, outlined plans for making the closure in one low-water-high-water cycle.

Despite all the improvements on the Mississippi River,



Legal matters affecting engineers was topic of paper read by R. Emmet Kerrigan, Esq., Deutsch, Kerrigan and Stiles, Attorneys, New Orleans, before New Orleans Meeting of ASCE. General chairman of meeting was LES past president Roy T. Sessums (right), technical program chairman was Prof. Walter E. Blessey, head of the Tulane University Civil Engineering Dept.

there still are serious problems in keeping the big stream under control, the President of the Mississippi River Commission, Maj. Gen. W. A. Carter, said.

Gen. Carter, who also is Lower Mississippi Valley engineer of the U. S. Army Corps of Engineers, Vicksburg, related some of the river engineer's problems in a luncheon talk before the convention of the American Society of Civil Engineers.

Describing the benefits of the river control program since 1928, Gen. Carter said conservative estimates indicated that flood damages in the lower valley in the amount of $8 billion have been prevented. The control plan has made it possible to haul 254 billion ton miles of cargo on the river between New Orleans and St. Paul in the last 10 years, at a saving in transportation costs of $1.75 billion.

"The butcher, the baker and candlestick maker have suddenly become experts in highway planning," a speaker said at the convention of the ASCE.

Grady Carlisle, assistant to the director of the Louisiana Department of Highways, Baton Rouge, related in a paper devoted to state cooperation in planning Louisiana urban facilities that the accelerated apportionment of federal funds for Interstate Highway construction has generated interest from sources that have never before been concerned with highway programs.

"These curbstone engineers can cite all the reasons why a proposed highway location is wrong, all without benefit to traffic information and economic data," he stated.

In his talk, Mr. Charlisle told of legislation which required all municipalities of over 5,000 population in Louisiana to develop and adopt a major street plan, subject to approval by the Board of Highways.

"I do not know if this procedure is unique within the nation, but we feel that there is a great deal of merit to this requirement," he said. "Certainly, it points up the awareness of the Legislative Branch of this State to the necessity for joint planning."



Participants in joint Lake Charles engineering societies meeting for National Engineers' Week included (front, from left), Glenn D. Garber, Chairman, Lake Charles Observance; Lt. Col. Lloyd G. Coutts, Feature Speaker of the Joint Meeting, Member of Faculty of the Industrial College of the Armed Forces, Washington, D. C. and National Security Seminar concurrently held at Chennault Air Force Base, Lake Charles; Richard Cox, President, Lake Charles Section, American Institute of Electrical Engineers; Harold Waterfield, President, Lake Charles Section, Society of American Military Engineers; (rear, from left), Prof. Miller Clarkson, Master of Ceremonies; Walter Richard, Navy League; Charles W. Stokes, President, LES-NSPE, Lake Charles Section; Hilton Cotten, Secretary-Treasurer, American Institute of Chemical Engineers; Comdr. Mohns Thornton, USNR, Program Chairman of Joint Meeting and Arrangements Committeeman for National Security. Not shown is Robert Lasater, President, McNeese Engineering Society.

Lake Charles

On Monday, February 15, Louisiana Engineering Society-National Society of Professional Engineers sponsored a joint meeting between LES-NSPE, American Society of Military Engineers, American Institute of Chemical Engigineers, American Institute of Electrical Engineers, and McNeese Engineering Society at Lake Charles High School auditorium. Professor Miller Clarkson of the McNeese State College faculty served as Master of Ceremonies. A brief history of each of the participating engineering societies was given by a representative of the respective society. The feature of the program was a very interesting talk by Lt. Col. L. G. Coutts, speaking on "Technological Progress and National Human Resources". Col. Coutts, a member of the faculty of the Industrial College faculty of the National Security Seminar. Col. Coutts revealed some very interesting and timely information and illustrated his talk with colored slides.

The above meeting was held actually prior to the week of national observance because it was the first day of the National Security Seminar, and we felt the publicity would add to the meeting and also throw some additional publicity toward National Engineers' Week.

On Monday, February 22 over KPLC-TV, a 30-minute panel discussion was presented. The first ten minutes was a panel consisting of the writer, President of the Lake Charles Section of LES; the Plant Engineer of one of Lake Charles largest industrial concerns, Mr. A. D. Hargroder of Olin Mathieson Chemical Corporation; and a member of a professional engineering firm, Mr. Harry Shutts of F. Shutts' Sons. In this 10-minute period we discussed the objectives of National Engineers' Week, told briefly of LES-NSPE, and stressed the counselling function of Engineers' Week and of this occasion. The latter 20 minutes was an industrial panel discussion by Mr. Dave S. Bruce, Director of Operations, Cellulose Products Division, and the Wilmington, Delaware office of Hercules Powder Company, and Dr. Kenneth Staffin, Process Engineer, Wilmington, Dela., Hercules Powder Company. These gentlemen presented a very interesting discussion of the construction of the Pro-Fax (poly propylene) plant now under construction in the Lake Charles industrial area. They included a brief non-technical description of the process and stressed the activities of the various kinds of engineering, from the acceptance of the idea from the research chemist's laboratory through the pilot plant operation and economics analysis by the chemical engineers; the chemical, mechanical, electrical, civil, etc., engineering comprising design of the proposed commercial plant; the construction site engineering by the civil engineers and others; on through to the operation and maintenance of the plant by the various types of engineers Hercules employs.

On Thursday, February 25, a similar panel was held on KTAG-TV at 6:30 p.m. The first portion of the program was a rather similar discussion of activities of engineers in the area and the opportunities for a challenging career in engineering within the next few years. The latter 20 minutes of the program was a discussion of the interesting highway system complex in the Lake Charles area and of the engineering involved from the first beginning of the plan to final completion. Messrs. Marion Garrison, Richmond Griswold, and Everett Toney participated in the general engineering discussion; and Messrs. Sidney B. Norris, Bailey Vincent, Ara Arman, and R. E. Dillon participated in the highway engineering discussion.

On Friday evening the Woman's Auxiliary of the Louisiana Engineering Society, Lake Charles Section, honored McNeese State College engineering, science and math students and faculty. This social was in the form of a party and dance at the McNeese Student Center.

An engineering display was set up by McNeese Engineering Society student members in the downtown Lake Charles Sears store showing chemical and physical science equipment, model of nuclear power plant, and civil engineering instruments. At Martin's Men's Store in South Lake Charles Shopping Center, the McNeese students arranged a space missile model with auxiliary equipment. Muller's Department Store also arranged a window calling attention to engineers' work.

C. W. STOKES
President,
Lake Charles Section

Baton Rouge

Engineers' Week Committee for the Baton Rouge area was composed of Gerald Dyson, Ernest Taylor, K. Thomas, Dave Hovey, Hal Branch, Jr., J. W. Sanders, Douglas Latimer, Albert J. Mayers, Jr., and Francis Sessums.

Activities included:

Acquiring Governor Long's signature on "Engineering Week Proclamation" for all L.E.S. areas.

Newspaper articles February 21, 22 and 25.

Radio spot announcements during daytime station breaks daily February 22 - 26.

Television spot film slides, and program inserts February 22 - 26.

Downtown window displays including models of water treating plant, swimming pool, and sewage treatment plant.

Suburban window display of model of highway overpass and access roads.

Presentation of awards in connection with JETS activities were made at the February 24 meeting of L.E.S. as follows:

Mr. William Lignos, professor of Physics at Baton Rouge High School as the "Most Outstanding JETS Faculty Advisor".

Mr. Joseph Gaines, President of Istrouma High School JETS Club accepted the awards for the "Most Outstanding JETS Club".

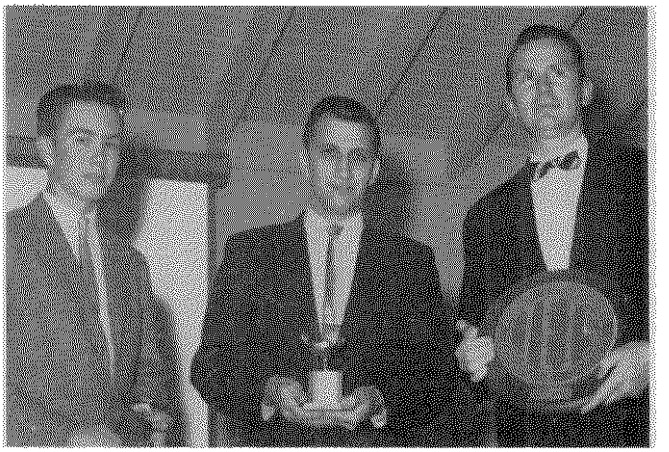
Mr. W. C. Gaddy, Esso Standard Oil, accepted for Esso the award for the "Most Outstanding Cooperating Inndustry in the Area".

FRANCIS B. SESSUMS
Chairman, Engineers' Week

(To the Editor: I won't make any claims on surpassing Alexandria's fine effort, but I felt our group made Engineers' Week recognized in Baton Rouge. Francis Sessums did an excellent job of heading the committee. I would like to see his efforts recognized if possible. /s/ Douglas Latimer, President, Baton Rouge Section)



Dedication of Pontchartrain Expressway in New Orleans coincided with Engineers Week. Mayor deLesseps S. Morrison (dark raincoat) cut ribbon. Many engineers attended.



Baton Rouge award winners (from left), Joseph Gaines, William Lignos, W. C. Gaddy during Engineering Week in Capital City.

Shreveport

On Monday, February 22, at a noon meeting at the Capt. Shreve Hotel, Q. W. Hargrove spoke to the Junior Chamber of Commerce on "Engineering Challenges of the 1960s."

On Tuesday, February 23, noon meeting at the Capt. Shreve Hotel was held the regular meeting of L.E.S. Members with their Wives. The Mayors of Shreveport and Bossier City proclaimed February 21 - 27 as National Engineer's Week. Dr. Virgil Orr of La. Tech spoke on "Professional Status of Engineers." Seventy members and guests were present.

Wednesday noon at the Caddo Hotel before the Mid-City Kiwanis Club, O. T. Ice Jr. spoke on "The Methane Series of Hydrocarbons and Interesting Young Students in Engineering Careers."

On Thursday, E. M. Freeman spoke on "What is a Professional Engineer?" before the Bossier City Rotary Club.

On Friday, Q. W. Hargrove spoke on "Engineering's Great Challenge—the 1960s" at the Washington Youree Hotel—Shreveport Rotary Club.

A panel discussion was held at the State Exhibit Auditorium on the various branches of Engineering with a member of each Branch available for interview with interested high school students.

In addition spot announcements were made during the week on Radio Station KEEL announcing Engineers' Week and the various activities scheduled.

A display was shown in the lobby of the Commercial National Bank Bldg. during the week, and posters were displayed in a number of other buildings and schools announcing the activities.

A special vote of Thanks is due our General Chairman Francis Grant for the work he did in connection with the activity.

O. T. ICE, JR.,
President,
Shreveport Section

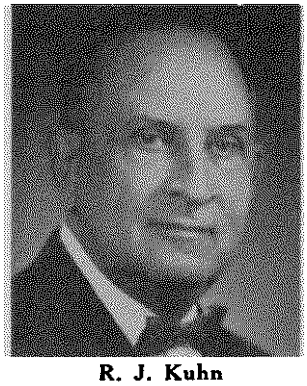
(Continued on Page 28)

Describes Corrosion, Cathodic Protection

By Robert J. Kuhn

In 1960 practically every pipe line system in the United States has or is in the process of having its pipe lines electrified in order to stop corrosion.

At the end of 1958, there were 571,500 miles of underground gas pipe lines in the United States, not counting the hundreds of thousands of service pipes between the mains and the customers premises.



R. J. Kuhn

Add to this the tens of thousands of miles of oil and oil product pipe lines and the many miles of generally large diameter water pipe lines in the United States and some general idea of the magnitude of the corrosion problem may be reached.

Various estimates of the corrosion losses in the United States have been made.

Fortunately for the industries involved and for the public in general, effective methods of controlling and stopping corrosion on underground piping have been developed and are being used by the respective industries today.

To understand the corrosion process, it is desirable to familiarize oneself with the Electro-chemical "Electromotive Series."

This series is a list of metals such as gold, silver, copper, lead, iron, aluminum, zinc and magnesium arranged according to the electric potential each one would assume if placed in a container of say, salt water, and tested to some metallic object placed in the same water and used as a reference.

In the laboratory this series is usually arrived at under highly controlled conditions but for pipe line corrosion work we may make up a sort of "Home Made" electromotive series that is very useful in understanding and controlling corrosion. This "Home Made" electromotive series is as follows:

Gold	+1.300 volt
Silver	+0.450 volt
Copper Sulphate Half Cell Electrode	Zero
Copper pipe	−0.100 to −0.300 volt
Highly aerated steel pipe	−0.100 to −0.300 volt
Semi-aerated steel pipe	−0.300 to −0.600 volt
Poorly aerated steel pipe	−0.600 to −0.800 volt
"Bright" non-aerated steel pipe	−0.850 volt
Aluminum	−0.960 volt
Zinc	−1.150 volt
Magnesium	−1.600 volt
"High Output" Magnesium	−1.800 volt

Robert J. Kuhn, winner of the 1960 LES Technological Accomplishment Medal, graduated from Tulane University with a Bachelor of Science degree in Mechanical and Electrical Engineering. He is a New Orleans consulting engineer. This article is abstracted from a paper delivered by Mr. Kuhn at the Annual Meeting Jan. 8, 1960.

What is the meaning of all this to the engineer?

Most engineers and laymen are familiar with the adverse effect produced on an iron or steel object when

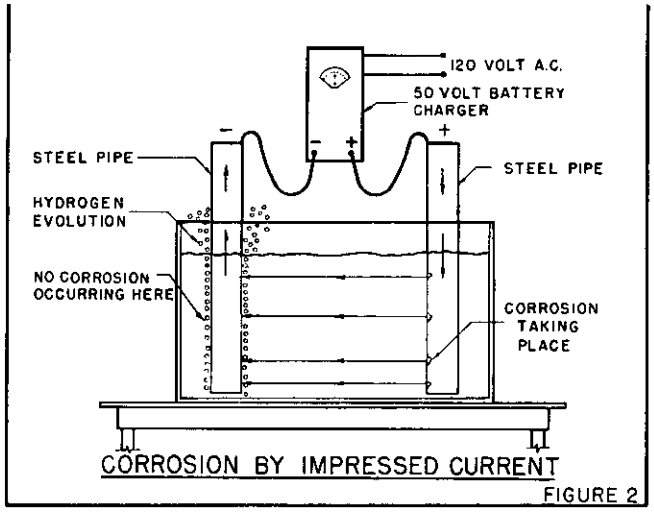


FIGURE 2

connected with a copper object and immersed in water. The iron or steel generally corrodes while the copper is not attacked.

Copper pipe has a position in the electromotive series of approximately −0.200 volt average while semiaerated iron or steel has a position of approximately −0.450 volt. Copper pipe is, therefore positive to steel and conversely steel is negative to copper. When we connect the two, we short circuit them and the copper is lowered in potential with respect to the water and the iron or steel is raised in potential with respect to the water.

Under such a condition direct electric current discharges from the raised or positively charged steel to the water; carrying metal into solution and causing corrosion. This current flows through the water to the copper, creating voltage drops in the solution just about equal to the open circuit difference of potential between the copper and steel collects on the copper, and deposits on the copper a microscopic layer of atomic hydrogen.

If we coupled iron or steel to aluminum, zinc or magnesium these latter metals would discharge current and corrode rather than the iron or zinc and the iron or steel would collect current and hydrogen and would not corrode.

Mention was made of the "Copper Sulphate Half Cell Electrode." This testing device comes in a variety of shapes and sizes but it consists essentially of a non-conducting container such as a plastic tube an inch in diameter and 9 inches long; a porous wooden plug; a copper rod or tube extending into the porous tube plus some copper sulphate solution in the tube.

The wooden stopper must be kept moist and electrically conducting and in use the electrode is placed in the earth or in water and the voltage between it and pipe lines or other structures tested with a sensitive D. C. voltmeter.

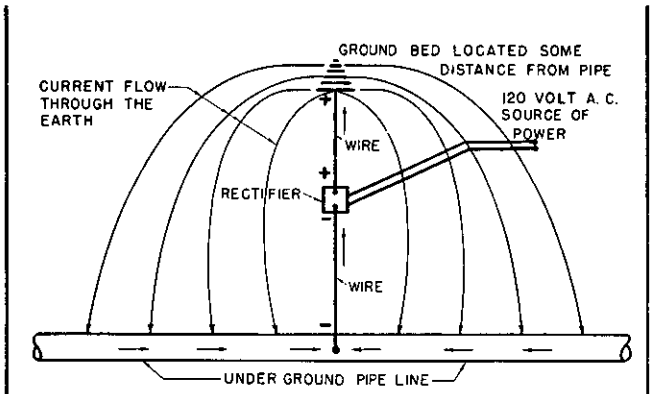
This electrode serves as a sort of electrical benchmark or sealevel in corrosion investigating work.

Let us take two specimen of bare, steel pipe and partly immerse them in a salt water bath. Connect one to the

positive terminal of a 50 volt battery charger and the other specimen to the negative terminal. Note the absence of any activity in the tank while the rectifier is inoperative.

Now turn on the switch energizing the battery charger. What a difference. Note the streamers of rust forming around the positively charged specimen and the hydrogen gas evolving from around the negatively charged specimen.

This experiment is conducted to clearly show the corrosive effect of a positive condition on an iron or steel



CATHODIC PROTECTION RECTIFIER CIRCUIT ON A PIPE LINE

CURRENT COLLECTS EVERY WHERE ON THE PIPE LINE AND CORROSION IS PREVENTED FIGURE 4

pipe. Of course, the condition is stronger than ordinarily encountered but occasionally such conditions prevail.

Let us now substitute a well coated specimen for the positive or corroding specimen but let us further cut a small hole in the coating to see what happens when a heavy positive conditon is impressed on a coated pipe with some imperfections in the coating.

Here goes the switch on again. Now let us watch the time. It will probably take about five to ten minutes for the positive, discharging current to puncture the pipe wall.

This is such a short period of time that it makes one wonder how pipe lines survive a year or two in the ground or in corrosive waters.

On pipe lines the galvanic voltages are less than a volt in contrast to the 50 volts on the rectifiers. Pipe wall thicknesses are greater and the environment is usually but not always less salty than the water used in the tank here.

On pipe lines, on account of the lower galvanic voltages, the hydrogen film usually builds up causing the pipe to polarize thereby reducing the driving voltages and putting obstacles in the path of the galvanic currents.

Just as we find galvanic currents circulating in the earth around a combination of copper and steel piping, the same thing occurs around a bare steel pipe buried in the earth without coupling to any outside source of current.

On welded, cross country pipe lines, galvanic currents are generated from countless galvanic cells and combinations. There are very local currents circulating within a few inches, others between a stream and a high sandy field, others travel great distances, miles in fact, are easily measured and are called long line currents. These long line currents are generally less harmless than some closely confined galvanic currents.

Cathodic Protection

When direct electric current collects on iron or steel surfaces from surrounding soil or water, corrosion does not take place.

I learned this principle by experience during the electrolysis and soil corrosion investigations in New Orleans in the 1925-26 period.

When the welded steel, high pressure gas mains were installed in New Orleans in 1928, I installed a system of protection negatively charging these pipe lines. This method of protection was later to be called by various investigators, "Cathodic Protection."

In 1931 I introduced this method of pipe line protection to a subsidiary of the United Gas Company in Houston, Texas and from New Orleans and Houston the method spread to other southwestern and Pacific Coast pipe line systems. Today, practically every pipe line system in this country is using or contemplating using cathodic protection.

Pipe line corrosion on the more modern pipe lines seems to be more serious than the corrosion reported on older systems. Reasons for this may be that the modern lines generally have higher carbon steel than on the older lines; have thinner walls; are welded rather than coupled, plus the greater operation pressures carried on many lines. All these factors tend to increase corrosion rates.

Cathodic protection or the making of a pipe line negative to the surrounding earth or water may be provided in a variety of ways. One is to use a rectifier, resembling a battery charger, in which 120 volt or other voltage A. C. is rectified to low voltage D. C.

The negative lead from the rectifier is connected to the pipe line to be protected and the positive lead is connected to a "ground bed" which may consist of from a few feet to several hundred feet of junk pipe or railroad rail buried in the earth some distance from the pipe line.

Graphite and Durion anodes may be used for ground bed material instead of junk pipe or rails.

On very well coated pipe lines, zinc and magnesium anodes may be used in lieu of rectifiers and ground plates. Zinc and magnesium anodes serve both as small generators and small ground plates. Each maintains a small voltage with respect to iron or steel and this voltage comes into play when zinc or magnesium anodes are electrically connected to a pipe by means of a single small wire for each anode or group of anodes.

Both rectifiers and zinc or magnesium anodes accomplish the same purpose, the lowering of the potential of the pipe line with respect to the surrounding soil or water.

Cathodic protection involving rectifiers or generators should only be operated under engineering supervision with the division of responsibility clearly outlined.

Some Legal Matters Affecting Engineering

By R. EMMETT KERRIGAN

From the title of my talk you may gather the impression that I have set out to cover an extremely broad subject in a very short time. Curiously enough, however, there have been relatively few court decisions dealing with the legal responsibilities of engineers.

On the other hand, whole books have been written about the legal problems of contractors, and there are a respectable number of law review articles about architects. Whether engineers are more efficient, or just less pugnacious, than architects, I don't know, but they have managed to get by with a lot fewer lawsuits.

The answer may be that the engineer is usually retained in a consulting capacity in which he has less responsibility for actual operations and correspondingly less opportunity of becoming embroiled in litigation.

The architect, on the other hand, is often solely liable for the validity of the plans and specifications for the work. Further, the owner usually looks to the architect to make sure that the contractor performs the work properly.

As middleman between the owner and contractor, it is not unusual, to put it mildly, for the architect to incur the wrath of one or both of the other sides of the triangle.

If a job goes sour, it is highly customary for the contractor and the architect to blame each other; and the owner sometimes has no recourse but to appeal to the courts to settle the argument.

Meanwhile, the consulting engineer has done his task and quietly collected his fee, sheltered by his more passive role from the disputes which have flared up among the other parties.

Of course, in those situations in which the engineer undertakes some of the ordinary responsibilities of the architect, the engineer increases his exposure to legal liability.

Moreover, in the ordinary case, the engineer has not always gotten away entirely unscarred by the battle.

You may be wondering why I have been talking about architects to a group of engineers. I have not forgotten about my audience, — and I have good reason for these introductory remarks. Engineers may derive profit from studying the law as it relates to architects, because, by and large, the relatively few cases involving engineers have been decided on the same rules that the courts apply to architects, and even, in some degree, to contractors.

Architects, engineers and contractors are all skilled specialists who sell their services as such to laymen, and are held to a correspondingly high level of care and skill by the courts. Architects and engineers are, in addition, members of learned professions, and are accordingly bound by even higher standards of skill and loyalty than are contractors.

Architects and engineers are in a way even handicapped, legally, by the abstruse nature of their art. Judges are untrained in the mysteries of science, and they accordingly tend to be more concerned with, and impressed by, the result achieved by a technical man, than by the methods by which the result was reached.

A judge feels instinctively that when a building is constructed, it is supposed to stay up, and be weatherproof, and pieces of it are not supposed to fall off. If it collapses, or if rainwater seeps in, or if a cornice falls off and kills a passerby, there is a decided tendency on the part of the courts to hold that the untoward event supplies its own proof that the building was not put up properly to begin with.

In legal language we call this — the doctrine of *res ipsa loquitur* — a Latin phrase which means, the thing itself speaks. Or, in other words, the fact that the accident happened, without more, constitutes an accusation of negligence against the architect, the engineer and the contractor.

This accusation places on these skilled professionals the burden of proving that no negligence, or lack of the expected care and skill, on their part had any causative relation to the casualty.

Res ipsa loquitur is not peculiar to the construction and manufacturing industries — it extends to all technical and scientific fields, including, for example, the operation of commercial airplanes. In each case it reflects the awe and mystery in which science has cloaked itself; and the understandable tendency of uninitiated judges to hold science to its promise of perfection.

In the natural order of things, some professional men are dealt with less harshly than others by the law. It is common knowledge that all men must die at one time or another, and that there must be a loser in every lawsuit.

When a doctor loses a patient, or a lawyer loses a suit, there are usually a number of his professional brethren who will testify that he did all that human ingenuity could do with an impossible situation.

But when a boiler blows up or a gas-storage tank collapses, and unfortunate people are killed or hurt, the courts will attempt to pin financial responsibility on someone connected with the construction or installation of the offending work.

I'm sure that all of you are familiar with the routine obligations that the law places on you. You must be properly licensed to practice your profession in every state in which you practice it, and the courts will not assist you in collecting a fee for any work for which you were not so licensed.

In one interesting variation of this rule, it was held in Idaho that an engineer was entitled to recover his fee for work delivered in that state, even though he was not licensed to practice there, when the work had actually been done in the state of Washington, where the engineer was properly licensed.

You are all aware that when you agree to prepare or to review plans and specifications, you are responsible, to the person with whom you have contracted, for the accuracy and feasibility of your work. When you contract to fabricate or install equipment, you expect to stand behind your contract and to reimburse the owner if he has to pay someone else to correct your mistakes.

It is clear to all of you, I know, that you owe a duty of undivided loyalty to the man who retains you. If you are employed to review an architect's plans, or to supervise or inspect a contractor's work, the courts will be quick to hold you liable if you should allow any relationship between yourself and the architect or the contractor to influence your decision to the injury of your employer.

In a recent case in California, an architect who had been retained to supervise a construction, made the mistake of accepting simultaneous employment from the contractor in connection with another job. The owner charged the architect with having approved defective work, and the California court held that the owner was entitled to bolster his charges by presenting to the jury the suspicious circumstance of the architect's working for the contractor whom he was supposed to be supervising.

All of these responsibilities as between the parties to the contract are well-settled in the law, and you don't need a lawyer to explain them to you. They are matters of common sense, and are as obvious to the layman as to the lawyer.

What is not so well-settled, or so obvious to an engineer untrained in the intricacies of the law, is the exent of the liability of engineers and architects to injured persons with whom they have no contractual relation at all. Exploration of the extent of this liability will require a little delving into history.

Over 100 years ago, the driver of a mail coach in England was crippled for life when the coach broke down, and threw him off onto the roadway. He sued the man who had contracted with the Postmaster-General to keep the coach in good repair; but the English court held that the repairman could be held liable, for the coach's defective condition, only to the person with whom he had contracted to keep it in repair.

Analyzing the court's opinions, the principal ground for the holding seemed to be that to permit such a suit would expose manufacturers to too much potential liability. In subsequent years, this same rule was applied to building contractors. It was held that they were liable for defective work only to the owners for whom the work was done, not to third persons hurt or killed by reason of the defect.

In one such case, a little schoolgirl fell over a low wall around the steps leading down to the school basement. Her father sued the school trustee — the equivalent of a school board — and the architect who had prepared the plans for the school, — on the ground that a railing should have been placed around the steps.

The Indiana court held that the trustee could not be held liable for acting in reliance on the architect's plans, and the architect could not be held liable because his plans had been approved by the trustee.

Justice Frankfurter of the United States Supreme Court has pointed out that in the last century and the first years of this century, the courts often acted on the principle that their function was to prevent raids on corporate treasuries by juries sympathetic to injured plaintiffs; whereas the tendency today seems to be toward placing the risk of loss on those who can afford to bear it, regardless of questions of fault.

One of the landmarks along the road to this modern view is the decision of the highest court of the State of New York in 1916, in the case of *MacPherson vs. Buick Motor Company*. One of the wheels on a Buick automobile had collapsed, causing injury to the owner of the car. He sued the Buick Company, which was then an independent firm.

The company resisted the claim on the ground that its only direct contractual relationship was with the dealer to whom it had sold the car; and that under the then established rule, it had no liability for defective manufacture toward third persons such as the ultimate owner of the car who was injured.

The New York court took the view, however, that an automobile manufacturer knows that its cars will be resold by its dealers to the public; and that there is no reason why the manufacturer should not be liable to ultimate purchasers who are hurt as a result of defects in the cars.

This decision gained acceptance by courts all over the country as to manufacturers; and it soon began to be applied to the construction industry as well.

One of the early cases involving construction also arose in New York; and this is one of the few cases in which engineers have been considered liable to third parties.

A baseball grandstand was under construction in Buffalo. The plans called for steel columns, which would support the roof trusses, to be secured by anchor bolts set in the concrete floor. When the time came to erect the columns, it was found that, by error, not enough bolts for all of the columns had been embedded in the concrete.

The supervising engineer directed the contractor to drill holes in the concrete for the missing bolts, to set the bolts, and then to grout with sand and cement. This was done, but the green cement was not allowed to harden sufficiently before the columns were placed over the newly-set bolts.

One of the columns pulled its bolts and fell, killing one of the contractor's workmen. The court indicated that the engineer was liable for the death, because he should have warned the contractor not to place columns on the new bolts until the cement had hardened.

Some years later the federal court in Oklahoma held a supervising engineer liable for the death of a third person when a heating system exploded during a test. The ground of liability was that the engineer permitted the use of an inadequate turnbuckle in anchoring a steam pipe to a conduit line.

These decisions, involving deaths which occurred during construction, left unsettled the question of the liabliity of engineers, architects and contractors for injuries to third parties after completion and acceptance of a job. Some courts continued to exonerate these parties in this situation, on the theory that after acceptance, the owner became liable for the condition of the premises.

There are still a few states in which the courts have not yet accepted in any degree the rule holding engineers, architects and contractors liable to third persons — injured as a result of their negligence in erecting buildings and other works classified as realty. But there can be no question that these courts are now in the minority; and even some of these courts have engrafted so many exceptions onto the non-liability rule that they might as well adopt the majority rule of liability to third persons.

Legal (Cont.)

In states adhering to the majority rule, architects and engineers have been considered liable in a variety of situations.

An architect who had contracted to supervise excavation work in California, was held liable for subsidence of adjoining land, on the ground that he had failed to give proper supervision.

Last year a contractor was held liable for the death of a child, and injuries to her parents, from carbon-monoxide poisoning resulting from defective installation of a hot-air heating system.

In New York, the federal court indicated that a subcontractor was liable for the electrocution of a linesman who took hold of a guy wire while he was about to tap in a service line. It was charged that the subcontractor had negligently strung a high tension line in such a way that it sagged and came into contact with the guy wire.

Situations involving tremendous potential damages may arise. A dozen or so years ago, the Pittsburgh-Des Moines Steel Company put up a tank for storage of liquefied gas by a gas company in Cleveland. To cut costs, the tank was constructed in a novel cylindrical design instead of the usual spherical form.

The tank burst and collapsed and the escaping gas caught fire. One hundred thirty people died in the fire, hundreds of people were injured, and 150 homes and 15 factories were totally or partially destroyed.

Many lawsuits were filed, and both the state and the federal courts held that the plaintiffs had made out a jury case of negligence on the constructor's part in using the cylindrical design, in using wooden supports for the tank, and in not anchoring it to its base.

It is also necessary to note that architects and contractors have sometimes been held liable for injuries occurring years after a job is completed. The statute of limitations gives no protection in these situations, because the statutory period begins to run, not when the alleged negligent act was committed, but only when the injury takes place.

One such case was decided recently in Washington, D.C. A contractor repaired a broken outdoor iron stair railing in 1942, allegedly without removing a deposit of accumulated rust at the base of the anchor rod.

The repaired railing stood firm in sun, rain, wind and snow for seven years. In 1949, a tenant in the building leaned against the railing, it broke, and the tenant fell off the stairs and was injured. She sued the contractor, alleging that the absorbent rust deposit he had failed to remove had contributed to rusting and failure of the anchor rod. The federal court of appeals held that the plaintiff had made out a strong enough case to go to the jury.

Some years ago, a California court held a contractor liable for nailing a porch railing improperly. The case arose when the railing collapsed and a third person fell off the porch, eighteen years after the porch was constructed.

A case is now pending in our Louisiana appellate courts which has produced a rule of law going beyond anything heretofore decided on the subject of the liability of architects and engineers to third parties.

The case involved the installation of a hot-water system in a hospital under construction. The plans and specifications, prepared by an engineering firm, called for a pressure-relief valve as part of the system.

The plumbing subcontractor submitted a brochure which made no provision for a pressure-relief valve, because he was under the impression that the same purpose would be served by a temperature-relief valve. The engineering firm refused to approve the brochure, but the architect apparently did approve it, and the subcontractor proceeded with his work.

When the system had been installed without a pressure-relief valve, the subcontractor lit the boiler to test the system. The boiler exploded, and one of the subcontractor's employees died from live steam burns.

His heirs could recover only workmen's compensation benefits from the subcontractor, so they sued the architect, the engineers, and manufacturers of various components of the hot-water system. The courts exonerated the manufacturers because there was nothing defective about the elements of the system. The engineers were exonerated because their plans and specifications were proper.

But the architect was held liable for heavy damages, on two grounds. One was that the architect should not have approved the subcontractor's brochure which did not provide for a pressure-relief valve.

It is hard to quarrel with this holding. But the court of appeal went further and held that the architect was liable on the additional ground that he had contracted to inspect the work; and that, had he inspected it diligently, he would have noticed the absence of a pressure-relief valve.

It appears that in this latter holding the court failed to draw a vital distinction between defective work and incomplete work. If the architect had noted the absence of a pressure-relief valve, it seems that he would have been entitled to assume that the subcontractor would comply with the specifications and install this required valve before lighting the boiler.

I understand the case will be appealed to the Supreme Court of Louisiana, and it is hoped that that court will rectify this seeming error on the part of the lower courts.

At all events, you can see that an engineer's potential liability to third parties is becoming an increasingly important factor that he must take into account in his professional work.

It would be well for him to keep in close touch with his attorney to minimize his exposure.

His contract obligations should be carefully reviewed so as to avoid liabilities not within the contemplation of the parties. This is important not only to avoid disputes between the parties to the contract, but also because the engineer's contract obligations may have a bearing on his liability to third parties.

Moreover, he should consider carrying liability insurance, and plenty of it. The relatively slight additional cost for higher coverages may be a small price to pay for adequate protection and peace of mind.

It is necessary to make sure that the policy coverage is broad enough to take care of all of your operations, and that it covers acts, errors and omissions occurring prior to the policy period, and for completed operations. Particularly, your liability policy must be co-ordinated with your various contract obligations, to make sure that it

will cover any special liability which might arise from particular contract provisions.

Inasmuch as some of you no doubt are associated with construction firms, I shall mention a few matters in that area that may be of interest.

The first deals with responsibility for defects that appear in the work after its acceptance. The Supreme Court of Louisiana had occasion to pass on this question in a case involving a housing project.

What happened was that during the course of the construction the owner sold the property to the plaintiff. The work was completed and thereafter the plaintiff discovered certain defects and filed suit against the surety, which had given a bond guaranteeing faithful performance by the contractor.

No such suit had ever been filed by a third person against a surety, because it had always been felt that the only parties who had claims against the surety were the owner and the furnishers of labor and materials. The lower court, apparently being of this opinion, dismissed the suit, but on appeal the decision was reversed.

The Supreme Court relied on an article in our Civil Code which states that one who acquires real property has the right to enforce a contract made for the improvement of the property by the person from whom it was purchased. This article is found in the part of the Code dealing with servitudes, and it had never been considered as applying to the situation involved in the case under discussion.

It would seem that this codal article had no such bearing, and that if it did, it was repealed by the private building statute, which was meant to cover this entire field. Be that as it may, until the decision is reversed or modified by an act of the Legislature, it is the law of this state.

The decision has far-reaching effects in that it makes the contractor ultimately liable to subsequent purchasers for latent defects.

This is so because under this decision, coupled with other decisions and codal articles, suit can be filed against the surety within five years, and in some instances ten years, after acceptance of the work, depending upon the nature of the construction. And the surety in turn can hold the contractor under its legal subrogation and the express indemnity provisions of the application which the contractor is required to sign for the bond.

By accepting a building that is not fully completed or in which there are apparent defects, the owner waives his rights against the contractor unless there is an express reservation with respect to such deficiencies. An acceptance does not, however, preclude an owner for hidden defects, which are usually referred to as latent defects. The question of what are latent defects must, of course, be decided by a judge or a jury.

By permitting suit to be brought for such defects by subsequent purchasers against the contractor's surety, the possibility of recovery is naturally increased.

There are instances in which a right will be created in one part of a contract and a later provision will endeavor to destroy such right. For instance, the contract documents may expressly indicate that a certain physical situation exists and then provide that the contractor is required to make an examination of the site to satisfy himself as to its condition.

It may be that you have experienced cases in which the owner has relied on such a seemingly protective clause, and an attempt has been made to require you to forego the benefit of the specific clause.

In any event, you can rely on any such express representation, and the owner cannot deprive you of your rights thereunder by a general clause.

In discussing the acceptance of work, I pointed out that an owner will be held to have waived apparent incompletion in performance. The same type of waiver can exist at the beginning of the work. Any requirements of the contract documents for the performance of any act, such as starting the work by a particular day, or furnishing a bond, or any other matter, are waived if the owner permits the work to be started without a compliance with such provision.

Some of you are no doubt familiar with the Louisiana and other public work statutes. As you know, they provide in general that, except in cases of emergency, all public work to be done by any public corporation or political subdivison of the state shall be advertised and let by contract to the lowest responsible bidder who has bid according to the contract, plans and specifications as advertised; and that no such public work shall be done except as thus provided.

From this it follows that public boards do not have authority to do work in any other manner. If work is let by a public board without such statutory compliance, it is not believed that there can be any ratification, and the party doing the work is not entitled to any payment therefor. The courts say that a promise to pay cannot be implied when there is no power to contract. In passing on this question, the Supreme Court of the United States said:

> ". . . that it is better that an individual should occasionally suffer from the mistakes of public officers or agents, than to adopt a rule which, through improper combinations or collusion, might be turned to the detriment or injury of the public.

One court has gone so far as to say that under such circumstances the contractor cannot recover even for the value of the work done.

You should not, therefore, take a contract from a public body if there has not been a full compliance with the statute. On the other hand, you can prevent the award of such a contract — if there has been such a violation.

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GATHERED at the table of Outgoing LES President Roy T. Sessums at the 62nd Annual Meeting banquet was this festive group.

(Continued from Page 21)

Alexandria

The main event of Engineers' Week activities in Alexandria was the banquet meeting on Thursday night, February 25 at the Bentley Hotel. Our principal speaker was Dr. Marton Woodin, Dean of the Louisiana State University at Alexandria. The Dean spoke on the importance of the engineering profession and on the future plans for the Louisiana State University at Alexandria.

Guests at the banquet included Mayor George W. Bowdon, Jr. of Alexandria, Ed Rand, State Representative from Rapides Parish and the Presidents and their wives of the following civic clubs: Cenla Civitan Club, Alexandria Junior Chamber of Commerce, Alexandria Kiwanis Club, Exchange Club of Alexandria and Alexandria Civitan Club.

Approximately 60 members and guests attended our banquet. A feature of the banquet activities was the presentation of a plaque by the Aelxandria Section to Mr. O. E. Barron for outstanding service to our section.

Other activities during the Engineers' Week included window display in a downtown department store of engineers' projects, the placing of Engineers' Week Banners and posters throughout the Central Louisiana Area, spot broadcasts on Radio and Television and a 10-minute Television Program. Also, several engineering talks were made to Civic Clubs in Alexandria.

DANIEL V. CRESAP,
President,
Alexandria Section

New Orleans

National Engineers Week in New Orleans was officially proclaimed by Acting Mayor Glenn Clasen at City Hall in a message given to Edward A. McLellan, president of LES, and Pierre Stouse, general chairman of the local observance.

LES members met jointly with the New Orleans Section, American Institute of Electrical Engineers, at the Sheraton-Charles Hotel to hear a talk on "Some Critical Views of Trends in Engineering Education" by Joseph W. Rittenhouse, Cleveland, Ohio, technical director of the Hi-Voltage Equipment Division, Joslyn Mfg. and Supply Co., on Feb. 22.

On Feb. 23, John L. Martines, Assistant Dean of the School of Engineering at Tulane University spoke before a Lions Club luncheon.



NEWLY-INSTALLED LES President Edward A. McLellan hosted this table at the Annual Meeting banquet. A large throng attended.

On Feb. 24, Messrs. McLellan and Stouse represented LES and the Engineers Week committee at the dedication of the new Pontchartrain Expressway. Mayor deLesseps S. Morrison opened the program with praise for members of the engineering profession and cited the Expressway as a tribute to their skill. Many engineers attended the ceremonies, among them Capt. Neville Levy, chairman of the Mississippi River Bridge Authority; R. B. Richardson, Director of the State Department of Highways; Kenneth King, City Traffic Engineer.

On Feb. 25, James M. Todd, a past president of LES and a past national president of ASME, addressed the Members Council, Chamber of Commerce of the New Orleans Area, "Engineering in the 60s," at a luncheon at the Roosevelt Hotel.

Head table guests included Mr. McLellan, representing LES; James A. Cronvich, AIEE; E. Landry Murphy, ASME; Frank C. Fromherz, ASCE; Ernest Gaiennie, ACHE; Mr. Stouse and William A. Baker, Jr., Engineers Week vice-chairman. A large delegation of area engineers attended.

On Feb. 24, Charles Knost addressed the De La Salle High School Senior Class on "Engineering: A Career of Opportunity."

On Feb. 26, an hour-long program on WYES-TV featured a half-hour NSPE film and a panel on "Engineering and Education in Louisiana in the Next 10 Years." Moderator was Mr. McLellan; participants were Dean Lee H. Johnson of the Tulane School of Engineering and Prof. Walter E. Blessey, head of the Tulane Civil Engineering Dept.; Bernard Grehan, of B. M. Dornblatt & Associates, Consulting Engineers, and Cecil M. Shilstone, Shilstone Testing Laboratory.

Active in Engineers Week arrangements were Dan Vliet, Bob Philibert, Claude Kelly, A. J. Brodtmann.

—o—

Lafayette

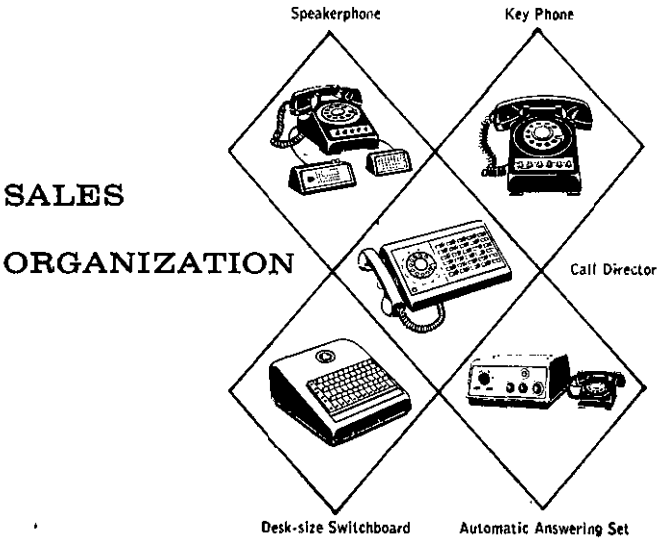
ON TV—Five 20-minute films from NSPE

One 20-minute Panel Discussion Group Moderator: Ray H. Marr, Ph.D., District Manager for the Marr Co. of Dallas, Tex.; industrial engineers: Phil Brock of Dow Chemical Co.; Carl A. Kinney of Atlantic Refining Co., James E. Reed of Central Louisiana Electric Co.; engineering educators: Felix J. Boudreaux, Ph.D., Professor of Electrical Engineerings; A. J. Szabo, Associate Professor of Civil Engineering; F. L. Larue, Jr., Assistant Professor of Chemical Engineering, all of Southwestern Louisiana Institute.

ON RADIO (Station KVOL & KPEL)—Ten spots each station—most spots were 60 seconds and a few were 20 seconds. Spots were made up from local talent along with NPSE material.

SEPARATE PUBLICATIONS—REA, Gulf States, and Bell Telephone featured NSPE material which we supplied to them in their employee and customer publications.

J. R. TROXLER, Chairman
Publicity Committee
for RAYMOND E. JENKINS,
President, Lafayette Section



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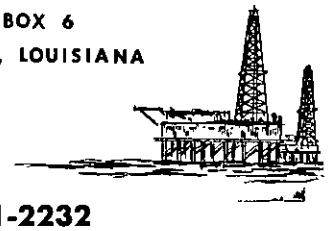

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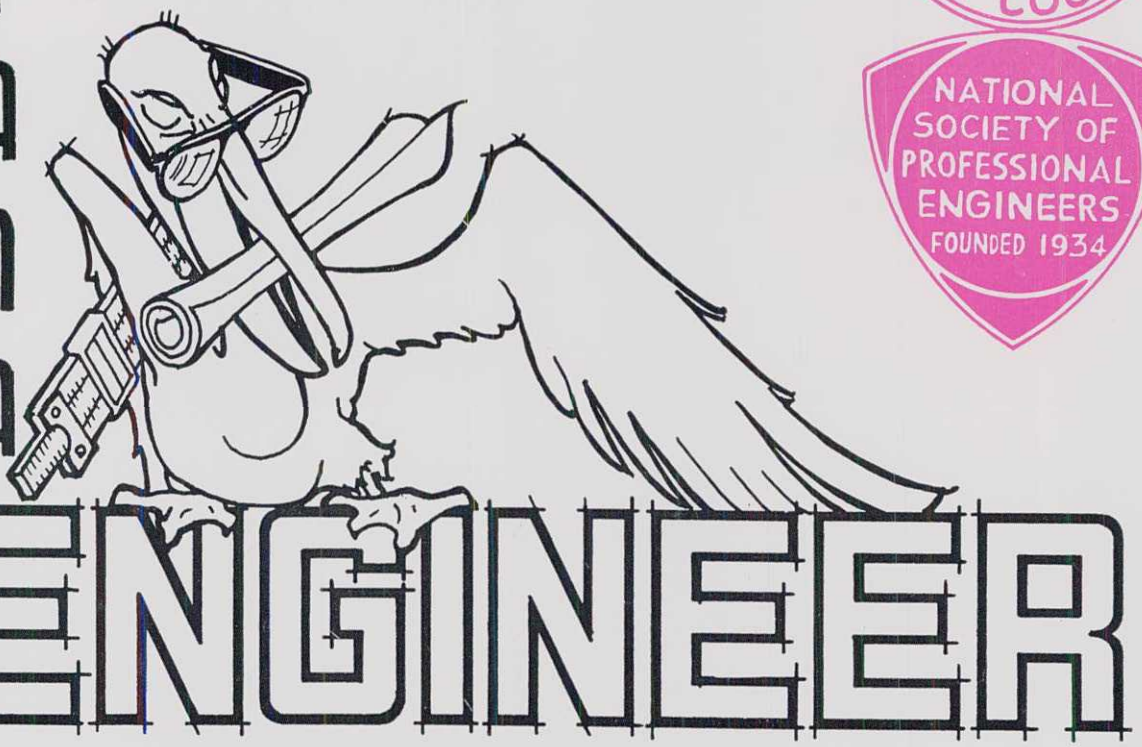

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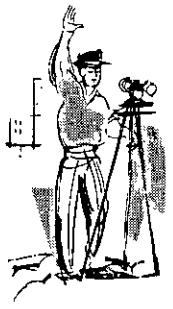

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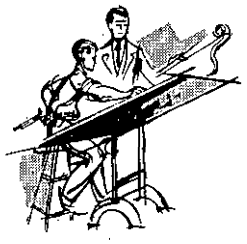

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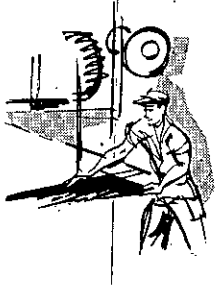

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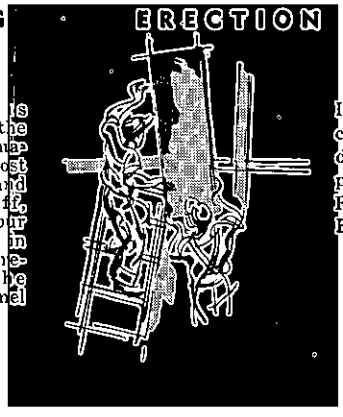

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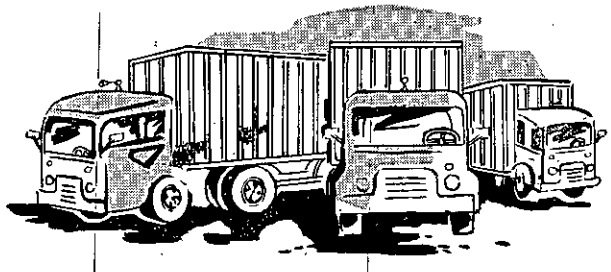

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***OUR COVER:** Need for science and engineering education was emphasized at LSU Centennial Science & Engineering Symposium at LSU April 28, 1960. Speakers included (from left), Dr. L. E. Grinter, dean of University of Florida graduate school; Dr. Harry C. Kelly, associate director, National Science Foundation; Dr. W. V. Houston, president of Rice Institute; Dr. R. W. Richardson, Esso Research & Engineering Co., New Jersey.*

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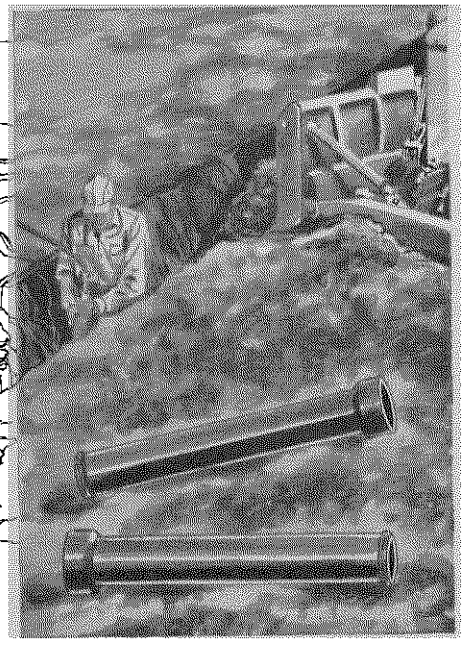

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LES Moves To Defer Resolution

Fast action by the Louisiana Engineering Society working in conjunction with other engineering groups, resulted in a Senate Concurrent Resolution being referred to committee for study rather than being passed on May 29.

The measure, Senate Concurrent Resolution No. 9 (Wilkinson), would have the effect of weakening the state engineering registration law (Act 73 of 1950), said Edward A. McLellan, LES president, who expressed the hope that all engineers would so inform their legislators.

It was brought up for consideration in the House just three days after the Senate approved it (33-1-5 abstaining).

House Concurrent Resolution No. 23 (Sanders), a measure with a number of the same features, is still pending.

On being notified of the introduction of these two concurrent resolutions, LES officials immediately met with representatives of the Gulf Institute of Consulting Engineers, Inc., and the Louisiana Section, American Society of Civil Engineers, and asked LES members for their assistance in contacting legislators.

On Saturday, May 28, the LES Board of Direction met in Baton Rouge and after thorough review passed the following resolution:

Resolution of The Louisiana Engineering Society
Board of Direction
Baton Rouge, La.—May 28, 1960

Whereas, the Senate on Thursday, May 25, 1960 received and on May 26, 1960 approved Senate Concurrent Resolution No. 9, and

Whereas, this measure which is primarily intended to provide pay increases for certain state employees who are not qualified engineers and cannot obtain these increases through existing State Civil Service procedures, and

Whereas, the proponent of this resolution gave as a reason for its passage that the State Board of Registration of Professional Engineers and Land Surveyers "does not object to the limited type of licensing these employees", and

Whereas, there is presently in litigation a law suit filed by 10 engineers, members of the Gulf Institute of Consulting Engineers, Inc. against the State Board of Registration with the intent of keeping the State Board from registering as professional engineers certain public employees, and

Whereas, House Concurrent Resolution No. 23, which has been proposed for consideration by the House, would have the effect of opening the licensing to any or all public employees, and

Whereas, these concurrent resolutions have the effect of circumventing Act 73 of 1950 and the Louisiana Engineering Society Board of Direction feels that the issuing of indiscriminate licenses by legislative concurrent resolutions is inimicable to the best interests of the public safety and contrary to the spirit of the regulatory statute governing the registration of professional engineers, and

Whereas the Louisiana Engineering Society Board of Direction is vitally concerned with the protection of the public where the exacting standards of professional engineering are concerned, and

Whereas these resolutions have the effect of downgrading professional requirements under the engineering statute rather than providing for new classifications under the Civil Service system, which appears to be the proper remedy, and

Whereas the Louisiana Engineering Society Board of Direction feels that action on these resolutions before a final legal decision in the matter presently affecting the State Board of Registration would be premature,

Therefore be it resolved that the Louisiana Engineering Society Board of Direction recommend and urge that these resolutions be referred to committee and that interested parties be called to present their views so that the public employees affected may be given such relief as appropriate, so that the public safety will not be impaired and so that the state's engineering standards be protected.

Commenting on the matter, Frank Fromherz, president, Louisiana Section, American Society of Civil Engineers, said in part:

"We realize that these resolutions are designed to benefit technical employees of various state department who have reached the top classification under Civil Service. As the Civil Service standards now exist they can not expect further advancement. We do not wish to stand in the way of any person's advancement particularly when they have displayed the ability and skills which merit increases in pay and status. Nevertheless, the resolutions under discussion are dangerous in fact as well as theory since they affect the public safety by undermining professional standards."

Said Warren S. Moses, New Orleans, president, Gulf Institute of Consulting Engineers, Inc.; "The membership of the Gulf Institute of Consulting Engineers, Inc., which is comprised exclusively of professional engineers in private consulting practice, deplores the passing of Senate Concurrent Resolution No. 9 and the proposal of House Concurrent Resolution No. 23 for consideration by the House.

"These resolutions tend to lower the standards of the profession to the extent that soon reciprocity with other states will be impossible and the safety of the public will be impaired. This might soon require other states to make each engineer take examinations to be licensed and this can seriously affect many engineering firms in Louisiana.

"We do not desire to see any qualified engineer not licensed but there are standards established and engineers should meet those standards to be licensed."

Engineering-Law Seminar June 10

Legal 'Counsel' For Engineers

Louisiana Engineering Society members from Lafayette, Monroe, Baton Rouge, Lake Charles, Bogalusa, Houma, New Orleans and Shreveport have sent in their checks ($5.00) for the Engineering-Law Seminar at Tulane University June 10.

The seminar, jointly sponsored by the Louisiana Engineering Society and the Louisiana State Bar Association, comes at a time when engineers in the state are pressed both by law suits and the threatened weakening of Act 73 of 1950, the State Registration Law, in the State Legislature.

Other articles in this issue deal in part with these topics, which reflect increasing national trends concerning the engineering profession (cf. "Some Legal Aspects of Engineering," R. E. Kerrigan, The Louisiana Engineer, April, 1960).

This seminar is designed to promote mutual understanding among engineers and attorneys in the pursuit of their respective professions, and from the engineer's standpoint, to guide him through some of pertinent phases of the law.

Co-hosts for the all-day seminar will be the Tulane Law and Engineering Schools.

The seminar will be held in the Kendall Cram Room of the new University Center. A buffet luncheon will be served.

The program will begin at 9 a. m. with introductory remarks by Edward A. McLellan, LES president, and an official of the New Orleans chapter, LSBA. Frank B. Riess, chairman of the agenda committee will moderate, assisted by various committee members.

Dean Lee H. Johnson of the Tulane School of Engineering and Dean Ray Forrester of the Tulane Law School will briefly discuss the roles of the graduate engineer and attorney.

Speakers and their topics include:

9:30 a. m. — Wood Brown, Attorney, State Board of Registration for Professional Engineers and Land Surveyors, "The Engineering Law in Louisiana."

11 a. m. — Dr. Frank W. Macdonald, Executive Secretary, State Board of Registration, "Engineering Law Enforcement Procedures."

12 noon — Buffet Luncheon.

1 p. m. — Bernard Marcus, Partner, Deutsch, Kerrigan & Stiles, "Fundamentals of Collective Bargaining with Labor Organizations."

2 p. m. — Alvin T. Rubin, Baton Rouge, Partner, Sanders, Miller, Downing, Rubin & Kean, "Means of Avoiding Possible Liability in the Practice of Consulting Engineering."

3 p. m. — Harry E. Kelleher, Partner, Lemle & Kelleher, "What Makes the Legislature Tick?"

The speakers have been advised of the particular interests of engineers for this program, as outlined by the engineering agenda committee. Ample time for discussion of each subject has been planned.

Admission charge for LES members and guests is $5.00; $2.50 for students. This includes the cost of the luncheon.

Please forward your reservation and check at your earliest convenience so the caterer can be notified in time, to the Louisiana Engineer Editorial Office, 921 Carondelet Building, New Orleans, La.

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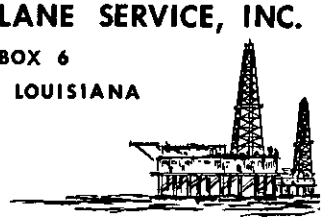

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President's Letter

So Few Work For So Many

By EDWARD A. McLELLAN, President
Louisiana Engineering Society

The professional engineers of Louisiana have through the years been fortunate to have a dedicated few who were willing to "carry the ball", so to speak, for the improvement of the entire profession. I believe that almost unanimously, engineers have long wanted and desire more strongly today to improve the engineering service offered the public and to get from the public more understanding and recognition of the engineer as a professional man.

To accomplish this, a registration limited to qualified engineers was known to be basic and essential. Those "Few" worked long and hard, for many years, through many disappointments and setbacks to have a Registration law passed by the Legislature. Their efforts were finally rewarded by the passage of the Act of 1950. Admittedly the Law has some weaknesses and faults, but it is a start, a basic step in the right direction. Twice, since 1950 those "Few" have, at great expense to themselves in both time and money, tried unsuccessfully to have passed strengthening amendments to our Louisiana Law so that ours would be comparable to that of other progressive States.

The number of engineers registered in Louisiana is now approaching 6000 and if we are ever to achieve the professional status that all desire, we have each got to realize that it is our privilege and obligation to do our individual bit of help. It is incumbent on the Louisiana Engineering Society, representing all branches of engineering in the state, to continue to lead the way. The L.E.S. is named in the law to recommend names to the governor for service on the Registration Board. To carry on the efforts toward improvement of our profession is basic with the L.E.S.

The Board has therefore established the Registration Law Fund which will be used exclusively for protecting and strengthening our State Registration Law.

By letter to our own membership and to all registered engineers, we have asked from each a small contribution to the Fund. "How much will be needed?"—"When will we need it?" are questions of little importance. We may need it tomorrow, we may need it in two years, the Fund may just sit there. We might have too much or too little. The point is that the support of Registration is a continuing activity that will be necessary through the years. We cannot wait for a fire and then try to find a fire extinguisher.

Unfortunately, it appears that still too many of those 6000 just will not realize the importance of their individual action. They apparently are satisfied to do nothing and let those "Few" act for them without benefit of help or even an expression of their views. Elsewhere in the Louisiana Engineer, you will find listed those "Few" who cared enough to make a contribution. There are 374 names and a total of $2,348.00 as of May 25, out of almost 6000. That is a pitifully small percentage. The sad part of it is that vast majority of the so few not heard from are just sleeping — they are not interested enough to express themselves. It is not that they object to the iead of the fund or the contribution. True, there are those who do conscientiously object, but they must be small in number. We heard from only a few who took the trouble to write. Their letters were almost as welcome as a contribution. They cared enough to write! It could not be the amount of the contribution suggested ($5.00) that deterred response. Any amount would be welcome. Of those who replied, some more, but many sent less.

The time has come when the profession must realize that it is grown up and each member must accept his individual responsibility. We still have our dedicated "Few" who are willing to take the lead and do the work, but we need a Fund to acknowledge appreciation of their efforts and sacrifices in the past, and as evidence of our more practical support in the future. You can rest assured that the L. E. S. Board will administer the Fund judiciously. The 374 who have donated should not be expected to carry the load for our 6000 Registrants. I do not believe that the 5,626, if they will seriously consider the matter, will want to benefit without any effort on their part. The Fund is still open and will always be open to contributions. Those not heard from should contact Mr. John Fernandez, Secretary, 522 Crystal Street, New Orleans 24, Louisiana.

—o—

Engineering Of Air Units Becomes More Exacting

A trend to air-cooled air conditioning equipment is caused by the consumer's increasing attention to low maintenance cost and "trouble-free" units, says an LES member whose business is based on practical engineering applications.

Jay M. Jalenak, owner of Jay M. Jalenak Engineering Co., specializes in air-cooled industrial applications up to 50 tons; his work also takes him into commercial, municipal and residential installations.

He noted that with the advent of the large-scale suburban shopping center where air conditioning is a must both for customer and employee the air conditioning engineer must concern himself with thinking about multi-installations, which calls for more exacting design and engineering.

An LSU graduate with a B.S. in Mechanical Engineering, Jalenak served in the U.S. Corps of Engineers in Korea with the 388th Engineers Pipeline Company. He is a member of ASME, Engineers Club, American Society of Military Engineers, American Society of Heating, Air Conditioning and Refrigerating Engineers. He is a 32nd degree Mason and a Shriner, and resides in New Orleans.

Gives Status Of Engineer Law Suits

From time to time, The Louisiana Engineer will summarize legislative or legal actions of interest to the engineering profession of Louisiana.

Of particular interest in connection with the recently-started LES Registration Law Fund is a status report on a suit filed in their own names by 14 members of the Gulf Institute of Consulting Engineers, Inc., against the State Board of Registration for Professional Engineers and Land Surveyors.

The plaintiffs, through their attorneys, are appealing the April decision of an Orleans Parish Civil District Judge dismissing the suit. They have also asked for an injunction to stay execution of the resolutions.

The Court ruled that "no justiciable controversy is asserted by plaintiff's petition," that the plaintiffs as professional engineers, and the State Board of Registration "are merely seeking an advisory opinion" that House Concurrent Resolutions Nos. 1 and 4 of the 1959 Fiscal Session are unconstitutional.

Reasons for Judgment

In its reasons for judgment, the Court noted:

This suit is brought by a number of persons who are residents of East Baton Rouge Parish, as taxpayers and as (registered) professional engineers, against the State Board.

The plaintiffs seek a declaratory judgment to declare invalid and unconstitutional the provisions of House Concurrent Resolutions Nos. 1 and 4 of the 1959 Fiscal Session, and further to declare that the State Board has no power or authority to issue licenses to any persons who do not meet the qualifications for licensing as set forth in the State Engineering Law.

Additionally, the Attorney General of Louisiana is named a defendant with the State Board.

The Court noted that:

1) House Concurrent Resolution No. 40 of 1958 purports to suspend the licensing law for a period of 30 days from the date of the adoption of a resolution to permit state employees to be licensed, and it provides for the licensing of certain state employees as highway engineers during the suspension, provided they meet with certain qualifications recited in the resolution.

2) Senate Resolution No. 21 of 1958 purports to deal with employees of the State Conservation Department and is similar to House Resolution No. 40.

3) House Concurrent Resolutions Nos. 1 and 4 of the 1959 Fiscal Session purport to deal with licensing as civil engineers of certain employees who are now in the employ of the State Department of Highways, performing the work of civil engineers.

Said the Court: "The Attorney General, in his answer, raises the question of whether there is a justiciable controversy. This Court is of the opinion that no justiciable controversy is asserted by plaintiffs' petition—that plaintiffs as professional engineers, and the State Board of Registration for Professional Engineers and Land Surveyors are merely seeking an advisory opinion. Although the litigants suggest that this is a justiciable controversy, it is patent upon the face of the papers that the parties hereto are not seeking a declaration of right, but rather an advisory opinion that the resolutions herein above referred to are unconstitutional."

Another example of engineer involvement in legal matters occurs in the case of J. B. Thomas vs. Fromherz Engineers, Singstad & Baillie, New Amsterdam Casualty Company, Lloyd LeBlanc and Jack L. Barker. Titled Case 19-899, 17th Judicial Court, Parish of Terrebonne, State of Louisiana, the litigation revolves around an incident which occurred in the construction of a tunnel under the Intracoastal Waterway near Houma. The plaintiff, J. B. Thomas, was employed by Baltimore Contractors of Baltimore, Maryland, the general contractors on the tunnel job, a joint undertaking of the State of Louisiana and the Police Jurors of Terrebonne Parish.

In the project under consideration, Fromherz Engineers by contract with the State Highway Department undertook three categories of engineering services: 1) to survey the job; 2) to design the work, prepare plans and specifications to be incorporated in invitations to bid and 3) to inspect work as it progressed as the representative of the State to insure to the State that the work as performed by Baltimore Contractors was in accord with the plans and specifications.

In his petition Thomas alleges that on April 16, 1959, he was a sand-hogger working for Baltimore on a pile-driving crew of which Lloyd LeBlanc was foreman and in which Jack L. Barker was operating the pile-driving crane, and claims to have received extensive injuries. He states that he was underneath the piling when it slipped from the pile-line. In his suit he asks $155,000 damages, interest and costs. He also asks that his suit be tried by a jury.

The plaintiff names Fromherz Engineers in his complaint on the grounds that they were at fault for his injuries in that they had the responsibility of supervising and directing the construction. They were derelict in their duty. Thomas claims, in that the piling slipped because the lead line was "not equipped with an end unit." He specifies that Fromherz and Ole Singstad of Singstad & Baillie were negligent "in failing to inspect said equipment; in permitting said pile-driver to operate without the proper safety appliances and particularly an end unit to securely hold the pilings which were being set."

The current status of this is open since the defendants have obtained a stay for time in which to prepare an answer to the plaintiff's petition.

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Roeger, Louis H.
Saunders, H. W.
Schlemmer, A. E.
Sincox, E. C.
Sorenson, W. C.
Strange-Boston, A. D.
Tyler, T. W.
Weston, C. W., Jr.
Wilder, J. A.
Floyd, William F.

(Continued on Page 24)

Rules to Govern Consideration of Applications for Registration

Act 73 of 1950, Sec. 12 (1) c, requires that an applicant for registration under the provision governing "Engineers of Long Established Practice" shall present written recommendations of five or more Professional Engineers registered under this Act and proof that he has at least twenty years of successful practice, satisfactory to the Board, not less than twelve years of which shall have been in responsible charge of important engineering work.

1. The applicant must be not less than 45 years of age.

2. Prior to the date of beginning of the experience that can be considered to be of professional character, he shall have not less than 8 years of experience of a character satisfactory to the Board and indicating that he has attained the knowledge and skill approximating that attained through graduation in an approved 4-year engineering curriculum; provided that every year that he spent in the pursuit of such a curriculum during which he earned not less than 30 semester hours shall be considered as equivalent to two years of the required experience. The technical character of such pre-professional experience shall be at least equivalent to that obtained while working for the state under the Civil Service designation of Engineering Aide III or for the United States under the Civil Service designation of Federal G.S.4. Typical tasks which will be considered as satisfactory pre-professional experience are to make graphs and charts, to perform ordinary engineering computations, to make and check survey and construction notes, to make routine construction drawings, to do level and transit work, to make routine inspections of construction work or to make routine tests of the properties of soils or materials.

3. He must have at least 20 years of professional experience satisfactory to the Board, all of which must be of a degree of technical difficulty and of responsibility not less than that specified by the State Civil Service for Engineering Aide IV or Professional Engineer I and by the U. S. Civil Service for Federal G.S.5, which designations include positions that involve work, under the immediate direction of a higher ranking Professional Engineer, such as chief of a survey party on location, technical work in the design and planning of engineering work and compilation of specifications, local charge of field or laboratory unit engaged in sampling, testing, and inspecting materials, etc., under general supervision. Not less than 12 years of this experience must be of a degree of difficulty and responsibility equal to or greater than that specified by the State Civil Service for Professional Engineer III and by the U. S. Civil Service for Federal G.S.11. These designations include positions which involve, under general supervision, individually or with a number of subordinates, the performance of difficult engineering duties or the supervision of a subdivision of an engineering organization requiring professional training, progressive experience, leadership, and independent judgment.

4. He must furnish a certified transcript of his college record, if any, along with his application.

5. The employment record must be completely validated by former employers or supervisors who were in a position to have intimate knowledge of the type of work performed and the degree of responsibility.

6. To be considered on the basis for registration under this clause the character of the experience may not necessarily have been in only one branch of engineering, but registration will be granted only in that branch in which the applicant appears to be most proficient.

7. Applicants will not be permitted to count experience gained after the effective date of engineering registration acts in the state of their official residence, if the experience was gained in violation of any of the provisions of the Act.

8. Personal appearance before the Board at one of its regular meetings is required.

What Every Registered Engineer Should Know

(Fifth of a Series)

Question — What is the purpose of the Professional Engineering Registration act?

Answer — The purpose of Act No. 73 of 1950, State of Louisiana, is to:

1. Regulate practices of engineering; land surveying.
2. Provide for the registration of qualified persons as professional engineers and land surveyors.
3. Define the terms "Engineer," "Professional Engineer," "Practice of Engineering," "Land Surveyor" and "Practice of Land Surveying."
4. Create a State Board of Registration for Professional Engineers and Land Surveyors.
5. Provide for the appointment of Registration Board members.
6. Fix the term of the Board.
7. Define the powers of the Board.
8. Define the duties of the Board.
9. Set forth minimum qualifications, other requirements.
10. Establish fees with expiration and renewal requirements.
11. Impose certain duties upon the State and political subdivisions thereof in connection with public work.
12. Provide for the enforcement of the Act and penalties for its violation.
13. Repeal all laws or parts of laws in conflict with the Act.

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LSU Symposium Features Engineer

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These are the requirements for the scientist and engineer of the future, set down by R. W. Richardson, Esso Research and Engineering Co., at a symposium on "Science-Engineering in the Space Age" at Louisiana State University in Baton Rouge April 28, 1960.

Dr. Fred H. Fenn, Dean of the LSU College of Engineering and a long-time LES member, presided at the symposium held in conjunction with the university's centennial celebration.

"Statistics say we are falling behind the Russians in the number of college-trained scientists and engineers," said Dr. Richardson. "Furthermore, there have been some disturbing indications recently that enrollment in our colleges in some phases of engineering has dropped.

"We cannot let this happen. We must have an increasing number of highly educated scientists and engineers and, in addition, we must educate all of our citizens so that they will appreciate and maintain our democratic way of life."

Dr. Richardson noted that the status of the scientist and engineer in the nation's economy and social structure has been rising.

Demand Outraces Supply

"From the point of view of accomplishments and achievements, we should be, I think, close to the top of the heap.

"Generally speaking, we do occupy a high position in our present society, although it is not always apparent to us."

He said the demand for engineers and for scientists of almost every discipline is increasing more rapidly than the supply.

"From the point of view of getting jobs and of monetary reward, this should mean that technical graduates will be recognized in very practical terms.

"Our professional prestige has been and still is increasing, and the way the community regards us will undoubtedly be determined to a large extent by our own actions.

Noting the "exalted" status of the scientist in Russia, Dr. Richardson commented: "Relatively, I do not think we occupy quite that exalted position in our own social structure. However, in our democratic system no one group can or should be greatly above any other group. Also, our standard of living is so high in general that most of us can have the things we want, within reason.

"Of course, being human, we would like a little more, and it is to be hoped that the future economic structure and our own achievements will provide this for us."

Lord Kelvin And The Cable

The relative importance of basic science and of experience in the activities of an engineer was illustrated in the story of Lord Kelvin and the Trans-Atlantic cable, told by symposium moderator Dr. William V. Houston, President of Rice Institute. A condensed version follows:

In the early 1850s a company was formed by Cyrus Field in the United States, and a number of financiers in Great Britain, to lay a cable between North America and the British Isles. They gathered together a fair amount of capital, and employed as chief electrician a man with telegraph experience, who had performed experiments which he believed proved the feasibility of Trans-Altantic telegraphy.

By a curious turn of fate, there appeared just at this time a mathematical electrician of Glasgow, William Thompson. At Cambridge and at the University of Glasgow, he worked on the mathematical theory of electricity.

He had considered the problem of the transmission of an electric current over a long line. He showed that it obeyed the equations for the flow of heat, that if the circuit was closed at one end, the current at the other end would not build up instantly, but rather slowly and that the time for it to build up would depend upon the product of the resistance of the line and its capacitance. Since both of these quantities are proportional to the length of the line, the time necessary to transmit a signal is proportional to the square of the length. When lengths such as those of the Trans-Atlantic cable are under consideration, the delay becomes significant.

No Truck With Mathematics

Thompson recommended the conductor of the cable should be made as large as possible, in order to reduce the resistance. And then the insulation of the cable should be made as thick as possible, in order to decrease the capacitance. Furthermore, very sensitive detecting instruments must be used at the receiving end, in order to respond to the initial rise of the current, rather than having to wait until the current has attained to its full value.

Although these conclusions were published, and the subject of discussion, the chief electrician employed by the Atlantic Telegraph Company declared that his own experiments proved the effects described by Thompson to be of no major significance. He indicated that one certainly need not bother with higher mathematics.

The situation presented a dilemma to the directors of the company. Most of them were not engineers, and in particular, they were not mathematicians. They had to decide between the claims of a man with a good deal of practical experience and one whose electrical engineering had been done entirely on paper and in the laboratory. It is easy to understand why they preferred to depend on experience, or what they thought was experience. So the project went ahead.

The cable was manufactured and preparations made for laying it. After some mechanical failures, a line was

finally laid in the summer of 1858. At first, it seemed to work, or at least so the chief electrician reported.

Later developments showed that it had never worked very well, and that in the effort to get satisfactory results, he had kept increasing the voltage applied at the sending end by means of an induction coil. Eventually pulses of 2,000 volts or more were put into the cable with the inevitable result that the insulation broke down and the whole thing was useless.

Gone to the Bottom of the Deep

Here was a situation all of the directors could understand. Close to a million dollars of their money was lying at the bottom of the Atlantic Ocean. They changed chief electricians, and put Thompson in charge.

It took a long time, however, because of the difficulty of raising more capital, because of the difficulty of making a new cable to Thompson's rigid specifications. He insisted upon setting up a standard of resistance. Such a thing had never been used before. But with it he showed that the copper ordinarily supplied by the manufacturer fluctuated in its electrical properties more than anyone had suspected. He made elaborate studies of the forces to which the cable was subject in the process of laying it, and insisted upon a continual check on the insulation and the resistance, as the cable was run out of the ship. Eventually in 1865, a satisfactory cable was laid. Thompson received the thanks of the British Empire in the form of knighthood and later became Lord Kelvin, one of the great men of his century.

The story of Lord Kelvin shows some of the pitfalls that might be avoided in striking the proper balance between engineering experience and scientific theory.



Retired Air Force Brig. Gen. Scott (right), was LSU Symposium banquet speaker. He is shown with chairman.

One who must make engineering decisions must have enough understanding of mathematics himself, and of the nature of physical theory, to be able to appraise its claims and to judge its value.

This problem is always with us. We must find the proper balance between the things that one can learn in school and the things that must be learned through experience.

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OUTING——Field Notes
By Allen Johnson

The clang of horseshoes and the groans of "amateur" shotputters mingled with the serious deliberations of the Board of Direction of the Louisiana Engineering Society at the annual outing of the Baton Rouge Section May 28.

A barbecue dinner at the Log Cabin followed the outdoor events, with the awarding of copious prizes donated by staunch LES supporters.

Prize winners, for athletic prowess and through the luck of the draw, as announced by Baton Rouge Section President Douglas Latimer, Sr., included:

Jim Bres, W. A. Wintz, Dick Ruckstuhl, F. J. Germano, H. S. Branch, Scott Young, Doug Latimer, Jr., Ed Metz, J. V. Roy, T. E. Pounds, S. V. di Stefano, R. H. Hudson, E. W. Lusted, Francis Sessums, Nick Carter, L. C. Schilling, Logan Price, E. E. Prescott, Clyde Boden, Jr., Fred Martin, Ted Bergman, Jim Mooney, Dick Phillips, Doug Latimer, Sr., E. L. Gish, Clayton Mahaffey, R. Mongeau, Louis Duclos, Ted Sutton, Jack Waltrip, Edward McLellan, Calvin Watts, Wayne Randall, Bob Dennis (first place, horse shoes singles), I. V. Roy and Bob Dennis (first place, horse shoes doubles), Logan Price (second place, singles), Clyde Boden, Jr. (shot put), Red Taylor, Steve Nasca, Wayne Randall, J. H. Russell, Jim Janssen, Jim Simpson, C. W. Hair, Tom Alexander, John P. Fernandez, Orville Ice, Slim Larkin, L. S. Major, Dick Korn.

Friends of LES who helped make the outing more enjoyable through their prize donations included:
Baton Rouge Blue Print & Supply Co., The Rawson Company.
Foster Grant Co., Gulf State Utilities Co., Copolymer Corp., Louisiana Concrete Products Co., Ronald Coco, Inc., Dow Chemical Co., Wilson Steel Co., A. G. A. Contractors, Kaiser Aluminum & Chemical Corp., Gulf Supply Co., Louisiana Plumbing & Electric Co., Dolese Concrete Co., Southern Bell Telephone & Telegraph Co., Westinghouse Supply & Apparatus Sales, W. R. Grace & Co., Line Material Industries, Ingersoll Rand, Esso Baton Rouge Refinery, Tinker Toye Fixit Shop, General Electric Co. and Power Packing Co.

Publication of a new engineering textbook, "Engineering: Principles and Problems," by Dr. Lee H. Johnson, dean of the Tulane university school of engineering, was announced in New York by McGraw-Hill Publishing Co., publishers.

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James F. Fairman, senior vice president, Consolidated Edison Company of New York, has been selected to receive the 1960 National Society of Professional Engineers Award for outstanding service to the engineering profession. Formal presentation of the Award will be made at a banquet session at the National Society's annual meeting in Boston, Mass., June 11.

Mr. Fairman is the 10th individual to receive the Award since it was first presented in 1949. Other recipients were: Herbert Hoover, 1949; David B. Steinman, 1952; Charles F. Kettering, 1953; Harry A. Winne, 1954; A.A. Potter, 1955; Donald A. Quarles, 1956; Granville M. Read, 1957; Nathan W. Dougherty, 1958; and William F. Ryan, 1959.

The 1960 Award cites Mr. Fairman for his "outstanding performance and originality in utility system design and operation; responsible citizenship in national defense; pioneering leadership in the development of nuclear energy for peaceful purposes; and continued initiative in the advancement of the engineering profession."

The causes for the decline in freshman engineering enrollment in the United States were revealed in a special survey conducted by the Engineering Manpower Commission of Engineers Joint Council.

This continues a trend started in 1958-59 when for the first time since 1950 freshmen engineering enrollments decreased. The 1958-59 class of 70,029 was 11.1 percent smaller than that of the previous year. The current class of 67,704 engineering freshmen is a decline of 3.4 percent from 1958-59.

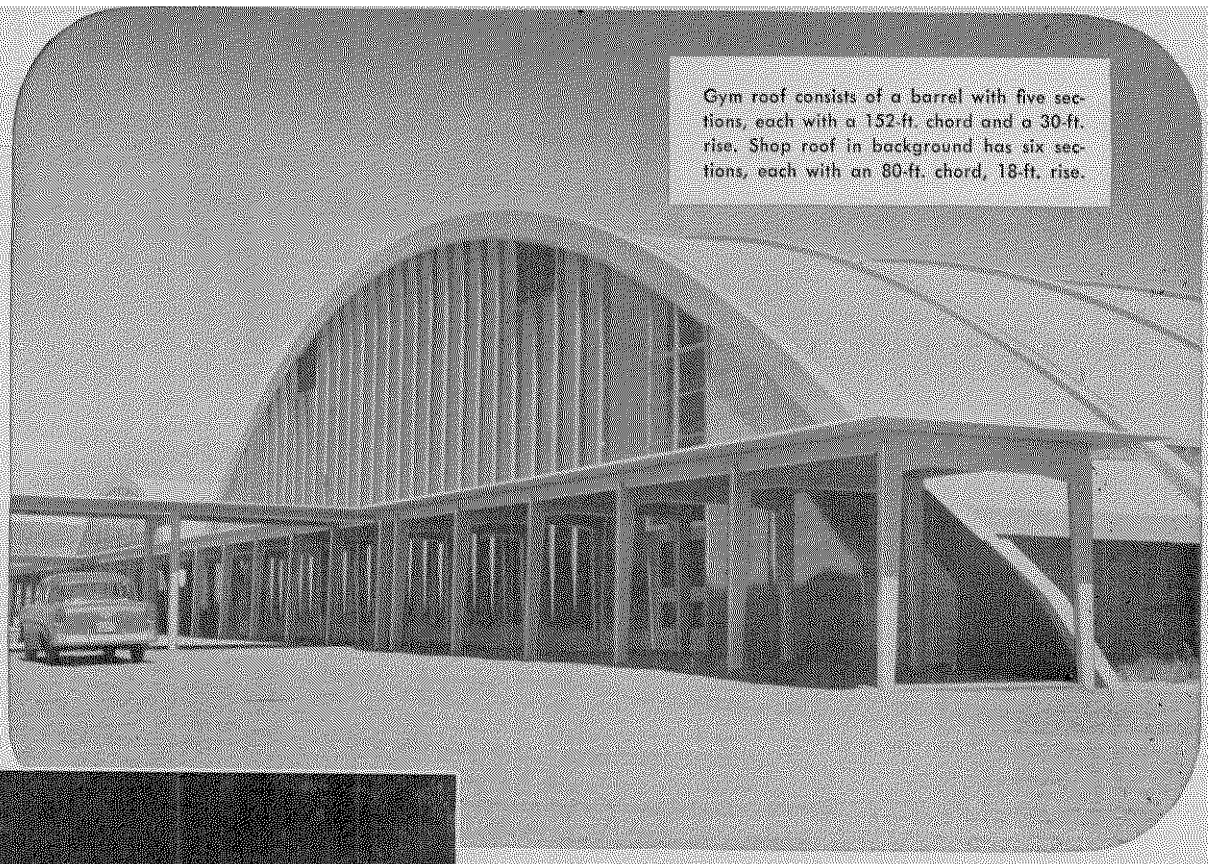
The study covered in detail 151 of 231 United States colleges which offer degree credit engineering courses. Approximately one-half of these reported a lower freshmen enrollment the past fall than in 1958. An increasing number also disclosed greater attrition rates for engineering students.

Geographic areas most affected by the enrollment decline are the South, South Central, and Mountain states. Public institutions in these areas are the ones particularly affected. Private institutions in these areas are the ones particularly affected. Private institutions on the other hand — particularly in the East and Midwest — did not witness as large a decrease.

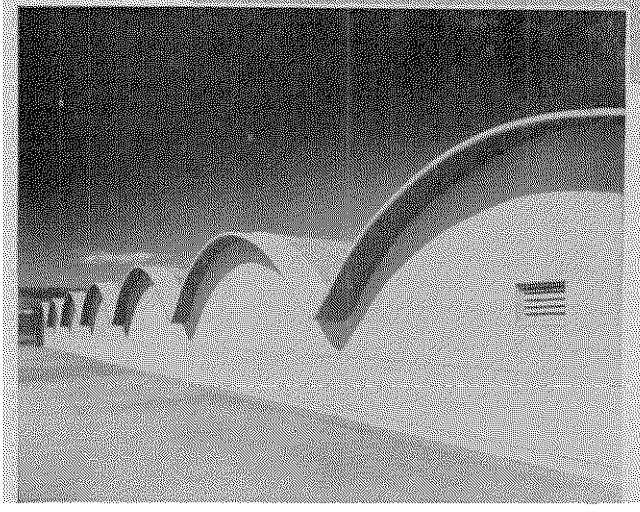
Reasons for the decline, (compiled from the statements of 150 engineering Deans) appear to be:

Increased interest by qualified students in other fields of science, especially since "science and the space age" has been glamorized in public opinion.

Concern over the rigors and demands of engineering education.



Gym roof consists of a barrel with five sections, each with a 152-ft. chord and a 30-ft. rise. Shop roof in background has six sections, each with an 80-ft. chord, 18-ft. rise.

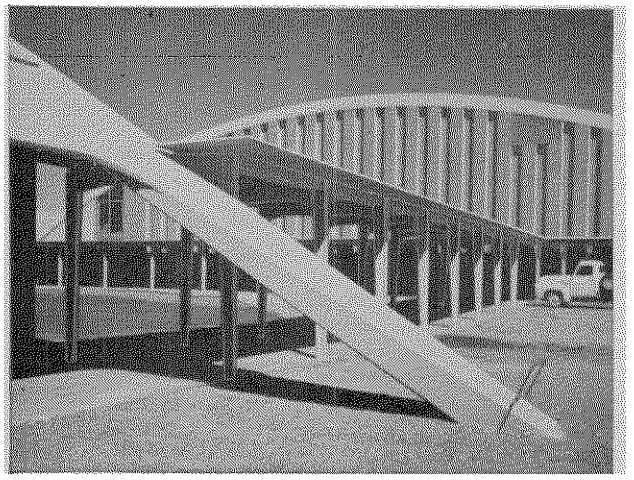


CONCRETE SHELL ROOFS

answer school's need for unobstructed floor areas

The Ellensburg High School, Ellensburg, Wash., demonstrates the versatility of concrete shell roofs for educational structures. Large unobstructed floor areas were required for three types of buildings: the gymnasium, the shop building and a multi-purpose building. Concrete barrel shell roofs were chosen for all three.

The roof of the multi-purpose building, above, consists of seven 60-ft.-long barrels, each with a 32-ft. chord and 23-ft. radius. Photo below shows the type of covered walks (precast concrete bents) used on the campus. The architect was Maloney & Whitney, Yakima, Wash. The structural engineer was Worthington & Skilling, Seattle. The contractor was Wall, Bartram & Sanford, Wood Village, Troutdale, Oregon.



Shell roof construction provided the unobstructed floor area required. It was economical to build and opened unusual design opportunities to the architects.

More and more architects and engineers are turning to concrete shell roofs for structures requiring open floor areas. Roofs with spans up to 300 feet and more can be built without any interior columns. In addition to school buildings such as shown here, concrete shell roofs are ideal for auditoriums, exhibition pavilions, hangars, field houses, train sheds, repair shops for large equipment, garages and warehouses.

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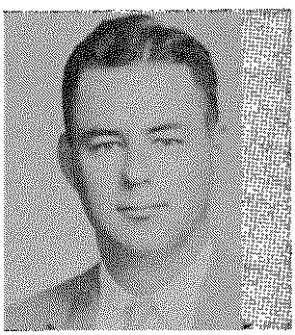
Guest Editorial

Engineer's Choice

By S. G. DINKEL
LES Membership Chairman

If you are sleeping, others are not.

Action by labor union leaders has already started with a resulting "Blueprint" to bring engineers, scientists and technicians into the field of organized labor.



S. G. Dinkel

The problem of organizing this group was the subject of a recent seminar of ten labor unions at Harvard University. The "Blueprint" was issued by the AFL-CIO. For a truly eye-opening documentary on this subject, you are urged to read the article entitled "AFL-CIO Conference Maps Engineer Union Plans" in the April 1960 issue of "The American Engineer".

For years now, many engineers have been playing the wait-and-see game or have had the "let John do it" attitude. No thought has been given to professionalism. There is every reason to believe that had these men taken action years ago, no decision would now be in the making.

Do you realize that only two out of five eligible engineers belong to the Louisiana Engineering Society and a lower percentage belong to the National Society of Professional Engineers? How then can these societies speak for the engineer on a state and national basis when they represent less than half of the eligible engineers of this area? For these societies to promote professionalism and to make the desires of the engineers known, all eligible engineers should be members. By joining the LES, you can automatically be associated with the NSPE.

Accordingly, we must all work toward this common goal. Act now, become a member of the LES and NSPE and help protect your professionalism. Contact Mr. John Fernandez, Secretary-Treasurer, LES, at 522 Crystal Street, New Orleans 24, Louisiana. He will gladly send you an application for membership form.

Obtain one, fill it out immediately and mail. You will acquire new pride in your profession by fostering its progress.

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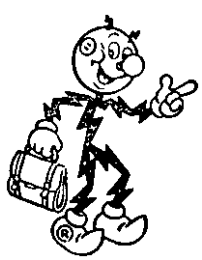

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La. Gulf Oil, Gas Future Is Bright

By Ray H. Marr

Since their discovery along the Gulf Coast, oil and gas have played an increasingly important part in the economy of our area. Americans are the world's largest consumers of energy; last year having consumed about 32,000 trillion Btu. Of this, petroleum supplied about 73%.

Our chief product is natural gas, which in addition to being a sought after fuel, is a building block for a host of useful petrochemicals. Unfortunately its present price is depressed considerably below its true value due to government regulation.

In the early days of the industry, exploration and drilling methods were extremely crude; however, about 1938 four significant technological advances took place which proved to be a great boon to oil and gas people. These were: (1) the realization that natural gas could be economically transported. (2) The development of an efficient drill bit. (3) The development of the seismograph; and (4) the evolution of electrical logging.

Although the demand for petroleum has quadrupled over the past 20 years, the oil operators costs have soared by a factor of eight. Therefore, to avoid the cost price squeeze, it will be necessary for the oil operator to improve his oil finding techniques through advances in technoligy. To this end several novel approaches are being experimented with, both as to improvement of the drilling method and also as to finding methods which utilize heretofore unstudied properties of hydrocarbons.

Assuming that the technology advances, the future of the oil and gas industry along the Gulf Coast would seem to be very bright. Although atomic energy may eventually in the distant future make the demand for petroleum as fuel diminish, the expanding petrochemicals industry will doubtless take up the slack.

Mr. Marr is the District Exploration Manager of the Marr Company of Lafayette, La. He spoke on the above topic before the Lafayette Section of the Louisiana Engineering Society on Jan. 18, 1960.

Economics Of Automation

Engineering Little Gypsy Station

By Lee V. Maurin

In the spring of 1958, Louisiana Power & Light Company felt that all components necessary for the complete automation of a steam electric station were either available or could be developed in time for the scheduled initial operation of the Little Gypsy Station, at Nine Mile Point on the Mississippi River, in January of 1961.



LEE V. MAURIN

The company's policy here, as in the modernization of older plants, calls for a reduction in required manpower, without having to lay anyone off.

The Little Gypsy Station will be of the outdoor-type design with principle plant equipment consisting of one 223 megawatt nameplate rating single reheat turbine with throttle steam conditions of 2000 psig and 1000 degrees F. and reheat steam at 100 degrees F.; a liquid cooled-generator with a rating of 291.5 MVA; and a 1,550,000 lb/hr gas and oil fired steam generator.

Some economic justification should be found for the purchase of all equipment employed in a power plant, and automation is no exception. Using the analysis presented by our consulting engineers, Ebasco Services Incorporated, and with which we have no major disagreement, it can be said that savings can be obtained in the following areas:

1. Manpower
2. Fuel savings
3. Reduced possibility of major equipment damage
4. Reduction in major equipment maintenance
5. Elimination of minor mishaps
6. Intangible benefits

The accompanying chart shows the economic comparison of control and instrumentation costs, as related to manpower and fuel savings, between three identical one unit and three identical two unit plants made up of 200 megawatt class turbine-generators and gas fired steam generators; but employing different control schemes. The conventional plant would be one similar to our number three unit at Ninemile Point and would be characterized by centralized control in conjunction with the usual automatic analog control loops. The MARC plant would possess a monitor and results computer in addition to everything present in the conventional plant. This plant would be similar to Sterlington number 6. And, of course, the automatic plant would possess all the features of the MARC plant in addition to full automation. Examining the evaluation for the one unit plant and taking the conventional plant as base, it can be seen that the automatic plant would cost $700,000 more. However, this is totally offset by the savings in plant shift personnel and in fuel, so that, after capitalization, a savings of $120,000 is realized. In the two unit plant evaluation there is a smaller proportional savings in shift personnel so that now the automatic plant results in an increased investment of $220,000 over the conventional plant. However, in all fairness, it must be stated here that Louisiana Power & Light Company normally operates a conventional two unit plant with but four shift positions so that we cannot take the full credit given in tihs analysis.

Thus, the capitalized value of the estimated manpower and fuel savings does not necessarily fully justify the cost of complete automation, and we must look to other areas for full justification.

It is estimated that there is approximately one major accident per every three units during these units' life. On the average today, a major accident for a 200 MW class unit would cost about $1,000,000 in damage, and from two to four months outage time. Estimating the outage at $8,000 per day, the total outage cost would be increased to $1,500,000 to $2,000,000 with a probability of about one in three of this accident occurring. The minimization of this risk is valuable; for, although our company has never suffered a major accident, the present day units are becoming larger and more complex, thus causing the probability to increase unless preventative steps are taken.

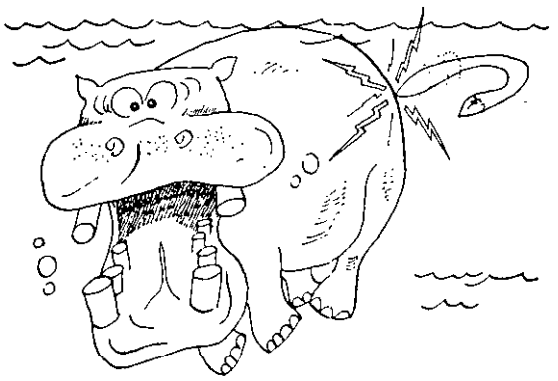
As for deduction in major equipment maintenance, it was assumed conservatively that one day every two years could be saved. With each day of outage worth $8,000, this saving of a half a day a year would have a capitalized value of $32,000. Acceptance of this savings has a sound basis in that General Electric in one of its instruction leaflets states, "The successful operation, minimum maintenance, and long life of a turbine-generator is dependent to a large extent upon employing the proper starting, loading, and shutting down procedures. These procedures gain in importance as units undergo frequent starting and loading cycles. Consistent and moderate procedures should be developed for units that are started more often than about three or four times per year." It is our opinion that this degree of consistency and moderation can only be achieved by an unthinking computer and should never be subject to the fallibility of a human.

Automation could also conceivably eliminate many minor mishaps arising from forgetfulness, and which result in outages. It was assumed that these outages would amount to one day per year, so the capitalized value of this savings would be $64,000.

Even with all these additional factors considered, the

The above article is abstracted from a paper read before the Annual Meeting of LES on Jan. 8, 1960, by Lee V. Maurin, a Production Engineer for Louisiana Power & Light Company. He received his B.S. in Electrical Engineering from LSU in 1949.

OPENS ON ELECTRICAL IMPULSE



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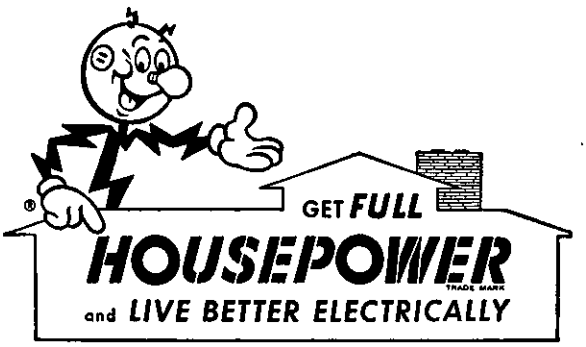

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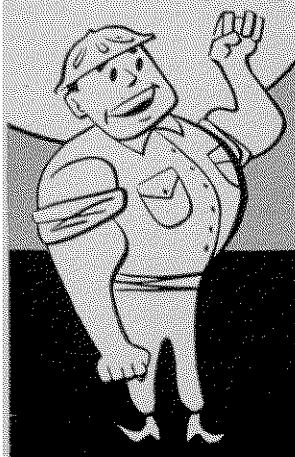

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The possible development of a flying crane, or "sky hook," via helicopter for the construction industry attracted the interest of engineers attending the national convention of the American Society of Civil Engineers.

A former Marine Corps brigadier general, Frederick R. Payne, of Los Angeles, who for three years commanded a helicopter group, said that with the "sky hook" a new potential develops for the constructor.

Mr. Payne, now a project engineer with Southern California Edison Company, reported to the convention on the use of helicopters in the construction of transmission lines.

He said that the helicopter flying crane has one unique and essentially important characterstic:

"There is no limitation as to what it can pick up or where it can lower its cargo. It has no limit as to the size, or bulk, of the object, if the weight does not exceed lift capabilities."

Driving on super highways has become so tedious that it is incumbent on the engineer to design signs and lighting so that the driver is forced to make one decision at a time.

A Texas engineer told the American Society of Civil Engineers that "it becomes problematical as to the feasibility of placing a lighting standard in a hazardous location versus no lighting at all."

The engineer, Hubert A. Henry, of Austin, designing engineer of the Texas Highway Department, said that experience has shown that improperly placed luminaries can completely obliterate signs at night.

But, he added that perhaps his remarks are "too critical, for everyone knows that highway improvement changes things, and, in consequence of his knowledge, each one is concerned by the prospect of changes that can be planned and by changes that occur, whether planned or not.

"The changes are often so dramatic in their effect, very profitable to some, adverse to others, that pressures are inevitable and come from every walk of life."

This is one reason, he said, that a planned highway program is so difficult to achieve.

"We find that those who are least informed of the proposed plans will generally resist the adoption for fear of its effect on them. Therefore, no plan should be conceived in darkness and developed in secret.

"To allay the fears, both real and imagined, we exert our greatest effort towards informing the public prior to a public hearing."

Irrigation practices in the southeastern part of the United States were under scrutiny at the convention of the ASCE.

Harold A. Scott, a Tampa, Florida, engineer, told the engineers that there is little doubt that irrigation is beneficial to crops in improving quality and quantity. But, he added:

"There is some question as to the degree of the effect." Mr. Scott of the firm of Reynolds, Smith and Hills, said that it resolves into the factors of irrigation and crop production, and that variables such as weather, soil fertility and estimating time of application play a most important part in a successful operation.

A famous southern general was mentioned at the convention of the ASCE in a report on Mississippi River tributary bank protection projects.

Harvill E. Weller, an engineer of the Mississippi River Commission, Vicksburg, Miss., said that one of the first bank protection works on record was constructed in St. Louis in 1838. Shoaling had occurred in the St. Louis Harbor until a minimum depth of five feet obtained during low water.

"A young lieutenant in the Corps of Engineers named Robert E. Lee designed corrective works that were constructed, under his supervision, by the Corps with some financial assistance from the City of St. Louis," Mr. Weller stated.

The use of prestress concrete in bridge construction in Texas was reported as "both practical and economical" in a paper presented at the convention of the American Society of Civil Engineers here today.

Wayne Henneberger, supervising designing engineering of the Texas Highway Department, told of the use of the material in structures spanning railroad tracks at San Antonio.

Mr. Henneberger stated that in the original planning it was decided a design using continuous I-beam spans could meet the requirements.

"However, by the time the structural designing was begun," he said, "the availability of structural steel for immediate construction was doubtful since other projects under contract were being delayed 12 to 16 months awaiting steel deliveries.

"The decision was made to design the structures utilizing prestressed concrete, even though we realized the longer spans would present some difficult problems."

But he said the construction of the project moved along rapidly without delay and was opened to traffic in 1959. The majority of spans on the structures are less than 68 feet.

He noted, however, that the limited experience on the San Antonio project with prestress concrete indicates its use in spans above approximately 90 feet "is practical and economical."

"Determination of physical properties of the concrete to be used, and proper control of stress loss are factors which must be considered before designs are final.

"We believe the use of prestress lightweight concrete will gain importance, particularly in those areas where hard rock aggregates are getting scarce. Certainly it is a field which deserves consideration from the bridge designer."

ASCE (Cont.)

Louisiana's Lake Pontchartrain area, which has been getting an average of two hurricanes every three years for the past 66 years, is about to get some help from the civil engineer in protecting life and property from the high velocity gales.

Two engineers with the U. S. Army Corps of Engineers District, New Orleans, reported in a paper presented at a session of the recent American Society of Civil Engineers of two plans of protective measures against hurricanes in the area. They involve the construction of barriers, levees and walls.

Authors of the paper, Walter S. Mask and P. Alfred Becnel, Jr., both of the Hydrology and Meteorological Section of the District Corps, reported on a hurricane study of Lake Pontchartrain and vicinity. Mr. Mask is chief of the section.

Objectives of the study include the collecting of data on the behavior and frequency of hurricanes; determining methods of forecasting their paths and improving warning services, and determining possible means of preventing loss of lives and damage to property.

Motion picture studies are being utilized to evaluate problems in the design of freeways, the American Society of Civil Engineers was told.

A paper presented at the ASCE convention stated that "freeway operation and design is still a relatively new phase of highway engineering, and traffic volumes on existing freeways have only recently reached the capacity that will permit full evaluation of freeway operation."

The paper was devoted to freeway ramp design as related to traffic behavior, and was authored by Charles Pinnell and Charles J. Keese, of the Texas Transportation Institute, Texas A&M College, College Station, Texas. It was presented by Mr. Pinnell.

How engineering skill is being put into essential use in preventing the Atchafalaya River, formed by Old River and Red River, from eventually capturing the total flow of the Mississippi River was related at the convention of the ASCE.

Jefferson L. Smith, chief of the Contract Administration Branch of the U. S. Army Corps of Engineers District, New Orleans, reported to the engineers on the Old River Control Structures, located on the west bank of the Mississippi River about 50 miles northwest of Baton Rouge, La.

These structures will regulate the flow from the Mississippi to the Atchafalaya River, and will divert a portion of the Mississippi River flow in the times of extreme high river stages.

He said that the construction of the Low-Sill and Overbank Control Structures are a part of a project that is of vital importance to the Lower Mississippi Valley. The purpose of the structures is to control the volume of flow entering the Atchafalaya River via Old River from the Mississippi.

No immediate emergency seems to exist in water supplies for rice irrigation in the southwest Louisiana rice fields, two Louisiana State University specialists said in a paper presented at the convention of the American Society of Civil Engineers.

Authors of the paper were Austin T. Harrell, superintendent of the L.S.U. Rice Experiment Station, Crowley, Louisiana, and Macon D. Faulkner, argriculture engineer in charge of rice irrigation at the station.

The "remarkable increase" in the size of ocean-going oil tankers offers a continuing challenge to the engineer in building docking facilities to accommodate the supertankers, a speaker told the convention of the ASCE.

The speaker, H. W. Reeves, staff engineering of Brown & Root, Inc., Houston, Texas, pointed out that since the World War II development of the T-2 tanker, which has a capacity of 16,500 DWT tons, a length of 523 feet and a loaded draft of 30 feet, tankers have grown in size until now there are in operation tankers of 105,000-ton DWT capacity, with a length of 950 feet and a loaded draft of 50 feet.

The United States is lagging behind Europe in the use of prestressed concrete for long-span bridges, a Connecticut engineer told the ASCE at a convention session here recently.

The issue in the use of such construction has been a matter of economy, Morris Schupack, partner in the consulting firm of Schupack and Zollman, of Stamford, Conn., said. He presented a paper on the construction concept, design and economics of cast-in-place, post-tensioned concrete bridges of over 100-foot span.

He revealed that prestressed concrete bridges have made considerable inroads in the shorter span usage in the United States bridge field. But, in the longer span range, he added, spans of 100 feet or longer, the use of prestressed concret is still in "its infancy" in the United States.

"This is contrary to the experience in Europe where the longer span bridges in the range of 100 to 350 feet are predominately constructed of prestressed concrete, whereas many of the shorter spans are constructed of reinforced concrete," Mr. Schupack stated.

An engineering "first" in the construction of a prestressed concrete bridge with a span of 320 feet over water that had to remain navigable as a ship channel during construction was reported to the ASCE.

Such a span, which had never been tried before, is the bridge over Oneida Lake, on the Empire State Throughway, 12 miles north of Syracuse, N. Y., and near Brewerton, N. Y. At that point there is a ship channel of 230 feet, and a minimum vertical clearance of 20 feet, which was requested, had to stay unobstructed during the construction of the bridge.

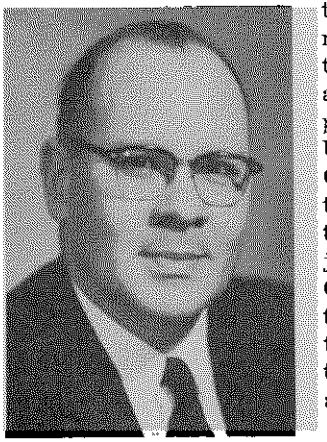
Details of the unusual bridge construction were presented at the ASCE convention by Eric C. Molke, of Albany, N. Y., a partner in the consulting firm of Summers, Munninger and Molke.

Problem: The Redesign Of Southwest Pass

Introduction

By Chester A. Peyronnin, Jr.

The Mississippi River is the major waterway through the central United States. Beginning in Lake Itasca, Minnesota, it flows south and is joined by the waters of the Missouri, Ohio, and Tennessee Rivers and finally enters the Gulf of Mexico. The area drained by it encompasses over 40 percent of the United States and part of Canada. Inland vessels can travel from the Great Lakes to the Gulf and into all major valleys of the interior. Ocean commerce, drawing up to 35 feet of water, can enter from the Gulf and travel to the ports of New Orleans and Baton Rouge, Louisiana.



C. A. Peyronnin, Jr.

It is highly desirable that the allowable depth be increased to 40 feet in order to accommodate larger or more fully loaded vessels. This depth exists from the Gulf to New Orleans except in the Passes proper and across the sea bars at the mouth of the Passes. Of the three major outlets, Pass a'Loutre has not been improved.

South Pass has been improved by jetties and dredging to a depth of 30 feet and Southwest Pass has been improved by similar methods to 35 feet. Because of the limited width of South Pass, only Southwest Pass is suitable for improvement to a depth of 40 feet. The limitation in securing such a depth is mainly an economic consideration of the cost of maintenance dredging.

At the present time, it is necessary to dredge an average of 2,100,000 cubic yards annually to maintain the 35-foot channel. The deeper channel has been authorized by Congress, but it was necessary to make an engineering study of the Pass to determine the best way of modifying the Pass to provide for minimum maintenance cost. It was decided that a model of the Pass would provide the best means of studying various possible designs because of the complex hydraulic regimen of the Pass. In 1956-57, data was collected in order to construct and verify the model. The model was operated in 1958-59 with 21 different designs and variations before the optimum design was selected on a basis of most economic construction and maintenance costs. This thus became one of the most comprehensive studies of a river pass ever undertaken. This paper will present some of the factors pertinent in the problem and its solution by the U. S. Army Engineer District, New Orleans.

Hydraulic Factors

The hydraulic regime of the pass is rather complex because of the interaction of fresh water from the river and saline water from the Gulf. Normally the river flow will vary during a year from a maximum of approximately 400,000 cubic feet per second to a minimum of approximately 20,000 cubic feet per second. The daily variation at low flows may be as high as 200 percent due to the tidal action of the gulf acting to retard the flow at high tide.

Salt water from the Gulf of Mexico has a higher density than the fresh water and so tends to flow under the fresh water due to the pressure gradient. At low river flows this salt water will intrude to the vicinity of New Orleans. At high river flow, it will be positioned at the mouth of the pass. The interaction of the two fluids results in a wedge which is arbitrarily defined at the interface salinity of 5,000 parts per million chloride ion. The direction of flow of the salt water is upstream and the fresh downstream, which results in an essentially stagnant condition at the tip of the wedge and high diffusion currents along the interface, figure 1.

Outside the pass, the Gulf flows generally to the west. Littoral currents approach along the pass and bend to the southwest due to the interaction with the effluent stream, then curve again to the west. These currents aid in the transport of any material moving out of the pass.

Sediment

Material is carried by the river in the form of suspended solids and in bed load. The material in suspension is not of great importance because it tends to remain in suspension. The bed load movement is of greater importance because it contributes the bulk of the material deposited in the passes. At low river stages the bed shear is not great enough to move any material. At higher stages this material is moved downstream until it reaches the wedge where it cannot continue to move because of the reverse direction of flow, thus causing the major shoaling problem. If some of this material could be moved up over the wedge or angled around the wedge, the problem would be greatly minimized. Other shoals caused by normal depositional processes are not as important as the bed load problem.

Solution

The solution to the problem consists of a re-alignment of the pass so as to effect a better approach of the bed material into the wedge. By moving the channel slightly to the east as shown in figure 2, the sediment will take a path to the west off of the wedge where it can be better transported by the littoral currents. Salt water flowing up the bar channel will tend to scour it out. This solution will offer minimum interference with navigation during construction and will not materially change the navigability of the pass. The turning point for vessels entering the river has been changed and is acceptable to navigation interests. An allowance of an additional 2 feet is made in the depth so that any material which happens to be deposited can be removed before the minimum depth of 40 feet is reached. This re-design will cost approximately $8,000,000 to construct and is scheduled for completion in 1963. Upon its completion, larger vessels will be able to enter the river, thereby benefitting the ports of New Orleans and Baton Rouge and indirectly other ports because of the greater tonnage transported.

Chester A. Peyronnin, Associate Professor of Mechanical Engineering at Tulane University and a Hydraulic Engineer in the Hydrology and Tidal Unit, Planning and Reports Branch, U. S. Army Engineer District, New Orleans. He summarized this article, delivered before LES in April, for The Louisiana Engineer.

Little Gypsy (Cont.)

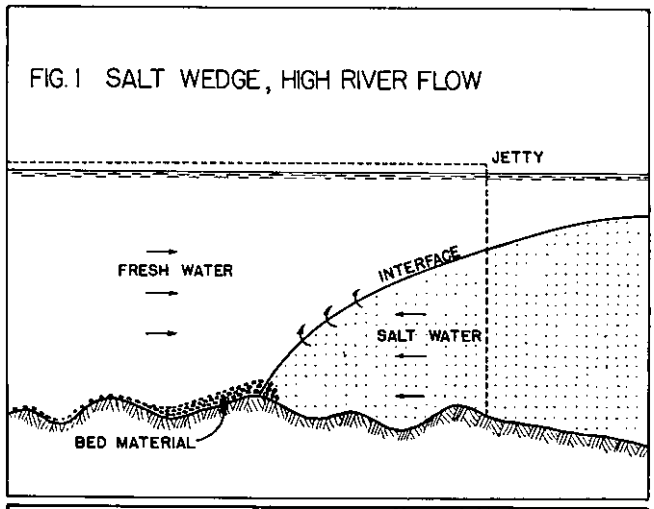
puter and control sub-loop failure while in operation above twenty per cent rating or computer failure only in operation below twenty per cent rating. Retention of manual control indicates the presence of operators at Little Gypsy; and, again, since this is a trial installation, it was considered wise to employ the conventional number of shift personnel at this station. Consequently, there will be three shift operators per operating shift and a total plant complement of about forty-three people.

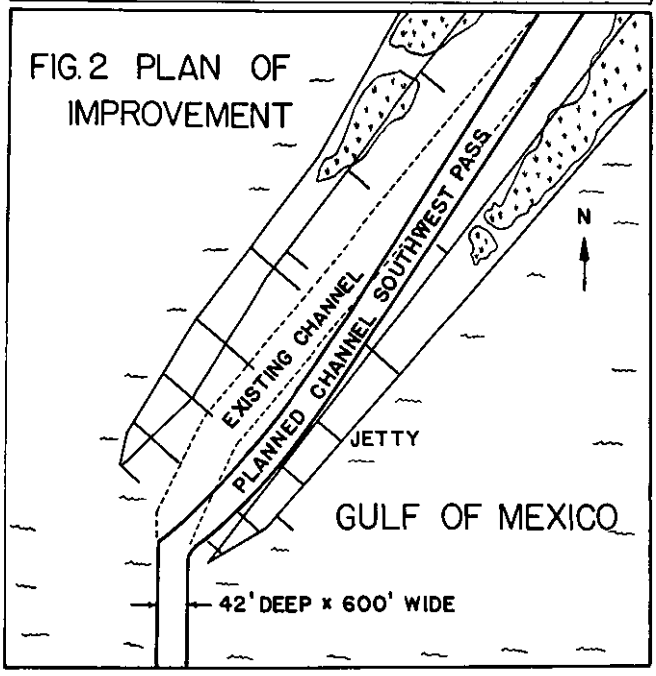
The projected ultimate size of this station will be six units with a total capability of two million kilowatts; and it is hoped that the number of plant employees will not have to be increased appreciably. It is not beyond the realm of possibility to assume that this six unit station could be controlled by three men; a control supervisor, a control operator observing the operation of the plant and taking over in the event of a unit computer failure, and, finally, a roving operator to be utilized wherever necessary.

Installation of a computer did not allow the reduction of any of the conventional plant safety relaying and interlocking features. Conversely, because of the degree of automation and also because of the very remote possibility of the computer malfunctioning, it was necessary to install safety features, which operate exclusively of the computer, in greater numbers than ever. Here again, it is hoped that, after the computer has proven itself, these safety features will be, to a large extent, "programmed" logic in the computer rather than "wired" logic exclusive of the computer.

Since the computer will do only what it is told to do, it has an advantage over the human operator in that it will act rapidly, to carry out consistently, the carefully considered, mutually agreed upon decisions of a number of people; while the operator must reply on his own spur of the moment judgment in a time of stress.

At the present time, design has progressed very favorably. About ninety per cent of the control circuits are completed and enough of the logic flow diagrams are accomplished to indicate that no insurmountable obstacles wlil be encountered. At present, we are very optimistic about the success of this venture.





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1. Investment						
A) Total	$1,000,000	$1,175,000	$1,700,000	$2,000,000	$2,200,000	$3,400,000
B) Differential	0	$ 175,000	$ 700,000	0	$ 200,000	$1,400,000
2. Plant Personnel						
A) Shift Op/Shift Inc. Supr.	5	4	2	6	5	2
B) Total Shift Personnel	21	17	9	25	21	9
C) Salary and Burden	$ 147,000	$ 119,000	$ 63,000	$ 175,000	$ 147,000	$ 63,000
D) Diff. Annual Cost	Base	$ −28,000	$ −84,000	Base	$ −28,000	$ −112,000
3. Fuel Cost						
A) Avg. NSHR	Base	−25	−50	Base	−25	−50
B) Differential Annual Fuel Cost at .30, 65%	Base	$ −9,000	$ −18,000	Base	$ −18,000	$ −36,000
4. Total Annual Savings	Base	$ −37,000	$ −102,000	Base	$ −46,000	$ −148,000
5. Capitalized Value of Savings at 12.5%	Base	$ 295,000	$ 820,000	Base	$ −370,000	$1,180,000

cost of automation is still not fully justified; and the only area left for consideration is in the intangible benefits, such as probable improved maintenance scheduling and increased possibility of operating a plant with substitute personnel during emergencies. It would be difficult to assign a dollar value to these real, but intangible, benefits.

Therefore, our company had to accept the fact that the cost of automation was not fully justifiable on a sound engineering basis at the present time; and, if such an installation were made, at least part of the cost must be accepted as a contribution to the advancement of the industry. It is now hoped that the installation at Little Gypsy will disclose additional and increased benefits having monetary value sufficient to fully justify future installations.

Automation, as applied to our industry, may be defined as the ability to reliably, safely and efficiently start, run and stop a generating unit without human intervention.

For the purpose of establishing the degree to which automation would be undertaken at Little Gypsy, it was necessary to present a list of instructions, or ground rules, for the working teams to follow in the engineering and design of the automation of the plant. These ground rules were:

1. Automation is to be designed on the assumption that the plant is unattended. The computer must, therefore, be able to do whatever the operators do at present.
2. In the event of failure or malfunction of any equipment involving safety to personnel or plant, the computer must be able to take corrective action or shut down the plant. (Initially, since operators will be present, we will use alarms instead of shut down where time element allows.) In the event of such failure involving economy only, the computer may alarm only and tag out for maintenance. This then becomes a problem of simple economics balancing the cost of automation against the estimated cost of loss in economy. (For our purposes, we may say that no automated corrective action need be taken if failure or malfunction of any equipment would still allow continued safe operation of the plant until eight o'clock the next morning. It was assumed that a theoretical serviceman would make an inspection of the plant each morning to detect and correct any trouble which might exist.)

Now, it was further realized that, although all control components necessary for automation should be installed at the time of initial operation, there could conceivably be a time lapse of up to a year or more before all plant components would be under full computer control. This time lag would be used in "debugging" control circuits and in determining the constants and dynamics of the various control loops. Initially, of course, we expect to have in service the scanning and alarming, logging and routine computation features of this computer installation. This initial time lag, coupled with the acknowledgement that there must be continuity of service even though the computer should be temporarily out of service, rendered it wise to construct a conventional plant, similar to Sterlington 6, and to then use the camputer to accomplish the same functions now performed by the human operator in a conventional plant.

So in the Little Gypsy plant there will be present all the conventional, but solid state, analog control sub-loops, such as combustion control, superheat control and the like; with the computer stepping in to optimize these loops and to take over the controls to safely operate the plant in the event of malfunction of any or all of these sub-loops. It might be said at this time that many of these control sub-loops do not become effective until the unit is operating at over twenty per cent rating; so that the computer will be solely responsible for the safe operation of the plant at those times when the plant is operating below twenty per cent rating. It is to be hoped, and expected, that the industrial digital computer will prove its reliability and availability, in the future, to such an extent that it will be feasible to realize the savings possible in eliminating all control sub-loops and allowing the computer to completely perform the tasks normally assigned to these sub-loops. This savings would be appreciable and could be a major factor in the justification, on a sound engineering basis, of a computer installation.

It was also deemed wise to retain possible full manual control of the plant in the event of simultaneous com-

Memorial

WILLIAM B. SETTOON

It was with great sorrow that the many friends of William B. Settoon learned of his passing at the untimely age of 47. Mr. Settoon was one of the outstanding civil engineers in the State and his absence will be felt strongly by his associates. He was born and lived in New Orleans almost all of his life. A graduate of Warren Easton High School, he attended Spring Hill Junior College in Mobile briefly before entering Tulane University to study Civil Engineering, in which he received his degree in 1935.

After graduation he became connected with the United States Corps of Engineers, remaining there until he entered the U. S. Navy Seabees in which he served overseas during World War II and emerged as a lieutenant.

Back in civilian life, Mr. Settoon was connected with various firms as a professional engineer and at the time of his death was an associate in the firm of Curtis & Davis, Associated Architects & Engineers. Besides the Louisiana Engineering Society, he was a member of the American Society of Civil Engineers and the American Concrete Institute. He is survived by his widow, formerly Miss Iris Steiner; William M. Settoon, his son; and by his parents, Mr. and Mrs. William K. Settoon.

Be it resolved that this obituary be entered into the minutes of the Louisiana Engineering Society, published in the Louisiana Engineer, and that copies be sent to his family.

Cecil Shilstone, James Janssen.

—o—

Gulf Offshore Fleet To Have An Addition

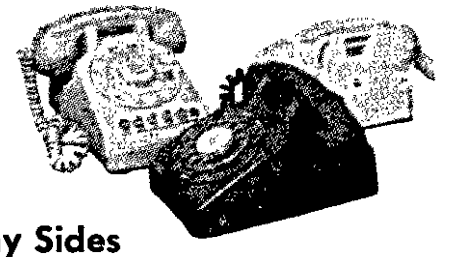
LOCKPORT, La.—A new 6-foot tug designed for towing crude oil barges in the Gulf of Mexico will be christened the "Bud Bollinger" here shortly by the Bollinger Shipyard and Machine Shop, operators of the Bollinger Towing Co.

It will be the fourth of a tugboat fleet which receives crude oil by gravity feed from offshore drilling platforms and transports them to Port Arthur, Tex., for refining.

Designed by naval architect Richard Bollinger of Lockport, a registered professional engineer, the new craft is powered by two Waukesha Wanderer 315 HP marine diesel engines provided by Reagan Equipment Co. of New Orleans and Jackson, Miss.

Under normal operating conditions, the tug will handle two 10,000-barrel barges, according to Bollinger marine superintendent Bill Miller.

"With these new engines," said Miller, "we better our previous runs in fair weather by 8½ hours."



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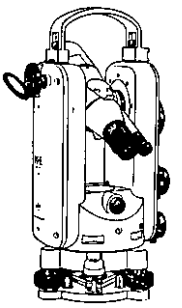

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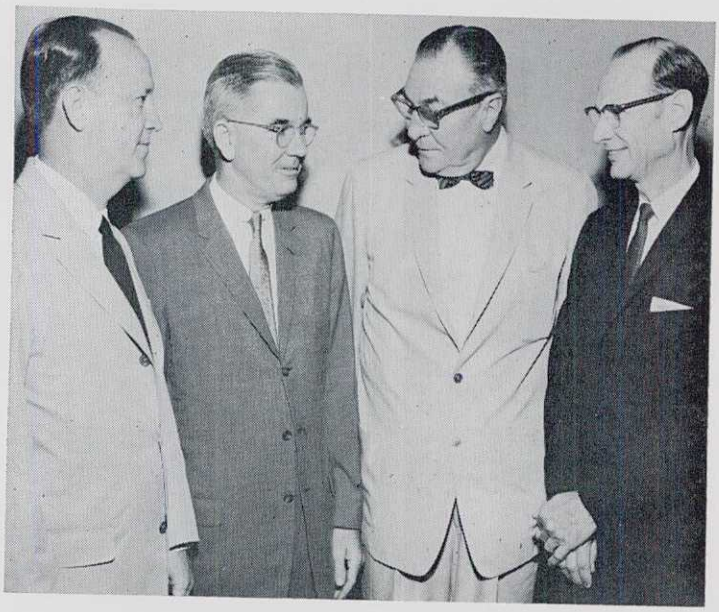

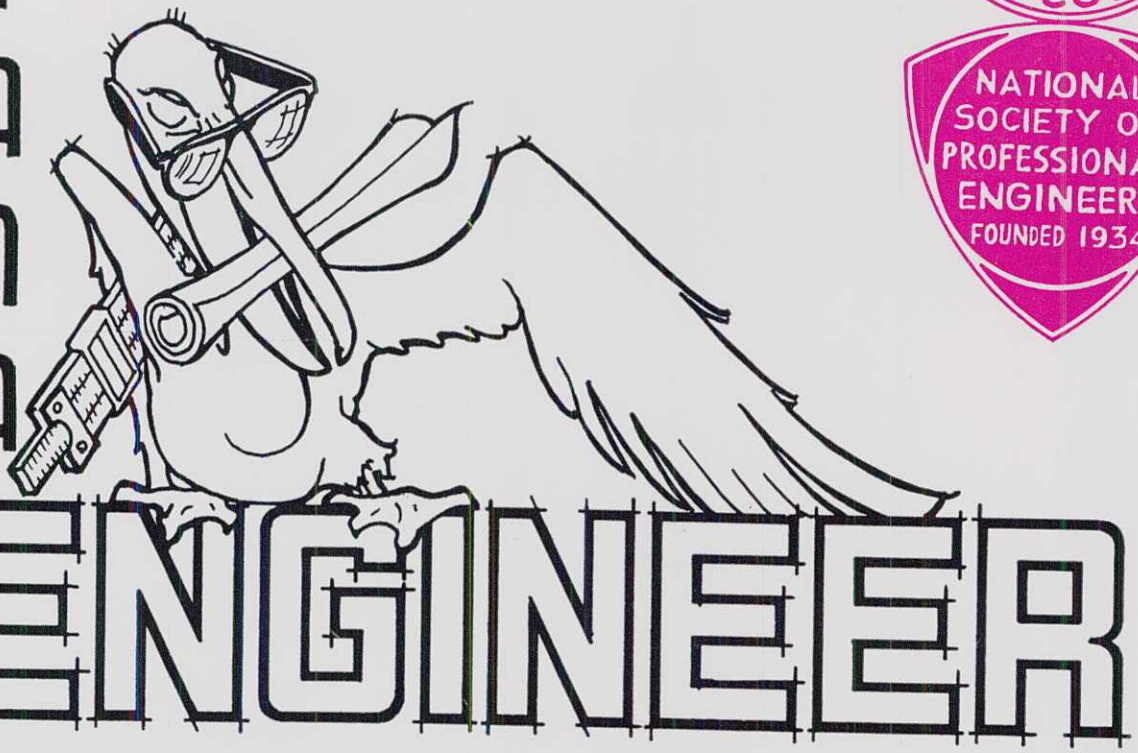

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LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans Monday, May 9, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Latimer, Riess and Fernandez present. Mr. Allen Johnson, Public Relations Counsel, also was present by invitation. Mr. Riess moved that the reading of minutes of the preceding meeting be dispensed with, seconded by Mr. Latimer and carried.

The Treasurer presented a quaterly financial report as of March 31, which was accepted upon motion by Mr. Riess seconded by Mr. Duclos.

Mr. Allen Johnson presented his monthly report on Public Relations and announced that the Engineering-Law Seminar had been postponed to June 10.

The secretary reported the receipt of 282 checks totaling $1,750.00 as contributions to the Registration Law Fund, and stated that additional donations were still being received at the rate of 5 to 10 daily. Several letters which accompanied donations were read and it was decided that a list of contributors would be published in The Louisiana Engineer.

Correspondence between the State Board of Registration and Dan J. O'Rourke of Lafayette was read. President McLellan advised that the correspondence had been referred to the committee on Professional, Civic and Industrial Affairs.

The secretary read a letter from Mr. A. M. Fromherz requesting the society's assistance in connection with a citation served on his firm claiming liability in its supervision and inspection of a construction project. It was the consensus of opinion among those present that the society should render assistance as much as possible, with the exception that it should not enter the suit as a "friend of the court" until the cost of such action could be determined. The secretary was instructed to write to the National Society of Professional Engineers and request their assistance, and to acquaint Mr. Leo Odom, Chairman of the Committee on Functional Section for Engineers in Private Practice, with the case.

Mr. Johnson advised that the cost of printing a membership roster in the Louisiana Engineer would be $835.25.

Mr. Duclos moved that the Public Relations Contract be renewed for another six months, seconded by Mr. Latimer and carried.

Mr. Riess moved that Kenneth L. Kinney of Baton Rouge be reinstated, and that the resignation of Douglas W. Speed of Baton Rouge be accepted with regret. Motion seconded by Mr. Duclos and carried.

President McLellan appointed Messrs. George R. Hammett and R. P. Lockett, Sr., to prepare a memorial resolution for the late James P. Henderson.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ
Secretary-Tresurer

Minutes of Meeting of the Board of Direction held at UCT Park, Baton Rouge Saturday, May 28, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Ice, Janssen, Latimer, Riess, Watts and Fernandez present. Mr. Allen Johnson, Public Relations Counselor, also was present by invitation. Mr. Duclos moved that the reading of minutes of the preceding meeting be dispensed with and corrected in accordance with the secretary's notation.

The order of business was dispensed with and a lengthy discussion took place on current legislation affecting the engineering registration law. It was announced that a meeting had been held at the Engineers' Club on May 25, attended by Messrs. Roy T. Sessums, J. P. Fernandez and J. S. Janssen of LES, Drs. Donald Derickson and Frank Macdonald of the State Board of Registration, Warren Moses, George P. Rice, B. M. Dornblatt and E. C. Guillot, Jr. of the Gulf Institute of Consulting Engineers, Frank Fromherz of ASCE, and Allen Johnson and Clint Bolton, Public Relations Counselors. The purpose of the meeting was to discuss Senate Resolution No. 9 introduced by Senator Wilkinson and House Resolution No. 23 introduced by Representative Sanders. It was reported that LES had sent telegrams to all members of the legislature in the New Orleans area expressing opposition to these two resolutions. Much discussion followed and it was suggested that LES adopt a resolution condemning these concurrent resolutions and distribute copies to each member of the legislature and also obtain as much publicity as possible in Sunday morning's newspapers. The secretary was requested to telephone each section and start chain reaction by means of personal contact with legislators in each area.

The secretary reported that he had telephoned all of the sections in accordance with the above request and that each had agreed to cooperate. Mr. Janssen then offered the following resolution which was seconded by Mr. Riess and carried:

"WHEREAS, the Senate on Thursday, May 25, 1960 received and on May 26, 1960 approved Senate Concurrent Resolution No. 9 and

WHEREAS, this measure which is primarily intended to provide pay increases for certain state employees who are not qualified engineers and cannot obtain these increases through existing State Civil Service procedures, and

WHEREAS, the proponent of this resolution gave as a reason for its passage that the State Board of Registration for Professional Engineers and Land Surveyors "does not object to the limited type of licensing these employees," and

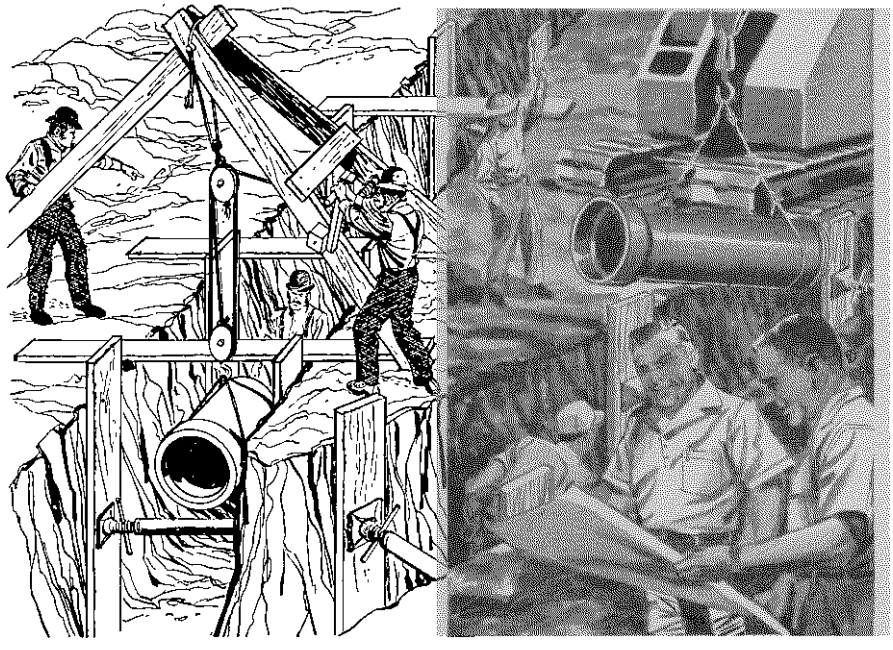
WHEREAS, there is presently in litigation a law suit filed by 10 engineers, members of the Gulf Institute of Consulting Engineers, Inc., against the State Board of Registration with the intent of keeping the State Board from registering as professional engineers certain public employees, and

WHEREAS, House Concurrent Resolution No. 23, which has been proposed for consideration by the House, would have the effect of opening the licensing to any or all public employees, and

WHEREAS, this concurrent resolutions have the effect of circumventing Act 73 of 1950 and the Louisiana Engineering Society Board of Direction feels that the issuing of indiscriminate licenses by legislative concurrent resolution is inimicable to the best interests of the public safety and contrary to the spirit of the regulatory

(Continued on Page 29)

Progress in sanitation 75



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President's Letter

Calling All Registered Engineers!

By EDWARD A. McLELLAN, President,
Louisiana Engineering Society

I am back on the same subject I wrote you about in the June issue of The Louisiana Engineer: the need for support of the Registration Law Fund. We have a long way to go yet.

Elsewhere in The Engineer you will find an account of our activities recently in Baton Rouge in a successful effort to oppose legislation which we felt would tend to weaken the Registration Law.

Suffice to say then we got wonderful support from the many individuals asked to serve. The cooperation received from other interested engineering groups such as the Gulf Institute of Consulting Engineers, the ASME, the ASCE and the State Board were execellent.

At its July meeting the L.E.S. Board of Direction authorized the appointment of a committee to serve through the 1962 session of the State Legislature. This committee will be charged with the gigantic task of receiving and analysing suggested improvements in the Registration Law.

They will cooperate with all interested Engineering groups and come up with the revisions which seem to best cover our needs and which will be supported by the vast majority of engineers so that we may avoid internal squabbles at the time we present the desired changes to the Legislature. Personnel for the Committee is being considered right now.

This Registration Law Committee will have expenses such as mailing, phone calls and secretarial services.

These expenses will be paid, subject to L.E.S. Board approval, from the Registration Fund. When the revisions are decided upon, there will be expenses publicizing our wants and doing the promotion and selling necessary to avoid opposition when the changes come up for approval. The committee work will aid in improving the professional standing of all engineers and should be supported by all.

Unfortunately, very few additional engineers have donated to the Fund since I wrote you last issue. I do not have the exact latest figures at hand, but roughly 400 have donated about $2400.00. The mailing of our first appeal for funds to all 6000 registered engineers cost some $600.00. Wires, phone calls, etc. during our recent successful efforts in the Legislature ran about $100.00. Our share of the legal costs for preparing and pursuing the case to prohibit the State Board for registering ineligible persons named in concurrent resolutions amounted to approximately $800.00. Simple arithmetic leaves but $900.00 to cover all of the work the committee must do in the next two years. It is not enough!

We must have better financial support for the Fund from all Engineers. If you have not yet sent in your donation, please do so at once. Send your checks marked "Registration Law Fund" to Mr. John P. Fernandez, 522 Crystal Drive, New Orleans, La.

Law Fund Donors (Cont.)

Alexandria—Edgar Mitchell.

Baton Rouge—I. M. Grisaffi, Charles W. Hill, Joseph T. Hoskins, P. W. Huey, E. W. Kleinpeter, Dean C. McKee, Raymond Sloss, E. M. Spiller.

Lake Charles—Warren P. Beedle, B. A. Garber.

Lafayette—F. L. Larus, Jr., Irving Manuel, Raphael Mayeux, C. J. Russell.

Monroe—J. T. Balfour, W. L. Corbin, Jr., Asa M. Ray.

New Orleans—E. H. Arnold, Jr., Earl T. Bellander, E. M. Brignac, Jr., Harold A. Bywater, Jr., Lionel J. Cucullu, Ralph L. Davenport, Albert V. Deckart, Jr., Jean Deligans, L. J. N. duTreil & Associates, R. R. Eckert, Jr., Harold L. Flettrich, Harold N. Ford, L. K. Harrison, W. T. Hogg, S. E. Hottinger, Jr., George H. Hudson, Lawrence A. Kelly, Jr., Charles M. Kerr, A. F. Landers, Paul D. Noll, Bill W. Parks, John L. Pfeffer, W. W. Reaves, Jr., Lindsey G. Riddle, Henry A. Saacks, Carl Schneider, Robert J. Swayne, Jr., John E. Taylor, Edward J. Yoerger, A. L. Willoz.

Shreveport—B. M. Nowery, Jr., Thomas L. Amiss.

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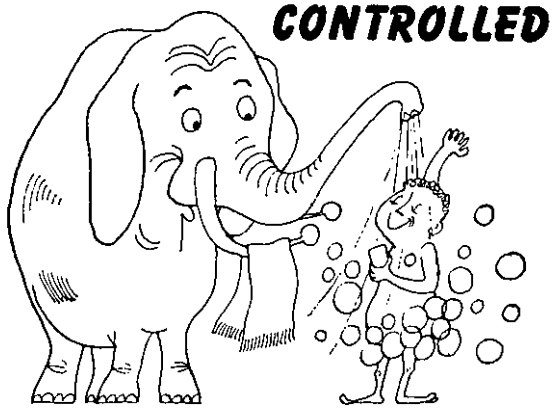

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LES Scores Legislative Success

Strong support from Louisiana Engineering Society members, diligent work by its offices and legislative committee members and close cooperation with fellow engineering groups brought the "limited" legislative campaign of LES in the 1960 State Legislature to a successful conclusion.

LES officers of the Baton Rouge, Lafayette and New Orleans area appeared before a House committee in June with representatives of the State Board of Registration for Professional Engineers and Land Surveyors, the Gulf Institute of Consulting Engineers Inc. and the Louisiana Section, American Society of Civil Engineers in the wind-up of a vigorous program to acquaint the legislators with the urgency of protecting the public by preserving and promoting higher professional engineering standards.

Two concurrent resolutions, House Concurrent Resolution 23 (Sanders) and Senate Concurrent Resolution 9 (Wilkinson), and House Bill 1202 (Stinson) were referred to committee for study and as such failed of action during the 1960 session.

LES Legislative Committee Chairman Francis B. Sessums pointed out, however, that "the fact that we were able to obtain favorable results on 1960 legislation does not mean we should relax our vigilance. On the contrary, we need to continue to conduct an active educational campaign among our legislators to warn them of the disastrous effect on the public safety that could result from unwittingly weakening our engineering statute and professional engineering standards."

Cooperation of the several engineering groups was apparent at all times during the legislative hearings.

For example, at a hearing on House Concurrent Resolution 23, the following attended: LES President McLellan and Secretary-Treasurer John P. Fernandez, board members Douglas Latimer and Louis Duclos; F. L. Larue, G. R. Dyson; Frank Fromherz and W. S. Nelson, representing ASCE; Warren Moses and George P. Rice, for the Gulf Institute of Consulting Engineers, Inc.; Dr. Frank W. Macdonald and Dean F. W. zur Burg, for the State Board, with Board Counsel Wood Brown.

The procedure here, as in other hearings, called for the appearance if not actual testimony of a body of interested engineers to lend weight to the proceedings.

It involved many hours of time spent in research—as Fernandez did in preparing data for the hearing on House Bill 1202; in preliminary organization, as Francis Sessums did in his capacity as legislative chairman, and in contacting legislators—a work shared in by engineers too numerous to mention. It also involved the time of the interested members in going to the legislative sessions from various parts of the state.

Signs Of Engineers

Two very unusual painted outdoor spectacular displays have just been placed in service by Industrial Outdoor Displays of New Orleans, La. for the New Orleans Hotel Association. These are the first of their kind in the United States and are among the largest outdoor displays in the New Orleans area, said E. M. Brignac, Jr., of Industrial, who is active in professional engineering activities.

Special electronic equipment was designed by Industrial Outdoor Displays' engineers. Utilizing telephone facilities all signals are carried from a central point to the two separate display locations. A single pair of telephone wires is used in each instance. At the display locations additional electronic equipment decodes, transmits and sets up the correct message next to eac hotel's name.

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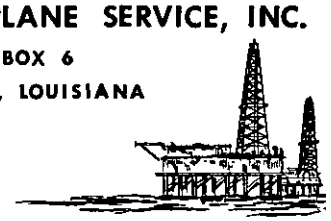

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TOM ORY, Pres. DR. W. J. ELMER, V-Pres.



A LARGE TURNOUT at the Kendall Cram Room at the Tulane University Center for the Engineering-Law Seminar sponsored by the Louisiana Engineering Society and the Louisiana State Bar Association included engineers, lawyers, graduate students, architects. All-day program included a buffet luncheon.

Tulane Engineering-Law Seminar Held Innovation

The vice-president of the Louisiana State Bar Association said that the first Engineering-Law Seminar sponsored jointly by the Louisiana Engineering Society and the LSBA could well set the pattern for a national program of engineer-lawyer information exchange.

Speaking before approximately 125 engineers, attorneys, architects, engineering and law graduate students at Tulane University June 10, Alvin R. Chritovich likened the program to a medical-legal seminar series that had developed successfully on a national basis.

He urged that more programs of this nature be planned to permit a useful exchange of ideas among the two professional groups.

Edward A. McLellan, president of the Louisiana Engineering Society, who presided over the all-day seminar, pointed out that Louisiana engineers have come into an increasing need for legal advice as various aspects of the engineering profession have come under outside attack. He said that the program, initiated through LES, served an immediate purpose in view of several major legal actions in progress affecting the profession and also in light of proposed legislation then affecting the administration of the engineering law of Louisiana.

Speakers included Wood Brown, counsel for the State Board; Frank W. Macdonald, executive secretary, State Board; Alvin B. Rubin, Baton Rouge attorney; Bernard Marcus and Harry T. Kelleher, New Orleans attorneys. (Portions of these talks appear elsewhere in this issue. Mr. Rubin's remarks will appear in a future issue. Mr. Kelleher's remarks, of an informative and humorous nature concerning the inner mechanics of the State Legislature, were made in executive session.—Editor's Note).

Messages were received from top national engineering-law officers.

Paul H. Robbins, executive director of the National Society of Professional Engineers, wired Mr. McLellan from Boston, where the annual meeting of NSPE was in progress:

"Best wishes for most successful law-engineering seminar. Such inter-professional conference do much to improve understanding between our professional groups. Congratulations to LES and Louisiana State Bar Association for sponsoring this joint venture."

Wrote Joseph D. Stecher, Chicago, executive director, American Bar Association: "Your Society and the Louisiana State Bar Association are to be congratulated on arranging this seminar, and I am confident that it will prove very beneficial to both professions."

Mr. McLellan expressed appreciation in his opening remarks to a number of individuals who had assisted in making the seminar possible. They were: Mr. W. W. Thimmesch, executive counsel, LSBA, and his assistant Mr. Richard Seither; Dean Ray Forrester of the Tulane University Law School and Mr. Ralph Slovenko, of the Tulane Department of Professional Studies; Dean Lee H. Johnson and his staff at the Tulane School of Engineering; Mr. Horace Renegar, director of the Tulane public relations department and Messrs. Quent Ault and Mark Hepler of his staff; the engineering agenda committee composed of Mr. Frank Riess, chairman; Mr. Clayton L. Nairne, Col. William Lewis, Mr. Waldemar S. Nelson, Prof. Walter E. Blessey, head of the Tulane Department of Civil Engineering; Mr. Robert Gosa and to Mrs. Frank Fromherz, president of the LES Woman's Auxiliary and her telephone committees.



C. L. DENSON, president of Monroe Section of LES, addresses Engineers Week dinner meeting at Louisiana Tech's new Student Center. Featured speaker was Dr. M. R. Lohmann, (next to Mr. Denson) Dean of Engineering at Oklahoma State University. Fourth from left is Dean T. Bogard, first vice-president of the Louisiana Engineering Society.

received as evidenced by the many favorable comments from the members of the clubs.

7. Exhibits—Dr. J. S. Tarbutton and his Committee placed the following exhibits:

Beaird's Drug: There were three fractional horsepower motors with a detailed report of an experiment performed on a 10 h. p. polyphase motor, complete with circle diagram and graphs—approximately 13 pages.

Ruston Office and Photo Supply: A classroom type slide rule with a display of a 6½ page typewritten transient problem. Two texts were shown with an analog computed plot of the solution to the problem.

Milam Drug: Engineers' Week posters, drawing equipment, drawings of Engr. 451 students and translucent models used in teaching drawing.

J. C. Penney Store: A set of plans for the Bayou D'Arbonne Lake Dam and Spillway; and an assortment of textbooks, handbooks and magazines, and some small instruments.

Ritchie's, Inc.: Heathkit Electronic Analog Computer; Brush Recorder with solution to problem programmed on computer; Vibration Analyzer; and engineering books.

Town Tech: Self-Aligning Ball Bearing and Engineering books.

Glasgows: A Chemical Engineering display using equipment and "tools of the profession" as follows: Colorimeter; Tele-Thermometer; Control Valve; Minneapolis-Honeywell Records-Controllers (Tel-o-Set); Pressure Type Thermometer; Dial Thermometer; Thermocouple; Orsat Apparatus; Scintillation Counter; Journal Literature (4); Handbook; Textbooks and Reference Books (12); and a slide rule.

Lewis': A Petroleum Engineering exhibit consisting of an oil rig, several rock cores and five books dealing with various aspects of petroleum engineering.

Marbury's Drug Store: A Geological Engineering display consisting of equipment used by Geological Engineers doing preliminary mapping: Plane table and alidade; topographic map which was prepared by students in Field Methods course; rod; Micro surveying altimeter; eight books dealing with various aspects of Geological Engineering.

Posters were displayed in the following locations on the campus: Bogard Hall, Keeny Hall, Prescott Library, Lomax Hall, English Building, Student Center and Bookstore, Dramatic Arts Building, Carson-Taylor Hall, and "Bill's Barbecue."

8. Library Displays—Mr. Jack Painter and his Committee placed book displays in the Engineering Library and the Main Library at Tech. Two window edge displays were installed were installed in the Engineering Library. These had draped burlap backgrounds and each had a model rocket in addition to books and a poster advertising National Engineers' Week. In the Main Library, the bulletin boards features pictures of rockets and posters about National Engineers' Week. Books on rocketry and small models were displayed in a display case in the reading room.

9. Films—Films were shown continuously from 8:00 a. m. to 4:00 p. m. on February 22 and February 23 in Bogard Hall, Room 122. "Challenge at Carquiney," (a welded bridge film) and "Inertial Navigation" were shown each hour the first day. "Mackinac Bridge Diary" and "Inertial Navigation" were shown each hour the second day. Attendance was very good.

10. Panel on Science and Engineering—A panel discussion on science and engineering was held at the Ruston High School on Thursday, February 25, from 10 to 11 a. m. Mr. H. L. Henry, Head of General Engineering, served as moderator. Other members of the panel were: Mr. W. W. Chew, Head of Chemical Engineering; Mr. R. A. Smith, Head of Civil Engineering; Mr. R. M. Steere, Professor of Electrical Engineering; Dr. J. J. Thigpen, Head of Mechanical Engineering; and Mr. R. E. Carlile, Assistant Professor of Petroleum Engineering. Approximately 85 students attended and evidenced their interest by many questions.

11. Dinner Meeting With Professional Societies—A dinner meeting was held at 7:00 p. m. February 24 in the new Student Center at Louisiana Tech. In attendance were members from: The Monroe Section of LES; the Monroe Group of ASME; the Monroe Section of AIEE; the Alexandria Section of LES; and the engineering faculty at Louisiana Tech. Many wives were also present. Members of the Shreveport Section of LES and the El Dorado Section of AIChE were forced to cancel their attendance because of the very bad weather. A short musical entertainment was presented by students at Louisiana Tech from the cast of "Die Fledermaus" under the direction of Mrs. May Elaine Wallace.

The featured speaker was Dr. M. R. Lohmann. He gave a very enlightening and interesting talk which was well received and enjoyed by all.

12. Lapel Buttons—Lapel buttons bearing the 1960 thematic design "Engineering's Great Challenge—the 1960's" were worn by the faculty and the officers of the student engineering organizations during the week of February 21-27.

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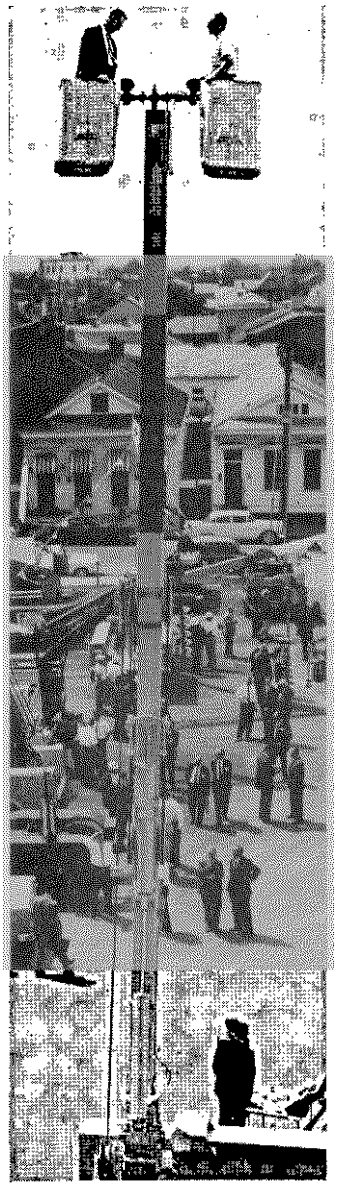


A number of Louisiana Engineering Society members participated in the Combined Distribution - Transmission Conference sponsored by the Operating Section of the American Gas Association in New Orleans May 9-13, 1960.

The address of Welcome was given by Clayton L. Nairne, executive vice-president of New Orleans Public Service Inc. and an LES past president, substituting for NOPSI President Gerald L. Andrus.

C. R. Newlin, an LES member, acted as moderator for a panel on "What's New In Construction and Maintenance." S. E. Trouard, an LES member, and E. A. Wagner, Jr., spoke on "Deep Ground Beds for Cathodic Protection."

James S. Janssen, LES second vice-president, presided at a Distribution Design & Development session. All these participants are NOPSI people.

Delegates also attended automotive and mobile equipment sessions sponsored jointly by the Automotive and Mobile Equipment Committee of the AGA and the Transportation Committee of the Edison Electric Institute.

The conference, featuring outstanding speakers and papers, attracted many engineers. Excerpts from a few follow.

* * *

Experience with a relatively new process, the extrusion of a plastic polyethylene film on pipe, was the subject of a paper by John V. Adkin, Rochester Gas & Electric Corp., Rochester, N. Y.; O. E. Moore, Panhandle Eastern Pipeline Co., Kansas City, Mo., and J. C. Vogt, Laclede Gas Co., St. Louis, Mo.

The authors noted that historically, the gas industry has shown a strong interest in plastic pipe as a possible substitute for steel and copper. A basic reason for doing so was the good resistance shown by various plastics to corrosion.

"The basic disadvantage of most plastics presently available as piping material is their relatively low mechanical strengths," the authors noted.

They cited a Republic Steel Corp. product known as "X-tru-coat" plastic-coated pipe and tubing as an attempt to obtain the exterior advantages of plastic to fight corrosion and the strength of steel for safety and pressure requirements in a commercial product, a steel pipe with an outer jacket of plastic pipe.

In a survey of use of this product by 21 gas distribution and transmission companies nationally, using approximately five million feet of this pipe, the authors found that 20 rated it "excellent, good or satisfactory" from a construction standpoint; 8 of 10 found the electrical current requirements for cathodic protection comparable to those of their presently used coatings; 7 found no change in the material itself or the adhesion between the pipe and the coating on inspecting portions in service from 13 to 24 months underground.

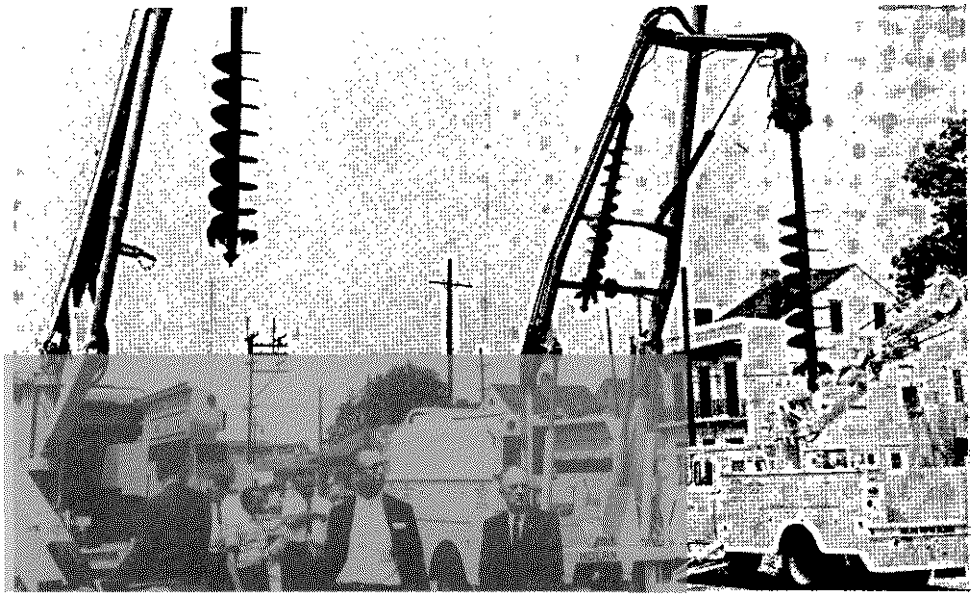
Under an "other comments" question, most companies expressed concern over the life of the material in the soil environment. The earliest installations in this survey were made in 1956.

Some companies mentioned the fact that the coating becomes slippery when wet and is difficult to handle, requiring tight booming.

* * *

A "phenomenal renaissance" in gas lighting in the United States almost a century and a half after the first installations was the subject of a paper by Otto B. Vogel, Boston, Mass., Boston Gas Co.

"From practically nothing, installation of gas lights rose to 250,000 units in 1958, just 50 years after gas lighting was all but



"Skybucket" used in utilities maintenance (above) was demonstrated at American Gas Association special exhibit and display at Municipal Auditorium in May. Exhibit showed latest developments in equipment for automotive - mechanical divisions of the industry. At right are rotary "post-hole diggers" which can drill quickly, efficiently for installation of utility poles, and serve other useful construction phases.

killed by the incandescent bulb, said Vogel.

"It would appear that the time has come," he said, "for the industry to draw up a uniform code of minimum installation standards for gas light supply lines. It may be argued by some that the utility has no responsibility for customer installed services, but it appears logical that we should have as good a code covering this kind of installation as we have for our interior piping."

Controls, formerly administered by the "Old Lamplighter" now range from clocks to a new proposal to utilize the heat of the gas light to energize thermocouples to supply the power required to operate a photocell control.

"To sum up," said the author, "it appears that gas lights are back to stay."

* * *

The May AGA Conference in New Orleans was "one of the most completely visualized the South has ever seen," according to F. J. Didier, New Orleans, manager of Delta Visual Service Inc.

Working with materials provided by Fredric Moshier, New York, assistant secretary of the AGA's operating section, Delta Visual projected as many as six film strips or slides simultaneously at the conference.

—o—

For Whom The Bell Tolls!

By JAMES JANSSEN

Second Vice-President, Louisiana Engineering Society

"It tolls for thee." About once per year your Alma Mater comes to you for financial assistance and it presents facts to show why it needs such assistance. Since we are dealing with facts, let's face another one. **You did not pay for all your college education.** Neither did your father, guardian or any other single benefactor. The tuition that was paid for you covered only a portion of the cost of your professional education, probably a good deal less than half of the actual cost. Even the proceeds from endowments didn't make up the difference. Annual donations were required from those who preceded you to keep most private universities operating.



James Janssen

And if you went to a tax-supported institution, do not be complacent; more and more of these are finding it necessary to request help from alumni.

And who is going to help the engineering schools, if the engineers do not?

To quote further from John Donne, "No man is an island, entire of itself; every man is a piece of the continent, a part of the main." As it is in any other profession, so is it in engineering. As the profession goes, so goes the practitioner. As our group standards of prestige, development, and remuneration go up, so do our personal standards and returns.

Sir Francis Bacon is quoted as saying, "I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto." If this was true 400 years ago, it is more true now.

With scientific knowledge and engineering applications thereof advancing at an exponential rate, the technical schools have problems enough with securing and holding teaching personnel, with maintaining modern curricula, and with admitting and instructing students.

The least we can do is to help them with their financial problems. Donations by us to engineering institutions are investments that pay off in a multitude of ways. such as increased r e c o g n i t i o n and remuneration. The other professions have long since come to a realization of this and are reaping the results. For engineers, it is late but not too late.

Let's be selfish and donate generously to the future of the engineering profession by rendering financial aid to the engineering schools.

JAMES S. JANSSEN, who wrote the above article for The Engineer, is second vice-president of LES. ..He is principal gas engineer, engineering department, New Orleans Public Service Incorporated. He represented LES at recent annual meeting of NSPE in Boston.

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BOSTON —— Field Notes
By Allen Johnson

Back from Boston and the annual meeting of NSPE was James Janssen, LES second vice-president . . . Leon M. Reinach, assistant to the President of The Houston Corporation, will be the featured speaker before a joint meeting of LES and the Louisiana Section, ASCE Aug. 8 at the Engineers' Club in New Orleans. He will be introduced by C. C. Barnard, Baton Rouge, Barnard & Burk, consulting engineers . . . LES members were served from mobile field kitchens at a joint meeting in July with the Society of American Military Engineers. Speaker Brig. Gen. Carroll L. Wood, Jr., commanding the 337th Engineer Brigade, drew an unusually large turnout . . . Aside to C. W. Stokes: Ernest Levingstone, Lake Charles, asked for a repeat of the Engineering-Law Seminar—in Lake Charles. Among the many at the all-day program: Emery Domingue, Lafayette; H. N. Ogden, Baton Rouge, who assisted with the moderating; Clyde LeBlanc, Houma; Jim Fourmy and E. C. Moore, Hammond; John J. Guth, Jr., Shreveport; F. V. Osterlet, Port Sulphur; Walter F. Plauche; Billy J. Taylor, Monroe; A. M. Fromherz, Cary B. Gamble, Lionel J. Cucullu, S. E. Hottinger, J. R. Rombach, Jr., David B. Lawrence; J. B. Shipp, Lake Charles; G. S. Schrenk, Paul Andry, Jr.; Charles Perrault, Baton Rouge; David Hunter, George Williamson, E. M. Arnold, John Martinez, Theodore Lala, and others to be listed at a future time . . Installation of Waukesha engines in Gulf Coast yards is keeping Reagan Equipment Co. engineers busy during the hot summer months.

IN BUILDING within a budget, designers and builders must frequently face the problem of providing a load bearing floor or roof with an uninterrupted span at a low cost, said W. E. (Bill) Moore, President of SpanDeck Corp. "SpanDeck, a steel constructural unit with long span, light weight, and broad width, economically and easily solves the problem by providing fast handling, easy installation and significat savings in field labor" . . .



NEWLY-ELECTED officers of the Woman's Auxiliary of the Lake Charles Section of Louisiana Engineering Society, installed on May 22, 1960, with Mr. C. W. Stokes, President of the local Section of LES-NSPE as installing officer, include (from left), Mr. Stokes; Mrs. Ray Burgess, incoming President; Mrs. Marion Garrison (with box of flowers), outgoing President; Mrs. Rodney Rentrop, First Vice-President; Mrs. Leland Self, Second Vice-President; and Mrs. Mohns Thornton, Secretary-Treasurer.

The National Society of Professional Engineers urged a resolutions subcommittee of the Republican National Convention to develop a party platform which includes policies that can provide a favorable climate for achieving adequacy in numbers and qualifications of engineers and scientists.

C. G. Roush, chairman of the 53-member group's Policy Review Committee, testified before the Education, Science and Technology Subcommittee of the Republican National Convention in Chicago regarding "the absolute necessity for the governing body of our nation to recognize and encourage the utmost development and utilization of our engineering and scientific manpower."

Roush, who is manager of the Westinghouse Electric Company at Kansas City, submitted a five-point suggested "plank" on engineering and science for the Democratic platform.

The National Society's suggested "plank" covers policies concerning education, attracting engineers and scientists to government service, utilization of engineers and scientists for professional pursuits, effective utilization of engineering and scientific talent in private practice, and legislation to provide engineers and scientists with fair and nondiscriminatory status under Federal laws.

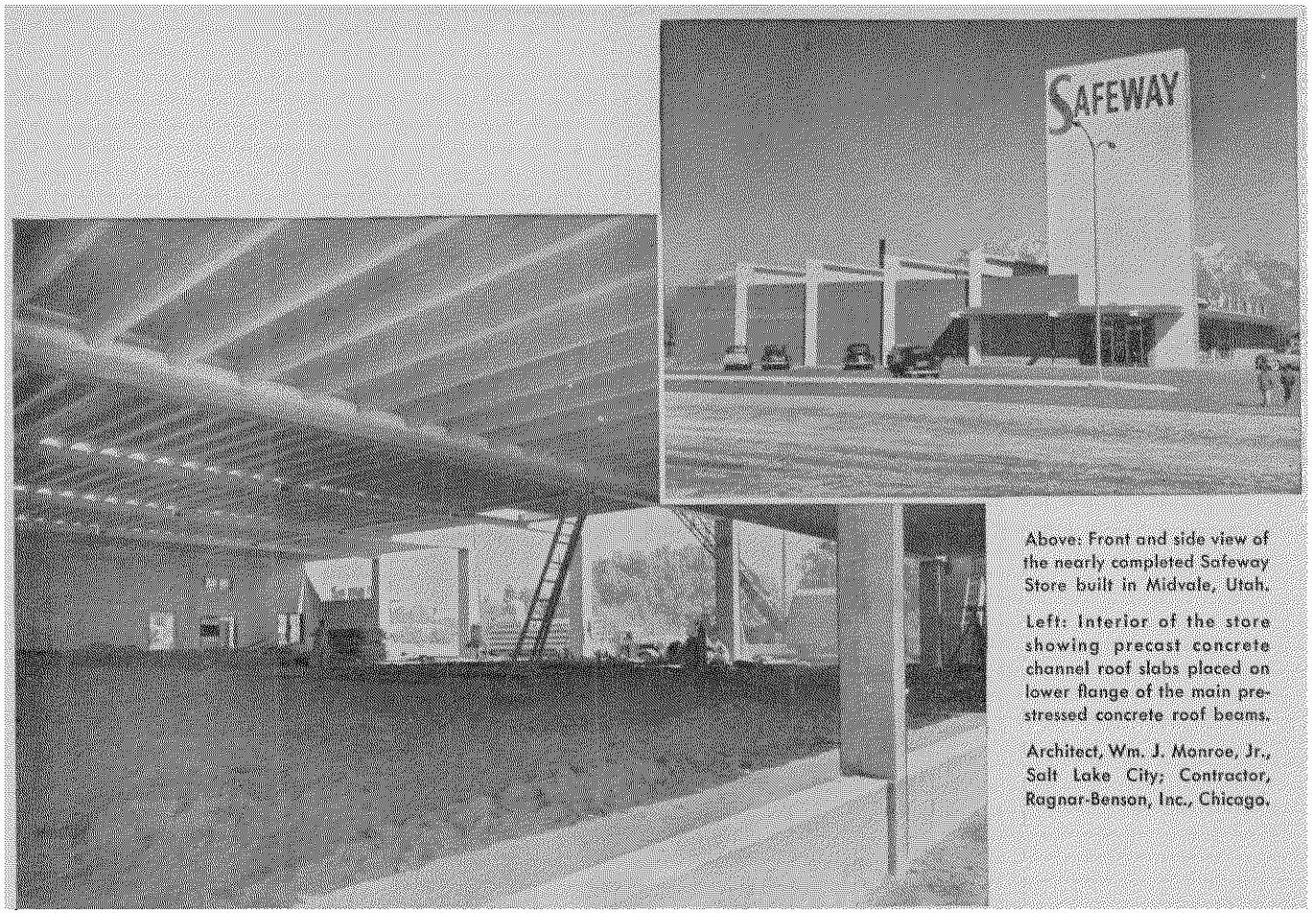
This year's engineering graduates continued to find a very favorable employment situation. According to a survey by the Engineering Manpower Commission of Engineers Joint Council, 82% of engineering graduates had definite plans, and another 11% had job offers they were considering. It was anticipated that virtually all the new engineers would be placed.

Plans for prospective graduates were devided as follows: 62% with jobs, 11.3% considering jobs, 8.0% entering military service, 10.1% entering graduate studies, 1.2% with other specific plans. In all cases, these figures do not vary more than 1½% from a comparable 1959 survey.

Over a period of three years, job commitments for chemical engineers surveyed climbed most sharply (64%, 70%, 67%).

The limited data obtained in other fields indicates the graduates in business and commerce, and in arts and science were about 10% below engineers in definite commitments.

Survey information was supplied by deans of engineering and placement officers from over 100 colleges and universities throughout the United States and covered 15,000 engineering graduates.



Above: Front and side view of the nearly completed Safeway Store built in Midvale, Utah.

Left: Interior of the store showing precast concrete channel roof slabs placed on lower flange of the main prestressed concrete roof beams.

Architect, Wm. J. Monroe, Jr., Salt Lake City; Contractor, Ragnar-Benson, Inc., Chicago.

Super Mart's 108 ft. clear span made possible by Precast, Prestressed Concrete Beams

The Safeway Store Building in Midvale, Utah, obtained a clear floor area 108′ wide by 130′ deep through the use of only five precast, prestressed concrete beams. The beams, cast on the job site, were placed to give a 16′ space above the finished floor in the main store area.

The roof required about 13,500 sq. ft. of precast concrete channel slabs with conventional reinforcement. These channels, 2′ wide with 10″ legs, were placed on the lower flanges of the main prestressed beams. This allowed the prestressed concrete beams to stand boldly above the finished roof line to produce a dramatic architectural effect.

Structures designed to utilize precast and prestressed units can be built for any usage and to conform with any applicable local building codes. Like all concrete structures they offer many advantages: great strength, extra long life, very low maintenance cost and true *low-annual-cost* service. In addition, such structures provide great resistance to destructive natural forces such as storms, decay, termites and especially fire.

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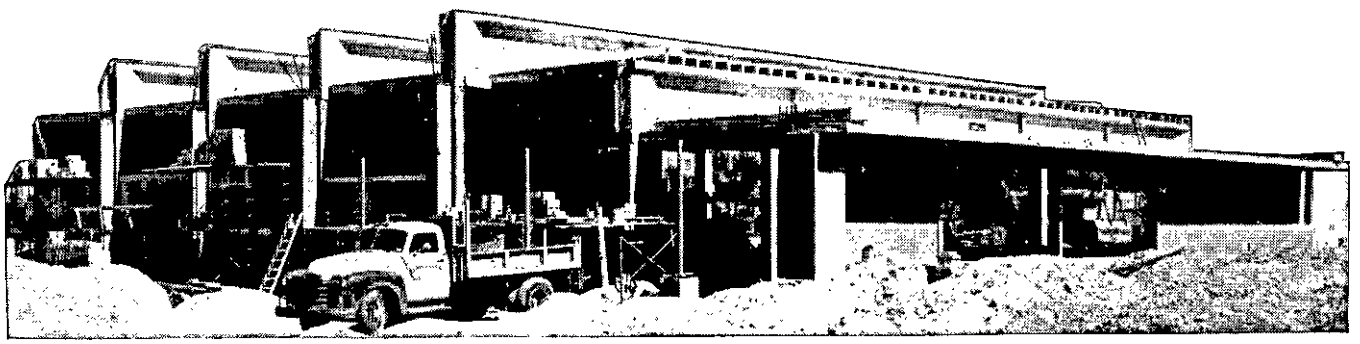

Seminar

(Continued from Page 12)

experience in engineering work, and (third) and finally, qualification on the basis of long-established practice. In this latter category there must be at least twenty years experience, plus recommendation of at least five professional engineers.

Parenthetically, I might say that the act contains a substantial number of provisions dealing with the licensing, etc. of land surveyors. I am omitting all reference to these provisions since they do not seem to fall within the purview of this discussion.

Shorty after the provisions dealing with registration there appears the section that is generally known as the "grandfather clause" which permitted registry of all persons practising engineering at the time of the effective date of the act without examination. This section requires that any such registry occur within a period of one year (that is, August 1950 to August 1951). The last paragraph of this section also gave a similar privilege to state employees engaged in civil engineering activity, permitting them to register as professional engineers (within the same period of one year) and limiting their license to the time during which they continued in state employ. We will have occasion to discuss this also a bit later, particularly in connection with the concurrent resolutions of the Legislature which are now giving the engineering societies a great deal of concern.

As to the second major duty of the Board, namely that of the enforcement of the act and, in effect, the policing of the profession, attention should be called to Section 20 of the statute which deals with the power of the Board to censure registrants or suspend or revoke registration in the event of wrongdoing. This section, in my opinion at least, is unfortunately drawn in some respects. More particularly, it provides that the Board may take disciplinary action only in three cases. One, in case the defendant has been convicted of a felony, two, in case that he has been found guilty of fraud, negligence, or incompetency "in his practice," and three, in case he has committed a fraud in obtaining the certificate or in violation of the act. Some of you may feel that this is perhaps unduly restrictive. This section goes on to provide a machinery for the holding of a hearing and the finding by the Board.

Related to this section with regard to violations is the section dealing with penalties. This provides generally that persons guilty of violation of any of the provisions of the act are guilty of a misdemeanor and may be subjected to a penalty of a fine of not more than $500.00 or imprisonment of not more than three months. The Attorney General and several district attorneys are charged with the duty of proceeding with the enforcement of these penalties and the Board also is given the authority to prosecute directly. This is the section under which the Board must take action against unregistered persons who practice or offer to practice engineering, etc.

In completing this discussion of this act there are a couple of other sections which need to be referred to briefly. First, the provision dealing with reciprocity, which appears in Section 19, and provides that the Board may, if it finds that a registrant under the law of some other state (which state has standards of at least as high as our own), applies for registration, his certification may be issued without further formalities. Lastly, we find a provision for temporary permits in Section 24, which authorizes the Board to issue permits for not in excess of thirty days in any calendar year for persons registered under the law of other states, without actually registering them under our own statute.

This, in very brief summary, is our Louisiana professional engineering statute. It follows in many respects the so-called model act although the latest edition of the model act has been revised to make some amendments and improvements.

It seems to me that it might be interesting for us to make a little comparison this morning with the regulatory provisions dealing with other professions. Let me say at the outset that I do not intend, at this point, to go into any of the issues involved in the regulation of what is generally known as the "oldest profession" which, of course, deals largely with the penal statutes and perhaps the laws of nature.

You might be entertained to know that Louisiana, in common with most other states, has legislated profusely on the subject of regulation and licensing of all sorts of occupations and professions. The Louisiana Revised Statutes contain a long section known as Title 37 which begins with a chapter dealing with accountants and includes many categories, including, for example, the licensing provisions dealing with barbers, funeral directors, beauticians, plumbers, etc. This section contains, in the cur-

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rently published volume, a total of 303 pages and we find our own engineering statute occupying its proper niche in this mass of legislation.

Perhaps it might be most fitting to look for comparison at the two professions of law and medicine and the regulations contained in the statute concerning these two. The medical profession is covered by the statute providing for the Board of Medical Examiners. This is an old statute, some fifty years of age and, as I understand it, parallels fairly closely the provisions of most other states. The examination and licensing provisions are not dissimilar from the engineering statute except that examination appears to be the universal rule. The provisions for enforcement are somewhat broader than our own and, most important, there is a specific provision for an injunction to be brought by the Board to prevent unlicensed practice of medicine. The situation with regard to the practice of law is somewhat different. The statute here provides for the so-called integrated bar system in Louisiana under rules adopted by the Supreme Court of the state. In substance, this requires that all practising attorneys become members of the Louisiana State Bar Association which is set up under rules of the highest court and all graduates of Louisiana law schools are admitted on diploma. Its officers and governing authorities are elected by the members and disciplinary authority is vested in the Supreme Court to disbar or reprimand.

I think it is fair to say that in comparing the professional engineering with the profession of law and medicine, many of the problems which are presently vexing the engineers seem to be handled to an extent through the internal organization of those two professions. In my own profession of law I might note that there are active committees of the state bar dealing with unauthorized practice of the law and with grievances involving unethical practice by the lawyers. I understand that the same thing, to a great extent, exists in the medical profession. I am sure that doctors and lawyers both would be the first to admit that these committees are far from completely efficient and effective. They are, however, active and I suspect that their existence and activity in itself goes far toward preventing many abuses.

Since, to my knowledge, this is the first of the law and engineering seminars, it seems to me that it would be profitable for us to discuss together some sections of our statute which have raised questions, which has been criticized, or which might be improved. In making these comments, I want to be clearly understood as speaking individually and not as expressing any position or opinion of the Board of Registration as such.

The first item I would like to deal with is the very troublesome question of definitions. As all lawyers know, definitions are, at the very best, puzzling and tricky. You will remember that professional engineering is defined, in the very beginning of the act, as service, etc. which requires "the application of engineering principles." Now, I think that it is obvious if someone digs two holes in the ground, puts a post in each of the holes and lays a piece of timber across the top of the two posts, he is, in a broad but very real sense, involving the application of engineering principles. The building of a chicken coop, or the prizing of a car out of a mud hole by application of a lever, are other examples which spring to mind. Plainly, the application of engineering principles does not always involve professional engineering. Further, our statute specifically exempts the practice of architects from the provisions of our law. One of the first and most troubled questions that raises itself is a proper line and definition of the two professions, that of professional engineering and that the architecture. From a practical point of view the Board has evolved, what I think is a workable solution, in that the Board does not undertake to consider residential construction or small buildings as involving professional engineering and I think that it is fair to say that as between the Board of Architecture and the Board of Engineers, there appears to be little conflict in this regard.

In passing, I might note that this type of problem is common to all professions. Since I am more familiar with the law I cite as examples the problems which arise between the organized bar and accountants, particularly in the tax field, as well as similar problems which arise out of land title insurance companies, trust departments of banks, etc. In all of these fields, just as in the field of professional engineering, it is never possible to draw a clear line between black and white and I suppose that the best that we can hope for is an effort to define as clearly as possible, with the understanding that perhaps no definition will be completely clear and satisfactory. I raise this only to solicit your own study and consideration as to the possibility of perhaps moving towards a little greater clarification.

In more or less the same field, I suggest to you study of Sub-section A of Section 12 of the statute which, as you will remember, provides that engineers shall be licensed in one of eight categories; agricultural, chemical, civil, etc. We might note that the two sister professions that we have discussed, law and medicine, do not have any such specialized licensing. A lawyer is qualified as an attorney at law and the same thing applies to an M. D. It is, of course, true that both lawyers and doctors specialize. This is a growing tendency, and perhaps inevitable, but there is not attempt in the statute itself or in the licensing authority to define, as between the branches of the profession.

In the performance of its duties, the Board has found the number of puzzling problems in this respect. The statute itself does not define the various branches of engineering. There exists in several other states decisions to the effect that an attempt at definition by the Board would be, in effect, legislating and, therefore, illegal. Further, during my several years as attorney for the Board, I have repeatedly attempted, by means of cross-examination or otherwise, to obtain from the members of my board a concise, clear and definite distinction between the several branches of engineering. I am forced to a conclusion that there is no such clear line and that the various branches of necessity must overlap.

As a tentative suggestion it seems to me that it might be wise to consider amendments to the statute to provide simply for the qualification of professional engineers without attempt to qualify in particular branches and then to leave to the professional societies, through their ethics and grievances committees, the policing of engineers who seek to perform duties in fields in which they are not competent. As a matter of fact, the Board now takes the position that it does not have the power

to take disciplinary action against an engineer who, when qualified in one division or category, undertakes professional engineering duties on the borderline of another category. The Board has ruled that this is a matter of professional ethics which is beyond the purview of the regulatory statute and addresses itself to the professional societies as such.

The next problem that I would like to address myself to deals with a recent development under the "grandfather clause." You will remember that I said that under Section 19 of the statute it was provided that for one year after August 1950 state employees, who were performing civil engineering functions, were permitted to register for a limited license which would, in effect, make them professional engineers so long as they stayed in state employ. In 1958, a so-called joint resolution was presented to the Legislature (two of them, in fact) in which the Legislature, by joint resolution without debate and without reference to committee, undertook to suspend the time limit in this section so that certain employees of the state might now come in under the "grandfather clause." Four persons qualified under this provision. Thereafter, in the fiscal session of the Legislature, in 1959, another similar joint resolution was presented and passed (I should say that in both of these instances the Board had no notice of intent to present these resolutions and I believe that in like manner the professional societies were unaware of their proposal). Upon the adoption of the 1959 concurrent resolution the Board received 129 applications of these employees to be qualified. Shortly thereafter a suit was filed in the Civil District Court for the Parish of Orleans on behalf of several professional engineers seeking a declaratory judgment that this method adopted by certain members of the Legislature, was ineffective and illegal. The substance of this suit was that while the Legislature had the right to amend the statute, it could not, by a joint resolution, without the usual formalities incident to the adoption of a statute or amendment to a statute, in effect, vitiate the substance of a regulatory law adopted for the protection of the public welfare. On a preliminary hearing this suit was dismissed by the District Court on the ground that an injunction should have been brought and that a declaratory judgment was not the proper remedy.

This dismissal has now been appealed. In the meantime, the 1960 session of the Legislature has now convened and we are advised that other joint resolutions further opening the door have been introduced. Fortunately, in this instance, public opinion has been somewhat aroused and the professional societies alerted. Hearings will be had and at least these resolutions will not be adopted blindly without the Legislature being aware of their substance.

The next item that I would like to refer to deals with the provisions concerning reciprocity which is contained in Section 19 of the statute. You will recall that this section permits an engineer registered in another state to register without formality here, provided that the qualifications under the statute in which he was registered, meet the minimum requirements of our own Louisiana statute. This, in effect, raises a problem in reverse. We find that Louisiana engineers often are unable to take advantage of the reciprocity clause in other states, for the reason that the Louisiana law does not come up to the minimum requirements of most of the other engineering regulatory statutes. Almost all of the states of the Union have adopted amendments to their engineering regulatory laws which require not only a diploma but at least a minimum of some years of experience before an engineer may be licensed. Efforts have been made in th past to amend our statute to provide for such internship or training period. These have been unsuccessful to date. I am told that only one other state in the Union in addition to Louisiana fails to require at least some experience before turning an engineering graduate loose on the public with an unlimited license. It would be to the advantage of the public and to the profession if such an amendment could be sponsored and passed.

I would like also to refer again to the section dealing with disciplinary powers of the Board. You will recall that under Section 20, the Board may discipline an engineer only if he has (1) been convicted of a felony, (2) been guilty of fraud, deceit, negligence or incompetency "in his practice", or (3) who has been guilty of fraud in obtaining his certificate, or violation of the act. I have already indicated that this seems unduly restricted. I am sure that to draft a more workable provision would require careful study. However, instances have come before the Board as, for example, a case in which a registered engineer has been found to be subject to complaint before the Securities Commission of the state for sale of doubtful oil interests and securities. It is conceded that the man has never been guilty of incompetency in his profession nor has he ever been convicted of a felony. Without, at this time, deciding whether or not he is guilty of these rather serious charges, it is extremely doubtful whether the Board could take any action under these circumstances. Perhaps the answer is that this is a matter of professional ethics to be referred to the professional societies but it seems to me that a careful study of this section and some less restrictive language would be desirable.

Finally, in reference to the penal provisions of the statute, dealing particularly with violations by persons who are not registered engineers, I think that serious thought should be taken. The Board finds many instances of unregistered persons advertising themselves as professional engineers or offering to perform professional engineering services. Fortunately, we have been able to handle the greater part of these without actual resort to the courts, however, it will be noted that our own statute does not, in so many words, give to the Board the right to go into a court and seek an injunction. The medical regulatory statute gives this right specifically and it has been used with great effect by the Board of Medical Examiners in stopping unauthorized practice of medicine. I have some hope that the court will say, if this issue is ever squarely raised, that the Board of Engineers does have a right to proceed by injunction against a violator even in the absence of any specific provision in the law. I must admit, however, that this is not free from doubt as a legal proposition. You will recognize that the difficulty of instituting criminal proceedings against violators is sometimes almost insuperable. In a criminal proceeding the Board is frequently seeking to get a local district attorney to institute a criminal action against one of his fellow townsmen on



Due for dedication in October are these new construction equipment facilities of Road Equipment Co., Inc., at 2100 MacArthur Drive, Alexandria. In charge of operations is Lyle Hanse, executive vice-president. Firm is headed by Walter H. Crory, President.

what appears, from the point of view of the non-engineer, to be a mere technicality. Further, when the action is brought in any criminal proceeding, the defendant must be proven guilty beyond a reasonable doubt. This places a considerable obstacle in the way of efficient administration of the act. Actually, in most cases, the Board is not interested in putting some one in jail or having him declared a criminal. The desirable result is to get a court order enjoining him from the objectionable activity. I submit that an amendment to specifically authorize injunctive proceedings by the Board in case of violations would be well worthwhile.

In conclusion, I know that you will recognize that this talk has been little more than a series of running comments which are drawn out of my own experience as attorney for the Board for the last several years. I think your profession is to be congratulated in having a vigorous and diligent membership on your board of registration and I know that I have learned a great deal in my activities as their attorney. I think it will be of great advantage, both to the Board and to the profession if, in connection with this seminar, we can have a full and vigorous discussion of some of the points raised and I know that the Board will benefit by your comments.

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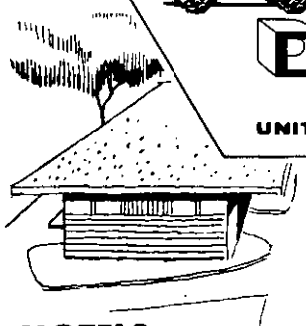

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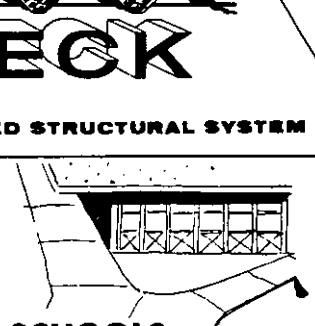

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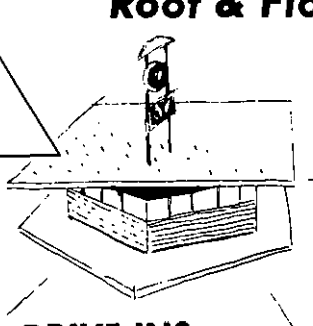

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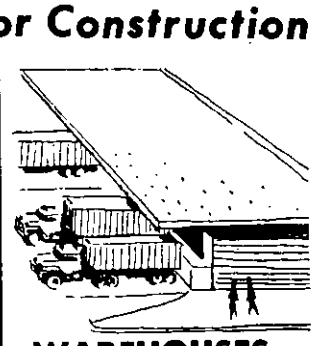

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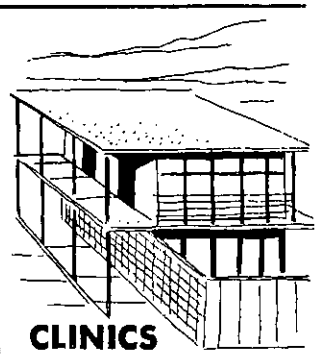

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Engineer Should Know Labor Law

By Bernard Marcus, Partner
(Deutsch, Kerrigan & Stiles)

I—Introduction

First, let me assure you that I am not going to go into competition—at least not unless the law business gets a lot worse. I was exposed to the mechanical engineering curriculum at the Carnegie Institute of Technology many years ago, and therefore qualify by reason of academic accident.

I am really here to tell you something about the law of labor relations as it affects the engineering fraternity. In doing this, I must perforce be somewhat general.

I realize that in most situations the engineering firm on a job is not directly concerned with labor relations problems. However, it has been my experience that the contractors on a construction job, who are directly concerned with problems of labor relations, find it easier to solve these problems when they are dealing with knowledgeable and understanding engineering personnel who have some background in, and acquaintance with, the law and custom of labor relations.

Further, I am sure that many of you actually handle labor relations, and perhaps even collective contract bargaining negotiations, with unions, for your various firms.

The law of labor relations is broader than simply the law governing labor disputes. On the other hand, at least for purposes of my discussion, the law of labor relations is not so broad as to encompass all ways in which employees and employers react to each other.

I am excluding wage and hour problems, but will say, parenthetically, if you have any question about wage rates to be applied on any job in which you are involved, run, do not walk, to your lawyer. I tell you this because the cost of violations of the Fair Labor Standards Act, or the Walsh-Healy or Davis-Bacon Acts can be tremendous. And these violations, at least in the industries in which you are primarily engaged, may generally be avoided, at little or no expense, by intelligent and knowledgeable prior planning.

I am also excluding from this discussion the impact of workmen's compensation and other similar laws.

The law of labor relations then, at least for the next half hour, is concerned with those activities and practives which have arisen in connection with collective-bargaining and the incidents thereto, and action taken to implement or destroy collective bargaining.

Time permitting, I shall emphasize union activities, such as strikes and boycotts, which are resorted to, generally, to achieve or maintain, or enforce, collective bargaining.

Local, state and federal law are all involved in labor relations. So, for that matter, is a substantial body of "private" law, known as the arbitration process.

By far the most important of this "law" is the National Labor Relations Act, and the Taft-Hartley and Landrum-Griffin amendments thereto.

Objectives of Bargaining

I think we can take it that the objective of organized labor is to engage in collective bargaining, and execute collective-bargaining contracts for the ultimate purpose of achieving increasingly better wages, working conditions and economic security.

The self-help techniques utilized in achieving these objectives are the strike picketing and boycott. These techniques are interchangeable and generally all three are used at the same time in the effort to gain the objective.

The federal statutory scheme makes achievement of collective bargaining the most carefully guarded of all labor objectives. Successful bargaining is to unions what competitive success is to business. From the government's point of view successful bargaining is a means of averting industrial strikes.

Contemporary labor relations law is designed to eliminate or minimize the necessity of resort to the union self-help tools of strike, picketing and boycott.

Subject Matter of Bargaining

The subject matter of collective bargaining, from the point of view of the union, is almost limitless. Sections 8a5 and 8b3 of the federal act state generally that bargaining shall be "with respect to wages, hours and other terms and conditions of employment."

This encompasses higher wages, shorter hours, improved working conditions, seniority, pensions, welfare funds, health plans, compulsory unionism, check-off of union dues, make-work programs (which are not union unfair labor practices, if asked for in an adroit manner), and contractual clauses to insure faithful performance.

I am going to go into some detail as to the nature of some of the strike, picketing and boycott techniques employed by unions. Since a great part of the law now in existence covering use and misuse of these techniques has been made in the construction and stevedoring industries, it seems appropriate to discuss these techniques, in front of this audience, in the great port city of New Orleans.

The Taft-Hartley Law made it an unfair labor practice for a labor union or its agents to induce or encourage the employees of employer A, to refuse to work on the goods of employer B, at the premises of anyone except employer B, with the object of forcing A to cease doing business with B, or forcing A to force B to recognize and bargain with any union as the collective bargaining representative of B's employees.

After 12 years of enforcement of this statute, in 1959, the Landrum-Griffin amendment broadened the area of illegality of the secondary boycott prosciptions of the Taft-Hartley Act.

This was designed to close certain loopholes, of a tech-

Bernard Marcus outlined to the Tulane University Engineering Law Seminar the need for the engineer to be familiar with numerous aspects of labor relations.

nical nature, which the 12-year history exposed in the Taft-Hartley amendments.

The present secondary boycott statute is designed to insure that when a union is picketing or striking one employer, the effect of the picketing will be strictly limited to that employer, and its employees, and will not be broadened to cover inducements of another employer, and its employees.

Difficult problems arise when more than one employer is doing business at a particular location.

For example, in the construction industry, it is normal practice for a prime contractor, an engineering firm and perhaps six or more subcontractors, to be engaged in work at the same time at the same location or situs.

If the electrical workers union is on strike against the electrical contractors on a job, and that union pickets the common construction situs where that electrical contractor is at work, the union must very carefully limit the impact of its picketing to the electrical contractor and its employees.

If the union happens to induce or encourage employees of any other of the employers on the job to leave the job, it has violated the secondary boycott provisions of the federal labor act.

"Reserved Gate"

Employers engaged in doing business at a common situs have recently adopted "the reserved gate" technique, in combatting common situs picketing.

If there is more than one entry to the construction site, the union will be told by the prime contractor in charge of the site, that only one gate located at a particular place, will be used by employees of the strikbound employer. Then, if the union pickets at any other of the gates to the construction site, it will be clear that its objective is to shut down the entire job, and that it has no intention to limit the effect of its picketing to the struck employer.

In recent cases involving Virginia-Carolina Chemical Company and the General Electric Company, Louisville plant, the National Labor Relations Board has approved the doctrine on "reserved gate" picketing. The Board's views have been approved by the United States Court of Appeals for the District of Columbia.

Transport Industry

The Teamsters' Union occupies a highly strategic position in modern industrial society for purposes of secondary action, and this fact certainly shows up in the printed reports of secondary boycott cases.

Teamsters are in a position to refuse to handle Kohler bathroom fixtures and therefore make or break the Kohler boycott any place in the country, because they work on the unloading and loading docks of interstate truck lines.

Examples of Secondary Boycotts

A few examples of secondary boycott activities held unlawful by the Labor Board in the building-construction industry are:

a—Carpenters refused to work on a building job because wall and floor coverings had been purchased from a building supply house with whom the carpenters union was engaged in an organizational dispute.

b—Bricklayers refused to work on a construction job because of a dispute between the general contractor on the job and the local building and construction trades council. Here, the Bricklayers' Union was attempting to force the subcontractor who employed the bricklayers to cease dealing with the general contractor.

c—The carpenters union was attempting to get the owner of a department store to award certain remodeling work to an independent carpentry contractor who employed union carpenters, rather than to an independent contractor who employed non-union carpenters. Therefore, the carpenters employed directly by the store refused to go to work.

"Hot Cargo" and "Allies"

The 1959 amendments specifically outlaw "hot cargo" agreements, which are agreements by the terms of which an employer contracts not to force his employees, in the course of their employment, to handle goods declared to be unfair by the bargaining representative of the employees.

The "hot cargo" contract is an agreement by which the employer agrees in advance to tolerate a secondary boycott against the employer which produces the "hot goods."

"Struck work" clauses, unlike "hot cargo" clauses are a defense to secondary-boycott charges, both under the 1959 amendments and under the Act as it existed prior to 1959.

By a struck-work clause, the employees of a contracting employer are given the right to refuse to perform work farmed out by a strike-bound employer. The reasoning is that an employer who accepts strikebound work is an "ally" of the struck employer, and not a neutral party to the dispute.

The leading case on the "allies" question involved an engineering company, Ebasco Services, Inc. Ebasco had subcontracted substantial parts of an engineering drafting job to Project Engineering, a separate company engaged in the same business. A draftsmen's union struck Ebasco. During the strike, Ebasco increased the amount of work assigned to Project, and even sent some of its drawings to Project for completion. When the union got wind of this, it picketed Project's premises, inducing some of Project's employees to refuse to work, with the ultimate object, of course, of forcing Project to cease doing business with Ebasco.

You can see that in structure, this case is identical to many cases in which secondary boycott violations were found. In this case, however, it was held that Project was not a "neutral" in the dispute, that there was no true secondary boycott and that therefore there was no violation of the law.

Subsequent to the Ebasco case, the argument was made, and the Labor Board held, that common ownership and management of two companies, one of which was strikebound, **per se** made the companies "allies" in a labor dispute. The Court of Appeals for the First Circuit, in the J. G. Roy & Sons case, held, and I think properly, that the test of whether two employers are allies is not common ownership, but whether one employer transfers some of its own business to another employer, in an effort to circumvent the impact of a labor dispute.

In accordance with this view of the "allies" doctrine, no alliance has been found to exist between shops using cigarette vending machines and the supplier of such

Labor Law (Cont.)

machines; between distributors and manufacturers of the same product; or between a person purchasing prefabricated houses for re-sale and the manufacturer of the houses.

The legislative history of the 1959 amendment establishes that the "allies" doctrine has not been affected by the 1959 law.

III—Jurisdictional Disputes

Section 8 (b) (4) (D) of the National Labor Relations Act makes it an unfair labor practice for a labor organization or its agents to engage in strikes or picketing, or threats thereof, against an employer, in order to force the employer to change a work assignment from one class or group of employees to another class or group of employees.

The traditional jurisdictional disputes involve two craft unions, both belonging to the AFL-CIO, and each of which seeks to control certain operations.

However the statutory definition of jurisdictional dispute which has not been changed by the 1959 amendments is considerably broader than this.

To repeat the section makes it an unfair labor practice to force or require "any employer to assign particular work to employees in a particular labor organization or in a particular trade craft or class rather to employees in another labor organization or in another trade craft or class." However if the employer is failing to conform to an order or certification of the Board when he makes the assignment there is no violation.

Here is an example of a jurisdictional dispute which recently took place in the Port of New Orleans.

A stevedore took on a new unloading contract and moved its regular longshore gangs composed of members of the two general longshore locals in the Port of New Orleans to the wharf where the job was located.

One of these locals then demanded that the employer hire members of the two locals in the precise proportion used by the stevedore's predecessor.

In order to effect this it would have been necessary for the new stevedore to have discharged a considerable number of its employees. It refused to do this and the objecting union picketed.

The object of the picketing was to force the new stevedore to hire members of the picketing union in the place of members of the sister general longshore local. This was not a dispute between the two crafts but between two groups of employees and none the less a violation of section 8(b)(4)(D).

The general counsel of the Labor Board is obliged to seek an injunction in the United States District Court to enjoin asserted violations of the secondary boycott provisions of the Taft-Hartley Law and has discretion, and usually exercises it affirmatively, to seek an injunction in the District Court against violations of the jurisdictioned dispute provisions of the Taft-Hartley Act.

IV—Collectve Bargaining Techniques

In the few minutes remaining in the time allotted me, I should like to discuss objectives in collective-bargaining.

In the industries in which you gentlemen are largely engaged, the construction, dredging and oil businesses, collective-bargaining has been in existence for many years, and the unions with which you deal are pretty sophisticated organizations.

Further, practices have grown up in these industries, which repeatedly have been ratified by successively negotiated contracts, which are costly to the employer and do little or no good to the industry itself.

In this type of situation, the prime objectives in collective bargaining should be to straighten out the contract, in order to make it a workable document and to eliminate costly clauses.

There are two approaches to this kind of effort.

First, the approach which was taken in the steel industry at the inception of their 1959 negotiations: namely, that all objectionable clauses had to come out of the steel contract at once. This is wrong, and was proved unworkable in the steel negotiations. In my opinion the attitude manifested by the steel negotiators at the commencement of the negotations contributed not a little to the long and costly strike in the steel industry.

The second attitude which I believe is preferable, is more conservative. When the employer has been saddled with an unsatisfactory and costly contract, it should embark on a long-range program, well before negotations commence, to educate its employees to the facts of life, and to prepare them for a stiff round of collective bargaining negotations.

Then at the bargaining table, the employer should strive to make progress slowly, but steadily, to correct the deficiencies in the contract little by little, over a considerable period of time.

For example, the waterfront employers at the Port of New Orleans, had for many years been faced with a completely unworkable grievance and arbitration procedure which had blindly been written unchanged into each contract renewal with the International Longshoremen's Association.

Every one, including the ILA, recognized that the procedure was unworkable. Everyone knew that no effective arbitrations had been held on the New Orleans waterfront since the inception of collective-bargaining relationships more than 20 years ago. The ILA knew this and therefore was able to win every grievance by default, by adopting an intransigent position, which in ordinary circumstances, would have forced them into a losing arbitration proceeding.

This year the negotiating employers decided to embark on a program of contract improvement, and they went to work to achieve the achievable in the negotiations. Certain minor adjustments were worked out, to the advantage of the employers and not to the disadvantage of the unions and a new grievance and arbitration clause was written into the contract.

This clause has had its effect on the waterfront during the fewer than six months that it has been in effect. Although no arbitrations have been held to my knowledge, the employers' position in the handling of nonsensical grievances has been immeasurably strengthened, because the employer at the end of a grievance session now can say, "If you don't see it my way, let's arbitrate under the contract," and the union knows when it can't win.

There are still many things wrong with the general longshore agreement at the port of New Orleans, which were not corrected during the 1959-60 negotiations. But perhaps in time the New Orleans Steamship Association

contract will be what any contract should be, namely, a comprehensive and comprehensible document, not internally inconsistent, and reasonably clear as to its intended meanings.

I do some impartial labor arbitration work. A couple of months ago I was called upon to determine a dispute which had arisen in a small plant near New Orleans, as the result of introduction of a piece of automated equipment, which dispensed with the services of four employees. The question at issue was whether employees in classification A or classification B should have been eliminated, and the dispute arose in a context as to the application of the seniority clause in the contract.

It was clear under the clause that the four displaced employees would have bumping rights elsewhere in the plant, but there was a question as to where the bumping rights could be applied and there were different answers, depending upon which four employees were displaced.

So to arbitration. There are fewer than 100 employees in this plant. The seniority clause went on for three and one-half pages, and it contained involuted clauses within convoluted clauses. I did not know what it meant.

When I got to the arbitration I asked, as a matter of curiosity, whether this clause had ever been involved in any prior arbitrations, and was informed somewhat bitterly by the attorneys representing the union, and the employer, that there had been nine arbitrations in the last four years, each with a different arbitrator, to interpret the seniority clause.

It turned out that this clause had been lifted bodily from another contract, between the same union and a giant oil refinery in which more than 1,100 persons had been employed, and had been tailored to meet the unique conditions in existence in that refinery.

After the arbitration was concluded, I suggested that perhaps the parties might get together at the next contract negotiation session and write a seniority clause more suitable to the small-scope operations of the plant involved. Both sides volunteered that this was a good idea, but each was afraid that if it agreed to any changes, it might possibly be "gotten" by the other party.

In this type of situation, it seems to me that the employer must take the initiative. Collective-bargaining contracts in the past have been written largely by unions, largely by employer default. And if your collective-bargaining contract is an unholy mess artistically, perhaps you have only yourself to blame.

If this attitude continues much longer, collective-bargaining agreements will soon become as incomprehensible as insurance policies, and for the same reason.

Engineers Club To Close Briefly For Redecorating

TO ALL MEMBERS:

The Engineers Club of New Orleans, 404 Baronne Street, will be closed from Monday, August 15 through Friday, August 26 for repainting and general refurnishing. We have chosen this time as it comes in the middle of the summer vacation period and will least inconvenience the membership.

We are looking forward to an active Fall and Winter season at the Club and know everyone will enjoy the "new look" of the Club.

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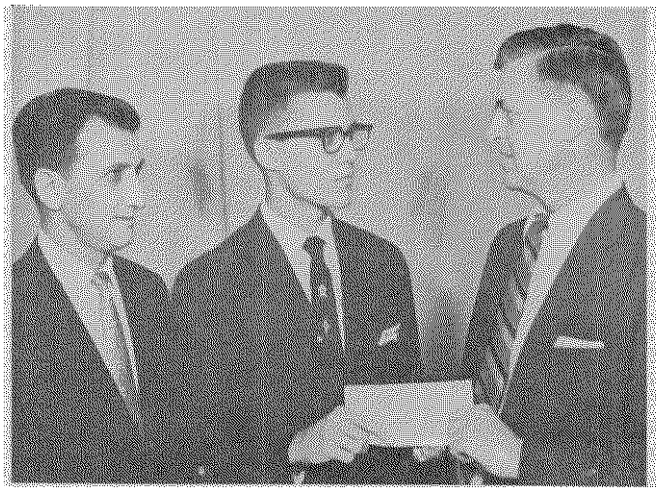
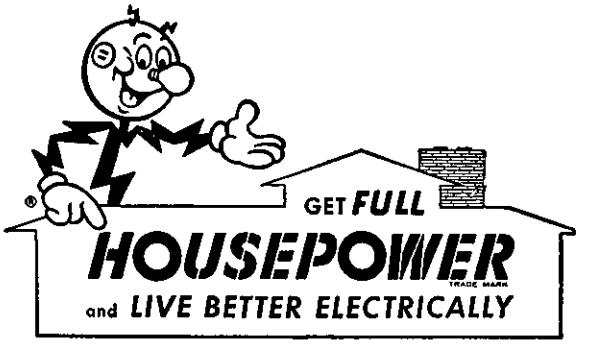


Edward Stafford (center), senior at Baton Rouge High School and member of the Junior Engineering Technical Society, was awarded a $240 scholarship by the Baton Rouge section of the Louisiana Engineering Society. D. F. Latimer (right), section president, presents the award while William Lignos, advisor of the Junior Engineering Technical Society, looks on. The scholarship is presented annually to the area's most outstanding Jet member.



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July 6, 1960—Harry H. Anderson, New Iberia; Kenneth W. Beck, Lake Charles; Arno W. Becker, Seguin, Tex.; Louis A. Bello, Yonkers, N. Y.; Gino E. Bisone, Houston, Tex.; George G. Briggs, Opelousas; Elliot E. Brown, New Orleans; Blaise M. Carriere, New Orleans; Joseph M. Conway, New York, N. Y.; William L. Corbin, Jr., West Monroe; Euardo C. Costa, Lafayette; Henry P. Dorman, Brookhaven, Miss.; Gerald A. Dubroc, Lafayette; Ned J. Dufour, Baton Rouge; Henry D. Foote III, Ruston; James E. Franklin, Winnsboro; John Giraul, Baton Rouge; Edward E. Hale, Baskin; James A. Hoogland, Ruston; Jacob P. Krumbein, Pensacola, Fla.; Shirley A. Lynch, Bryan, Tex.; John C. Miller, Metairie; Frank C. Pfeiffer, Jr., Lake Charles; Edward J. Pohlman III, Monroe; Donald D. Randolph, Glenmora; Sylvan J. Richard, Lafayette; Harold H. Schroeder, Omaha, Neb.; Robert E. Siegfried, Lexington, Mass.; Harold L. Trentham, Houston, Tex.; Nathaniel P. Turner, Houston, Tex.; Corydon A. Veley, Jr., Ponte Vedra Beach, Fla.; Samuel P. Walker III, New Orleans; Thomas C. Watts, Shreveport.

—o—

LES members are active in planning for the 15th annual Petroleum Mechanical Enginners National Conference at the Jung Hotel Sept. 18-21, 1960. Louisiana chairman is Tom Mixon, The Ethyl Corp., Baton Rouge, and Frank Walk, Frank Walk & Associates, New Orleans, is vice-chairman. Advance registration is being handled by G. J. Groh, R. J. Tricon Co., Inc., 751 Tchoupitoulas St., New Orleans—if you haven't already made your plans to attend. Top national speakers will range over a wide field of topics of interest to the petroleum industry.

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(Continued from Page 7)

statute governing the registration of professional engineers, and

Whereas the Louisiana Engineering Society Board of Direction is vitally concerned with the protection of the public where the exacting standards of professional engineering are concerned, and

Whereas these resolutions have the effect of downgrading professional requirements under the engineering statute rather than providing for new classifications under the Civil Service system, which appears to be the proper remedy, and

WHEREAS the Louisiana Engineering Society Board of Direction feels that action on these resolutions before a final legal decision in the matter presently affecting the State Board of Registration would be premature,

THEREFORE BE IT RESOLVED that the Louisiana Engineering Society Board of Direction recommend and urge that these resolutions be referred to committee and that interested parties be called to present their views so that the public employees affected may be given such relief as appropriate, so that the public safety will not be impaired and so that the state's engineering standards be protected."

Mr. Latimer moved that a telegram worded as follows be sent to all representatives not previously contacted:

"THE BOARD OF THE LOUISIANA ENGINEERING SOCIETY REPRESENTING 2,000 MEMBERS REQUESTS THAT HOUSE RESOLUTION NO. 23 (SANDERS) AND SENATE RESOUTION NO. 9 (WILKINSON) BE REFERRED TO COMMITTEE SO THAT TESTIMONY MAY BE PRESENTED BY REGISTERED PROFESSIONAL ENGINEERS. INDISCRIMINATE LICENSING BY CONCURRENT RESOLUTIONS CIRCUMVENT EXISTING LAWS THAT SAFEGUARD LIFE HEALTH AND PUBLIC PROPERTY."

The motion was seconded by Mr. Riess and carried.

The secretary reported that, as of Thursday, May 24 the following donations had been received for the Registration Law Fund:

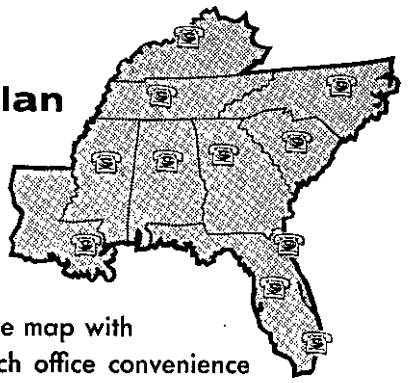
Section	No. of Donors	Amount
New Orleans	180	$1,119.50
Baton Rouge	71	485.00
Lafayette	35	215.00
Shreveport	29	186.00
Monroe	30	177.50
Alexandria	17	95.00
Lake Charles	12	70.00
Total	374	$2,348.00

Discussion followed on other legislation and it was agreed that the LES concurred with the Gulf Institute of Consulting Engineers and the New Orleans Section, ASCE and that the Legislative Committee would cooperate with the architects in opposing House Bill No. 324, which limits architects' fees.

Mr. Ice stated that the Shreveport Section would like to have a LES workshop exhibit at the State Fair to be held in Shreveport. Mr. Riess moved that the society underwrite the exhibit as proposed by the Shreveport Section up to $150.00. Motion seconded by Mr. Duclos and carried.

Upon motion duly made and seconded Mr. Gaylord Cox was reinstated to the grade of Member, and the meeting adjourned.

...This Plan



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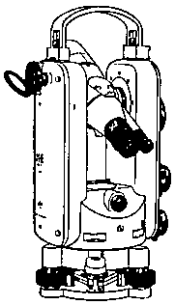

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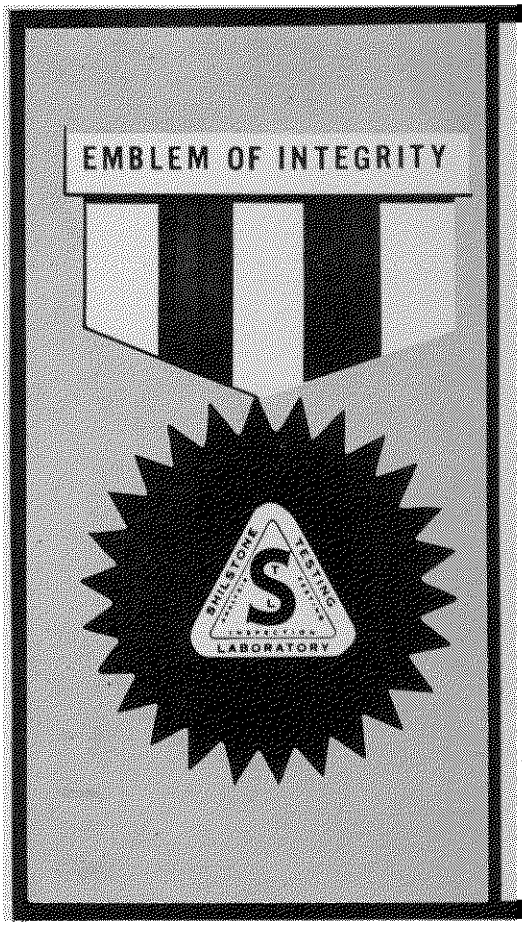

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Vol. 46 No. 5
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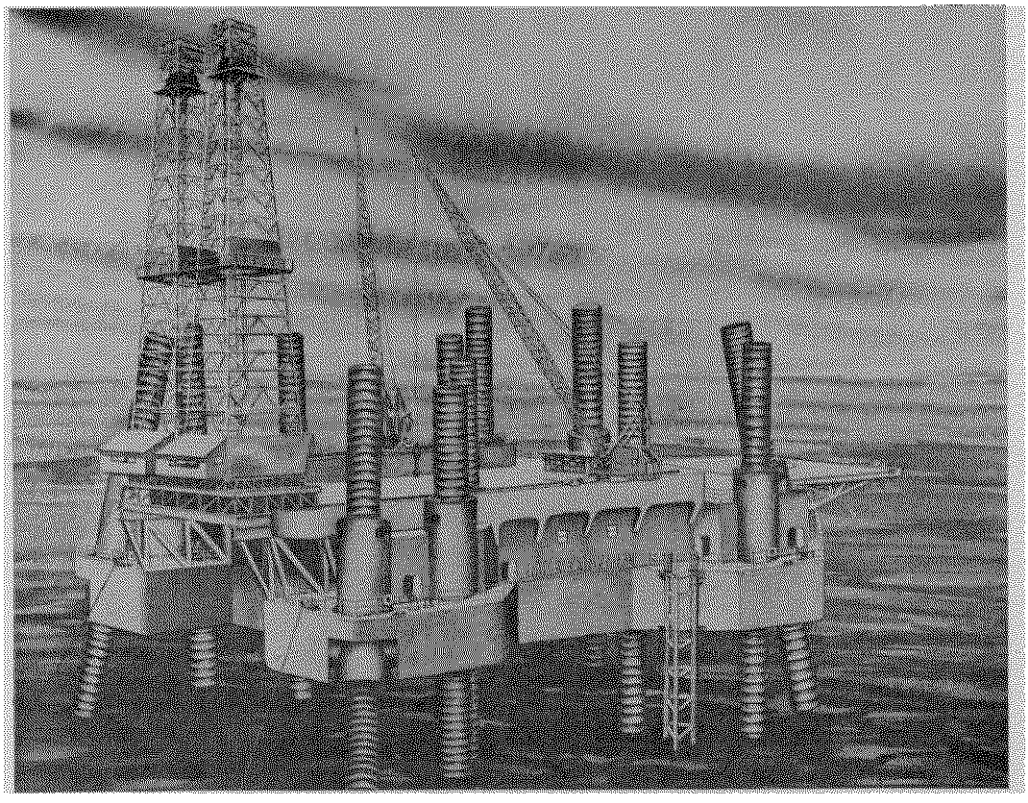

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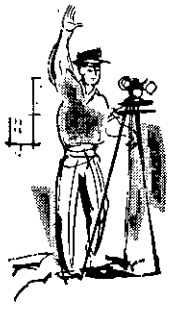

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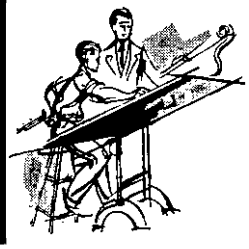

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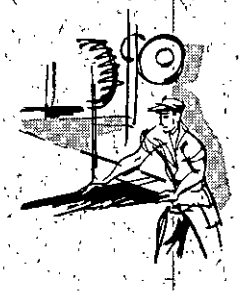

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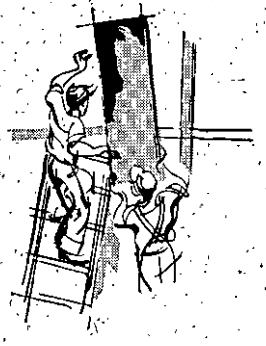

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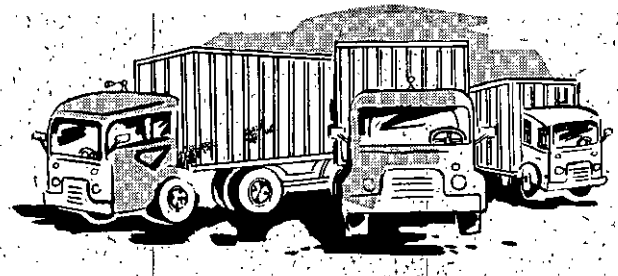

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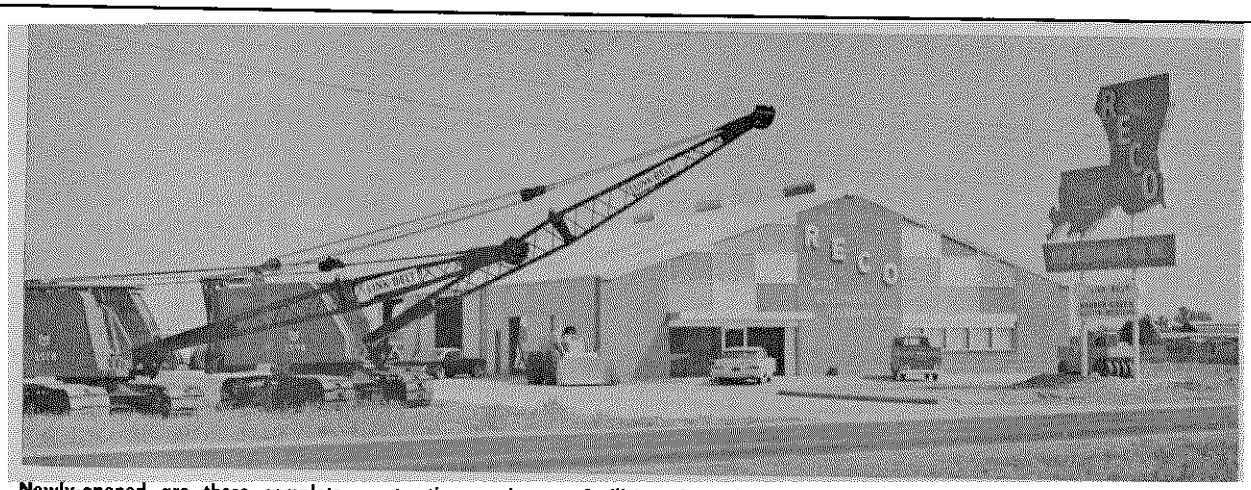

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AEC Loans Uranium Fuel Elements For LSU Reactor

(Special to The Engineer)

BATON ROUGE—The U. S. Atomic Energy Commission has approved the loan of more than $100,000 worth of uranium fuel elements for a proposed sub-critical reactor at Louisiana State University, it was announced by President Troy H. Middleton.

The University will design and build the reactor as a research and training device this fall with a $38,154 grant from the AEC Reactor Development Division.

Harry D. Richardson, LSU associate professor of mechanical engineering in charge of the project, said that a sub-critical reactor is similar to atomic reactors used to power atomic submarines and power plants, but does not produce their power and radiation. He said that it will be a safe and valuable asset for training in nuclear engineering.

It will allow LSU scientists and students to perform experiments in reactor theory without the safety danger of a critical reactor and will be used for research and training in both the College of Engineering and the College of Chemistry and Physics.

The AEC loan of fuel elements for the reactor includes 2500 kilograms of natural uranium as metal slugs canned in aluminum and 112 grams of plutonium as seven one-curit plutonium-berryllium neutron sources. Richardson reported that the uranium is worth more than $100,000 and the neutron sources about $6,000.

The fuel elements will be loaned to the University without charge as long as necessary. Richardson said that LSU has already obtained approval for the necessary ABC licenses. He added that construction of the reactor will begin in September and probably take about three months.

Two graduate courses will be added to the engineering curriculum in the fall and built around the construction and use of the sub-critical reactor. One will be a lecture course in the theory of reactor engineering, and the other a laboratory course in its use.

Richardson said that some of the associated equipment purchased with the AEC grant will also be used in several graduate and undergraduate courses in radio-chemistry and mechanical engineering.

Within the next several years University officials hope to obtain a 10 kilowatt atomic reactor to step up nuclear training and research in all fields. The College of Engineering plans to use it for courses in reactor design and for the training of operating personnel.

Richardson said that the proposed reactor will open up many new possibilities for LSU researchers as well as for technical personnel from Louisiana industries. When obtained it will be valuable both as a research instrument itself and as a means of producing radioactive isotopes for other research.

The College of Engineering now has a faculty member studying at the University of North Carolina in preparation for work with the proposed reactor. He is working toward a doctoral degree in nuclear engineering in preparation for teaching courses in that field at LSU when he returns.

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THE LOUISIANA ENGINEER

Vol. 46 **October, 1960** **No. 5**

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Our Cover: T. M. Mixon (left), Ethyl Corp., Baton Rouge, was Louisiana Arrangements Chairman for the 15th Annual Petroleum Mechanical Conference, sponsored by the Petroleum Division of the American Society of Mechanical Engineers and the ASME New Orleans Section. He is shown with Conference Chairman J. P. Mooney, Humble Oil & Refining Co., Baytown, Tex. Many LES members participated.

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LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans June 20, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Janssen, Latimer, Sessums, Watts and Fernandez present. Messrs. Waldemar S. Nelson and Allen Johnson also were present by invitation.

Mr. Sessums moved that the Secretary be authorized to prepresent the position of the Board of Direction of LES at the Senate Judiciary Committee hearing on June 21 as shown in the attached prepared statement; however, he felt that the leading presentation should be made by members of the Louisiana State Board of Registration. The motion was seconded by Mr. Watts and carried unanimously.

Discussion followed on what would be the board's position on an amendment to Section 18 (Public and Private Work), Paragraph A-3, proposed by the insurance companies, if House Bill 1202 should pass. Mr. Janssen moved that the board take a position in opposition to any amendment whereby the insurance companies would be exempt along with industrial and manufacturing corporations, because this weakens the law in an already weak point. The motion was seconded by Mr. Latimer and carried.

The president reported receipt of a letter from Mr. A. B. Rubin asking whether the board would be interested in opposing Senate Bill No. 234, which requires advance information relative to proposed bond issues, including engineering fees to be paid. Mr. Latimer moved that no action be taken on this bill, seconded by Mr. Janssen and carried.

President McLellan announced that NSPE Legislative Counsel Milton F. Lunch had requested that telegrams favoring the passage of HR 10, commonly known as the Smathers-Morton-Keogh Self-Employed Retirement Bill, be sent to our Louisiana senators in Washington. The president advised that a telegram already had been sent to Senator Russell Long and that a similar one would be forwarded to Senator Allen Ellender.

A letter from the Gulf Institute of Consulting Engineers was read in which it was stated that the cost of the pending suit against the State Board of Registration would be $2,580.00. After some discussion Mr. Sessums moved that the society pay 25% of the estimated cost, seconded by Mr. Watts. Mr. Duclos offered a substitute motion to change the amount to 30%, which was accepted by Messrs. Sessums and Watts and the motion was adopted **unanimously.**

Mr. Duclos moved that the cost of mailing solicitation for the Registration Law Fund, telegrams and telephone calls concerning pending legislation, be charged to the fund. Motion seconded by Mr. Latimer and carried **unanimously,** after which the meeting adjourned.

———o———

Minutes of Meeting of the Board of Direction held at 337th Engineer Brigade Armory, New Orleans Monday, July 11, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Janssen, Larue, Latimer and Fernandez present. Messrs. Henry L. Landry and Edward H. Arnold Jr. also were present by invitation. Mr. Janssen moved that the reading of minutes be dispensed with and that a notation be added thereto to indicate that motions pertaining to the Registration Law Fund had passed unanimously. Motion seconded by Mr. Latimer and carried.

The president reviewed the society's activities in connection with current legislation. Copy of a letter addressed by Mr. Wood Brown, Attorney for the State Board of Registration, to Representative Stinson, author of House Bill No. 1202, was read, in which he reiterated the L.E.S.'s commitment to attempt to remove the various categories of engineering from the registration act, so that all registrants would be Professional Engineers without any specific branch designations.

A letter from the president of the Shreveport Section was read in which he reported on efforts made toward the defeat of House Concurrent Resolution No. 23.

A financial report on the Engineering-Law Seminar sponsored by the LES and the State Bar Association was presented, showing excess of expenditures over receipts of $2.47.

The following resolution was offered and Mr. Latimer moved that copies be mailed to all board members for comment and, if acceptable, the resolution be adopted and forwarded to interested parties. Motion seconded by Mr. Janssen and carried:

"WHEREAS, the Louisiana Engineering Society, an organization of 2,000 members, of which approximately 1,500 are registered Professional Engineers in the State of Louisiana, is vitally interested in continuing improvement in the caliber of engineering service available to our public, our industry and our governmental agencies; and

WHEREAS, the Louisiana Engineering Society recognizes the value of important engineering work to special skill and knowledge gained by long experience of some employed by the State of Louisiana under the Civil Service "Engineering Aide" classification; and

WHEREAS, "Engineering Aide IV" is the highest non-professional grade now available and yet some Grade IV aides have developed unusual skills and competence in specialized fields due to long continued industrious effort. These skills are of great value to the state and further development should be encouraged. And

WHEREAS, these same workers, while having special skill and experience, do not have technical knowledge broad enough to qualify as registered engineers, and yet their experience may make them more valuable to their individual departments than inexperienced Professional Engineers, therefore

BE IT RESOLVED, that the Board of Direction of the Louisiana Engineering Society go on record as strongly favoring the establishment of non-professional classifications in our state civil service system with the same salary scales as those of Professional Engineer I and II. These new classifications would require proportionately greater abilities, length of service and general competence than presently required to hold Aide IV rating. Such action would save to the departments skill developed through the years and would afford financial rewards to those who can further develop beyond present Aide IV to the extent that Civil Service will specify for these grades."

The secretary reported that 476 ballots had been returned, with two marked, and that all applicants named

(Continued on Page 29)

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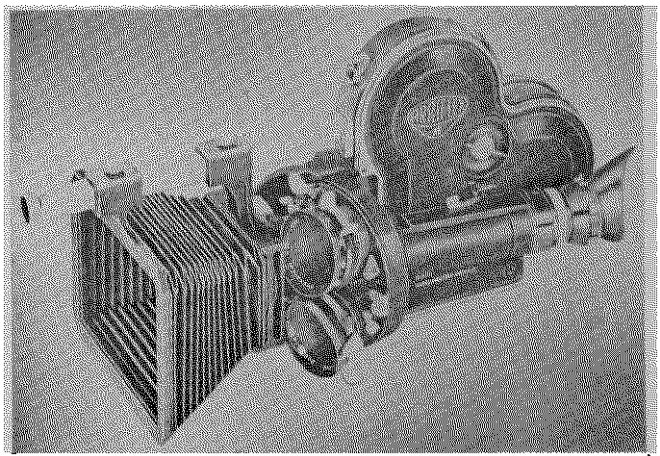
A warning that American business must inject quality into its productivity or lose its world position was expressed by a General Electric executive to a group of chemical and petroleum engineers, including a number of LES members.

S. W. Corbin, general manager of General Electric's Industrial Sales Operation, speaking at the Company's second annual turbine seminar at the Roosevelt Hotel in New Orleans, said that technological innovations have obsoleted, almost overnight, the traditional belief that increased raw output would guarantee our industrial leadership.

In supoprting his contention, Corbin pointed out that much of American industry already has more capacity than it needs, and we are losing ground. Added to this, he said, is the fact that the classic economic triumvirate of Land, Labor and Capital no longer motivates our economic growth.

"New technology," he said, "is the answer to our survival. The kind of productivity we need is not quantitative but qualitative; not just more products but better products.

Another important by-product of advanced technological development Corbin touched on was the growing need for engineers to become more active in business decisions. He said they must keep management informed of the benefits of new research.



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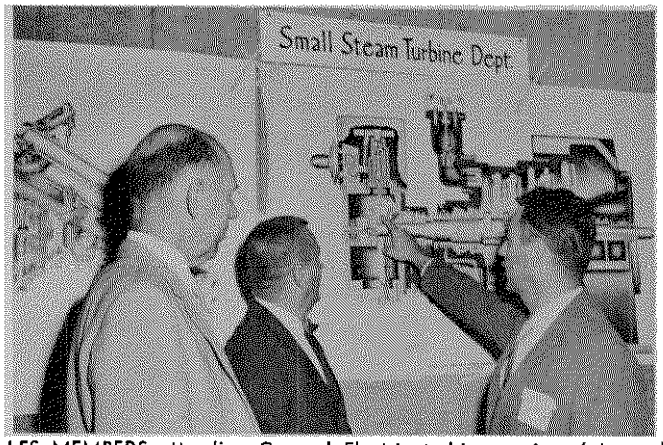
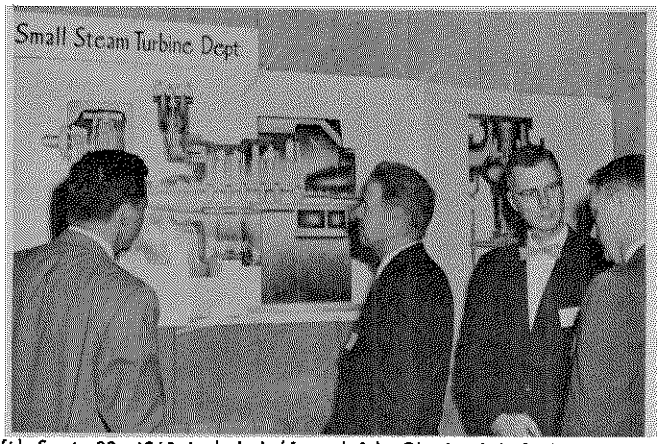
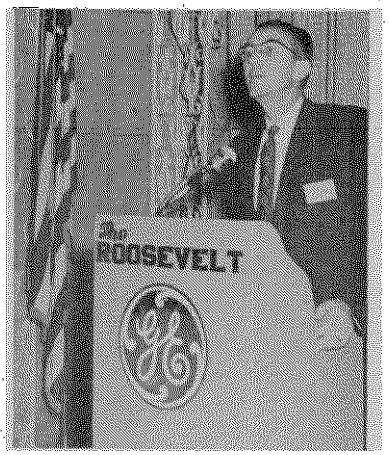




LES MEMBERS attending General Electric turbine seminar (above, left) Sept. 22, 1960 included (from left), Charles W. Stokes, Cities Service, Inc., Lake Charles, an LES Board member; W. L. Sutton, General Electric, past president of the Baton Rouge Section, and S. G. Dinkel, General Electric, New Orleans, LES membership chairman. In photo at right are Howard Dogood, Shell Oil Co., New York (hands in pockets), R. P. Cheesman, G-E, Fitchburg, Mass. (hands crossed).





CROSS SECTION of petroleum and petrochemical engineers from all over Louisiana (left photo), hear presentation by Howard Perry, G-E Fitchburg, manager, industrial sales.

Allied Chemical Chief To Address B. R. Council

Kerby H. Fisk, chairman of the Board and Chief Executive Officer of Allied Chemical Corporation, will be guest speaker at this year's annual meeting of the Baton Rouge Council of Engineering and Scientific Societies.



Kerby H. Fisk

Tom Alexander, president of the Council and a past LES Baton Rouge Section president, said the meeting is to be held Tuesday, October 25, at the Capitol House.

The Baton Rouge Council of Engineering and Scientific Societies is an organiters affecting engineers and sible a united effort on matzation formed to make posscientists in the Baton Rouge area

Among other projects, the group sponsors the Baton Rouge Engineers Club and sponsors a united program of counseling for high school students interested in engineering and scientific fields of education.

The annual meeting provides an opportunity for members of the Council to get together to hear nationally and world-renowned professional speakers. In the past the Council has had as it speaker M. J. Rathbone, president of Standard Oil Company of New Jersey, and the late Charles Kettering, a vice president of General Motors and Ethyl Corporation.

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Letters to the Editor

. . . *from Ruston,*

As Chairman of the 1960 National Engineers' Week Committee at Louisiana Tech, I would like to express my sincere thanks for the excellent coverage given our observance in the August issue of "The Louisiana Engineer." The nice things you had to say about the report are very much appreciated and the large amount of space you gave to it was more than we could have expected. I hope that it might be of some value to others who are concerned with future programs.

I'm sure I speak for Dean Bogard and all others who contributed to the succes of our observance when I again express our heartfelt thanks.

Sincerely yours,

Grover J. Trammell
Professor
Louisiana Polytechnic Institute
Department of Mechanical Engineering
Ruston, Louisiana

. . . *Alexandria*

To the Editor:

The 1961 Engineers' Week Committee wishes to take this means of expressing their appreciation for the splendid article on Engineers' Week in the August LOUISIANA ENGINEER.

Articles of this type render a great service to the Louisiana Engineering Society in making the membership conscious of Engineers' Week at a time essential to the proper planning for the 1961 program of activities.

Your reference to Engineers' Week as "an important opportunity for the engineers of the state to present their story to the community, to their neighbors, to their coworkers, and to government officials at all levels" so ably states the aims and purposes of Engineers' Week, and will serve the Committee as a guide for planning the 1961 activities.

Thank you so very much.

James B. Smith, Chairman
1961 Engineers' Week Committee

. . . *Shreveport,*

To the Editor:

Our Louisiana Engineering Society exhibit at the Louisiana State Fair is about three weeks off and we would like to have any extra copies of The LOUISIANA ENGINEER for distribution at the Booth if you would be so kind as to send same to us.

Thanking you for your attention to this matter, I am

O. T. Ice, Jr., President
Shreveport Section

. . . *New Orleans*

To the Editor:

My attention was recently directed to the new format of the LOUISIANA ENGINEER and I am writing to extend congratulations on the attractive layout, nice pictures, and clear print. The magazine has always been a valuable source of information about Louisiana engineering projects and problems, with an appeal to the trained engineer, but now it will, I think, have an even wider appeal because of the new format.

The growing industrialization of our area has created an increasing demand in the Library for organized information about all phases of science and industry, and our newly created Business and Science Department has been well received by the community. The volume of calls it receives grows daily, and the only ceiling to limit its usefulness is imposed by our lack of adequate materials and staff. Members of the Louisiana Engineering Society have donated several useful volumes in the past to help overcome the deficit and we would welcome any others which might be available.

The emphasis in schools today on science courses has created an unprecedented demand for books on mathematics, chemistry, physics, biology, botany, etc. and we need numerous copies of books on these and other subjects to meet demands, hence gifts are most welcome.

Again, our congratulations on the new format of the magazine, and with best wishes,

John Hall Jacobs, Librarian,
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Outing—Field Notes
By Allen Johnson

Prize-winners abounded at the LES Annual Outing September 27, 1960 at the Metairie Country Club (see photos, Page 20.) Golf winners included (in order): members gross—Joe Riorda, Bob Boh, J. O. Adams; guests gross—W. L. Ferguson, J. H. Thibaut; members net—P. J. Stouse, R. S. Drueding, Henry Boh, George Hammett, H. J. Lane, Grover Bayles, H. N. Ford, K. B. Kammer, D. B. Schell; guests net—John Tedford, Don Towsley, A. J. Mora; closest to #17—W. L. Ferguson; members high gross—C. D. Brooks, A. H. Douglas; putting—Bob Boh, Henry Boh, C. A. Bragg; high score, Claude Kelly, Sr.; horseshoes singles—Ray Maddux, Sid Ellis, Martin Ripp, Jack Roach; doubles—H. J. Grunsky, W. K. Bankston; runners-up—A. I. Ory, Claude Kelly, Jr. . . . A host of other participation prizes, made available through some 70 firms, were awarded. Congratulations are in order for Annual Outing Chairman Claude Kelly, Jr., and his able committeeman for a day enjoyably spent . . . Among those in attendance: H. R. Norckauer and Douglas Latimer from Baton Rouge; Allan Betz, R. M. Seago, M. "Dan" Hogan, George Hoopingarner; John P. Fernandez, who attended an NSPE secretary-treasurer's meeting in Atlanta (and won a tape-recorder at the Outing), and many more.

The National Society of Professional Engineers held its 26th annual meeting in June with the admission of two new state societies, New Hampshire and Kentucky, bringing the 56,000-member Society representation in all 50 states plus Puerto Rico, the Canal Zone, and the District of Columbia.

Highlights of the four-day meeting, held in Boston, were:

Board approval of the establishment of an Institute for the Certification of Engineering Technicians.

Steps toward implementation of the Functional Plan for unity of the engineering profession.

A preliminary report on the new survey entitled "Engineering Professionalism in Industry," made by the Professional Engineers Conference Board for Industry. Final report will be published soon.

Approval of an expanded NSPE public relations program, including the production of a film on professionalism.

Presentation of the NSPE Award to James F. Fairman, senior vice president of Consolidated Edison Company of New York; and the presentation of the first annual Industrial Professional Development Award to the Phillips Petroleum Company.

Adoption of a suggested political platform plank calling on the Democratic and Republican parties to "recognize the role of engineering."

The National Society's Board of Directors adopted a recommendation of the Inter-Society Relations Committee reiterating NSPE's endorsement of the Functional Plan for engineering unity, and directed the Committee to work "in full cooperation with the engineering groups which elect to participate in a program for the implementation of the Functional Plan."

Attending the meeting as official observers were William Ryan, former president of ASME, and Harold Foote, prsident of AIEE. Both announced that their organizations had taken action toward starting negotiations with NSPE for implementation of the Functional Plan.

Principal speakers at the meeting were Dr. Hugh L. Dryden, deputy administrator for the National Aeronautics and Space Administration; Dr. Gordon S. Brown, dean of the College of Engineering at MIT; Senator Kenneth B. Keating of New York; Admiral Arleigh Burke, chief of Naval Operations; and Representative Gordon H. Sherer of Ohio.

The Louisiana Engineering Society was represented by James S. Janssen, New Orleans Public Service Inc., Society second vice-president.

On July 23, after spending a month in the Soviet Union, an Engineers Joint Council delegation returned to the United States. The purpose of this mission, made possible through a grant from the National Science Foundation, was to study the utilization of engineers and technicians; how they are educated and subsequently integrated into the rapidly expanding Soviet economy. A complete report is now being formulated, meanwhile they have given in advance a few brief observations which may be of interest.

* Not more than 20% of USSR high school students are directly admitted to higher education. The remaining 80% must spend two years in industry before being permitted to continue their education.

* The 20% directly admitted to higher education from high school must spend one year and four months in practical industrial training (under faculty guidance) makes it possible to strengthen considerably the theoretical content of Soviet engineering. As a result, theoretical and mathematical content is above that generally given in the bachelor programs in the United States engineering colleges.

* The mathematical content of the course work in Soviet technicums is above that of practically **all** the technical institutes in the United States.

* Of the 14,000 to 16,000 graduates of the U. S. technical schools, not over a thousand are of the quality of those produced by the technicums of the Soviet Union which are now producing 250,000 graduates annually for industry. There seems to be little question but that enterprises are utilizing technicians to support effectively the work of engineers in research, design and production.

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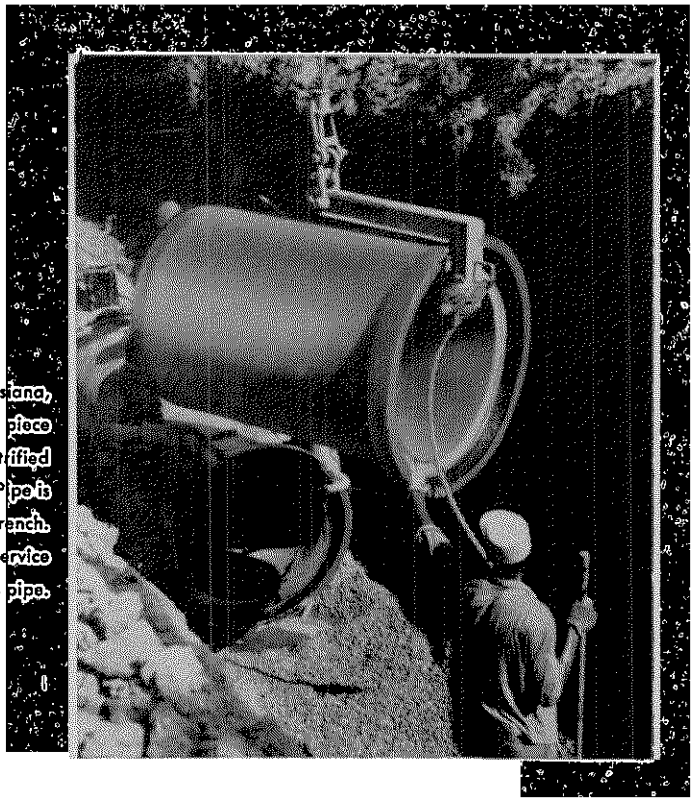

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Petroleum Engineers Hold Spotlight

LES members played active roles in the successful 15th Annual Petroleum Mechanical Conference September 18-21, 1960, sponsored by ASME (Petroleum Division and the ASME New Orleans Section.

Louisiana engineers from all phases of the petroleum and gas industry participated. Among those serving on panels, giving papers or preparing sessions were:

G. R. Hammett (A. M. Lockett); J. B. Arbour (Esso Standard); Emile Brinkmann (Universal Drilling); L. C. Poindexter (United Gas); Landry Murphy (Allan J. Harris); S. G. Smith (Bedell & Nelson); R. F. Fenton and W. G. Reymond (Esso); J. J. Malloy (American Cyanamid); T. W. G. Richardson (Shell); R. L. Nall (John H. Carter); Paul Best (The California Co.); T. E. Pounds (Dow Chemical); A. W. Betz (Betz Engineering Sales); Dean Fred H. Fenn (LSU Engineering School); G. M. Haydel (Frank Walk & Associates); J. G. Ferrell (Gulf Oil Corp.); B. B. Pierce (Crown Zellerbach); S. S. Labouisse (American Cyanamid); C. M. Sampson (Freeport Oil); M. M. Cawley (Mobil Oil); E. H. Fletcher (Avondale Marine Ways); R. N. Crews (J. Ray McDermott); J. D. Burns (Continental Oil); J. G. Allen (Esso); G. S. Roberts (Ethyl); Mortimer Squires, Jr. (consulting engineer); J. E. Gallagher (Shell); B. E. Crowder (Humble); M. M. Heller, D. T. Mast, V. L. Scharfe (all of United Gas); H. M. Kiefer (Shell); K. J. Ebner (Texaco); D. C. Meyers (Shell); L. L. Denson (consulting engineer).

Banquet speaker was Elmo W. Koschel, general sales manager, Southern Bell Telephone & Telegraph Co., New Orleans.

Offshore drilling rig visits were sponsored by The California Co., Humble Oil and Continental Oil. A representative selection of the more than 50 papers presented follows:

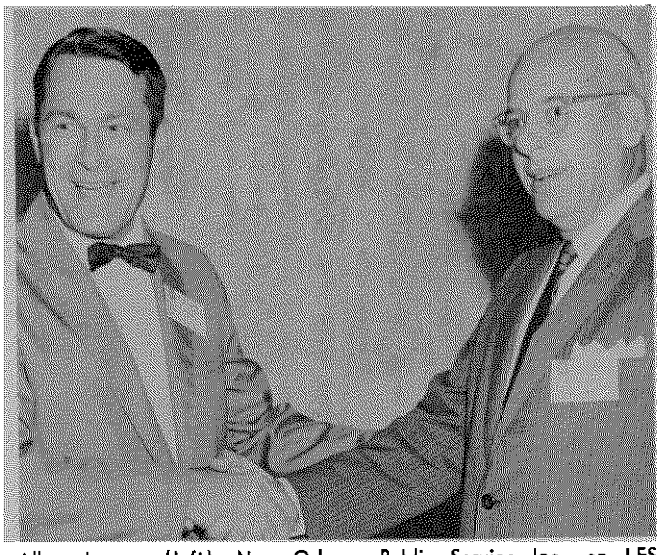
The economical design of a 15,000-pound blowout preventer was the subject of a paper presented by Mr. Herbert Allen, Mr. Robert C. Brooks, and Mr. G. E. Nevill of the Cameron Iron Works, Inc., Houston, Texas.

James H. Caldwell, district service manager for the West Coast Division of the Cooper-Bessemer Corporation, presented a paper at the 1960 Petroleum Mechanical Engineering Conference of the American Society of Mechanical Engineers at the Jung Hotel in New Orleans September 19. He discussed maintenance of turbocharged engines with a view toward lengthening periods between downtimes, keeping engines on the line, and minimizing human error.

Mr. Roy R. Die, Senior Supervising Engineer, Humble Oil and Refining Co., Corpus Christi, Tex., discussed recent developments in field gas handling facilities and some specific application of these developments. Needed future developments in handling facilities were also covered.



CONFERENCE OFFICERS included (from left, front), Allen F. Rhodes, vice-chairman; J. P. Mooney, chairman; G. W. Lunsford; (from left, rear), Mixon, Louisiana chairman; Frank H. Walk, Louisiana vice-chairman.



Allen Jensen, (left), New Orleans Public Service Inc., an LES member, is shown with Harold Grasse, ASME vice-president, Region VIII.

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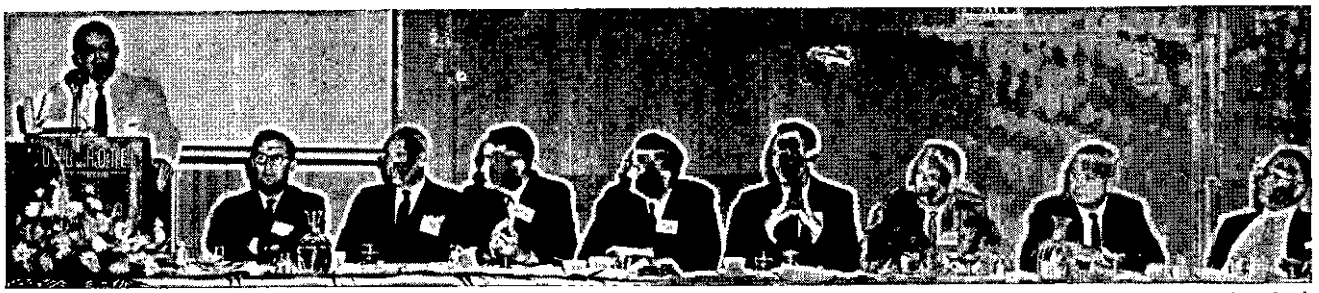

LUNCHEON SPEAKER Mayor deLesseps S. Morrison is heard by G. J. Groh, luncheon chairman; Grasse; Jensen; Mooney, Lunsford; F. K. Zerbe, J. W. Young (left to right).

Dr. C. R. Hocott, Research Manager and Harold G. Galloway, Senior Engineer, of Humble Oil and Refining Company, Houston, presented papers at the Conference.

Dr. Hocott's topic, "You Too, Can Be a Creative Engineer," set out to remove the mystery from general concepts of creativity. The important attributes of a engineer to be truly creative were discussed. Hocott has been associated with Humble since receiving his Ph. D. from the University of Texas in 1937.. He has authored 10 technical papers on petroleum production and is active in numerous engineering organizations.

Galloway discussed recent developments in field gas handling. Needed future developments were also suggested. He has worked exclusively on gas engineering problems since graduation from Rice Institute in 1948.

Mr. P. R. Scott, Chemist, Shell Pipe Line Corp., Houston discussed a newly developed automatic vapor pressure controller for volatile injection into crude streams. This controller regulates highly volatile gasoline plant products for optimum utilization of crude lines for transporting these products. It is the first satisfactory method found, he said.

Dan Christopher, Manager of Grayloc Sales Division of Gray Tool Co., Houston, Tex., presented a paper on "Bi-Metallic Pipe," discussing the widespread application of bi-metallic pipe in the prevention of product contamination and catalyst poisoning. The pipe is primarily a means of saving money by reducing the amount of alloy material required in a piping system exposed to corrosive atmospheres.

Important improvements in depth measuring accuracy of oil field service cable were discussed by Mr. William Bowers, Section Head, Schlumberger Well Surveying Corporation, Houston, who told how the development of a unique cable testing machine and a new automatic cable measuring and marking tool have made these improvements possible.

Mr. Willard E. Bennett, Labor Relations Superintendent, Cities Service Refining Corp., Lake Charles, discussed the profession of management. He outlined a general course of action for the individual who desires to improve his grasp of the management profession.

Mr. Edward O. Jones, Jr., Associate Professor of Mechanical Engineering, Auburn University, Auburn, Alabama, discussed the effects of internal pressure on thin shell pressure vessel heads. Experimental strain gage data were used for the determination of stresses in these heads.

Jones also received his B. S. degree at Auburn; has been with the University for 13 years. He has had industrial experience with Consolidated Vultee and with the Oak Ridge National Laboratory. At Auburn he is active in Tau Beta Pi, Pi Tau Sigma and Eta Kappa Nu, SAE and the Society of Experimental Stress Analysis.

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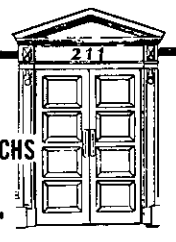

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LADIES COMMITTEE included (from left, front), Mrs. R. B. Kinzbach, Houston; Mrs. F. H. Walk, of New Orleans, chairman; Mrs. Allen F. Rhodes, Houston; (from left, rear), Mrs. G. J. Groh, New Orleans; Mrs. J. P. Mooney, Mrs. G. E. Nevill, both of Houston.

After receiving his B. S. from Oklahoma State University in 1940 he entered the oil industry. Since 1945 he has been located in South Louisiana. He is presently serving in Humble's eastern area. A past chairman of the Delta Section of AIME he has previously authored several technical papers.

Mr. C. E. Lautzenheiser, Maintenance Specialist, Dow Chemical Company, Freeport, Tex., discussed uses of sound in testing for flaws and thickness of material. Application of ultra-sonics to general and specific problems were explained.

Mr. Edward Gordon, Computer Analyst and Mr. William P. Heineman, Staff Engineer, both of United Gas Corporation, Shereveport, each presented papers.

Heineman discussed the use of thin wall pipe in the oil and gas industry. Economic advantages and operating experiences were highlighted.

A new computational procedure for calculating the supercompressibility factor of gas was explained by Gordon. This new method is very useful for automation of gas pipeline measurement. Other promising methods for solution of this problem were given by Gordon.

Mr. Jack W. Hayden, Attorney at Law, Houston, Tex.; Mr. Arthur B. Wintringham, Technical Assistant to the General Manager of Research and Development, Ethyl Corporation, and Dr. D. Lewis Shuker, Personnel Consultant, Psychological Service Institute of Baton Rouge participated in a panel discussion on the encouragement of creativity by the use of proper company policies.

Shuker received his Ed.D. from the University of Houston and has done further study in psychology at L. S. U., he has authored many papers and articles in various professional education and social science publications as well as the college text book "The Navy Story."

Since receiving his degree from Rensselaer Polytechnic Institute, Wintringham has been active in the chemical and petroleum industries. He is experienced in research, development, design and construction. He has been associated with the Ethyl Corporation since 1946.

Hayden has a B. S. in Chemical Engineering from Rice Institute as well as a LL.B. from South Texas College of Law. For the past eight years he has specialized in patent, trademark copyright and unfair competition causes in the Patent Office and in all courts. He has authored various papers and articles on patents. A member of the American Bar Association, he is also active in T. S. P. E.

Two Olean, N. Y. men presenting a technical paper at the conference were Roy M. Greene and Richard F. Moser. Both are employees of Clark Bros. Co. where Green is general manager of Turbo-Products Division and Moser is Vice President and general manager of the Reciprocal Products Division. Their paper discussed economic development of prime movers using natural gas fuels.

Three Pittsburgh men presented a technical paper at the conference. They are Ralph D. Webb, John R. England, and John A. Gilligan, all employees of the United States Steel Corp. where Webb is Assistant Manager in charge of structural, plate and high strength steel metallurgy; Gilligan is research associate in the Applied Research Laboratory; and England is staff metallurgist in the Alloy Metallurgy Department. Their paper discussed the constructional steels and their application in the petroleum industry.

Donald R. Snow, a graduate mechanical engineering student at Stanford University, and Dr. G. D. Galletly of Emeryville, Calif., presented a technical paper at the Conference.

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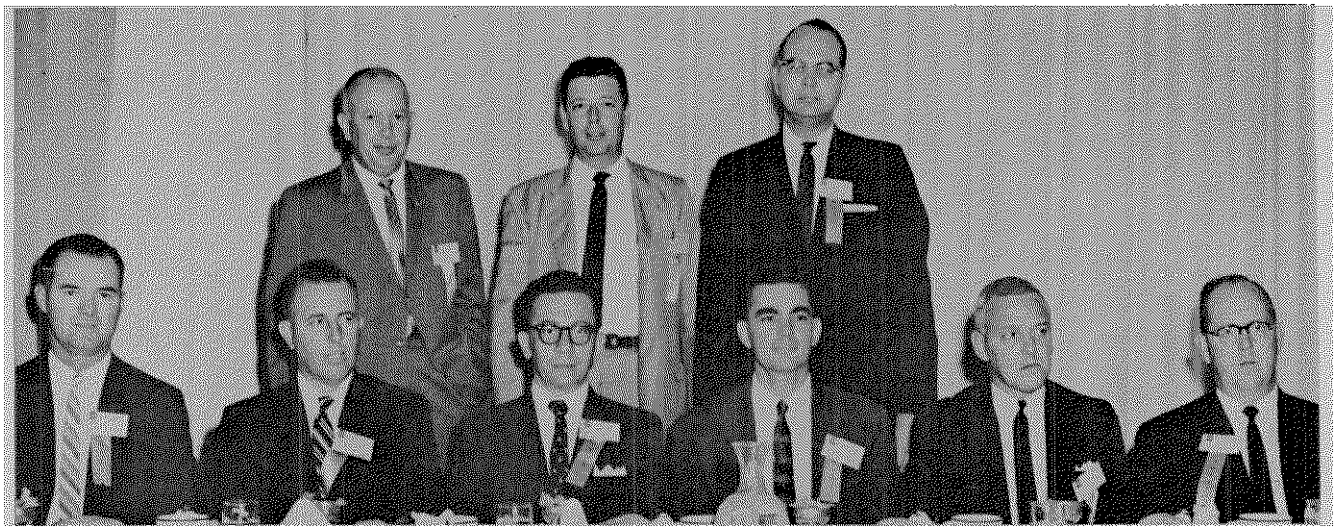

LOUISIANA ARRANGEMENTS committee included (from left, standing), Mixon; Walter J. Verlander, Power Specialty Co.; Walk; Ben Lockett, Service Supply & Engineering Co.; Forney Fuller, Jr., Chemical Cleaning, Inc.; E. H. Pavia, G. A. Heft & Co., treasurer; R. F. Muller, Jr., American Cyanamid Co., secretary; G. M. Baccich, Jr., A. M. Lockett & Co., Ltd.; W. H. Johnston, F. N. Johnston Co. Not shown are J. P. Mercier, Welding & Mfg. Co., and G. J. Groh, R. J. Tricon Co.

Dr. Galletly is an engineer employed by Shell Development Company. Snow was previously employed by Shell. Their paper compared experimental and theoretical results of continuously drilled tube plates.

William W. Holt, Jr. of Decatur, Ala., supervising engineer for Plantation Pipe Line Co., presented a technical paper at the conference on the use of turbine type meters for pipeline metering.

He attended the Air Force Institute, and received his B. S. Degree in Mechanical Engineering from the Georgia Institute of Technology.

Robert A. (Bob) Graff, owner of Graff Engineering Corp. presented a technical paper at the conference on methods of sulfur recovery from petroleum gases, as well as process economics and methods of handling sulfur for shipment.

Graff has spent most of his professional life in the gas purification field. After several years' work with Girdler, in connection with the original laboratory and pilot plant development of the Girbotol Process, he established his own company in 1944, and has since been active in the specialized field of gas desulfurization and sulfur recovery. He is a graduate of the University of Florida, with post graduate work at Louisiana State University. Graff is a member of AICHE and ACS, and the author of several technical articles covering gas desulfurization and sulfur recovery practices.

Mr. Robert M. Levy of Linden, N. P., engineer for Esso Research and Engineering Co., presented a review of the properties of thermosetting plastics and glass fibers used in glass reinforced plastic pipe. He also discussed pipe performance and test methods.

Mr. Dale McKissick, Metallurgist, Reed Roller Bit Company, Houston, Texas discussed the practical aspects of heat treatment of high speed steels and will propose four requirements of quality heat treatment. He has worked in the Metallurgy field since receiving his M.S. from Ohio State University in 1953.

A "Statistical Tool for the Engineer" was the subject of a paper presented by Mr. Charles Lewis, Metallurgical Engineer, Cook Heat Treating Company of Texas, Houston. The paper covered graphical solutions of some selected cumulative probability functions. A detailed description of data preparation, plotting and interpretation was included.

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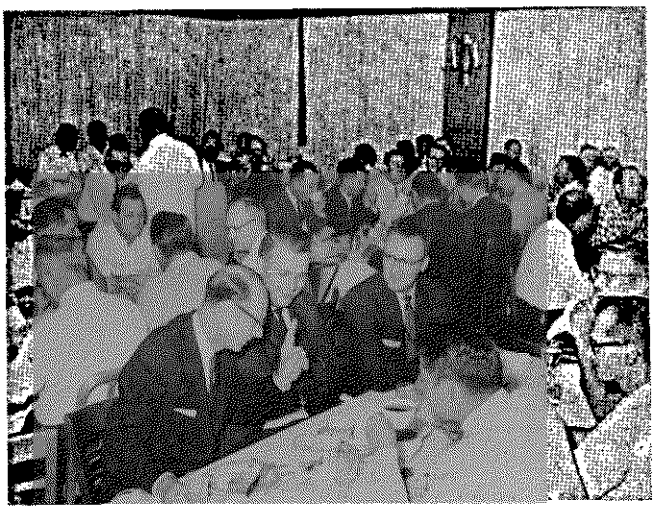
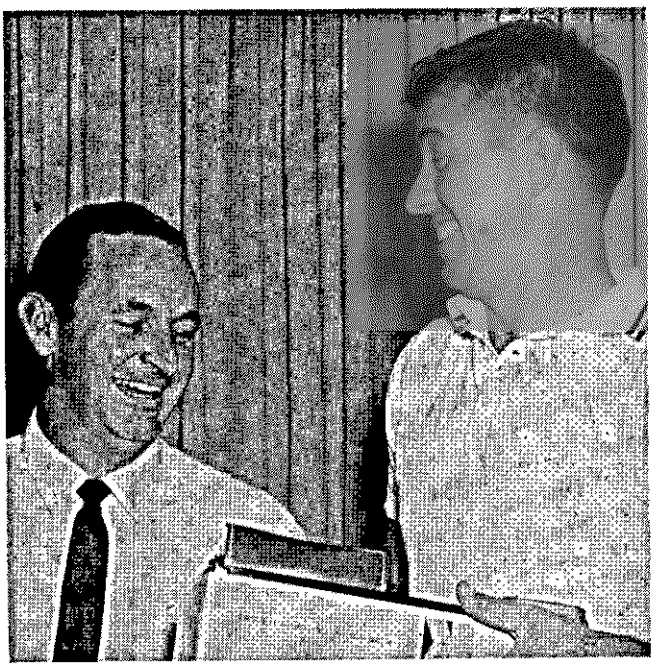


Annual Outing



LES President Edward A. McLellan is faced with the dilemma of awarding silver tray to two who tied for President's Trophy (with 77 each), James M. Todd and Frank W. Mcdonald at Les Annual Outing Sept. 27, 1960. Upper right, Tulane Engineering School Dean Lee H. Johnson makes point at Metairie Country Club gathering. Right, Ray Maddux receives hoseshoe singles award from Don Schell (left). Lower right, LES members set to the viands with gusto. Below, Russell Hall (left), congratulates doubles horseshoe winners W. K. Bankston and (right), H. J. Grunsky.

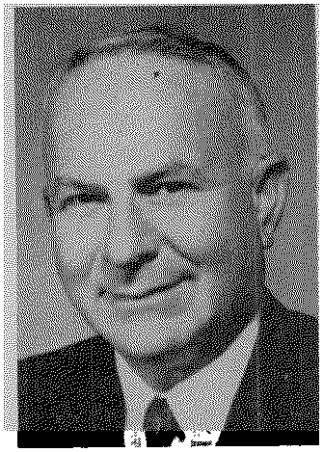




Dream Becomes $200 Million Reality

By LEON M. REINACH

Disraeli said, "The Secret of Success is Constancy of Purpose," and I think this well describes the development of a dream to build a natural gas pipeline of some 2,650 miles, equivalent to the distance from Los Angeles, Calif., to Miami, Fla.



Leon M. Rainach

The story of The Houston Corporation and its wholly owned subsidiaries, Houston Texas Gas and Oil Corporation and Coastal Transmission Corporation is, I think, most fantastic and interesting.

The founders of the project had invested $4,400,000 of private venture capital, and five years of prodigious effort before financing was arranged, on August 29, 1958.

Our job was to develop an economically feasible pipeline system. Feasibility is described as "the quality of being practical; something capable of being done or effected" and finally, "capable of being dealt' with successfully."

The Houston Texas Gas and Oil Company was founded by the late J. O. Mack on May 26, 1952. It is most fortunate that the New York Times of February 18, 1953, carried a dispatch describing Mr. Mack's intended pipeline. Cecil A. Beasley, Jr., a Washington attorney who represents the firm of Barnard and Burk, Inc., consulting engineers of Baton Rouge, Louisiana, saw the article and forwarded it to Mr. C. C. Barnard with the notation: "Charlie, you may be interested in this." Mr. Barnard took a plane to Houston and met with Mr. Mack. On April 21st, 1954, Mack employed Barnard and Burk to handle the engineering matters, including market surveys, on the proposed gas transmission main. Mr. Barnard and I went to Florida, with a staff of engineers, on April 27th, 1954, and we visited all cities and industries along the proposed route of the natural gas pipeline.

The market survey estimated that the fuel requirements of residential, commercial and industrial users in Florida, converted to equivalent natural gas, would total 626 million cubic feet per day, in the third year of gas operation. Reserves in excess of four trillion cubic feet would be necessary to assure a 20-year supply of natural gas for a market of this magnitude.

Coastal Transmission Corporation, a wholly-owned subsidiary of Delhi-Taylor Oil Corporation, agreed to supply gas to Houston. Coastal and Houston signed a Letter of Intent, on February 26, 1955, for the proposed purchase and sale of natural gas. Coastal was to acquire adequate reserves in South Texas, where gas was selling from 15 cents to 18 cents per Mcf, construct a gathering system linking numerous fields, and build a pipeline to Baton Rouge, Louisiana, at which point the proposed pipeline of Houston was to commence. The difference in cost of gas in South Texas and in Louisiana, made it feasible to go the longer distance for a gas supply.

We filed with the Federal Power Commission on August 26, 1955. We proposed a main line with some 500 miles of 30-inch diameter pipe, with the balance of the main line consisting of 26-inch, 20-inch and 18-inch pipe. This line was estimated to cost $110 million. It was designed to transport, sell and deliver, initially, an average quantity of 350 million cubic feet of natural gas per day.

Coastal Transmission Corporation filed its Application with the Commission on February 8, 1956. The main line of Coastal was to consist of 566 miles of 26-inch and smaller diameter pipe. The cost of these facilities was estimated to be $59,805,000

The two largest electric power companies serving Florida, namely the Florida Power & Light Company and the Florida Power Corporation, had expressed an interest in purchasing gas in the field, directly from the producers, and having Houston transport the gas and deliver it to them for their own use in their electric generating plants. We agreed to this transportation arrangement.

Florida Power & Light Company contracted with the Sun Oil Company to purchase 100 million cubic feet of gas per day for a period of 20 years. This is the largest single contract in the industry. Florida Power Corporation contracted with the Sun Oil Company and The Pure Oil Company to purchase 50 million cubic feet of gas per day, also for a period of 20 years.

With the successful conclusion of contracts with these two large fuel users, Houston and Coastal were ready for hearings before the Federal Power Commission. The Commission set public hearings to be held commencing on July 9, 1956.

The matter of proving whether or not we had adequate gas reserves to support our project was the first order of business taken up by the Examiner for the Commission. Our entire Application sought authorization to transport and sell and to transport an average daily volume of 350 million cubic feet of gas.

Commission staff engineers did not agree that we controlled sufficient gas reserves to support the size of project for which we had made Application. It was necessary to immediately conform the Applications of Houston and Coastal to the reserves accepted by the Commission staff. This, in substance, reduced our project to facilities for transporting an average of 282 million cubic feet per day instead of 350 million cubic feet per day.

Our amended joint project provided for a main line of some 1,517 miles of 24-inch diameter pipe and less, and approximately 1,100 miles of lateral gas gathering and sales lines.

The total estimated cost of the Houston project came

MR. REINACH, a native of New Orleans and a graduate of Tulane University, has had a part in planning and building several major oil and gas piplines in the U. S. The above article is abstracted from an address by Mr. Reinach, assistant to the president of the Houston Corporation, before LES Aug. 8, 1960 at the Engineers Club.

to a little over $100 million and the companion project of our supplier, Coastal Transmission Corporation, was estimated to be approximately $60 million. Thus the joint project to bring less expensive gas from fields in the Rio Grande Valley to Florida markets was, at that time, estimated to cost approximately $160 million.

It was desirable that our pipeline provide service throughout the State of Florida, in order to bring the advantages of natural gas to as many people as possible.

Today, Houston owns the gas distribution properties serving Jacksonville, Orlando, Miami, Lakeland, Daytona Beach, and Eustis, Mt. Dora and Umatilla. We are, therefore, one of the largest distributors of natural gas in Florida, and we expect to sell in excess of 40 per cent of all the gas to be supplied by the pipeline for resale to residential, commercial and small industrial customers.

On February 21, 1957, the Federal Power Commissioners, by uanimous vote, found that Houston and Coastal had complied with the conditions imposed in their Certificates.

We moved our office from Houston, Texas, to St. Petersburg, Florida, the latter part of June, 1957. Mapping work, which was in progress in Tulsa, was also transferred to St. Petersburg.

Plans and specifications and more detailed drawings of compressor stations were prepared and material orders firmed. We prepared applications for permits to cross State and County roads, railroads and navigable streams. By the time financing had been arranged, Coastal and Houston together had completed the survey of 1,020 miles of the main line and 370 miles of lateral lines, and had obtained options on 287 miles of right-of-way. By this time, the founders of the project had invested $4,400,000 in venture capital.

The plan of financing was completed on August 29, 1958, when the Securities and Exchange Commission accepted our Registration Statement. We advised our customers that we would start construction at once and that we expected to begin delivery of gas on or about June 1, 1959. I am very happy that we were able to accomplish this schedule and to fulfill the confidence that our bankers, institutional investors and customers expressed in us.

It is appropriate for me to recognize the invaluable assistance given the natural gas project by consulting engineers, investment bankers and accountants, and to acknowledge the indebtedness of The Houston Corporation to these firms.

The following firms prepared engineering reports, including market estimates and economic data, and had representatives appear as witnesses before the Federal Power Commission on behalf of their clients:

Barnard and Burk, Inc.; Commonwealth Services, Inc.; Duff and Phelps, Inc.; Goodwin Engineers, Inc.; Harry Hendon and Associates; Middle West Service Company; Pipeline Technologists; Reynolls, Smith and Hills; Smith & Gillespie; Stone & Webster Service Corp.

DeGolyer & MacNaughton were consulting geologists for Coastal Transmission Corporation.

Inc., Lehman Brothers and Allen & Company were the

Scharff & Jones, Inc., of New Orleans, Blyth & Co., principal underwriters for The Houston Corporation. One hundred thirty-six additional underwriting firms purchased our investment units and subsequently reoffered them to the public.

Additional investment bankers appeared as witnesses before the Commission to testify that the proposed gas distribution systems could be financed.

Institutional investors, headed by The Prudential Insurance Company of America, The Equitable Life Assurance Society of the United States and the John Hancock Mutual Life Insurance Company, committed to purchase first mortgage pipeline bonds of Houston Texas Gas and Oil Corporation and Coastal Transmission Corporation, in the total of $107,400,000. Forty-one additional insurance companies, pension funds and trust funds purchased the first mortgage pipeline bonds of our two transmission subsidiaries.

Bankers Trust Company, New York, are our principal bankers. Also participating in our financing are 10 other banks.

The Company's pipeline subsidiaries have applied to the Federal Power Commission for certificates to construct and operate additional facilities (principally additional compressor stations and laterals) to increase maximum daily capacity from approximately 273,000 Mcf per day to 371,000 Mcf per day, without regard to the heat content of the gas. The cost of construction for this expansion is estimated to be $23,600,000. Hearings before the Commission are now in progress.

On June 1, 1959, a valve opening ceremony at our Brooker Compressor Station near Gainesville, Fla., signalled the introduction of natural gas to Florida for wide distribution to domestic consumers and to large and small commercial and industrial businesses for their varied uses.

Thus was made possible the development of a dream into a plus $200 million reality.

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Public Health Service Delves Into Air Pollution

(The following article was forwarded to the Engineer by Mr. Arthur Thigpen of the Monroe Section of the Louisiana Engineering Society—Ed. Note).

Creation of a new Division of Air Pollution in the Public Health Service has been announced by Surgeon General Leroy E. Burney.

The new Division will consolidate the research, technical assistance and training activities carried out since 1955 by the Air Pollution Engineering and Medical Programs.

"The Division will enhance and facilitate the efforts of the Public Health Service to assist States, Communities and Industry in their research and control activities in this expanding field of nationwide public health concern," Dr. Burney said. The continued emphasis on many personal, community and industrial activities which contribute to both the intensity and complexity of air pollution and the continued trend toward concentration of our population in metropolitan areas makes it clear that the nationwide threat of air pollution is becoming greater.

The growing importance of air pollution is reflected in the acceleration of interest and activity at all levels of governments and by industry, university and other private organizations concerned with furthering knowledge and abatement of a complex and growing health problem. The increase in governmental and private efforts to deal with the health and economic hazards of air pollution has been particularly notable since November, 1958, with the National Conference on Air Pollution called by the Surgeon General held in Washington, D. C.

Chief of the new Division will be Vernon G. MacKenzie, engineer and longtime career officer in the Service, who is at present Assistant Chief, Research and Development, Division of Engineering Services. Mr. MacKenzie has worked in the field of air pollution for more than 10 years. Deputy Chief will be Dr. Richard A. Prindle, PHS career medical officer who is at present Chief, Air Pollution Medical Program. Assistant Chief of the Division will be Mr. Ralph C. Graber, engineer and PHS career officer who is at present Chief, Air Pollution Engineering Program.

Creation of the new Division for air pollution is a logical step to facilitate research and technical assistance efforts in a field where the interdependence of medical and engineering techniques and knowledge is widely recognized and in which research and community field studies increasingly call for the combined talents of many professional disciplines. By bringing all public health air pollution work into one division the Service will be able to coordinate more efficiently its medical and engineering liaison with State health departments, industry, university, and all the other private and governmental groups.

Ruston Schedules 9th Instrumentation Meeting

The School of Engineering, Louisiana Polytechnic Institute, Ruston, La., announces the Ninth Annual Instrumentation Conference to be held on the campus Nov. 3-4, 1960.

James W. Malone, publicity chairman, said the papers which are to be presented at the technical sessions are:

"Unique Problems in Process Control in Propellant Manufacturing Processes" — Author Pending, Thiokol Chemical Corporation, Marshall, Tex.

"The Relationship of Existing Primary Measurement to Complete Computer Control of a Processing Plant"—Mr. H. L. Payton and Mr. Charles Thurmon, Monsanto Chemical Company, Luling, La.

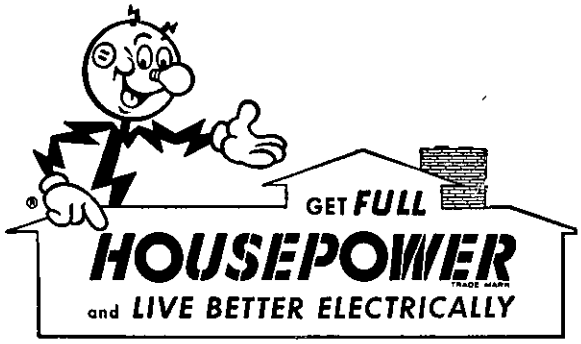
"High Speed Chromotography"—Mr. Helmut J. Maier, The Perkin-Elmer Corporation, Norwalk, Conn.

"Process Instrument Engineers' Notebook"—Mr. C. R. Skalnik, American Oil Company, Texas City, Tex.

"The Practical Considerations of Instrumenting a Petro-Chemical Plant"—Mr. J. H. Black, The Texas Eastman Company, Longview, Tex.

"New Trends in Flow Measurement"—Mr. Tom Filban, Daniel Orifice Fitting Company, Houston, Tex.

In addition to these papers, exhibits of new equipment in instrumentation and process control will be displayed by representatives of the leading manufacturers of such equipment.



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Engineering Law Enforcement

By FRANK W. MACDONALD, Executive Secretary

(Louisiana State Board of Registration for Professional Engineers and Land Surveyors)

I believe it is appropriate to begin this paper with the question—"What Is an Engineer?" In the eyes of the law, an engineer is a person who is authorized to use the title and qualified to practice through registration with the governing body. In the eyes of the public the things that engineering deals with is not clear. Actually, the description of an engineer is much more comprehensive than our legal definition. When we have identified ourselves properly to receive public recognition we will have done much to eliminate many of the problems presented in engineering law enforcement.

In the United States we have at present 250,000 registered professional engineers. Louisiana with nearly 6,000 professional engineers is the 11th state in the nation. We are exceeded in the South only by the state of Texas. Louisiana was the second state in 1908 to adopt a law for the registration of Civil Engineers.

At the present time Louisiana stands alone in that it is the only state which permits the registration of college graduates without years of experience and examinations.

Even the new states of Alaska and Hawaii, the District of Columbia, Puerto Rico and the Canal Zone require years of experience and written examination for recent graduates. This is a weakness in our law that should be remedied as promptly as possible.

The Louisiana act governing the registration and practice of professional engineers and land surveyors was adopted in 1950, and is based to a large extent on the model law. The board is charged with the duty of administering and enforcing the provisions of this act, making investigations of violations, and presenting the facts of such investigations either to the district attorney for prosecution or in its own name to any district court in the state for consideration.

The Louisiana act provides that persons who practice or offer to practice professional engineering or land surveying in the state must be registered professional engineers or land survyors. The use by individuals of telephone listings, calling cards, letterheads, newspapers and local journals or directories in advertising engineering services is considered to be an offer to practice engineering.

It is estimated that during the first ten years of the board's operation (1950 to 1960) we have investigated approximately 900 cases. In this same period we have had 5 court cases with favorable decisions reached in each instance. One of these cases involved a registered land surveyor who was advertising and practicing as a civil engineer. Another was the case of a general contractor engaged in the preparation of plans and specifications for the construction of rice dryers, rice storage plants and other similar large structures.

In reprimanding one of the defendants, the court stated "that laws governing the practice of professional persons are essential to a community to insure that competent individuals will serve the public. The engineering profession is an old established field of practice and as in the case of similar groups such as the medical and legal professions, it should be safeguarded against the acts of unscrupulous persons. It is right and proper that persons who possess the qualifications to do so hold registration as professional engineers and that unqualified persons who persist in practicing the profession without license are guilty of a misdemeanor."

The procedures that have been adopted are that the initial investigation of possible violations is made by the board office. To assist in obtaining information of violations through advertisements the board subscribes to a daily commercial newspaper and reports that lists the engineering projects planned for construction in the state. We also purchase the telephone directories of the larger cities of the state to check the listings in the classified ad sections. Periodically, usually about every six months, the office personnel visits the telephone company in New Orleans to review the telephone directories of all the smaller cities of the state.

The major portion of the investigations made have been with the listings in the classified section of the telephone directories. I regret to state that we have had very little cooperation from the officials of the telephone company in endeavoring to prevent listings of persons who are not registered under the provisions of the law. In checking the telephone and city directories we review not only the listings under consulting engineers, but also the block ads and other advertisements of firms and individuals, page by page for the entire classified section.

When an advertisement is found that indicates a possible violation, the executive secretary writes a letter of inquiry to the firm or individual requesting a description of the engineering work involved and the names of the individuals who perform such services. If no reply is received after a period of two weeks a second letter is sent in which a time limit of 10 days is suggested for a reply to be submitted to the board and with a comment that if not received within this time, the matter will be referred to the board's attorney for consideration. In most cases the executive secretary is able to obtain the necessary information for consideration by the board without assistance from the attorney.

In the majority of the cases of advertisements investigated the violation is unintentional and found to be

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Dr. Frank W. Macdonald is head of the Mechanical Engineering Department at Tulane University. He addressed the Engineering-Law Seminar in his capacity as executive secretary of the State Board.

a case of lack of knowledge of the engineering registration law by the individual, or overenthusiasm on the part of the telephone company to sell business listings. These types of cases are usually settled by the individual having the advertisement corrected in the next issue of the publication. In the more flagrant cases when a violation exists and through correspondence or conferences with the individuals unsatisfactory results are obtained, the matter is referred to the attorney of the board for action. The attorney then endeavors by conference or correspondence with the individuals involved, to bring about compliance with the statute. In the event the attorney is unable to obtain satisfactory results, the case is then discussed at the next monthly meeting of the board. It is our regular practice to have the attorney for the board report on such cases at each of our regular monthly meetings. To facilitate the review of cases at the meetings, the attorney prepares a written report to be presented to the board which covers the summary of his investigations and activities during the past month. Those cases thus reviewed that are considered to be flagrant, with little likelihood of willing compliance with the provisions of the statute, are on the recommendation of the board referred to the district attorney for action, or referred by the board to its attorney for action under the penal provisions of the statute.

In the cases of violations in practice, the initial investigation is usually made through the offices of the board. An attempt is made to obtain all possible information from the individual involved, and to collect any material that might be available through registered professional engineers or others that might have knowledge of the violation. The material that has been assembled is submitted to the board members and the attorney for consideration. When violations of practice are found by the board in cases of this type, the matter is then referred to the attorney for further action.

The board members have also been very active in investigating cases of violations through practice and advertisements. We are fortunate in that our board membership is well distributed over the state. Board members are often asked to assist in investigations or conferences on cases that are in the vicinity of their residences. The members have also been very active in meeting with engineering groups and societies throughout the state to inform the professional engineers of the vigilance of the board in investigating and correcting violations. We have also informed the professional engineers through circular letters and reports in our annual publication of our efforts and asked their cooperation in the enforcement of the law.

One of the problems confronting the board is the practice of firms or corporations in Louisiana. The statute provides for registration only of individuals. The attorney general on August 6, 1953 rendered the following decision to the board:

> "It is our opinion that if a corporation or a partnership does professional engineering work in this state as defined in the act, letterheads, cards, advertisements, etc., should reflect clearly that such entities have in their employ, or have officers, members or owners qualified, registered engineers in the particular branch of engineering, and naming them, care being taken that these entities are not themselves as entities held out to be qualified registered engineers."

On the basis of this decision it is the regulation of the board that corporations and firms may practice in Louisiana provided the persons in responsible charge of the engineering work are registered professional engineers; also that the names of these individuals appear on the firm letterheads and in any advertisements they may employ.

The use of the word "engineer" in advertisements and listings has been the cause of serious deliberation by the board. The board does not feel that under provisions of the statute we have a monopoly on the title of engineer. There are many types of engineers such as stationary, marine, etc., over which we have no control. It is the feeling of the board that any name that implies a relationship or is a subdivision of the branches in which we register (in civil, mechanical, electrical), does require the person using such title to be registered. A good example of related branches is in electronic engineering. The board under the statute can issue licenses in electrical engineering but not electronic engineering. It has been the decision of the board however, that anyone who practices or advertises services in electronic engineering must be registered in the electrical engineering branch. This opinion of the board was upheld by a decision of the attorney general in 1953.

Many professional engineers in Louisiana do not distinguish the difference between the engineering registration law and the canons of ethics for engineers. The board publishes the canons in the annual roster of Professional Engineers. Within recent years it has also been the policy of the board to require all recent engineering graduates to read the statute and the canons. It is also the regulation of the board to have these applicants for registration take an oath declaring that they are in accord therewith and agree to conduct their professional activities strictly in accordance with the statute and canons of ethics.

The board however is not responsible for the enforcement of the canons of ethics. The board recognizes that for a profession, ethics are a prime essential and we publish this code in the annual roster as a constant reminder to the registered professional engineers of their responsibilities. Ethical infringements are the repsonsibilities of the engineering societies of states. The Louisiana Engineering Society is now an affiliate chapter of the National Society of Professional Engineers. In this capacity the society can now be considered to be the organization responsible for promoting and maintaining the interest of the professional engineer in Louisiana. For the last two years our board has developed an agreement and worked very closely with the society in a public relations program to promote interest in professional engineering. The Louisiana Engineering Society has recently formed a grievance committee to consider matters pertaining to ethical conduct and take proper action when necessary. The board has been referring complaints concerning unethical practices to the committee for consideration. It is sincerely hoped that this committee will assume, on a state level, the responsibility of dealing with professional misconduct and develop a procedure for taking appropriate action on decisions that are reached.

The Law and the Consulting Engineer

By ALVIN B. RUBIN
(Attorney at Law)

I. THE PROFESSIONAL

A. The professional practitioner is expected to possess not only skill but also learning. He is expected to have and use both. Oxford Dictionary: "A vocation in which a professed knowledge of learning is used in its application to the affairs of others, or in the practice of an art founded no it."

B. To what degree: The standard seems to be the level of learning and skill ordinarily exercised and possessed by the profession.

II. BASES OF LIABILITY — Matters peculiar to practice as engineer.

Basic principles same as these applicable to architects.[1]

A. Contract — Liability to owner.

1. Preparation of Plans and Specifications.
   a. Responsible for accuracy and feasibility of work.
      (1)
      (2) But that degree of care, skill and knowledge common to the profession is expected.
      (3) Plans must be adequate both as to design and materials.

      Example: Roof of a building collapsed under the weight of snow which accumulated on it, **Held:** Architect liable because he failed to design a roof sufficiently strong to carry the load which he could reasonably have foreseen it would have been obliged to carry.[2]

2. Negligent supervision of construction.
   a. Duty is to prevent material variation from the plans and specifications. But the supervisor is not an insurer: Does not **guarantee** a satisfactory result.
   b. Example: Architect permitted floor beams to rest on studded partitions. Defects developed in structure. **Held:** Liable to owner.[3]

3. Negligent certification of payments to be made. Liability to owner[4] and to surety.[5] Undivided loyalty to owner. No servant can serve 2 masters.

4. What happens when the cost exceeds the estimate?
   a. If the contract is to prepare plans and specifications for a structure not to exceed a stated cost, and the cost does exceed that amount, owner need not pay the fee.[6]
   b. Possible exposure to liability to owner in damages.[7]

5. Late delivery of plans and specifications.

B. Tort — Liability to 3rd persons (or to owner)

1. Degree of care and skill: — responsibility of the skilled professional calls for a high level of care and ability.

2. Judges, like clients, tend to observe results rather than methods. This is a handicap in establishing that proper care was observed in performing an unfamiliar scientific endeavor.

3. Origins of liability in tort:
   a. Manufacturers: (McPherson v. Buick)
   b. Professional persons. Is lack of contractual relationship with the injured person a defense?

4. Basic types of cases:
   a. The engineer uses a new method or otherwise departs from an accepted procedure. Must distinguish intelligent progress and experiment. Who else has used or is using this procedure? With what results?
   b. For some reason, the expected results have not been achieved.
      (1) Res ipsa loquitur: The thing speaks for itself. But what does it say?
      (2) Distinguish liability in contract: e.g. where the professional warrants his work (air conditioning adequate to cool to 70°); where the professional represents his own knowledge (certifications, reports)

5. Is there a difference in liability
   a. During construction?
   b. After completion and acceptance of work?

C. Liability to 3rd persons for personal injuries resulting from defective structures when the defect results from negligence in the preparation of plans and specifications.[8]

1. Exposure virtually unlimited in terms of number of persons and time.

2. Exposure generally ceases at death. At least the heirs don't need to worry — if they are not partners.

3. Typical cases:
   Architect failed to provide for railing on back porch of an apartment building. The back door opened in such a manner that persons on the porch were forced close to the edge. A 2 year old child fell off the porch 6 years after construction was completed. **Held:** The architect was not liable because

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(Herewith an outline of the presentation on "The Law and the Consulting Engineer" made by Alvin B. Rubin, of the Baton Rouge legal firm of Sanders, Miller, Downing Rubin & Kean before the LES-LSBA Law-Engineering Seminar at Tulane University June 10, 1960. Mr. Rubin's heavy commitments—including co-authoring a book—precluded a formal paper for The Engineer, but it was felt engineers would benefit by a perusal of this outline—Ed. note).

the defect was visible and apparent, not concealed.[9]

Child injured at school when he fell off a wall which had no guard railing. **Held:** The architect was not liable because the school board had approced the plans.[10] Premise of this case is that engineer-architect is not responsible to 3rd persons so long as he designs the building which the owner wants. Can you endanger 3rd persons just so long as you satisfy the owner?

4. If the architect-engineer knew of the danger, he may have a duty to take reasonable steps to prevent it. Example: An architect observed inferior quality roof sheathing lying on the ground. Knew it was defective. Took no steps to prevent its use. It was used and a roofer was injured. **Held:** Liable.[11]
   Girders were erected on concrete base. Contractor failed to set the blots in the concrete before it hardened. Architect permitted the contractor to drill holes and set bolts in the holes then fill the holes with concrete. Architect failed to warn the steel sub-contractor that the bolts had been reset and that the concrete had not hardened. Steel was erected and a girder fell, injuring a workman. Architect held liable.[12]
5. **Day v. National U.S. Radiator Corp.,** et al.
   a. What does it stand for?
   b. Where does it stand?

III. Some elementary safeguards.

A. Time sheets. Note each visit. Each item of work.

B. Letters, memos, and reports to architect, contractor, owner.

C. Shop drawings and brochures: Qualified approval.
   Checked for design only. Approval does **not** permit omission of any item required by or any deviation whatever from plans and specifications. Contractor remains responsible for: (a) Full compliance with contract documents, plans and specifications; (b) errors and omissions in the attached drawings or brochures; (c) incorrectly figured dimensions or quantities.

D. Contract with the owner (or architect) What is the engineer engaged to do?

IV. Insurance: It's better to have it and not need it than to need it and not have it.

A. Professional liability including errors and omissions — "Occurrence" Basis

B. Automobiles
   1. Your own
   2. Non owned autos

C. Use of premises. O.L. & T.

D. Workmen's Compensation. Is it needed?

REFERENCES

Ball, "Professional Negligence of Architects and Engineers," **Professional Negligence** (Vanderbilt Press 1960)

Cowgill and Small, **Architectural Practice**

Werbin, **Legal Cases for Contractors, Architects and Engineers** (McGraw Hill, 1955)

Annotations: Responsibility of one acting as architect for defects or insufficiency of work attributable to plans, 25 ALR 2d 1085

Architect's liability for personal injury or death from improper plans or designs, 59 ALR 2d 1081

[1]Cowles v. City of Minneapolis, 115 1 N. W. 184, 128 Minn. (1915)

[2]School District of King's County v. Josenbus, 88 Wash. 624, 153 P 326 (1915)

[3]Hubert v. Aiken, 2 N. Y. Supp. 711 (1905)

[4]Corey v. Eastman, 44 N. E. 217 (1896)

[5]State for use of National Surety v. Malvaney, 221 Miss. 190, 72 So. 2d 424 (1954), noted in 31 N. D. L. Rev. 54 (1955)

[6]Andry & Feitel v. Ewing, 15 La. 272, 130 So. 570 (1930)

[7]Prosser, Torts, §§ 87-88 (2d ed. 1955). See also Edward Barton Estate Co. v. Woodruff Co., 163 Cal. 561, 126 Pac. 351 (19.2)

[8]See Alameda County vs. Paxton, 119 Cal. App. 393, 259 P. 2d 934 (1953)

[9]Inman v. Binghamton Housing Authority, 143 N. E. 2d 895 (1957) noted in 27 U. of Ann L. Rev. 132 (1958)

[10]Sherman v. Miller Const. Co., 158 N. E. 255 (1927)

[11]Alameda County v. Paxton, 119 Cal. App. 393, 259 P. 2d 934 (1953)

[12]Clemens v. Benziger, 207 N. Y. S. 539 (App. Div. 1925)

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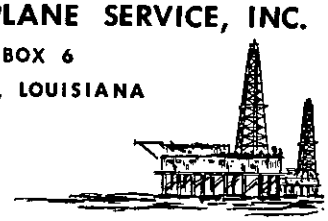

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TOM ORY, Pres. **DR. W. J. ELMER, V-Pres.**

Sept. 13, 1960—George A. Adams, Triumph; Jimmy C. Allen, Heflin; David G. Azar, Baton Rouge; Marcus D. Bailey, Phillips, Tex.; James R. Brown, Magnolia, Ark.; Jules A. Carville, Jr., LaPlace; Robert G. Chapman, Beaumont, Tex.; Lamar A. Conerly, Laurel, Miss.; Adam W. Cormier, Lafayette; Carmon R. Costello, Oak Grove; F. H. Culver, New Orleans; E. R. Dawson, Shreveport; T. D. Drewett, Chattanooga, Tenn.; Geo. H. Dunn, Jr., Houston, Tex.; Henry A. Ecuyer, Jr., Metairie; Lester F. Engle, Jr., New Orleans; Richard G. Fagin, New Orleans; C. Darrow Hooper, Dallas, Tex.; Wm. T. Jock, Jr., Baton Rouge; Joe M. LaCara, Shreveport; Alcide J. LeBlanc, Houston, Tex.; Shile Debs McCarty, Baton Rouge; James J. Mennis, New Orleans; Charles E. Meyer, Metairie; Wm. Mitchell, Jr., Monroe; John L. Nichols, New York; James S. Pharr, Houston, Tex.; James O. Reese, Jr., Franklinton; Morris Galvin Reinhardt, Baton Rouge; Elmer R. Remkes, Houston, Tex.; Donald L. Richard, Rayne; J. W. Richardson, Ruston; E. A. Roberts, Jr., Baton Rouge; Wm. H. Roberts, Jr., Metairie; David E. Schof, New Orleans; Roy C. Smith, Ruston; Louis E. Talbot, Houma; Robert C. Turnham, Shreveport; Jordan A. Walker, Shreveport; Ralph L. Whitehead, Decatur; W. R. Whitehead, Woodworth; Arnold Wurz, Marietta, Ga.; John L. Normand, Jr., Shreveport; Robt. E. Oswald, Metairie; Marshall K. Vignes, Houma.

—o—

Providing A New Coating For La.

James Frank, Jr., president, announces the formation of Top-All Company, Inc., with Aaron Abramson as vice president. Abramson, an LES member, is a registered Professional Engineer.

The company is the exclusive distributor in Southern Louisiana for Magna-Bond Protective Coatings and repairing compounds for use with swimming pools, pleasure craft, home repairs, refinishing furniture—a coating designed to repair, restore and protect metal, wood, concrete and other surfaces—wet or dry—from water and chemicals.

"Miracle Magna Bond coating," said Abramson, "stands up indefinitely under the severest 'paint killing' conditions. Its 'polarized' formula grips surfaces with an exclusive magnetic adhesion to withstand continuous wetting, impact and abrasion." The company is also distributor for Herculite Protection Fabrics, coated synthetic fabrics for marine and industrial use.

Herculite is an operationally-proven vinyl coated nylon fabric developed through years of chemical research and combining high tear strength with great durability to overcome the shortcomings of cotton canvan.

Herculite is effective for use as swimming pool covers, both to keep the pool clean, and as a protective measure to keep children and adults from falling into the pool.

(Continued from Page 7)

in the June membership ballot had been elected to their respective grades.

President McLellan appointed Mr. Janssen chairman of a committee to review the by-laws and recommend reorganization of standing committees so that the titles and duties of each would more closely parallel those of the NSPE.

Mr. Edward Arnold appealed to the board for assistance in obtaining a Branch Public Patent Search Room for New Orleans by writing to members of Congress. The president thanked Mr. Arnold for his civic interest and stated that the matter would be considered.

Mr. Janssen gave a summary of the NSPE's 26th Annual Meeting held in Boston which he attended as the society's representative. He then moved that the Registration Law Committee be appointed for a two-year term, to serve through the 1962 state legislative session. Motion seconded by Mr. Duclos and carried.

Mr. Henry Landry, Chairman of the 1961 Annual Meeting, presented a tentative program and received the board's commendation for his interesting and original plans for the meeting.

A letter from H. M. Robinson, attorney for American Printing Company, Ltd., was read in which he advised thta the State Department of Revenue had made formal demand upon his client for alleged delinquent sales tatxes, that protest had been made and a hearing requested on the grounds that American Printing Company was a manufacturer printing publications for its customers who either were engaged in inter-state commerce or held exemption certificates, and that if any tax is due, it is due by each customer respectively. For printing The Louisiana Engineer, alleged taxes due by the society total $71.98, and Mr. Robinson inquired whether we wish to concede or contest liability for same. Mr. Duclos moved that action be withheld on this matter until the outcome of the hearing is known. Motion seconded by Mr. Latimer and carried.

A reply from the NSPE in reference to the Fromherz case was read, after which the secretary was instructed to write NSPE and request them to refer the matter to the Functional Section for Consulting Engineers in Private Practice.

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

S. J. Lewis, Tyler, Texas

Jack H. Clabaugh, Houston, Texas

Thomas W. Bloodgood, Indianapolis, Indiana

R. A. Longmire, Baton Rouge

Mr. Latimer moved that the president appoint obituary committees to prepare memorials for our late members, John R. Horton and Rathbone DeBuys.

Mr. Janssen moved that the Secretary be authorized to attend the NSPE Secretaries's Conference to be held in Atlanta, August 29-30, seconded by Mr. Latimer and carried. The meeting then adjourned so that the society's regular meeting could begin on time.

JOHN P. FERNANDEZ,
Secretary-Treasurer



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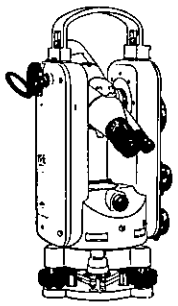

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Minutes of Meeting of the Board of Direction

held at the Engineers' Club, New Orleans

Monday, August 8, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Janssen, Latimer, Watts and Fernandez present. Mr. Allen Johnson, Public Relations Counsel, also was present by invitation. Mr. Janssen moved that minutes of the preceding meeting be approved as corrected, seconded by Mr. Duclos and carried. The correction stipulated that the special 2-year committee be known as the **Registration Law Committee** instead of the **Legislative Committee.** President McLellan announced that Mr. Waldemar S. Nelson had agreed to accept the chairmanship of this committee, whereupon Mr. Duclos moved that the appointment of Mr. Nelson be approved, seconded by Mr. Watts and carried unanimously. Mr. Duclos also agreed to serve on this committee.

President McLellan advised that he had invited Mr. Harold Mosher, past president of the National Society of Professional Engineers, to make the keynote address at the 1961 Annual Meeting.

The secretary reported that replies had been received from all but two board members on the resolution concerning State Civil Service Classifications, and that only one negative vote had been cast. A letter expressing the views of the dissenting board member was read, after which Mr. Duclos moved that, since only one objection had been made, the board adopt the resolution and forward copies to the following state departments and individuals:

Civil Service Commission
Highway Department
Public Works Department
Conservation Department
Board of Commissioners for the Port of New Orleans
Senator Horace Wilkinson III
Representative A. T. Sanders, Jr.
Mr. Clinton C. Hamm*
Mr. Robert Morales*

*Proponents of HR 23

The motion was seconded by Mr. Janssen and carried.

Correspondence between the secretary and Mr. H. M. Robinson, attorney for American Printing Company, concerning delinquent sales taxes levied against them by the State of Louisiana, was read. The secretary reported that Mr. Robinson had been advised that no action would be taken until the outcome of a pending hearing on the case would be known. Mr. Duclos moved that the secretary's action be approved, seconded by Mr. Latimer and carried.

Communications from the Shreveport Section and the Gulf Institute of Consulting Engineers were read, in which each offered recommendations for nominees to the State Board of Registration. It was decided that these recommendations would be considered when a vacancy on the State Board next occurs.

Mr. Latimer moved that the secretary write to Louisiana Senators and Representatives in Washington urging their support for the establishment of a Branch Patent Search Office in New Orleans. The motion was seconded by Mr. Janssen and carried.

Mr. Allen Johnson gave a report of Public Relations activities for the month.

Mr. Janssen moved that the elections of Messrs. Wm. E. Hodge, Shreveport, and Frank J. Weaver, New Orleans, be declared void since they have not acknowledged membership by payment of dues. Motion seconded by Mr. Watts and carried.

Mr. Latimer moved that 1,000 booklets "Key to a Greater Profession" be ordered from the NSPE for the 1961 membership drive, seconded by Mr. Janssen and carried. The secretary reported that solicitation for medal award nominees had been forwarded to all officers, committee chairmen and vice-chairmen. Board members were urged to submit recommendations, after which the meeting adjourned.

Secretary-Treasurer

—o—

NEW MEMBERS

Walter L. Ashton, Jr., Metairie; Hoyt W. Brown, Jr., New Orleans; John A. deMonte, Baton Rouge; Arthur G. Grant, New Orleans; George A. Hero, Jr., Gretna; H. Fred Martin, Baton Rouge; William P. Obier, Jr., Baton Rouge; Alton T. Rildick, New Orleans; Irwin L. Tunis, Metairie.

TRANSFER FROM JUNIOR MEMBER

Claude J. Kelly, Jr., New Orleans.

AFFILIATE MEMBER

Albert M. Alexander, Jr., New Orleans; Kirtley A. Boudreau, Opelousas; Gordon C. Bullock, Opelousas; Willie L. Crook, Jr., Baton Rouge; Daniel J. Shamburger, Lafayette; Jack L. York, Baton Rouge.

JUNIOR MEMBER

Albert J. Adoue, Jr., Metairie; Ronnie M. Bays, Pollock; Hubert J. Briley, New Orleans.

1960 GRADUATES

Jerry Allen, Cyril A. Barrios, Murray Bass, Jr., Arlen L. Bishop, Julius J. Dominguez, Henry P. Dorman, William J. Drawe, III, Gerald A. DuBroc, William A. Endris, Jr., Robert G. Graves, Kirby J. Guidry, Jacob H. Lashover, Numa L. Marquette, Jr., Donald J. Olivier, James R. Riquelmy, David E. Schof, Jr., Edward R. Sherwood II, Otis L. Talbot, Dalton L. Wolverton, Rex Scott Zerger.

1960 GRADUATES—SCHOLASTIC AWARDS

Wayne Robert Barcelo, Billy Roy Foster.

—o—

Aid in preparing for registration exams is given in the form of a comprehensive college level review course to engineering employees of Norland Associates, Inc., a Fort Atkinson, Wisconsin, product design firm. The course is attended by seventeen employees who have been meeting for two and a half hours a week since the class began in November.

Memorials

JAMES P. HENDERSON

It is with great sorrow that we record the passing on April 30, 1960, of our fellow engineer, James Perry Henderson, after a long, useful and distinguished career in engineering activities.

Jim's family, friends and associates are going to miss him very much. Always fair to labor and to management, he had justly earned a reputation as an expert in his line.

Born in West Union, Iowa, on January 15, 1877, he had passed his 83rd birthday when he was taken by his Heavenly Father. He had been a member of the Louisiana Engineering Society since 1938.

Educated in the Public Schools of Pueblo, Colorado, Jim was ambitious to get ahead and took a correspondence course in Mechanical Engineering and Engineering Drawing, finishing with fine marks.

In 1903 he became associated with the Babcock & Wilcox Company in their Chicago District territory in their Service and Erection Department and continued his connection with that Company and its associate, A. M. Lockett & Company, Ltd. of New Orleans until his retirement in 1946, after 43 years of service.

During his employment in the Chicago District from 1903 to 1929, Jim was in responsible charge of the erection of many large steam generating units in many parts of the Midwest as well as in Mexico and Canada.

In 1929, Jim joined A. M. Lockett & Company, Ltd., as supervisor of erection of Babcock & Wilcox equipment in the Southwestern District, which included the states of Louisiana, Texas, Oklahoma, Arkansas, Mississippi, and parts of Alabama and Florida. He was responsible for the erection of many large utility steam generating units throughout this area, and was esteemed and respected for his expert knowledge and wholehearted cooperation by all with whom he came in contact.

During World War II he was particularly active though beyond the age limit to enlist in the Services. Just as one example of his contribution to the defense effort is his work in the installation of 29 steam generating units in the Naval Ordnance plant in Shumaker, Arkansas, in record time.

Following the loss of his first wife after a short married life, Jim and Mrs. Agnes Pernot Galle were married on October 14, 1935, and resided in New Orleans until his death.

He is survived by his widow who resides in New Orleans; two daughter, Mrs. Joseph Taravella of New Orleans and Mrs. John S. Cavanaugh of Madison, Wis., a stepson, Edward Galle of Jacksonville, Fla., and a stepdaughter, Mrs. Wm. E. Padel of New Orleans.

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

R. P. Lockett, George R. Hammett

DAVID LIPSCOMB CULLOM

With deep regret and expression of sorrow, the Louisiana Engineering Society records the death, on January 16, 1960, of our friend and associate, David Lipscomb Cullom.

He was buried in his home surroundings at Nashville, Tenn., where he was born August 15, 1880. However, he spent most of his life with us here in New Orleans, where he was engaged in railroad and port activities.

In his early manhood he was employed in field engineering and track maintenance with the Illinois Central Railroad and Texas & Pacific Railway, and later valuation work for the Transmississippi Terminal Company. He was connected with our esteemed deceased member Frank H. Coleman in the original layout and construction of the New Orleans and Great Northern Railroad.

Until his retirement on September 30, 1948, he spent many years of an active life in charge of the maintenance of the dock facilities of the Board of Commissioners of the Port of New Orleans.

He was a long time member of our society, having joined us in May, 1916. He was made a life member January 10, 1946.

Be It Resolved, that the membership of the Louisiana Engineering Society express hereby its feeling of loss at the passing of David Lipscomb Cullom; that these resolutions become part of the minutes of the Louisiana Engineering Society; and that a copy be sent to his brother and each of his sisters.

W. T. HOGG, HORACE E. CRUMP

Engineering Briefs: Rapid Reading Scores

Rapid reading courses are given to professional and technical employees of E. I. du Pont de Nemours, Wilmington, Del. Du Pont engineers used to spend about nine hours a week on job-related reading, but since the start of the course have doubled and in some cases tripled their reading speeds.

A technical reading course in Russian is sponsored by the employee relations department of the Esso Research & Engineering Co., Linden, and Florham Park, N. J. The 200-hour course is attended by 25 employees of the company and is taught by a Rutgers University professor.

Leadership courses for engineers and scientists in supervisory positions were given recently to professional employees of Sun Oil Company, Philadelphia, Pa. The classes were attended by 65 engineering and research supervisors and were conducted by distinguished instructors from many fields of education and industry. Emphasis was placed upon the creation of an atmosphere conducive to the fullest development of the professional staff.

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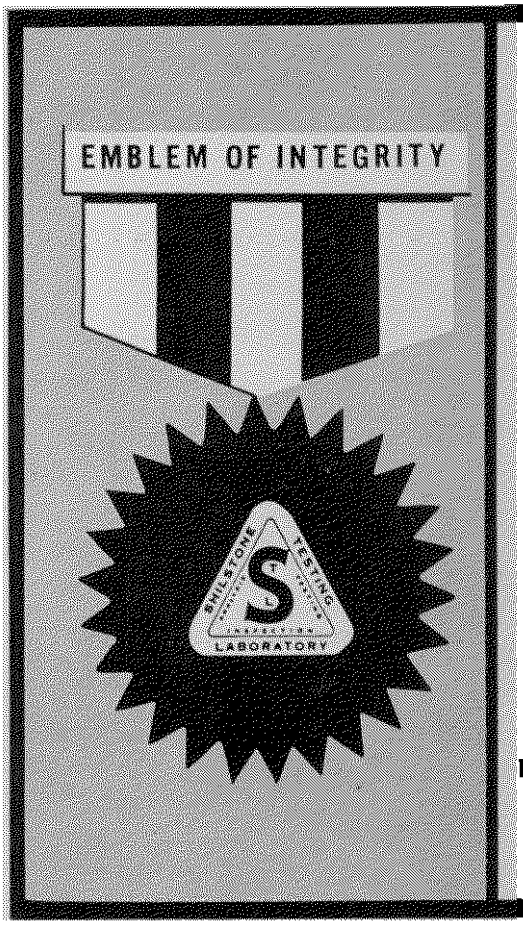

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Vol. 46 No. 6
December, 1960

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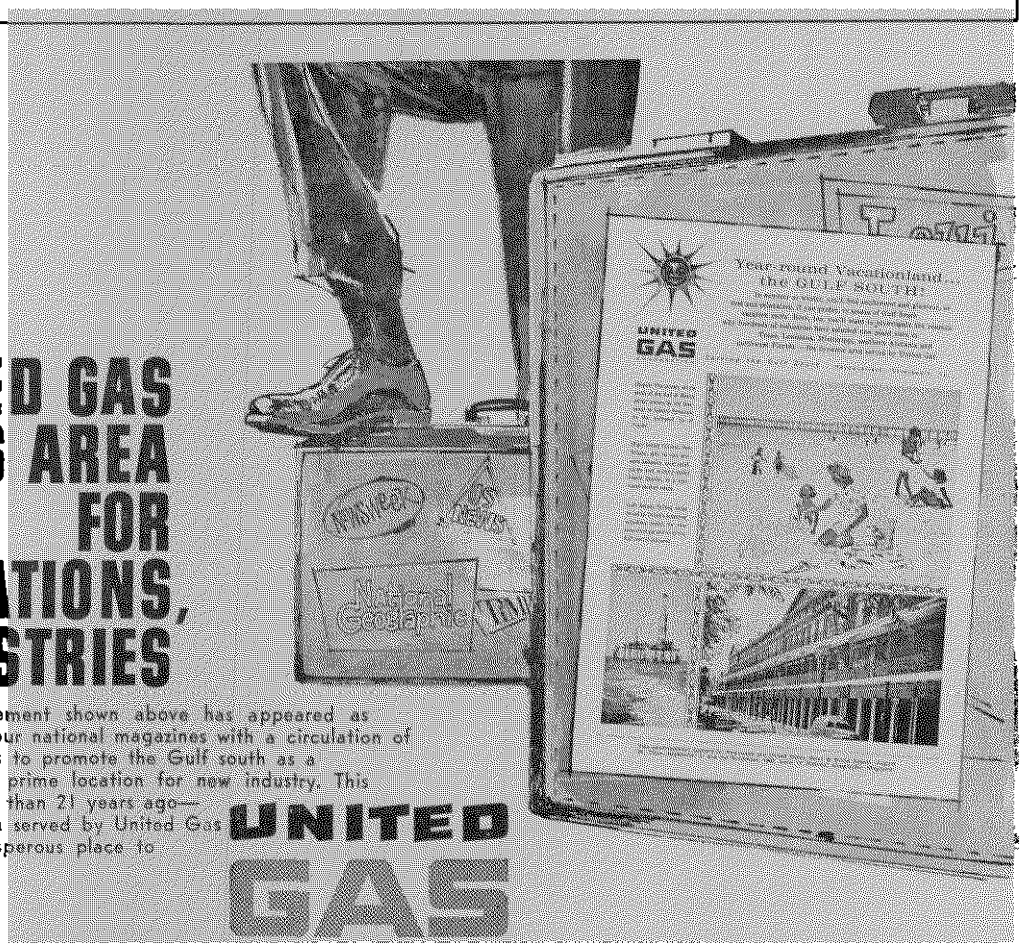

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THE LOUISIANA ENGINEER

Vol. 46 **December, 1960** **No. 6**

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OUR COVER: Kerby H. Fisk, New York, chairman of the of the board of Allied Chemical Corp., was main speaker before annual meeting of the Baton Rouge Council of Engineering and Scientific Societies Oct. 25, 1960. With him are Douglas Latimer, (left) LES Baton Rouge Section President, and Tom E. Alexander, Council President and a past LES Section President. Alexander and Prof. W. H. Carter represent LES on Council; other affiliates are AIEE, ASME, ASAE, AICHE, AIIE, ASHAE, ACS, ASSE.

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La. Engineering Society

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans Monday, September 12, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Janssen, Latimer, Sessums and Fernandez present. Mr. William Baker, local chairman for Engineers' Week, Mr. Allen Johnson, Public Relations Counsel, and Mr. B. L. Kiernan, member-at-large, also were present by invitation.

The order of business was dispensed with and Mr. Baker proposed that an Engineering Supplement be published in the Times Picayune during 1961 National Engineers' Week. He requested the board's authority to negotiate the matter. After much discussion Mr. Latimer moved that the Times Picayune be authorized to publish such a supplement with the board's approval, with the understanding, however, that the society will assume no financial responsibility nor will its members be expected to solicit advertising. The motion was seconded by Mr. Janssen and carried by a vote of three to two, Messrs. Sessums and Duclos voting negatively.

Mr. Sessums moved that the reading of minutes be dispensed with and that minutes of the preceding meeting be accepted as distributed to board members by mail. Mr. Latimer seconded the motion, with the request that a reference to the tabling of an application for transfer be deleted from the minutes. The motion carried with this deletion.

President McLellan announced that Mr. Harold Mosher, past president of the NSPE, had agreed to give the keynote address at the 1961 annual meeting. He advised that Messrs. Waldemar Nelson and Louis Duclos of the Registration Law Committee had suggested the appointment of Mr. Lionel Cucullu to their committee. Mr. Sessums moved that this appointment be approved, seconded by Mr. Latimer and carried.

A letter from Mr. Bernard Grehan, Chairman, Professional Affairs Committee, concerning an ethical practices case, was read. The secretary was instructed to forward copies of the letter to the interested parties and to express the board's approval of the committee's findings.

The secretary reported on the NSPE Secretaries' Regional Meeting held in Atlanta August 29-30.

Mr. Kiernan, a member of the Board of Examiners for Operating Engineers, read a prepared statement and explained that there is some misunderstanding on the part of sub-professional workers concerning the professional engineer's attitude toward them. Mr. Kiernan was assured that the LES Board of Direction would support a feasible plan for better training of technicians and sub-professional workers, and would give sympathetic consideration to a proposal for the welfare and betterment of these technicians, if such plan or proposal were submitted to the Board in concrete form. It was pointed out to Mr. Kiernan that the Board very recently passed a resolution urging the State Civil Service Commission to increase the salary range for engineer-aide positions.

The secretary reported the receipt of favorable replies from all congressmen in answer to the Board's request for cooperation in the establishment of a branch Public Patent Search Room in New Orleans. A reply also was received from Mr. McDougall, Personnel Director for the Louisiana Civil Service Commission, stating that the Board's resolution would be brought to the attention of the Commission.

A letter from Attorney H. M. Robinson concerning the State Sales Tax case involving the LOUISIANA ENGINEER was read. Mr. Janssen moved that the society pay the tax, seconded by Mr. Fernandez and carried with reluctance.

Mr. Janssen moved that the secretary be instructed to bring up the matter of publishing a new membership roster at an early meeting in 1961, seconded by Mr. Latimer and carried. Mr. Latimer then gave a summary of preparations being made for the 1961 Annual Meeting to be held in Baton Rouge.

Mr. Duclos moved that the society adopt the policy of sending a donation to a favorite charity of deceased members if so indicated in the death notice, in an amount comparable to the cost of the customary floral offering. Motion seconded by Mr. Latimer and carried.

Mr. Allen Johnson reported on the Public Relations Program and advised that he was attempting to coordinate seminars with the architectural and accounting professions, similar to the Engineering-Law Seminar held earlier in the year.

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans Monday, October 10, 1960

The meeting was called to order by President McLellan with Messrs. Duclos, Janssen, Larue, Latimer, Sessums, Watts and Fernandez present. Mr. Allen Johnson, Public Relations Counsel, also was in attendance and Mr. Alvin Fromherz, member-at-large, was present for the latter portion of the meeting. Mr. Duclos moved that minutes of the preceding meeting be accepted as distributed to board members by mail, seconded by Mr. Latimer and carried.

President McLellan announced that the James Fourmy case would soon be tried and that Mr. Waldemar Nelson had agreed to supply an expert witness from his staff to testify in behalf of the engineering firm defendant. He also announced that Mayor Morrison had appointed him to serve on the Advisory Committee for the Building Code, and reported that the Registration Law Committee was now complete except for one more member to be appointed from the Baton Rouge area.

Mr. Janssen reported on his special reorganization committee and it was agreed that copies of proposed amendments to the constitution and by-laws be sent to board members for comment, and that a special meeting would be held on Monday, October 24 to discuss this subject only.

A letter from the State Board of Registration was read in which they advised that the tenure of office of Mr. Leo M. Odom would expire in November. After some discussion Mr. Janssen moved that the following names be submitted to the governor in alphabetical order, without comment:

S. E. Huey
Waldemar S. Nelson
Leo M. Odom
H. Nash Ogden
Roy T. Sessums

Mr. Fromherz arrived at this point and the order of business was dispensed with so that he could be heard. He pointed out that both Mississippi and Texas have manuals of fee regulations for consulting work, but, none exists in Louisiana. He requested that a committee be appointed to prepare such a manual. Mr. Fromherz was advised that a Functional Section for Consulting Engineers was in process of organization unler the direction of Mr. Leo Odom, and that one of its first duties would be to compile a fee schedule. Mr. Fromherz stated that his firm had not been contacted by Mr. Odom, whereupon Mr. Duclos, the board's sponsor for this committee, was requested to contact Mr. Odom in the interest of expediting the formation of this Functional Section.

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

Leonce F. Dupuy (Jr.), Baton Rouge — Walter C. Lehigh, Metairie (Aff.)
Bernard A. Grehan (Mbr.), New Orleans — Herbert M. Rhodes, Ky. (Mbr).

The secretary reported that a Tulane University student had contacted NSPE about the formation of a NSPE Student Chapter at the university, and that material had been forwarded to Professor John L. Martinez, Assistant to the Dean, with the advice that LES would assist such a chapter if the faculty deemed it advisable to start one. Mr. Duclos moved that action on this be deferred until word was received from the Tulane faculty.

Mr. Sessums moved that Mr. Frank S. Foster Jr. be reinstated to the grade of Member, seconded by Mr. Latimer and carried.

Mr. Larue advised that the Lafayette Section desired to change its present officer-election date to coincide with those of the parent organization and the other sections. Mr. Sessums moved that this change in the section's constitution be approved and that Lafayette be authorized to take the necessary steps to place it in effect.

The secretary reported that Mr. Edward C. Moore of Hammond had inquired about the possibility of forming a chapter of LES in that city. Mr. Janssen moved that the secretary advise Mr. Moore that this would require a petition signed by fifteen voting members, preferably NSPE members, residing in the area, to be submitted to the Board of Direction with a copy of a proposed constitution and by-laws defining the jurisdictional area of the section. Motion seconded by Mr. Larue and carried.

With the concurrence of the board, President McLellan appointed Mr. John Gentillich to head a committee of his own choice to prepare an obituary for the late George D. Waddill.

Mr. Watts moved that Mr. Edward Olsen be transferred from Member to Affiliate grade, seconded by Mr. Latimer and carried, after which the meeting adjourned.

J. P. FERNANDEZ,
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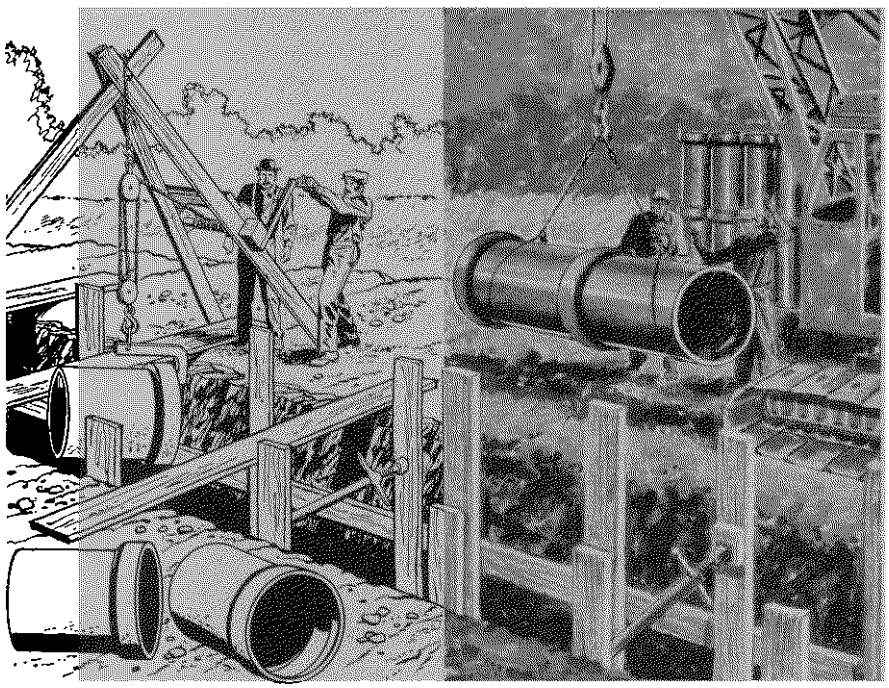

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Registration Law Group Complete

The Board of Direction of the Louisiana Engineering Society has appointed a Registration Law Committee to study possible revisions to the Engineering Registration Law. Under this law the society is charged with the responsibility of making nominations to the Governor of Engineers, from which nominations the Governor appoints members of the Board of Registration for Professional Engineers and Land Surveyors.

Mr. Edward A. McLellan, President of the Society, in appointing the committee explained: "The purpose of this Committee is to receive and analyze the various requests for change in our state registration law, to decide on the best change and try to get the various engineering groups all agreed before submitting the changes to the Legislature for approval. The strengthening of our Registration Law is of paramount importance to the profession in Louisiana so that our registration requirements will be equal to that of the majority of the other states in the Union".

The Louisiana Engineering Society Board in discussing appointments to the Committee wished to have a member from each of the L.E.S. sections as well as active representation from Baton Rouge for Legislative co-ordination and from New Orleans for liaison with the State Board of Registration which has its meetings in that City.

The following members have been named:

Waldemar S. Nelson, Chairman.....New Orleans
Louis Duclos.....Baton Rouge
Lionel Cucullu.....New Orleans
Arthur Thigpen.....Monroe
Frank H. Coughlin .....Alexandria
Francis C. Sessums .....Baton Rouge
Emery Domingue .....Lafayette
Charles W. Stokes .....Lake Charles
O. T. Ice Jr. .....Shreveport

The Chairman of the Committee, Mr. Nelson, has requested that The Louisiana Engineer acquaint the membership of the society with the formation and purpose of the Committee. He further requests that members interested in the Engineering Registration Law forward any suggestions to the Committee at 1200 St. Charles Avenue, New Orleans 13, or care of the society's secretary, Mr. John P. Fernandez, 522 Crystal Street, New Orleans 24.

The State Board of Registration has already offered any assistance that may be needed in formulating plans for amendment to the Engineer Law.

Mr. Nelson advises that detailed consideration of the various suggestions made will be undertaken beginning in January.

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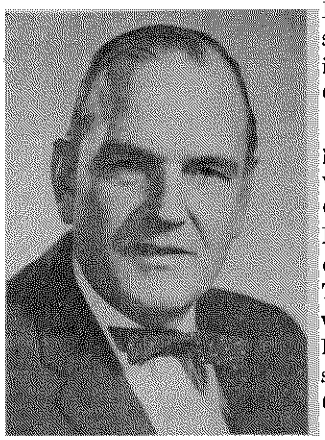
NSPE Official to Speak In Baton Rouge

LES Annual Meet Set Jan. 12-13

The past president of the National Society of Professional Engineers will be featured speaker at the Annual Meeting of the Louisiana Engineering Society next month.



HAROLD A. MOSHER

He is Harold A. Mosher, Associate Director of Engineering for the Eastman Kodak Co., Rochester, N. Y.

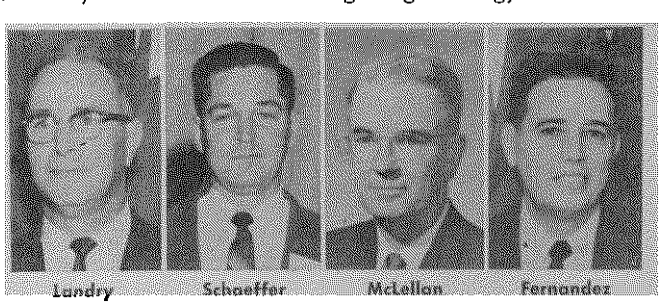
Five major papers will be presented at the meeting which is to be held at the Capitol House in Baton Rouge, Thursday and Friday, January 12-13, 1961. Theme of this year's meeting will be: "The Engineer—An Individual". All business sessions will be held in the Grand Ballroom.

Mr. Mosher has been a Vice-President of the National Society. A graduate of Occidental College at Los Angeles, he has been associated with Bell Telephone Laboratories in New York City, and Consolidated Film Industries in New Jersey.

Mr. Mosher has served as President of the Monroe County Chapter of the New York State Society of Professional Engineers, a member of the Board of Directors of both the State and National Societies, and a past chairman of the NSPE Membership Committee. He is a Fellow in the American Society of Mechanical Engineers and a member of the American Society of Air Conditioning and Ventilating Engineers, and is a past President of his local Board of Education.

Meeting officers are Henry Landry, Baton Rouge, chairman, and Herbert Schaeffer, Jr., Baton Rouge, vice chairman, Edward A. McLellan, LES president, chairman Ex-officio and John P. Fernandez, New Orleans, secretary-treasurer.

On Thursday, January 12 at 11 a. m., Mr. William Keister, Director of Switching Engineering, Bell Telephone Laboratories, Murrayhill, New Jersey will present a paper titled "Developments in the Field of Communications and How They Affect Engineers and Engineering."



Landry Schaeffer McLellan Fernandez

In the afternoon session of the same day, at 2 p. m., Dr. W. K. Lewis, Professor Emeritus at Massachusetts Institute of Technology in the field of Chemical Engineering, will discuss "The Place of Engineering in Society and Civilization."

General interest speaker at 7:30 p. m. Thursday will be Dr. W. Leighton Collins, professor of Electrical Engineering at the University of Illinois and Secretary of the University of the American Society for Engineering Education. His topic will be "Teaching Our Future Engineers.

On Friday, Jan. 13 at 10 a. m. Mr. Alvin B. Rubin, partner in the law firm of Sanders, Miller, Downing, Rubin & Kean, Baton Rouge, will present a paper on "Legal Liabilities in the Practice of Engineering."





Lewis Miller Rubin Keister

He will be followed at 11 a. m. by Dr. A. L. Miller, Head Office of Saline Water, U. S. Department of Interior, Washington, D. C., whose paper is titled "Water Problems of Today and Tomorrow."

Mr. Keister, who now resides in Short Hills, New Jersey, will find his Baton Rouge visit something of a homecoming as he is a native of Montgomery, Alabama, and graduated from Alabama Polytechnic Institute in 1930. He is a member of the American Institute of Engineers, Eta Kappa Nu, Tau Beta Pi and Phi Kappa Phi. With A. B. Ritchie and S. H. Washburn he is co-author of the book, "The Design of Switching Circuits" an outstanding contribution to the subject.

Mr. Keister has specialized in switching systems since joining the Bell Laboratories in 1930. He has done much work in the field of developing and testing long distance switching and signaling circuits with special emphasis on studies on relays and dial telephone switching systems. During World War II he taught theory and maintenance of radar equipment to military personnel. He began exploratory development of electronic telephone switching systems in 1952 and was appointed to his present post in 1958.

Dr. W. K. Lewis needs no introduction to the Engineering profession. Since his graduation from MIT in 1905 he has received merited recognition and honors from many universities and professional groups. He has been closely identified with MIT since joining the faculty as assistant professor in 1910. He became Professor Emeritus in 1948 and throughout a very distinguished career has made numerous contributions to modern society through his many published writings and his work on various government boards and other bodies. His own summary of his paper reads:

"The engineer tends to look on his work as technical in the narrowest sense, losing sight of its broader purpose and its relations and value to society as a whole. In consequence, he ignores functions vitally important to the social order which he is uniquely equipped to perform. The engineering profession must broaden its outlook."

One of the most distinguished attorneys in Louisiana and well known to many members of LES through his counsel on a variety of subjects, Alvin B. Rubin has been Visiting Professor of Law at LSU since 1946. He has chaired and served on various committees of the American Bar Association and the Louisiana Bar Association. As a prolific writer on legal topics his work has appeared in the American Bar Association Journal, Prentice Hall "Tax Ideas," Louisiana Law Review, Tulane Law Review and other journals. His paper will be of particular interest to all LES members since it deals with a subject of increasing timeliness, the engineer's legal liabilities in the practice of his profession.

Dr. A. L. Miller has a long and distinguished record of public service ever since his graduation from Loyola Medical College (Chicago) just prior to serving in the Medical Reserve Corps in World War I. In addition to extensive practice of his profession he has played a very active role in the political affairs of his native Nebraska, having served as the mayor of Kimball, his hometown; been a member of the Nebraska Unicameral Legislature, president of the State Medical Association, State Health Director and a Member of Congress from Nebraska for 16 years. During the 83rd Congress he was Chairman of the Interior and Insular Affairs Committee of the House.

He was appointed to his present post by Secreatry of the Interior, Fred A. Seaton in February of 1959 and is directing a research program for the development of low cost processes for converting saline water, both sea and brackish, to fresh water. It is notable that on April 11, 1960, the Department of Interior recognized Dr. Miller's long and fruitful public service and his outstanding contributions to the saline water conversion program by awarding him its highest honor—the Gold Medal Distinguished Service Award.

Bus trips to the Dow Chemical Co. plant at Plaquemine, La. and the Willow Glen Power Station of Gulf States Utilities Co. will be available.

The Meeting will close with annual cocktail party-dance starting at 8 p. m. and ending with a breakfast at 12:15 a. m.

Welcome to the

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Council Hears Chemical Chief

"Business leadership is not a science. It is a talent which management must learn to develop," Kerby H. Fisk told an audience of about 500 at the annual dinner

(see cover photo)

meeting of the Baton Rouge Council of Engineering and Scientific Societies at the Capitol House Oct. 25, 1960.

Fisk, chairman of the board and chief executive officer of Allied Chemical Corporation, spoke on "The Science of Business."

The speaker said he was becoming increasingly aware that the management of American businesses themselves is becoming a science. He pointed out that great similarity exists among all businesses.

"A corporation is but a collection of individuals," each with different talents, the Allied head emphasized. He said all the individuals should have one purpose; to do the best day-to-day job possible.

It's also necessary for individual and corporate efforts to be guided, the speaker said. Guiding those efforts is the responsibility of management, which Fisk called "bringing together individual efforts into a team."

"Corporate management has the responsibility for and must chart the course for the future," Fisk said.

He said that one of the biggest decisions management must make is how accumulating dollars should be put to work. Among the best ways to spend money is on new plant and new products, he said.

Fisk said that the problem of achieving a smooth-running organization is a problem of dealing with humans. Management must see that people are not miscast and must create team play, he said.

The Harvard graduate and businessman emphasized that a manager must have an understanding of the strengths and weaknesses of the other players on the team and be able to utilize the strengths and overcome the weaknesses.

The speaker stated that it is important to encourage creative thinking. "One of the fundamental needs is to take time out to think," he said.

Among the problems Fisk said exists today in the chemical industry and probably in most industries is the cost-price squeeze. He said that whether the present period is called a recession, a transition or even a depression, the fact remains that profits are being squeezed.

He said that sales are high, but costs are higher, particularly payroll costs. The unfortunate aspect of the situation, Fisk said, is that it is only the ability to earn a fair return that provides business with the dollars necessary for growth.

Management must seek for means to maintain profits, Fisk said. One method is a capital increase but it is not the only way, he pointed out.

Another way is to make more efficient use of plant and personnel, which is not an easy job, he warned. He said that Allied is continually encouraging individuals to think about their jobs.

The speaker was introduced by W. L. Epting, Jr., plant manager, Solvay Process Division, Allied Chemical Corporation, Baton Rouge plant.

Alexander introduced special guests and the presidents of the various societies which make up the council. The nine member societies are American Chemical Society, American Institute of Chemical Engineers, American Institute of Electrical Engineers, American Institute of Industrial Engineers, American Society of Agricultural Engineers, American Society of Heating and Air Conditioning Engineers, American Society of Mechanical Engineers, American Society of Safety Engineers and the Louisiana Engineering Society.

Council officers are Alexander, president; Henry G. Allen, vice-president and chairman of the annual meeting committee, and Gerald F. Kelley, secretary-treasurer.

Mayor-President Jack Christian presented Fisk with a key to the city and with a certificate making him an honorary citizen. Victor Ehr, executive vice-president of the Chamber of Commerce, also welcomed the guest speaker. The invocation was given by Very Rev. Msgr. Louis Marionneaux, pastor of Our Lady of Mercy Catholic Church.

Alexander presented a plaque on behalf of the council to Bill Holland, immediate past president, for the work he did during his term of office.

The council itself is composed of two men representing each of the nine-member organizations. Some 1,300 engineers and scientists are members of the organization.

(Continued on Page 41)

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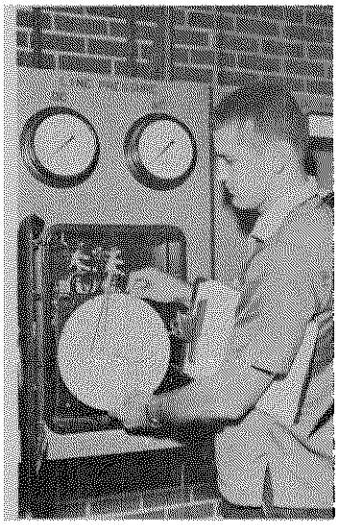
Six of One — Half Dozen of Another

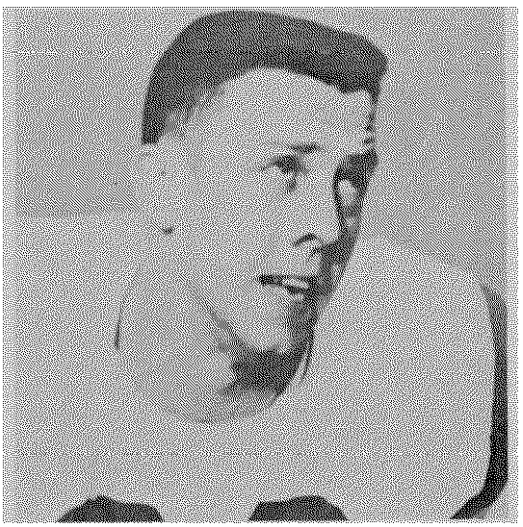
Engineering skill contributed substantially to the 1960 Southeastern Conference football season, particularly in a contest which saw Louisiana State University, national champions in 1958 and once-beaten in 1959, tie Ole Miss, nationally ranked No. 2 (by AP), 6-6.



Allen Green
. . . a mechanical

It was the talented toe of Allen Green, a senior in mechanical engineering, that saved the Rebels (10-0-1) from defeat at the hands of the Tigers.

And the crunching tackles of End Mickey Mangham, who caught the winning touchdown pass in the 1959 Sugar Bowl (over Clemson) and is a petroleum engineering student, helped keep the Rebels off balance.



LSU End Mickey Mangham
. . . petroleum engineering

It is more appropriate for The Louisiana Engineer to concern itself with Mangham, a 200-pounder from Kensington, Md., who is the Student Government Representative from the LSU College of Engineering.

His over-all average for three and a half years at LSU stands right at the "B" standard.

Mickey went to LSU without scholarship and tried out for the freshman team. He constantly outplayed the boys who were on scholarship, so at the end of his freshman year he was awarded a grant-in-aid.

Since that time he has started every game for LSU for the past three years and in 1959 was named to the All Scholastic All-America for his outstanding work both on the field of play and in the classroom.

In his three years with the Tigers, he caught 13 passes for 192 yards, but his chief forte was defense. He made few mistakes and contributed greatly to the wonderful defensive record compiled by the Tigers in that time.

Says LSU Coach Paul Dietzel: "We feel that he will be an outstanding contribution to the engineering field and know that he will be a success in anything he undertakes. He is a fine young man who made the most of the advantages offered by the Athletic Scholarship."

—o—

They're In The Right Place At The Right Time

The right time and the right place play important roles in the operations of Louisiana's only manufacturer of industrial cleaners.

By being a local operation, Malter Supply Co., Inc., 545 Magazine, New Orleans, offers savings of up to three weeks' delivery time, substantial freight cost reductions.

There are other advantages to the state's engineers, said Earl J. Mitchell, Malter sales manager.

"In making the decision to add industrial cleaners to our long-standing maintenance products," he said, "much consideration was given to building products tailored to do the specific job with regard to water hardness, atmospheric and climatic conditions. Down or cleaning time is expedited by materials characterized by fast drying time, emulsion time, distillation time, and so on, especially since labor still represents 95% of the cleaning dollar."

The local operation, too, has the advantage of on-the-scene personal contact with the cleaning problem. In its laboratories under the direction of Research Chemist James Tubre, Malter has developed: Malco 692L Solvent (Type A-H) for removal of hardened concrete from finished and unfinished metal with harming paint, for cleaning stainless steel equipment, for cleaning bricks and cement surfaces, for removal of light rust, for cleaning grout between tile, for cleaning swimming pools, etc.

Malco XL 99 Safety Solvent, with no flash point, no moisture content, a dia electric point of 32,000 volts, for cleaning metal, electric motors, etc. It has an M.A.C. of 500 ppm, and drying time of less than 30 seconds.

A Liquid Cold Stripper, to replace the hot tank method of soaking. It removes grease, dirt and paint.

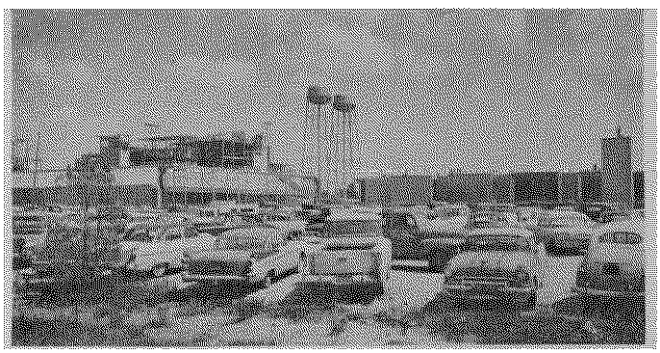
Degreasers and solvents to meet industrial requirements.

PCI Pipes Propylene To Hercules Plant

Keeping abreast—and ahead—of the ever-changing petrochemical market requires skill and ingenuity. Petroleum Chemicals, Inc. exhibited these traits at Lake Charles in preparing for the production of quality propylene, which will be piped across the highway to the Hercules Powder Co. plant now under construction.

The end result? Polypropylene plastics which will be produced by Hercules and made available to manufacturers in pellet form.

Propylene has been a by-product (capacity 60,000 tons a year) of the ethylene plant, but for Hercules' purposes the product had to be 99% pure. In boosting the purity



Propylene from Petroleum Chemicals Inc.'s plant will go to Hercules plastics plant (above), due for completion in January, at Lake Charles.

of its propylene PCI was able to greatly increase the value of the product.

High assay propylene will start streaming from PCI's plant in January next year, about the same time the Hercules plant will swing into operation.

To realize this purer product PCI had to install two new fractionation towers. Both are now added to its skyline.

The smaller tower, weighing 52 tons and standing 115 feet tall went on stream about Oct. 15. It will remove ethane from the propylene.

The larger tower, weighing 170 tons and standing 192 feet tall, was scheduled to go on stream around Dec. 1. It stands next to an older tower of the same size.

"In essence, the new tower sits on top of the first tower," said Robert B. Leibee, area chemical engineer. Leibee explained that the propylene will flow from the original tower to the second tower through a 24-inch vapor line.

Unusual aspects of the installation of the tower are:

- It was carried on two trailer trucks, one moving forward, the other backward.
- It was set in place in about 2½ hours.
- The ethylene plant will not have to be shut down to put the new towers on stream.

Many hours of careful engineering study were required before the tower could actually be hoisted into place. Built in Baton Rouge, the tower was moved to the plant on six railroad cars.

How to get it to the site? It was decided that building a railroad spur would be too expensive. The solution was that two trailer trucks were brought in from Houston (one had 16 wheels on its rear axles, the other had 32).

The tower was loaded on the trucks—and in about 30 minutes, with one truck moving forward and the other backing up to it, the tower was carried the 4 blocks to the site.

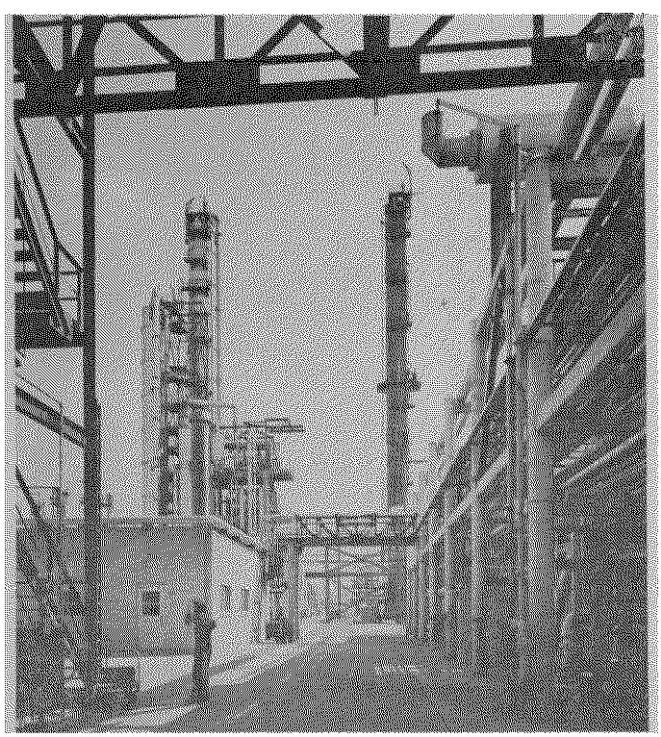
Here, on a hot August day, everything was in place for the big pull. Months ago the guy line locations and pole foundations were installed. An 80-ton crane was on the job. The lifting poles, requiring about 15 days to erect, had arrived the first week of July.

Since the base ring of the tower was so large, it had been cut into two sections for shipment, and now was rewelded on the tower foundation. As the rewelding was taking place, the auxiliary equipment was bolted or welded to the tower while it was on the ground, thus eliminating many hours of hoisting and rigging.

Everything had been planned to the last detail. Even to the valves leading to and from the tower. These were set in place during the ethylene plant turnaround last spring. When the tower is ready to go on stream, the valves will be opened to the tower, and other valves now operating will be shut.

In this way, it will not be necessary to shut down the entire plant when the new large tower is ready for operation. The same is true of the smaller tower.

Engineering for the new tower installations was done by the Lummus Co., with headquarters in New York, which also designed the original ethylene plant. Contractor was the Augenstein Construction Co. of Lake Charles.



(Photos, courtesy PCI Exchanger)

Purity of propylene is improved by 192-foot tower (above, right) at Petroleum Chemicals, Inc.

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Lake Charles LES Section Nominates Officers
Vincent Proposed To Succeed Stokes

The Lake Charles Section of the Louisiana Engineering Society has nominated Bailey Vincent for its 1961 president, to succeed Charles W. Stokes.

Other nominees submitted for consideration at a November meeting were Gus Quinn, Vice-President, and James Derr, Secretary-Treasurer.



Bailey Vincent



C. W. Stokes

A high level of professional interest and activity in the Section is reflected in a listing of its events in the past year.

Speakers before the Section included: James W. Martin, Beaumont, Merrill Lynch, Pierce, Fenner & Smith, "Investment Objectives"; Capt. Albert J. McGill, Chennault AFB, "The Strategic Air Command Becomes An Aerospace Force"; W. P. Heineman, Shreveport, United Gas Pipe Line. Co., "Some Trends in Modern Pipe Line Engineering"; Edward A. McLellan, New Orleans, president, Louisiana Engineering Society; C. J. Gotthardt, Norwood, Mass., Vice-President, Wilber & Williams Co., who spoke on Specialized Coatings, particularly in the Epoxy Resin field; Lt. G. E. Thomas and Lt. W. J. Lekki, Weather Detachment, Chennault AFB, "Weather Instrumentation; J. H. Steward, Industrial Radiography Laboratory, "Destructive and Non-Destructive Testing in Relation to Engineering Problems"; Allen Johnson, New Orleans, Public Relations Counsel, Louisiana Engineering Society, "The Engineer and Public Relations."

The year's events included a tour of the Gulf States Utilities Company's Roy S. Nelson Station and an August outing. Refreshments were served at the close of a number of meetings by the ladies of the LES Auxiliary.

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Diplomas Due In June

McNeese State College in Lake Charles will produce its first graduate engineers in June, 1961, the results of a general engineering program that has been developing since 1950.

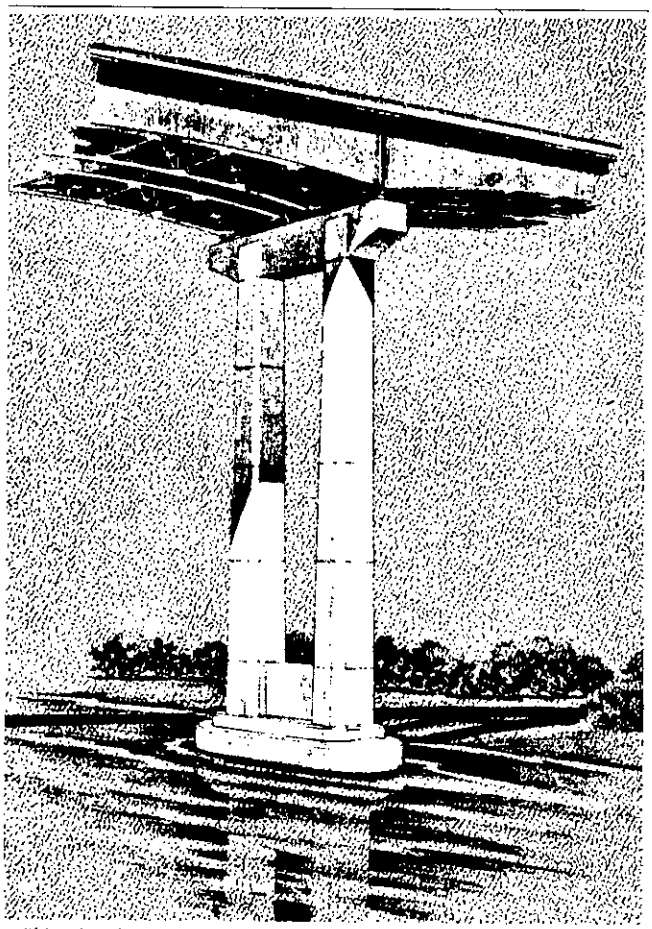
Prof. Miller Clarkson, head of the physical sciences and engineering department and an LES member, said that some 360 students are now participating in the program.

"It has generated considerable interest in the community," said Clarkson, who teaches an introductory course in general engineering and courses in engineering mechanics and surveying. "When we have obtained accreditation, we hope to establish an LES student chapter."

The McNeese Engineering Society, he said, is an active group, with speakers from LES and other engineering societies. It won second prize for its 1960 Homecoming parade float design.

Harry Miller was this year's recipient of an award presented by the LES Woman's Auxiliary, which also sponsors an annual formal dance for engineering students.

Serving with Prof. Miller, head of department, are John Fridge, a Cities Service Corp. employe; Richard Sullivan, petroleum engineering; James F. Williams, mechanical; Frank Rolufs, electrical, and Mrs. Montez Beard, lab assistant, chemical engineering.

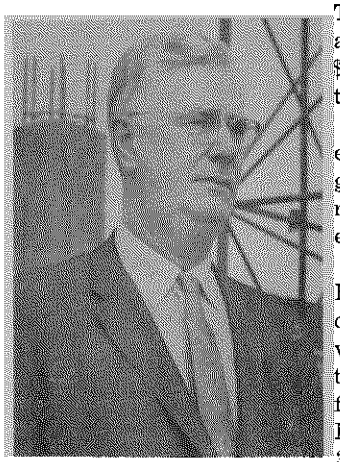


This pier design was selected for the new Calcasieu Ship Channel Bridge at Lake Charles. For overall view, see Pages 22-23.

McNeese Gets New Library

By GUS G. QUINN, P. E.

McNeese State College in Lake Charles, with a present student enrollment in excess of 2,700, has as its top priority the construction of a modern collegiate library. The state legislature in 1959 appropriated the sum of $800,000.00 for the construction of the building.



G. G. Quinn

After preliminary conferences, studies, and flow diagrams, the space requirements for the library were established as follows:

Shelving and Storage—Books, 100,000 volumes; microfilm in cabinets, 25,000 volumes; phono records and tapes, 5,000 units; 16mm films: Materials center, 400; Regional Film Library, 3,000; Film strips (in cabinets), 1,000; Slides (in cabinets) 1,000; for a total of 135,400 units.

Seating for 652 people as follows: Reading Rooms: Reference Room, 187; Materials Center, 116; 2nd Floor Open Study, 111, for a total of 414 people.

Special Rooms and Facilities: Preview and Conference Rooms, 25; Preview Room (Film) 8; Preview Room (Film Strip and Slide) 6; Microfilm Room, 5; Seminar Room, 9; Multi-Purpose Room, 90; McNeese Room, 35 people.

Faculty Study, 20; Studio and Listening Room, 8; Listening Stations, (turntables and headphones) 32, for a total of 238 people.

Staff and Service Areas—Technical Services, Librarian, Library Science Office, Film Library, Circulation, Reference, Periodicals—Documents; Staff Service, Control Center, Washrooms, Air Conditioning Machinery, Elevator, Janitor.

Equipment—Microfilm and Microcard Readers, 5 units; Projectors 16 mm, 3 units; Projector (film strip-slide), 3 units; Projector (opaque), 1 unit; Turntables, 32 units; Headphone Sets, 32 units; Rack with Recording Equipment and Public Address System (6 channels), Antenna (T. V. Commercial and AM-FM Radio), Television Facilities (Origination and Receiving) Projection Screens, Library Stacks.

The building as finally evolved is a two-story reinforced concrete structure, resting on concrete pile underreamed footings. Masonry and curtain wall construction is used to architectural requirement. Provision for future

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MR. QUINN, vice-president-designate for the Lake Charles section of LES, prepared this article specially for this issue. He is associated with Dunn & Quinn, Architects and Engineers.

A Cordial Salute to the Engineers

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Civil - Mechanical - Mining - Petroleum - Chemical - Electrical
Agricultural - Industrial - Safety Engineering

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LAKE CHARLES, LA.

expansion of floor areas on each floor will be to the south, horizontally.

Unit size of typical library shelving established the module of the building. Columns are spaced 22'—6" c. c. both ways. The building contains 42,239 square feet and typical ceiling height is 10'10".

The structure of the building was selected to be typical flat slab construction as this type seems to be ideally suited for library construction, i. e.,

(1) Fairly heavy live loading (125 p.s.f.).

(2) Availability of vertical space between finish ceiling and finish floor for air conditioning ducts, recess light fixtures, etc.

(3) Sufficient density (7½" thick slab) to reduce floor to floor noise to a minimum.

4000 p. s. i. concrete was specified for columns and 3,000 p. s. i. concrete used for floors and other structural members. Pozzolith admixture was used to reduce honeycombing and increase workability of concrete.

The foundation selected was drilled piling with the bottom underreamed at a depth of 25 feet below ground. This put the entire bell of the footing well within the Beaumont clay. Casing of the hole was specified to seal off the water bearing sand. As the footing was poured, the casing was pulled. The entire operation went off smoothly and uneventfully. A safe bearing value of 4,000 p. s. f. was used in footing design and footings balanced for dead load only. The largest underream diameter is 9'6". Due to the nature of the underreaming equipment, each footing shaft has a diameter of 1/3 the underream.

Electricity for the campus is obtained from Gulf States Utilities Company sub-station located on the campus and is distributed underground by a 2400-volt, 3-wire Delta system.

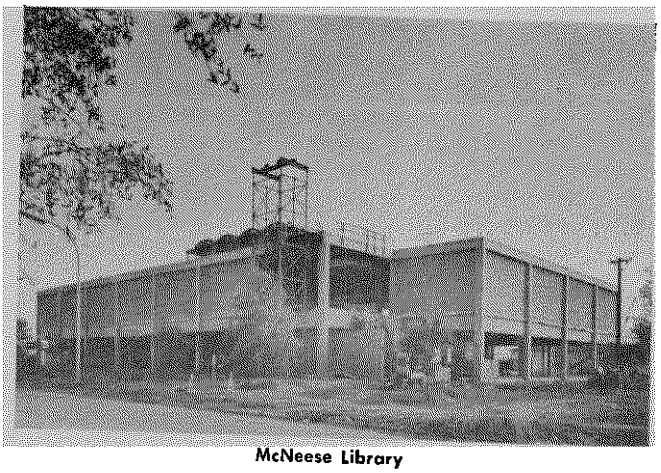
The building is air conditioned and is provided with humidity control. Attention was given to roof insulation and building construction for reduction of summer heat gains and proper allowance made for lighting, solar load, occupancy and ventilation.

Each floor is provided with an air handling unit and return air is sound baffled. Attention was given to selection of ceiling diffusers for low decibel rating. Ducts are acoustically lined for reduction of air noises.

Equipment is located in a penthouse on the roof. Heating for winter and re-heat is obtained by gas fired low pressure hot water boiler with boiler water temperature varying with outdoor temperature. A system of electronic controls is provided and the system is entirely automatic being scheduled summer and winter by time clock.

The air handling units are located on their floors practically over each other and the penthouse immediately over them. This influenced the selection of electric motor driven reciprocating compressors, one for each floor and using Freon 22 refrigerant. Compressor characteristics are 440/60/3 1725 RPM. Capacity 63.0 tons at 42.7 Deg. F. Suction Temperature and 120.5 Deg. F. Condensing Temperature. Each compressor is hermetically sealed, provided with crank case heaters, and three step capacity modulation.

Air cooled condensers are used and cool weather head pressure control is effected by dropping out condensing units automatically on head pressure schedule. Two condensing units are provided for each compressor and they are roof mounted immediately outside the penthouse. They discharge vertically and are driven by 3.0 hp 440/60/3 1750 rpm, ball bearing electric motors.



McNeese Library

Air handling units are multizoned, vertical discharge, provided with hot and cold deck dampers for complete temperature and humidity control. Each unit will handle 20,000 cfm against 1½" static pressure. Six row DX cooling and 1 row hot water heating coils are provided. Filters are low velocity 2" thick permanent type, open pore Urethane.

An open specification was written for air conditioning equipment. The Contractor has elected to furnish all equipment manufactured by the Trane Company, La-Crosse, Wis.

The McNeese Library is scheduled for completion in the Summer of 1961. General Contractor is Bartley, Incorporated of Lake Charles and New Orleans.

McNeese State College is one of the State Colleges under the administration of the Louisiana State Board of Education. Its president is Dr. W. N. Cusic. Associate Professor Samuel J. Marino of the Library Staff of McNeese assisted in establishing space requirements and schematic flow diagrams. The program is coordinated by the State Board by Mr. Charles J. Perrilloux, Supervisor of College Plants & Grounds. Dunn & Quinn, Lake Charles, La., are Architects and Engineers for the project.

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F. Shutts' Sons Began In 1887

Lake Charles Has La.'s Senior Firm

The engineering firm of F. Shutts' Sons is probably one of the oldest in the United States, having been established at Lake Charles, Louisiana by Frank Shutts in the year 1887. It has been in continuous residence there ever since. It first held membership in the Louisiana Engineering Society about 1907.

Frank Shutts, who received his technical education at Ames College, Iowa, took as his partner and professional associate, his wife, Adelaide Hayes Shutts. Mrs. Shutts, a native of England, had received a most unusual education for a woman of her day—mathematics and drawing. She accompanied him in the field on surveys and construction work and handled his drafting, calculations, estimates and other work. In the year 1899, she assisted Professor P. H. Philbrick, former Dean of Engineering at the University of Iowa, in preparing and publishing a book on Civil Engineering.

The first engineering activities of the firm consisted largely of railroad location and construction. Frank Shutts handled the location and construction supervision on what is now the Missouri Pacific Railroad from Alexandria to Lake Charles, including the Lake Charles terminals of this railway. As Division Engineer of the Kansas City Southern Railroad, he supervised the building of their line into Lake Charles and the construction of the Lake Charles yards; also the present steel bridge across the Calcasieu River. His firm located the Opelousas-Baton Rouge branch of the Missouri Pacific Railroad from Opelousas to Port Allen on the West bank of the Mississippi River. A great portion of this line was through the Atchafalaya swamp.

In 1899 and 1900, the firm handled a reconnaissance and location of what is now the Rock Island Railroad through Indian territory and Oklahoma. Since that time it has constructed hundreds of miles of industrial railroad and main line extensions.

From 1890 to 1910 it designed and built practically every major irrigation system in Southwest Louisiana, including the first one ever built in this area. In the year 1910, Frank Shutts altered the name of the firm from F. Shutts to F. Shutts and Sons, taking into partnership his three sons. In 1928, upon his death, the name was changed to F. Shutts' Sons and has remained that way for more than 30 years.

Character of Engineering Work Performed by F. Shutts' Sons: The original activities of the engineering firm were confined largely to railroad location and construction, irrigation and drainage projects, tram road construction and logging operations for the various saw mill companies then operating in Louisiana and Texas.

In 1912 the firm handled the engineering for the Parish (County) of Calcasieu from which position they resigned in the year 1948, after thirty-six years of continuous service. During this period it supervised the construction of over $5,000,000 worth of gravel, shell, brick and concrete highways and bridges. From 1923 to 1926 the firm designed and supervised the construction of the original Lake Charles—Calcasieu Parish ship channel from Lake Charles to the Gulf of Mexico by way of Orange and Sabine Pass. The total cost of this project to the taxpayers was approximately $5,000,000.

In 1925, the firm was appointed engineers for the Port Authorities of the Port of Lake Charles and has continued in that capacity ever since, having had full charge of the design and supervision of construction of all Port facilities on the Calcasieu River, now valued at over $20,000,000.

From 1935 to the present time it has acted as Consulting Engineers for every major industry located in Southwest Louisiana. It performed the following services for these industries:

1. Recommendation of site and purchase of property.
2. Topographic and hydrographic surveys.
3. Soil investigation and recommendation on foundation design.
4. Design and supervision of construction of all marine terminals for all of the industrial plants located.
5. Design and supervision of construction of portions of many of these industrial plants.

These plants now represent a total aggregate investment of over $1 billion.

During the period of World War II it served on the National Defense Council for the State of Louisiana and in this capacity acted for the Defense Plant Corporation in assisting in the development of war industry.

One member of the firm served for eight years from 1940 to 1958, on the Advisory Board for the Department of Highways for the State of Louisiana, and later served as a member of the Board of Commerce and Industry for the State of Louisiana. He was also Chairman of the Committee for Economic Development for Southwest Louisiana. and is listed in "Who's Who in Engineering in the United States."

Pipe Line Work: In 1901 the engineering firm located and supervised the construction of the H. H. Rogers pipe line from the Evangeline Oil Field to Sabine River. This was the first pipe line constructed West of the Mississippi River. Since that time it has served all of the major oil and gas companies and has located thousands of miles of pipe line for the transportation of petroleum and petroleum products.

Work Performed for the United States Government: The firm has served various government agencies on construction work in numerous capacities—in charge of dredging on intercoastal waterways; the construction of railways and war plants for the Defense Plant Corporation and the War Assets Administration; the United States Corps of Engineers on the design and supervision of construction of air bases; the United States Navy, Bureau of Yards and Docks, on the design of the Orange Naval Berthing Project and various installations along the Calcasieu River at Lake Charles.

Airport Experience: The firm of F. Shutts' Sons have been active over a number of years in the design and construction of various municipal and federal airports,

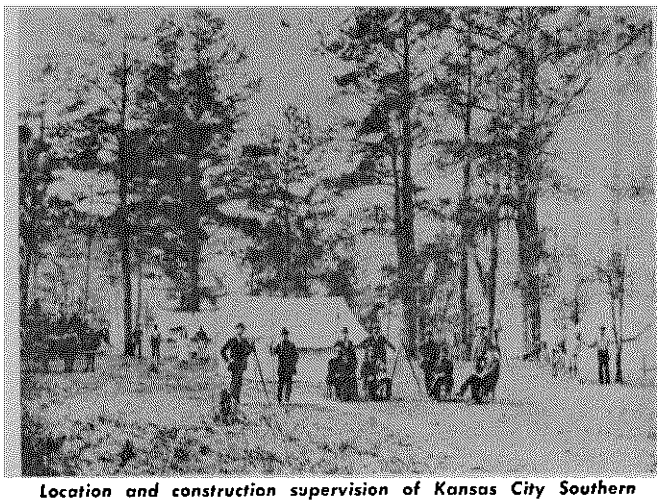
having designed and supervised the construction of the following:

1. 1917—Gerstner Field, Lake Charles, Louisiana, topographic work, grading, drainage, foundation work.
2. 1926—American Airways Landing Field South of Lake Charles.
3. 1932—New Orleans Airport on Lake Pontchartrain. The firm was employed by the Standard Dredging Company as Consulting Engineers on the construction of the lake front fill, seawall and the airport during the entire course of construction on this project.
4. 1936—Construction of Calcasieu Parish Airport East of Lake Charles.
5. 1937—Construction of the DeQuincy sod airport.
6. 1941-1942—Design and supervision of construction of the Lake Charles AF Fighter and Light Bomber Base under the United States Corps of Engineers, New Orleans District. On this project it handled the design, grading, drainage, reinforced concrete runways, and the activated sludge sewerage disposal plant for the base. The total cost of this project was approximately $7,500,000. It handled the acquiring of all property for this base through the Parish of Calcasieu, who later leased it to the United States Government.
7. 1948—Designed and supervised construction, Jennings Airport for the Parish of Jefferson Davis.
8. 1951—F. Shutts' Sons handled the design, specifications and assisted in the award of the contracts for the Lake Charles Air Force Base, for the strategic air command. Its portion of this construction work covered approximately $10,000,000 worth of work and was performed under contract with the United States Government, through the Corps of Engineers, Galveston District.
9. 1955-58—It handled the siting and design of a $30 million Naval Auxiliary Air Station at New Iberia, La.

During the year 1945 it was given the contract by the 8th Naval District, New Orleans, Louisiana, and designed and prepared specifications, prepared estimates and advised on the award of contract and later prepared final as-built drawings on the Fleet Berthing facilities located at Orange, Texas on the Sabine River. The amount handled by the firm on this project totaled approximately $4,000,000 and included the supervision of the dredging of the ship basin as well as the design of the berthing facilities.

Sanitary Engineering: The firm has made a special study of sewerage disposal and sanitary engineering over a number of years and has designed and supervised the construction of the following collection systems and treating plants.

1. Lake Charles Army Air Base Disposal Plant.
2. City of Lake Charles, 6.1 million gallon activated sludge disposal plant.
3. Sewer collection system for the City of Lake Charles.
4. Collection system and activated sludge treating plant for the Federal Housing Authority for the City of Maplewood.
5. Collection system and lift stations for the City of Port Arthur, Texas.
6. 8.3 million gallon treating plant for Port Arthur, Lakeview and Griffing Park.
7. Design of sewer collection system for South Lake Charles.
8. Design of treating plant "B" for South Lake Charles.
9. Design and supervision of construction to double size of Treating Plant "A" for First Sewerage District of City of Lake Charles.
10. Design and supervision of construction of 3¼ million gallon disposal plant for City of New Iberia.



Location and construction supervision of Kansas City Southern Railroad into Lake Charles (1896) was early Shutts project.

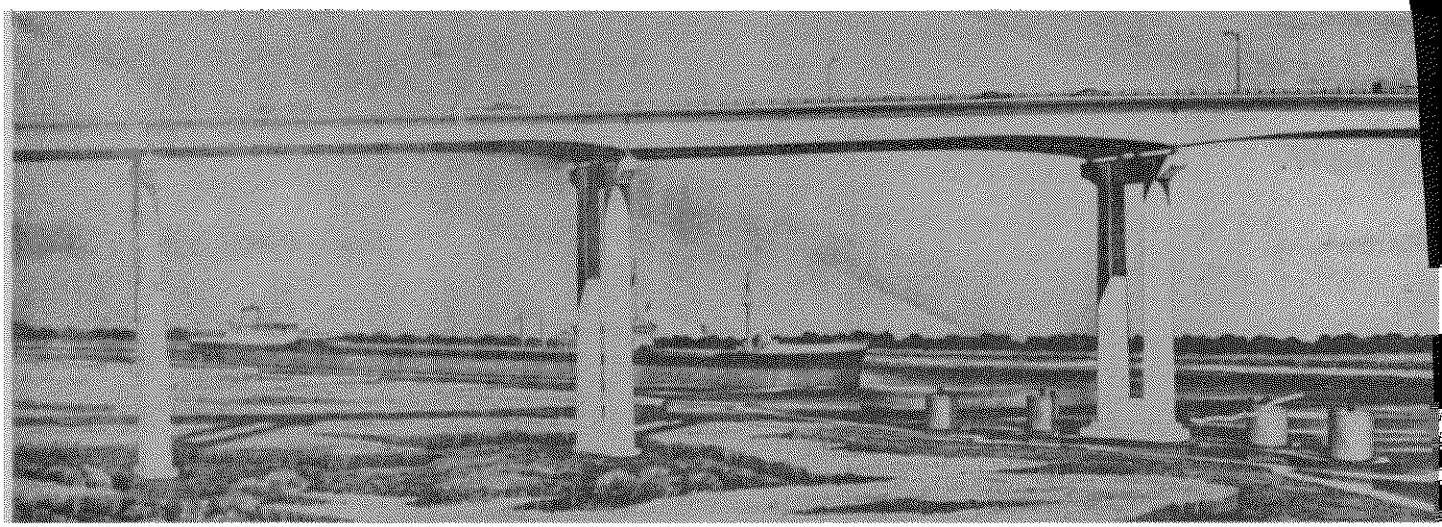
The Lake Charles firm designed and supervised construction of all foundations, marine terminals, railway tracks and designed the concrete structures (including post stress concrete beams) and buildings for the $20,000,000 Lone Star Cement plant.

It has designed marine terminals for the Lake Charles Harbor and Terminal District, Kelly-Weber Fertilizer Plant, Continental Oil Company, Olin-Mathieson Chemical Co., Columbia-Southern Chemical Corporation, Cities Service Refining Corporation, Magnolia Petroleum Company, Union Sulphur Company, Davison Chemical Company, Shell Petroleum Company, Standard Oil Company, Bureau of Yards and Docks, W. T. Burton terminal and many others, also all facilities for the Port of Lake Charles.

The engineering activities of this firm have been so varied and so numerous during the past seventy-three years that time and space does not allow their complete coverage and only a few of the major activities can be recorded here.

Present Activities of the Firm: At the present time the work of this firm is being supervised by three co-partners, namely, Fred Shutts, Elmer Shutts and Harry Shutts. These three partners were born in the engineering business and received their technical training at Georgia Tech and Wm. M. Rice University.

Engineering A New Span To Per



Under construction at Lake Charles is new Calcasieu Ship Channel Bridge (above); ←

(Special to The Louisiana Engineer)

BATON ROUGE—Construction projects now underway or projected on the big Interstate Highway program in the Lake Charles area will call for an expenditure of some $45 million, Highway Director Ray W. Burgess reported.

Burgess said the highway department is rushing ahead as fast as possible on the Lake Charles Expressway (I-10) route as well as the By-Pass Route through the highly congested urban areas.

On the By-Pass Route, Burgess said, construction is now underway on the bridge foundation of the main crossing of the Calcasieu Ship Channel at a cost of $1,135,000, for the superstructure of this bridge.

The first section of the By-Pass Route through Lake Charles will extend from the Lake Street area to an interchange located on Interstate-10 near Maplewood Overpass. This project will be let in several contracts, Burgess said, including the following designations and estimated costs: West Approach Bridge, $6,300,000; East Approach Bridge, $5,500,000; West Approach Roadway, $2,400,000; and East Approach Roadway to Lake Street, $2,100,000.

The highway director said that rights of way for the By-Pass section from the east end of the bridge now under construction to Lake Street, and the strip of right of way required for the south frontage road between Lake Street and Creole Street will be purchased within approximately eight months. Rights of way for the connection between the west end of the bridge and the Interchange at Interstate-10 will be purchased during the 1961-62 fiscal year, Burgess explained.

He said the third phase of the By-Pass, extending eastward from Creole Street, will be deferred to later stages of the Interstate Program, and it is anticipated that no rights of way will be acquired in this area within the next five years.

Burgess said the stage construction as planned by the Department of Highways will establish a functioning route on the By-Pass to relieve the congested traffic in Lake Charles until the entire giant program is completed.

At the same time, the highway director disclosed that work is forging ahead on the main artery of the Interstate through Lake Charles.

Almost complete, he said, are three construction contracts from Sulphur to Westlake which tie into the four-lane existing pavement on the west side of the Calcasieu River bridge. The three projects on this section include: Westlake Interchange $2,651,000; grading and paving, $2,690,000; and structures and interchanges, $2,963,000.

In addition, another $1,592,000 improvement within the city of Lake Charles is for the construction of two big railroad overpasses. Still another project includes the construction of grade separations over five city streets as well as another Railroad Overpass, costing a total of $2,466,637. Also underway is a project for grading of the roadway to the beginning of the proposed U. S. 171 Interchange at a cost of $1,168,790.

The paving job on the above roadway from a point east of the Lake Charles bridge to U. S. 171 is expected to to cost another $2,000,000. This project will begin upon the completion of the grading and structures, Burgess said.

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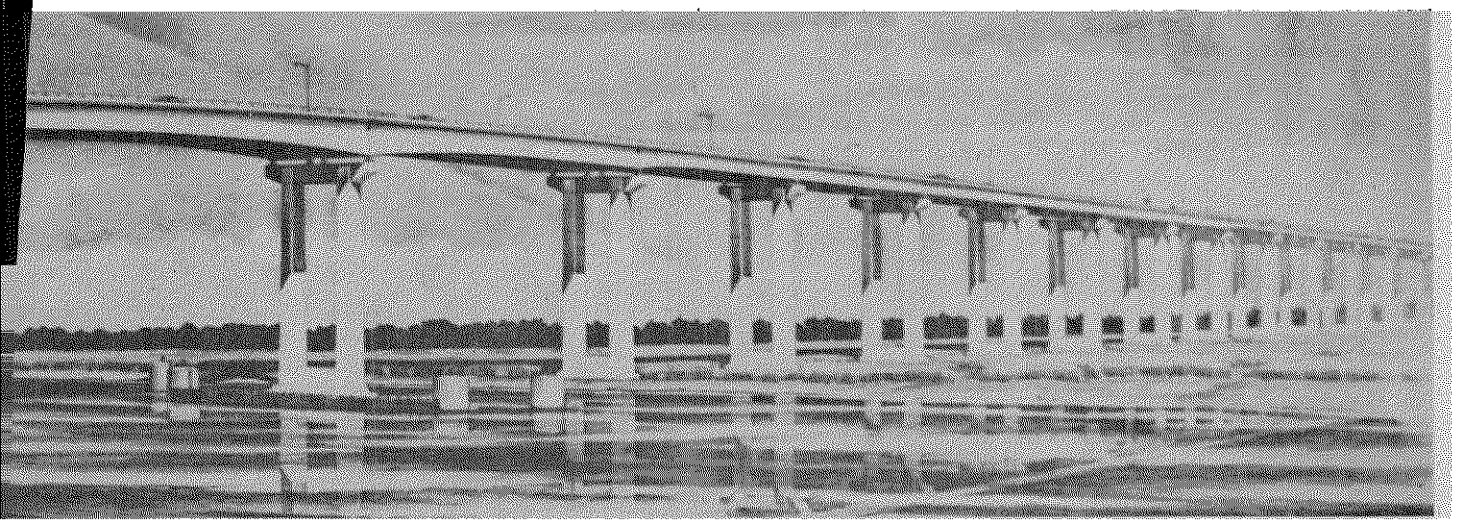
Greater Lake Charles Expansion



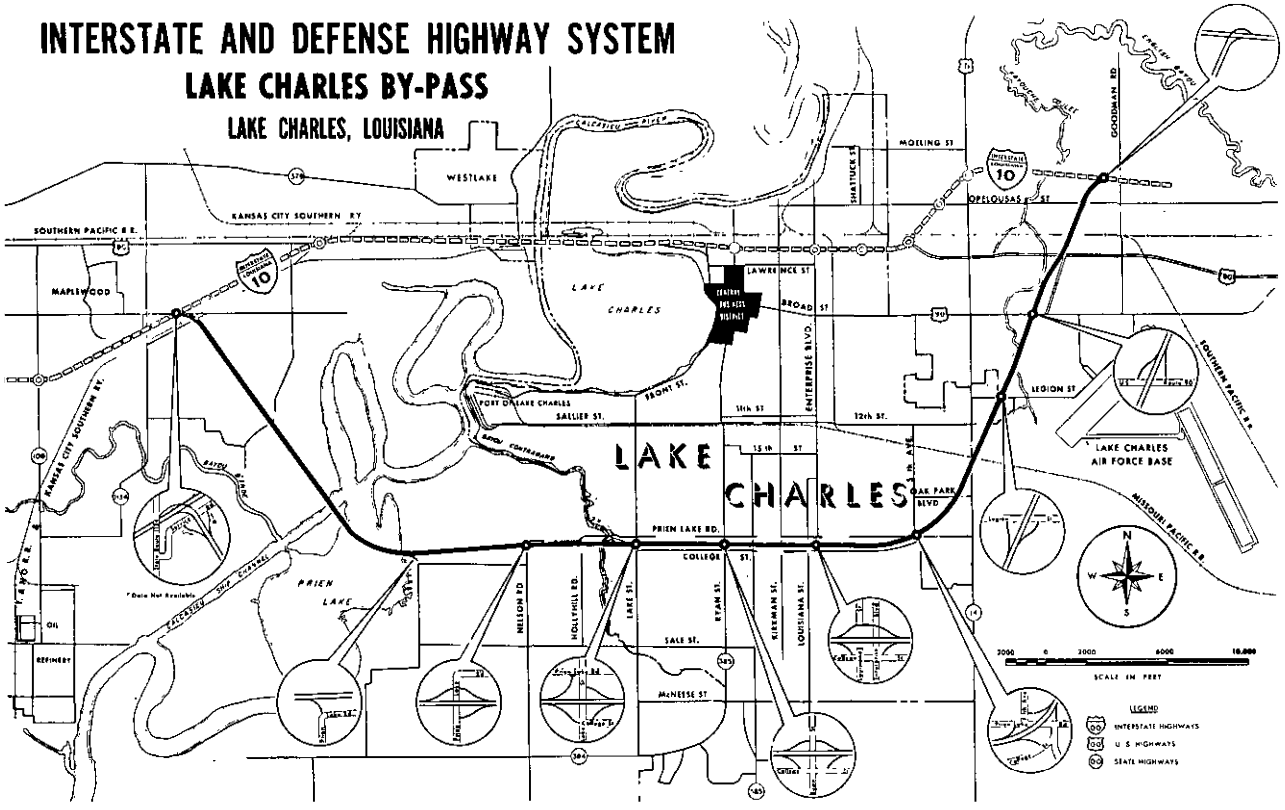
work underway will broaden, deepen channel and give supertankers access to port.

The highway department plans to receive bids on the construction of the U. S. 171 Interchange in January, and this project is expected to cost approximately $1,-500,000, the director pointed out.

Bids were received Nov. 30 for a 5.6-mile section of the Interstate from the east end of U. S. 171 Interchange east of Chloe, and for a 5.8-mile section from Chloe to the Junction with U. S. 165. Estimated costs of both these projects is $8,000,000, Burgess said.

The highway director said that with the completion of these projects, the Lake Charles area will have one of the most modern superhighways in the nation. Winner of a bid to furnish concrete for an initial phase of the work was Flenniken Construction Co.

District engineer with over-all jurisdiction of Lake Charles Area is L. D. McCorquodale. Bridge construction engineer in charge of these projects is P. P. Angiér and project engineer is Hampton Primeaux.



Map shows new Lake Charles By-Pass, projects totaling $45 million.

Engineer Makes Historic Port Report

By ELMER E. SHUTTS
(Port Engineer, Port of Lake Charles)

The history of the development of the Port of Lake Charles and of navigation on the Calcasieu River, I am sure, would reach back to the days of the early Spanish Explorers. Jean Lafitte reportedly made one of the first improvements by hand digging the Clooney Cut-Off at the West end of the present port facilties, in order that he might come into Lake Charles by skiff to get supplies, leaving his schooner just below this ditch at the mouth of a bayou, which became known as Contraband Bayou, where many people have since dug for buried treasure.

The first official definite information, however, that we have was reported by the old New Orleans Picayune on May 18, 1879; under the following caption on the front page under Washington date line appears the following:

"Lake Charles Proposed as a Port of Entry."

"Mr. Acklen has reported to House Committee on Commerce the bill to make a port of entry at Lake Charles and has been directed to report the bill to the House and put it on its passage during the morning hour."

The original paper is being filed herewith with the archives of this Society here in the Library. I am reading from an enlarged photostat as the original paper is in such a delicate condition.

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National Bank

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Kinder, La.
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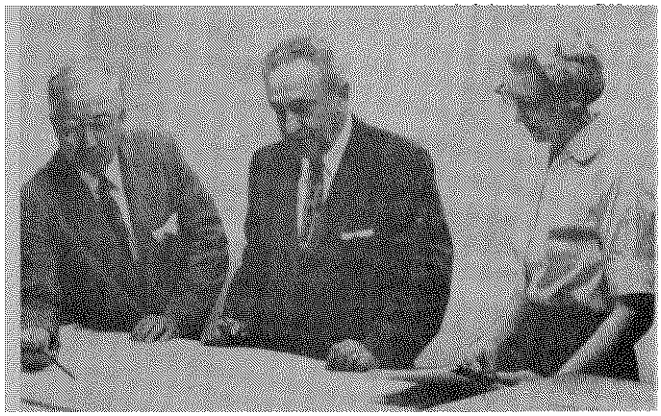


Port Engineer Elmer Shutts and President of the Board of Commissioners, Maurice Kushner, review plans for new construction.

In 1887, J. B. Watkins proposed the construction of a port at Cameron and projected his railroad through the marshes to its location. Through inability to finance the project, it failed.

On January 26, 1892, the Lake Charles Press contained the following report:

"The Board of Trade was organized under the laws of the state of Louisiana relative to the organization of corporations, by formal charter dated January 26, 1892. "The objects and purposes are declared to be, to promote the interests of commerce and trade, and increase the facilities and amount of the business of the City of Lake Charles and the parish of Calcasieu, and to further all measures requisite for the public utility and advantage attendant thereon."

"Immediately upon its organization, the Board took in hand the improvement of Calcasieu Pass. The president, Mr. H. C. Drew and Prof. S. Knapp went to Washington as a committee from the Board of Trade, and through their efforts and presentation of our advantages and needs before the Rivers and Harbors committee, secured an appropriation of $100,000 for the improvement of our harbor. In 1890 there had been an appropriation of $75,000 for this work, but it was deemed too small an amount with which to begin operations economically, and was accordingly held until the appropriation of 1892 became available. This work of improving our harbor is deemed of prime importance by the Board, and they are pledged to their best efforts to hasten the project until a satisfactory depth of water is secured.'

Again in a Special Edition of the Lake Charles Press, 1895, a fairly complete report on Calcasieu River Pass is given, a portion of which consists of:

"Improvements in the mouth and passes of Calcasieu River, a stream, let it be noted, navigable for 105 miles from its mouth, began as long ago as 1874,

This article is abstracted from a paper read by Mr. Shutts before the Southwest Louisiana Historical Society at Lake Charles. Mr. Shutts is associated with firm that has held LES membership since 1907.

but in a small way. In that year and again in 1882-83 cuts were made through the bars in Calcasieu Lake above Calcasieu Pass, resulting in a dredged channel 70 feet wide and 7,500 feet long. In 1886 two revetment walls were built. This pioneer work, while beneficial to the degree of affording a sufficient depth of water to permit lumber craft reaching the pass through Calcasieu Lake, is insufficient, and awaits further completion. That Calcasieu Lake is susceptible of deep channeling is agreed by all engineers, and with expected and practically assured appropriations such channel will be secured.

The contract for building one of the two jetties supplying deep water over the bar at Calcasieu Pass was completed by Messrs. Clarke & Co., contractors, in July of the present year. Prior to the building of this, the east jetty, fleets of schooners and sailing craft frequently anchored for days outside the pass, waiting for favorable tide upon which to cross. With the benefit already received all vessels now in commission for the lumber trade at this port said over the bar."

On May 22, 1909, a report was made by the subcommittee of Deep Water Committee of the Lake Charles Board of Trade composed of Rudolph Krause, Sr., D. R. Swift and Frank Shutts, founder of the firm of F. Shutts' Sons. On their map is shown a projected location for a Ship Channel along the West side of the lake. This location was the only one originally projected for the Kansas City Southern Railway and follows closely the route of the present direct channel from Lake Charles to the Gulf.

From 1909 to 1921 little progress was made on the Ship Channel. The effort of Lake Charles in promoting navigation was largely devoted to assisting in securing Federal appropriation and purchasing and furnishing to the Government rights-of-way on the Mermentau to the Sabine Intercoastal Canal.

In 1921, upon the refusal of the Federal Government to assist in a ship channel out Calcasieu Pass, Lake Charles made the decision to vote a bond issue and construct its own channel along the intercoastal location West to the Sabine; thence, down the Sabine Channel by way of Port Arthur to the Gulf. Three Million Dollars worth of bonds were issued by Calcasieu Parish and work began on this Channel in 1924, after the Supreme Sourt had set aside an injunction attempting to prevent the collection of taxes to service the bond issues. This channel was completed in 1926.

Industries

Since November, 1926 when the Port of Lake Charles was formally opened, permanent industries worth more than $1 billion dollars have been erected on the Calcasieu River Ship Channel. Many of these are national industries which have surveyed many areas of the country and have been led by the many natural advantages available to establish their plants in the Lake Charles Harbor and Terminal District. Included among these are the following: Olin Mathieson Chemical Corp., Columbia-Southern Chemical Corp., Continental Oil Co., Cit-Con Oil Corp., Cities Service Refining Corp., Magnolia Docks, Firestone Tire and Rubber Co., Davison Chemical Co., Union Sulphur Terminal, Kelly-Weber Fertilizer Plant, W. T. Burton, Shell Oil Co., Magnet Cove Barium Co., Continental Black, Inc., Gulf Menhaden, Calcasieu Shipbuilding Co., Lone Star Cement Corp., Ideal Cement Corp., Petroleum Chemicals, Inc., Constock Liquid Methane Corp. and Hercules Powder Co.

Future Plans

The Port of Lake Charles is already a bustling thriving gateway to midcontinent United States and future plans envision many additions and improvements of service to shippers. Work, now in initial stages, will improve the Calcasieu River and Pass Ship Channel by deepening it to 40 feet and widening to 400 feet. This improvement will enable the Port of Lake Charles to handle even the largest tankers afloat without interfering with the movement of freighters up and down the Channel.

Under construction now, and soon to be completed are new wharves with covered transit sheds, able to berth two additional ships. Three 400-ton storage tanks have been built with necessary boilers, pumps, etc. Other new projects include a bulk dry material unloading facility to handle ores of all kinds and bulk dry chemicals; a barge terminal which could handle trans-shipment of bulk dry cargoes from barge to ship or from barge to rail cars; and an industrial canal which would provide waterfront sites which could be leased out to industries who need barge facilities.

The future is bright indeed.

We Extend

Season's Greetings

to Louisiana's Engineers

●

May they continue to build for tomorrow on the firm foundations of the past

●

OLIN MATHIESON CHEMICAL CORPORATION

CHEMICALS DIVISION

LAKE CHARLES PLANT P. O. BOX 2896 LAKE CHARLES, LA.

Gulf States Puts Kilowatts To Work

Roy S. Nelson Station is designed to allow the eventual installation of 1,000,000 kilowatts of electric energy to help keep things humming in fast-growing south central Louisiana and southeast Texas.

The new power station is an important part of Gulf States' continuing expansion program—a program which has seen the Company's electric generating capability increase fivefold since the end of World War II.

Over the years, just as it has expanded its other service facilities, Gulf States has added to its power capacity through additions to its other electric generating stations at Lake Charles, Baton Rouge and Beaumont.

With the addition of Roy S. Nelson Station, several important milestones in the Company's history are established.

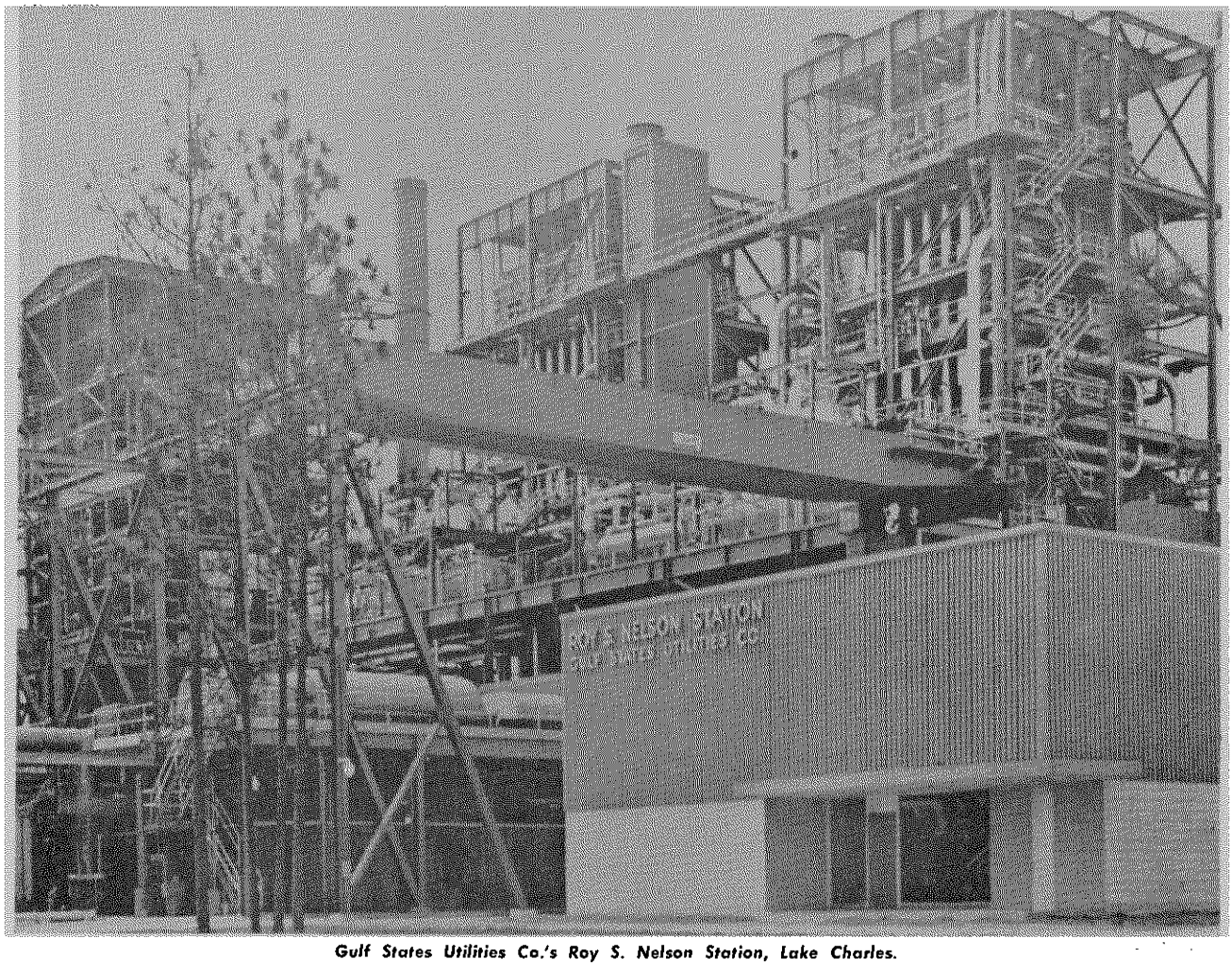
- It is Gulf States' first electric generating station to be constructed from the ground up since 1930 when Louisiana Station at Baton Rouge was completed.
- It is the first electric generating station added to the Company's system since 1946 when Riverside Station in Lake Charles was purchased.
- When the 111,000 kilowatt number one unit went on the line in February, 1959, Gulf States' electric generating capability passed 1,000,000 kilowatts.
- This is the first electric generating plant designed to accommodate 1,000,000 kilowatts of generating capability built by Gulf States.

Data for this article was provided by Mr. E. L. Granau, Gulf States Utilities Co., Lake Charles—Ed. Note

THE BOILERS

The boilers, where demineralized water is heated to steam at 1000° F. and steam pressure is raised to 1600 pounds per square inch, tower 133 feet, or as high as a 13-story building. Some 25 miles of tubing, enough to reach from Lake Charles to Vinton, are built into each boiler and carry the water and steam. From here, the high pressure steam is forced into the turbine where it causes the rotor to revolve like a windmill, only at supersonic speeds. Natural gas is used as fuel under the boilers and at full capacity, 52,000,000 cubic feet a day are burned.

The boilers evaporate enough water every 24 hours to supply the normal needs of a city of over 1,000,000. To maintain equipment at top efficiency, the water used is treated and made purer than the water you drink. Fires in the boiler are so hot that a nickel would melt within



Gulf States Utilities Co.'s Roy S. Nelson Station, Lake Charles.

seconds. Super heaters step up the temperature of the steam until it turns the pipes going to the turbines a cherry red.

THE TURBO-GENERATORS

The heart of the power plant is the turbo-generator unit, where steam pressure turns blades and drives a generator at speeds faster than sound through a magnetic field to produce thousands of kilowatts of electricity. A kilowatt of electric power represents one and a third horsepower, so this 111,000 kilowatt turbo-generator is capable of producing 148,000 horsepower, enough to power 740 shiny, new 200 horsepower automobiles or light over 1,000,000 hundred watt light bulbs simultaneously.

Despite their size, the turbo-generators are perfectly balanced, so much so that a coin can be balanced on edge atop each unit.

Standing beside the turbo-generators, it requires imagination to realize that these compact, streamlined machines are capable of providing the electric needs of a city of 100,000.

THE CONTROL ROOM

If the turbo-generator unit is the "heart" of the power plant, the control room is the "nerve center." Practically every piece of equipment in the plant plays a part in the function of some other equipment. Operating personnel must know at all times how every piece of equipment is functioning. From the control room, an over-all picture of plant operation is available. Instruments and automatic devices record pressures, temperatures, flows, voltages, speeds, frequencies and other information necessary for providing dependable electric service.

Remote control devices permit operators in this room to switch loads, add or decrease them as necessity demands. This room is connected by telemetering devices, radio and 'phone to the system load dispatcher, so that the Roy S. Nelson Station production can be integrated with that of other power plants in the Gulf States' system.

CENTRAL INFORMATION SYSTEM

Gulf States Utilities Company is the first electric utility company in the world to install and begin operating a Central Information System. The electronic watchdog keeps an automatic, around-the-clock written report on what's going on in the numerous, scattered pieces of complex equipment necessary to keep an electric power plant operating at peak efficiency.

In a power plant like Roy S. Nelson Station it is essential that operating information is charted and recorded at regular intervals, day and night. This adds up to a tremendous amount of paper work.

Here, briefly, is what the system does. First, it brings all essential information to a central point and automatically records the information. Next, the system instantly locates trouble or potential trouble and, finally, the system provides directive control from a central point to all locations through adequate communications.

At Neches Station, in the Sabine area, the central information system has eliminated 28,100 individual readings, entered on 20 different log sheets every 24 hours. This means that skilled production personnel are able to carry out more important assignments, allowing still more efficient, economical operations, thus holding down the cost of electricity.

Power for progress throughout the Gulf States system is generated by these power plants, all of which are interconnected so that power can be dispatched to any area from any plant. The senior power plants are Neches Station at Beaumont (86,000 kilowatts), and Louisiana Station at Baton Rouge (382,000 kilowatts). All three have expanded to their limits. Roy S. Nelson Station, West Lake, and two other power plants under construction, Willow Glen Station, Baton Rouge and Sabine Power Station, Orange County, Texas, can be expanded.

Roy S. Nelson, in whose honor this power station is named, became president of Gulf States Utilities Company in 1942.



Roy S. Nelson

Under his leadership, the Company has met without fail the ever-increasing demand for electric power during World War II and the post-war period of tremendous industrial growth in this area.

He has guided the Company through an unprecedented expansion program, of which Roy S. Nelson Station is an important part.

In December, 1959, the Company's Board of Directors named Mr. Nelson Chairman of the Board and President of the Company.



What About The Air Base?

"What about the air base?"

This is the leading question of the times about the continuing economic development of the Lake Charles Area.

The reference, of course, is to the imminent closing of the Chennault Air Force Base, in June, 1961, with the consequent loss in families, payrolls—and engineers—to the area.

* * *

The Air Force has conducted a positive information program in Lake Charles to minimize the effects of its departure. Business and industry has long been aware of the move, and has planned ahead accordingly.

Ex-Louisiana Gov. Sam Jones, vice-president and general counsel of the Gulf National Bank at Lake Charles, told The Louisiana Engineer: "This Southwestern Louisiana area has so many of the things that major industry requires that our long-range prosperity is assured. We have had continuing expansion in industry, and where in some cases this does not provide great numbers of new jobs, we are encouraging the development of heavy-employment industries — such as lumber manufacturing — for the area."

* * *

Proof of the continuing expansion of the area lies in recent reports of tax exemptions granted by the Louisiana State Board of Commerce and Industry.

These include: Hercules Powder Co., plant expansion, polyolefins, $516,000; Cities Service Refining Corp., plant addition-expansion, $4,582,000; Petroleum Chemicals, Inc., anhydrous ammonia plant addition, $733,700; Olin Mathieson Chemical Corp., plant expansion, $123,600 and $2,002,000; General Portland Cement Co., new plant, $548,000; Lone Star Cement Co., new plant addition, $219,700.

Lake Charles Dredging & Towing Co., shell processing plant, $1,986,000, and others.

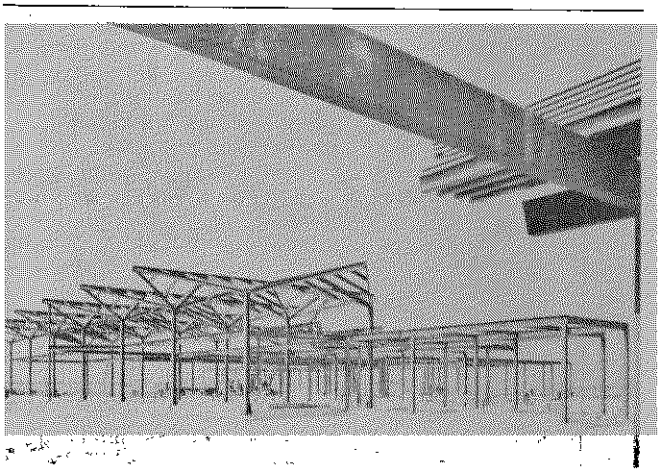
Two of the particularly interesting developments are those of Gulf Coast Furniture Manufacturing, $68,154, and Kurthwood Lumber Co. at Leesville, sawmill, $108,000. These appear to be the possible forerunner of other lumber manufacturing plants, utilizing the heavy stock of hardwood available in the area.

* * *

Other significant developments in the offing are the construction of the new airport and the new Calcasieu Ship Channel Bridge; the $22.5 million channel deepening and widening program (already initiated with an appropriation of $100,000 to the U. S. Corps of Engineers for preliminary studies) on which dredging is expected to start next July, and the projected $10 million industrial canal to provide additional sites for industry.

Industrial progress signs include Continental Oil Co.'s synthetic alcohol unit (see article elsewhere); new Port of Lake Charles facilities including a phosphate rack and barite ore-grinding operation ($2 million) at Westlake and a $1¼ million petroleum coke processing plant.

Obviously, it will be some time before the Lake Charles area is able to readjust its economy to make up for the air base. At the same time, however, there are signs that this readjustment process is already well underway.



Early progress shot shows new Lake Charles Airport (above), which is due for completion in fall of 1961. General contractors for above project is Lanza Enterprises, Inc.

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Conoco Expanding At Lake Charles

(Special to The Louisiana Engineer)

HOUSTON, Texas.—Continental Oil Company plans to construct a multi-million dollar petrochemical plant at Lake Charles, La., for manufacturing from petroleum a line of industrial alcohols formerly produced only from natural oils and fats.

The Conoco plant, the first of its type in the world, will have a capacity of more than 50,000,000 pounds annually of straight-chain primary alcohols, said Mr. Harold G. Osborn, senior vice-president. This series of alcohols will be marketed under the Conoco trademark of "Alfol" for use in the manufacture of detergents, plasticizers, cosmetics, lubricating oil additives, paper, textiles and emulsifiers.

The unique facility will be constructed adjacent to Conoco's refinery at Lake Charles. The Lummus Company, Houston, has been selected to build the plant.

Construction work is expected to start immediately, with completion scheduled in spring, 1961. When completed, the plant will employe approximately 125 persons.

At present, petroleum is a basic source of many branched-chain alcohols and low molecular weight straight-chain alcohols. But the higher molecular weight straight-chain alcohols have been dependent on natural sources, such as coconut oil and tallow fat.

Products made from straight-chain alcohols have superior use properties that are well known. For example, phthalate esters of straight-chain alcohols have better low temperature and permanence characteristics when used as vinyl plasticizers. And sulfates of straight-chain alcohols are used in synthetic detergent formulations.

"Alfol" alcohols contain even numbers of carbon atoms from six through eighteen.

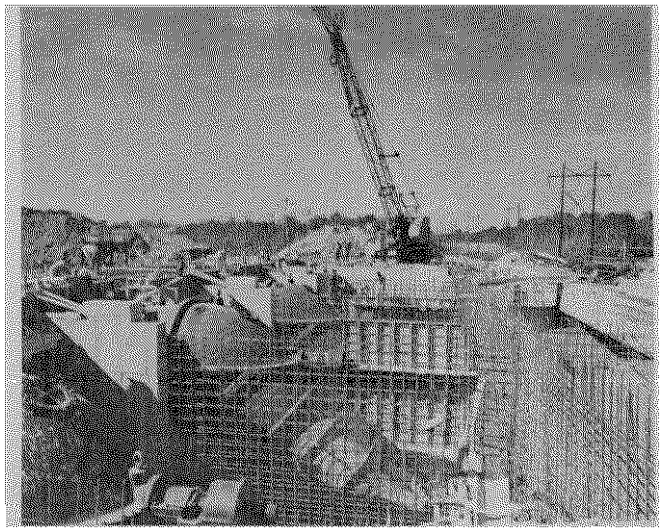
"Introduction of these new products made from petroleum-derived raw materials means that in the future these important chemicals will be available from a stable and economical source," said Mr. Osborn.

Primary raw material for the new products is petroleum-derived ethylene. Conoco will obtain its ethylene from the ethylene plant operated at Lake Charles by Petroleum Chemicals, Inc. Conoco owns a 50 per cent interest in Petroleum Chemicals.

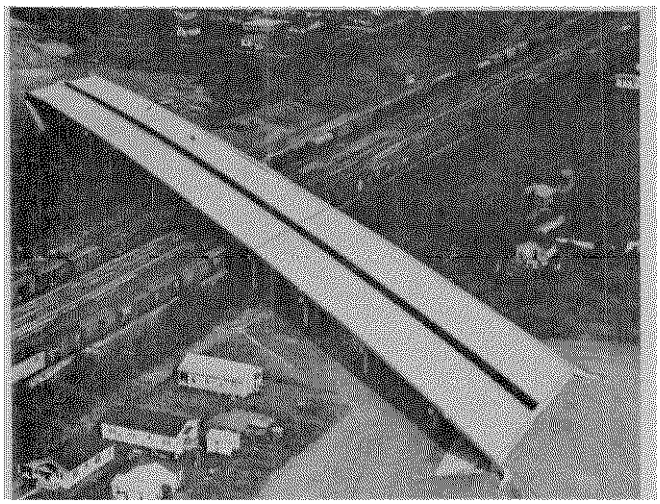
Development of the new process was announced by Conoco in September, 1958. At that time, the location and size of the unique plant was undecided.

The facility to produce "Alfols" is being designed on processing know-how developed by Conoco's research scientists and engineers at Ponca City, Okla., over a period of five years. The process is based on earlier work done by Professor Karl Ziegler, internationally known German scientist.

Conoco is licensed under the Ziegler patents. In addition, further processes have been developed by Conoco since initiating research work. Basic intermediate produced in the process is aluminum triethyl, a pyrophoric material also utilized in jet propulsion.



DRAINAGE IMPROVEMENTS, as exemplified above, are another feature of Lake Charles engineering program. D. W. Jessen and Associates, consulting engineers, supervised construction on project.



ONE OF MANY new overpasses at Lake Charles being built under the Federal Interstate Highway Program is shown above. Work when completed will give area one of most modern in U. S.

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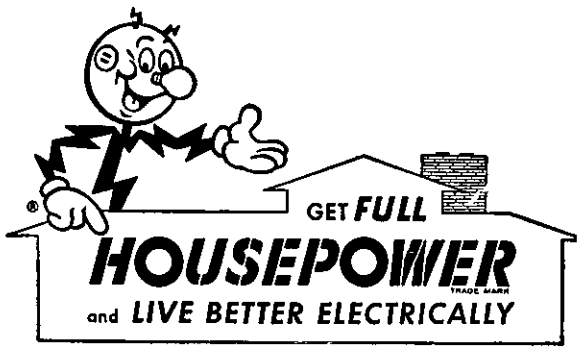

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Happy New Year!

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River Expressway Seen Feasible

An elevated expressway along New Orleans' riverfront can be built "within the foreseeable future," a team of engineers has concluded.

In a report newly made public, three engineering firms recommended construction of a four to eight-lane expressway stretching from Jackson avenue along the riverfront to Elysian Fields.

Reporting to the central area committee of the Chamber of Commerce of the New Orleans area, the engineers concluded that the expressway:

1. Is urgently needed.
2. Can be built with presently allocated federal and state funds.
3. Can be planned to cause a minimum amount of dislocation for property owners along its right-of-way.

The firms of Bedell and Nelson Engineers, Inc., B. M. Dornblatt and Associates, Inc., and David W. Godat and Associates made the report after almost a year's study of proposals for the expressway.

Releases Report

They were commissioned by the central area committee, which is seeking ways of preserving New Orleans' downtown business district. Charles Keller, committee chairman, made the report public recently.

Construction of a riverfront expressway has long been proposed as a major solution for New Orleans' traffic problems.



Charles Keller (second from left), chairman of the central area committee, Chamber of Commerce of New Orleans Area,, reviews recommendations of consulting engineer Waldemar S. Nelson (left), B. M. Dornblatt and David W. Godat (right).

As outlined by the engineers, it would provide a fast, cross town traffic artery which would relieve downtown congestion and remove heavy truck traffic from the business area and the Vieux Carre.

Under the engineers' proposal, it would run, generally, from Jackson avenue past the Mississippi river bridge approaches, through the proposed International Trade Mart site at the foot of Canal street, between the French Market and the river and on to Elysian Fields, where it would connect with the proposed interstate expressway.

The section from Jackson avenue to St. Joseph street, just past the bridge approaches, would be double-deck, with downtown-bound traffic moving on the upper level and uptown-bound traffic on the lower. Remainder of the elevated structure would be single deck.

There would be access ramps or interchanges at Jackson avenue, the Mississippi river bridge, Poydras, Canal, Esplanade and Elysian Fields, St. Claude avenue and N. Tonti and the interstate highway.

Co-ordination of the expressway route with plans for the proposed new International Trade Mart looms as a major problem, according to the report.

The engineers' recommended route runs through the middle of the proposed site for the exhibition building designed for the international center.

As an alternate, in the event the trade mart is built before the expressway, the engineers proposed a route which curves lakeward around the exhibition hall site.

Under either plan, the elevated expressway structure would run in front of the trade mart office tower as viewed from Canal St.

The engineers said they considered many possible solutions, but added, "an impasse was reached in trying to find a solution which would satisfy the International Trade Mart, at the same time, conform to design standards that would later permit incorporation in the federal urban highway system."

The consultants recommended their route on the assumption that the expressway will be built before the trade mart.

No firm plan has yet been advanced for financing the

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mart, although the Dock Board is considering a financing proposal.

There is also no guarantee that the Mississippi River Bridge Authority will allow the proposed tie-in with the bridge approach.

The consultants reported that Frank Masters, consulting engineer to the bridge authority, feels the connection would be "not feasible because of costs." The survey engineers, however, said the connection is technically feasible and urged every effort be made to accomplishment.

As an alternate, they said, the riverfront expressway could be connected to the Pontchartrain expressway lakeward of Camp St. The Pontchartrain expressway is under the jurisdiction of the state highway department.

No Cost Estimate

The engineers made no estimate of the cost of the expressway. This survey, they said, should await completion of an origin and destination study the state highway department is making on transportation in the New Orleans area. It is to be completed next year.

The transportation study is expected to establish whether the riverfront expressway is needed as a part of the state highway system andwhether the state highway department would participate in financing.

The engineers anticipate that the state and the federal government, through federal urban road funds, could share 50-50 in the cost.

They left no doubt, however, about need for the city to proceed with the project even if the state does not allocate funds.

"From the city's standpoint, the need becomes increasingly more urgent as traffic chokes the central area's streets and more and more traffic stays away or goes to outlying shopping areas to avoid the delays resulting from the congestion. At the same time, damage to Vieux Carre structures from vibration effects of heavy truck traffic continues undiminished. On this basis, it seems obvious that the city has a most vital stake in the project and must press for its construction from the standpoint of its needs alone."

The report stressed need for the city to take all possible steps to protect the right-of-way for the project.

"Safeguarding of the proposed right-of-way, both public and private, from encreachment or sale that could result in future increased costs, cannot be too strongly recommended," it stated.

The engineers noted that many opponents of the expressway proposal have felt it would create a "Chinese Wall" between the Vieux Carre and the river.

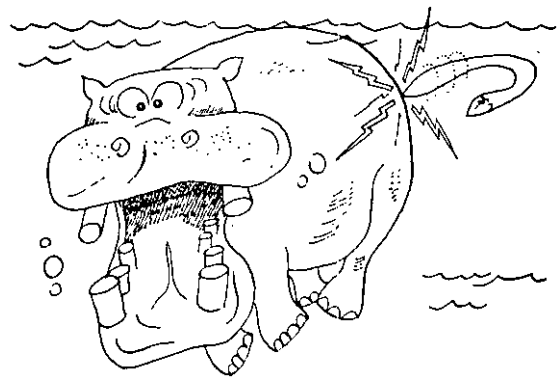
They contended that the expressway would benefit the French Quarter, by removing heavy truck and through traffic from its narrow streets.

In addition, they said it would be possible to combine construction of a long-sought plaza over the riverfront opposite Jackson Square with the expressway construction. Federal funds could not be obtained for the plaza, however.

Keller said the central area committee is convinced of the need for the expressway along the route recommended by the engineers.

Only questions that remain unanswered now, he said, are how wide it should be—four, six or eight lanes—and how it should be financed.

OPENS ON ELECTRICAL IMPULSE



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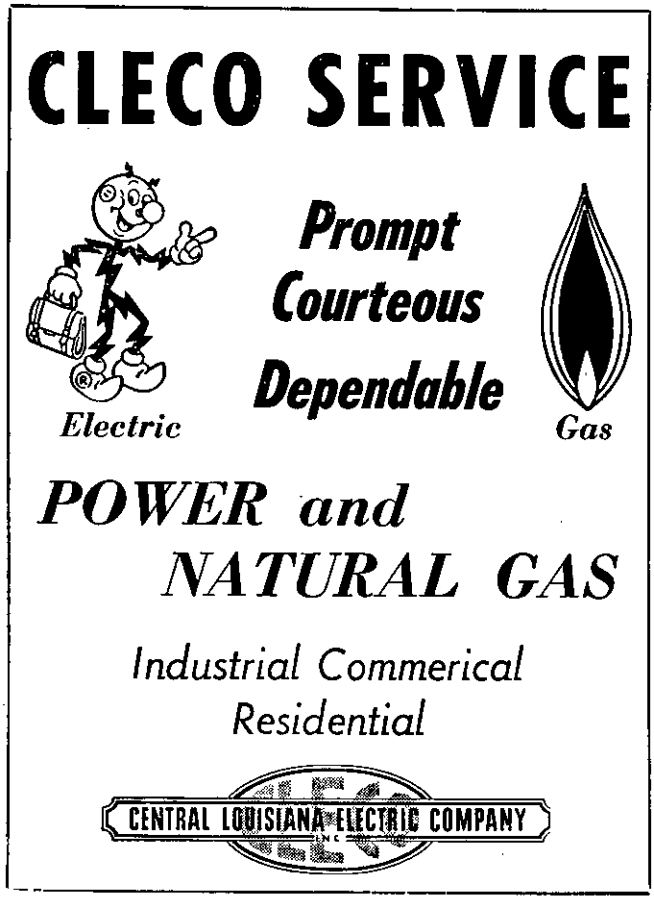
A Breakthrough In Turbine Control

By C. E. EVANS
General Electric Co.

The petro-chemical industry presents a challenge to turbine control systems. This is not only because of the precision required, but also because of the complexity of the power and heat systems involved. This is one of the reasons that we have undertaken the development of a totally new type of turbine control system. Our goal is to provide the most precise, flexible and reliable control system possible.

The control systems which we have been furnishing, by refinement and by better analytical methods of application have allowed us to keep pace with the needs of industry. However, to do so has increased the complexity of control systems to a point approaching the limit which good design practice will allow. Since it is logical to expect that demands on control systems will continue to become more complex and more demanding in the course of time, we have set out to develop an entirely new and different system which would meet the expected demands of industry for many years to come.

Mr. C. E. Evans is manager of the Turbine Product Engineering, Medium Steam Turbine, Generator and Gear Department, General Electric Co. He presented this paper before a G-E turbine seminar in New Orleans Sept. 22, 1960, which attracted LES members from all over the state.



With these thoughts in mind, our control design group, several years ago, began a preliminary investigation of new control methods. After an exhaustive survey of possible methods of control, it was decided that an electro-hydraulic system holds by far the greatest potential for flexibility and desirable response characteristics. Basically, the flexibility comes from the fact that an electrical signal can be transmitted very easily and rapidly and from the fact that various electrical signals can be integrated readily to cause the desired turbine action. In addition, by combining the virtues of present day solid state electronics with high presure hydraulics, it is possible to obtain response rates and degree of accuracy of control many times better than with any other type of control system and at the same time have built-in reliability at least equivalent to present-day control systems. We believe the new system will result in significant benefits to the petro-chemical industry, some of which follow:

1. Turbine availability will be improved both from the reduction of the number of moving parts and from the fact that a considerable number of necessary adjustments can be made with the turbine in service. The inherent wide adjustment ranges available in the electrical control will permit process changes to be accommodated with minimum modification.
2. By reducing the human error possibilities, turbine efficiency will be better sustained during its operating life.
3. The use of non-flammable hydraulic fluid instead of lubricating oil from actuation of the power elements of the control system will provide an even greater degree of safety than at present.
4. Station efficiency gains are possible because of inherent flexibility and accuracy of the electro-hydraulic control systems.

This department has been developing this type of control for several years. The first application was to provide extremely precise speed control of a test turbine used in steam path component development. An electronic speed control system has been in service on this turbine for approximately three and one-half years, and has continued to provide excellent reliable control. The second phase of the development was an electronic pressure control system. Such a system went into operation approximately two years ago in our research area, and has provided precision pressure control for steam research work ever since.

A logical combination of these system elements was the third phase of the development. A prototype system controlling both speed (load) and extraction pressure was installed on a 12,500 KW single automatic extraction condensing turbine in the River Works Power Plant where we generate all of our own power and steam requirements. This system went into commercial operation

in early December 1959, and has been in continual service ever since.

The name, electro-hydraulic control, implies that the control system consists of an electrical section and a hydraulic section. The electrical section of the system serves to provide the required intelligence functions and, in this manner, acts as the system "brains." The intelligence functions of the electrical section are accomplished by solid-state electrical components arranged in simple electrical circuits.

The hydraulic section provides the system "brawn" in that it supplies the high pressure fluid required to power the turbine control valve actuators.

The control of an automatic extraction type turbine requires that variation in both speed and extraction pressure be detected and converted to electrical signals. Reference to diagram may permit an understanding of such a system.

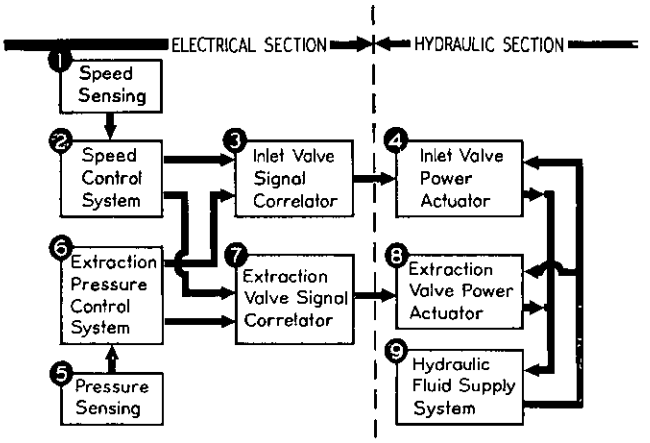


Diagram of Electro-Hydraulic Control System

The speed detecting of sensing function, Block 1, is accomplished by a permanent magnet generator which is driven directly from the turbine rotor. This generator provides the desired change in electrical signal, with change in turbine speed, required by the speed control system contained in Block 2. The function of the Block 2 circuitry is to furnish the inlet and extraction valve signal correlator, Blocks 3 and 7, with a speed command signal which is inversely proportional to changes in turbine speed.

The pressure sensing, Block 5, provides the extraction pressure control system, Block 6, with an electrical signal related in magnitude to changes in extraction header pressure. The extraction pressure control system operates on the changes in electrical signal received from Block 5, in a manner to impart command signals to both inlet and extraction valve signal correlator, Blocks 3 and 7.

The two signal outputs from Block 6 have opposite electrical senses proportioned in accordance with the physical design of the turbine to permit maintaining essentially constant generator output while varying the flow extracted to meet the demands dictated by the extraction header system.

Blocks 3 and 7 are called signal correlator blocks in that their principal function is to electrically combine the electrical signals received from the speed as well as the extraction pressure control systems. The resulting composite electrical output signal will effect changes in the inlet valve power actuator, Block 4, moving the turbine inlet control valves in direct accordance with the command voltage signal level.

The extraction valve power actuator, Block 8, operates the extraction control valves in exactly the same manner, receiving its signal, in this case, from the extraction valve signal correlator, Block 7.

The hydraulic fluid supply system, Block 9, provides both the inlet and the extraction valve actuators with the fluid power required to produce the desired turbine control valve motions.

Based on our analyses and on the excellent success of the three prototype systems described above, the General Electric Company is prepared to offer this type of control system on a commercial basis. We feel that the General Electric Company is eminently qualified to build such systems because of its unparalleled experience in the field of electronic-type control in other areas such as atomic reactor controls where reliability and accuracy are of paramount importance. With this experience we believe we can offer with confidence the first major breakthrough in turbine control in many years.

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Attention—Field Notes
By Allen Johnson

Lee Maurin's article on the Louisiana Power & Light Co.'s "Little Gypsy" plant, published in The Louisiana Engineer, has attracted widespread interest. It brought a request, among others, from Daystrom Inc.'s W. Martin Lyford in New York; the article was reproduced in the November "Mechanical Engineering."

Also in the mail: requests for information about the LES-Louisiana State Bar Assn. Engineering-Law Seminar at Tulane University last June from H. L. Henry, Jr., professor and head of the Louisiana Polytechnic Institute's Department of General Engineering (he teaches contracts, specifications and law for Engineers) and from Paul Berg, Ft. Wayne, Ind., State Secretary, Indiana Society of Professional Engineers, Inc.

Many LES members participated in the Association of Levee Boards of Louisiana Annual Meeting in New Orleans, among them Hu B. Myers, Calvin T. Watts, Col. G. M. Cookson, Dan Cresap . . . Ray Burgess told a meeting of the Better Highways Information Foundation that progress is being made with the Federal-Interstate Highway program in Louisiana . . . LES President E. A. McLellan and second vice-president James S. Janssen told Tulane Engineering students the advantages of LES and NSPE membership, at the invitation of L. B. Shackford . . . Joe Ranna (A. M. Lockett & Co. Ltd.) compared notes with John Pearl and R. M. Phillips (Babcock & Wilcox Co., Barberton, Ohio) . . . The LES Woman's Auxiliary will present a fiscal report from parent organizations and their local chapters at the Annual Meeting in Baton Rouge, Mrs. Frank B. Fromherz, Auxiliary president, said. "It should be of tremendous interest to the wives of LES members," she noted.

Our thanks for their assistance in preparing a Lake Charles engineering report to Messrs. Cecil Colon, executive vice-president, The Calcasieu-Marine National Bank of Lake Charles; George Hebert, Cities Service; Gabriel Gelb, New Orleans, (for Petroleum Chemicals, Inc.); D. W. Jessen and William Gamble of his consulting engineering firm; A. J. Rybiski, many of whose fine photos appear in this issue; J. B. Shipp, consulting engineer; Calcasieu Parish engineer Rodney Vincent; Mr. and Mrs. Marion Garrison, Olin Mathieson Chemical Corp.; James Carvin, Milton Hooper; Sam Richard, president, and A.S.E. Barnett, vice president, Gulf National Bank; Parker R. Ledbetter, general manager, Association of Commerce; Louis Duclos and O. J. LeBlanc, Baton Rouge, State Highway Department; Charles W. Stokes, Cities Service; Gus G. Quinn and Elmer E. Shutts, consulting engineers; C. L. Kittrell, secretary, Lake Charles Chapter, Associated General Contractors, and many others.

Launched as an experimental project in 1950, the Junior Engineering Technical Society (JETS) program today serves as a cooperative effort through which industry, engineering and scientific societies, and educational institutions may work together to enhance the science and engineering programs in their local high schools.

It combines the assistance and guidance of professional men, actively engaged in the scientific fields, with classroom activity under the guidance of high school instructors of science and mathematics.

The program stimulates the student's interest in science and engineering by providing an opportunity to apply the principles learned in high school subjects to actual engineering and scientific projects.

He becomes acquainted with men who are actively engaged in the field and through them receives a preview of the engineering and scientific professions.

By this means, the student can gauge his abilities against the scholastic and personal requirements of the scientific vocations. After 10 years of operation this organization has expanded to 650 chapters in 43 states as well as several foreign countries.

For further information on how you or your company can share in this program write to: JETS, Box 589, East Lansing, Mich.

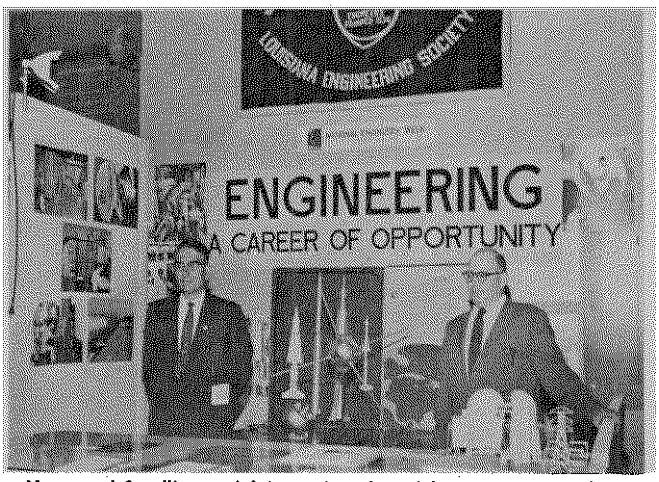
—o—

A straight-line extension of starting salaries received by University of Detroit engineering graduates indicates that by 1965 the school's engineering graduates can expect to start at $665 per month.

The prediction is based upon an increase in starting salaries from $210 per month in 1951 to $547 in 1960, as reported in **Ten Years of Their First Jobs After College 1951-1960,** a survey of past senior classes by the U. D. placement department.

University of Detroit engineering students all gain working experience before graduation via the school's cooperative study program, which perhaps explains their above average starting figures. (Average starting salaries for 1960 engineering graduates were about $525.)

If this prediction holds true, it will represent a 107 per cent starting salary increase for U. D. graduates over the 14-year period. If inflation continues at the same rate as in the past, however, the actual increase in buying power will be 76 per cent, or about 5½ per cent per year. The 5½ per cent figure represents about twice the yearly national increase.



Vanguard Satellite model (center) and model atomic power plant (on counter) featured the Louisiana Engineering Society's first booth at the Shreveport State Fair, Oct. 21-30, 1960. Manning the booth are M. C. Bubenzer, second vice-president of the Shreveport Section, and Francis W. Grant.

LES Exhibit Goes To Shreveport Fair

Attracting the attention of high school students to the engineering profesion was the aim of the first Louisiana Engineering Society-sponsored booth at the Shreveport State Fair October 21-30, 1960. An appreciable number of LES members from over the state visited the booth.

Highlights of the exhibit included an exact-size model of the Vanguard Satellite now circling the earth, miniature models of rockets, a miniature demonstration of various stages in the launching of a satellite.

Also included in the exhibit, occupying a 10 x 10 foot space in the General Exhibit Building, was a model atomic power plant made by B. M. Ferguson.

Copies of The Louisiana Engineer, The American Engineer and "Engineering, A Career of Opportunity," were given to interested visitors. Louisiana Engineering Society membership applications and engineering registration forms were also distributed.

The Shreveport Section obtained much favorable publicity with a photograph of the booth appearing in the Shreveport Journal on October 28, 1960, and a demonstration of the rocket launching being shown on Station KSLA-TV's evening news program.

"We would like to express our appreciation," said B. M. Ferguson of the Section's Fair Booth Committee, "to Texas A. and M. for pictures used in the booth and to Southern Bell Telephone & Telegraph Company, which furnished the Satellite and Rocket Demonstration for Children's Day. These will be used by the Telephone Company in their publications and gives good publicity to our profession, he said.

"We feel that our exhibit this year, together with its news and TV coverage, gave invaluable publicity to our profession and hope the Society can see fit to have a better one next year," Ferguson said.

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Asphalt Institute Building
College Park, Maryland

Putting Pressure On Highway For Research

OTTAWA, Ill.—A $27 million highway research project here has reached its major goal.

One million truck axle loads have been applied to sections of highway pavement at the nationally-supported test, the largest scientific experiment of its kind ever undertaken.

That's a lot of traffic—more than most roads get in many years.

In reaching this mark a fleet of 126 trucks, ranging from little "pick-ups" to huge tractor-semitrailer combinations, has piled up 15½ million miles of operation, gulping down about 3¼ million gallons of gasoline and diesel fuel in the process.

Meanwhile, a staff of skilled research engineers and technicians has been busy finding out what happens to the pavements under this traffic. They have gathered an estimated 300 million pieces of data.

The mammoth test is being sponsored by the American Association of State Highway Officials (AASHO), an organization which includes all of the nation's state highway departments. Actual administration and direction of the research is in the hands of a private non-profit organization, the Highway Research Board of the National Academy of Sciences—National Research Council.

Heading the project staff is Walter B. McKentrick, Jr., former chief engineer of the Delaware State Highway Department.

"A million axle load applications was the goal fixed when this research project was being planned back in the early 1950's," McKendrick said. "We feel that it is a milestone on the road to better highways for the entire nation."

The AASHO test is the first highway research project carried out with nationwide cooperation. The cost is being shared by the states, federal government and industry.

Research is being conducted on six loops of pavement built along an eight-mile stretch of flat farmland northwest of this Illinois River Valley city. This location was chosen because its soil and climate are typical of wide areas of the country.

The project's research engineers are using mechanical and electronic instruments valued at more than a million dollars to measure and record the effects of the truck traffic on the pavements and bridge spans.

Final reports on the research are to be completed in the fall of 1961 and published by the Highway Research Board. These reports are expected to contain a wealth of engineering information which will be valuable in highway design and construction for years to come.

—o—

What Every Louisiana P. E. Should Know

This is another in a series of articles prepared by the Editorial Staff of the LOUISIANA ENGINEER in which an attempt is made to answer questions of interest to professional engineers in this area. Where, in certain instances, it becomes necessary to answer questions of a controversial nature, it must be re-emphasized that the opinions expressed are those of the Editorial Staff and do not necessarily reflect the feelings of the Louisiana Engineering Society nor the Louisiana State Board of Registration for Professional Engineers and Land Surveyors.

For obvious reasons, no attempt will be made to go into legal interpretations since, in such matters, ethics dictate that we respect the boundaries of our sister profession. Any other questions our readers might wish to submit, pertaining to the Engineering Profession, will be welcomed by the Editorial Staff.

QUESTION—What are the main differences between the Registration Law in Louisiana and that of the other states?

ANSWER—The law in Louisiana requires no practical experience prior to registration as a Professional Engineer.

In 37 other states, there is the requirement that a prospective professional engineer, upon graduation, register as an "Engineer in Training", generally for a period of four years. He may, during the four-year training period, practice profesional engineering under the direct supervision of a Registered professional engineer. At the end of that period, he is eligible to apply for registration as a professional engineer.

DID YOU KNOW THAT:

16 states register architects under the same laws governing engineers.

31 states register land surveyors under the same laws governing engineers.

50 states, Puerto Rico and the District of Columbia now register engineers.

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New Orleans East Project Underway

The fact that the 32,000 acres—50 square miles—of New Orleans East will draw heavily on the brainpower and manpower of that community for many years to come is of vital interest to the state's engineering fraternity.

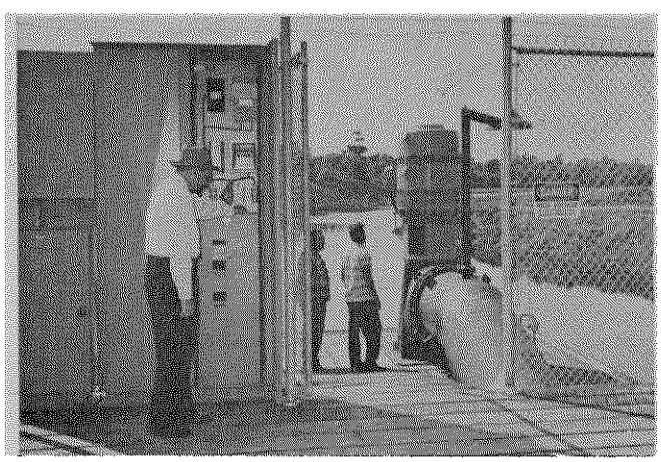
Certainly, engineering is the touchstone to the development of New Orleans East. Not a pump can start, not a ditch can be dug, not a street can be laid until engineering is completed. That's why it is important that the engineering profession be completely informed, and kept current, with what's going on out at New Orleans East.

Already, New Orleans East has drawn on the engineering talents of its community. Robert Atkinson, Chief Engineer of the company, is well known to the profession in New Orleans. He became familiar with the property when he joined the staff of its former owner, Col. R. E. E. deMontluzin, several years ago, and remained in this capacity with the new owners.

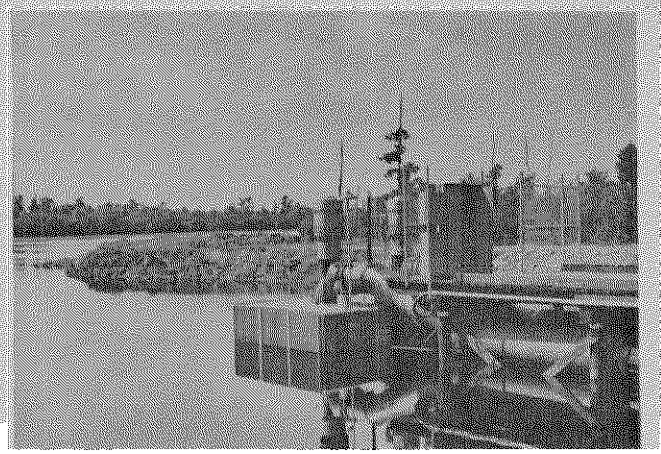
The firm of Bedell & Nelson Engineers, Inc., has been retained by New Orleans East, for several phases of the initial development. Louis Bisso, president of Planning Services, Inc., and former city planner of New Orleans, is another engineer whose talents have been retained by New Orleans East.

The all-over planning had been done by the firm of Harland Bartholomew and Associates, of St. Louis, whose initial studies for Col. deMontluzin formed the basis for later updating and re-evaluation on behalf of New Orleans East.

Both Atkinson and Bisso took part in a presentation at the Engineers Club before the Louisiana Engineering Society November 14, 1960. In addition, Ray Samuel, Director of Client Service, Godwin Advertising Agency, advertising and public relations consultants to New Orleans East, explained briefly the interesting background history of the tract.



Chief Engineer Robert Atkinson, New Orleans East, Inc., presses switch to activate Maxent Pumping Station during test period. One of the two 300,000 gpm units is shown through the gate. Water from series of borrow pits paralleling Highway 90, often called Indian Lakes, flows to the collecting basin at the Maxent Pumping Station.



Maxent Pumping Station of New Orleans East (above), which will drain initially the 750-acre tract of the development's first residential section. The two units will remove 60,000 gallons per minute from the area, and expel the waters beyond the old levee. This picture shows the water level at the time the pumps went into operation, Oct. 7, 1960. The water is now some 6 feet below this level.

Changing With The Climes?

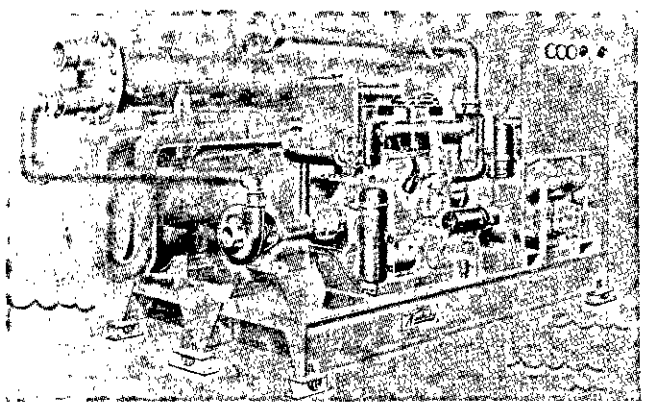
Savings in operational costs are being afforded through a 100-ton air conditioning water chiller system, according to Walt Lester, Reagan Equipment Co. engineer.

"A major consideration in selecting a system," he said, "is the cost of the power required."

He cited the advantage of automatic variable engine speed modulation which enables the system to respond to changing loads.

"Under rising heat loads the engine increases speed to meet the higher power requirement," said Lester. "Under diminishing load the speed decreases, adjusting the engine's power output to the requirement.

"This provides adequate power for all load conditions with maximum fuel economy, and by eliminating continuing recycling, increase the life of controls, accessories and other system components."



100-ton Air Conditioning Water Chiller Unit

Engineers Granted Registration

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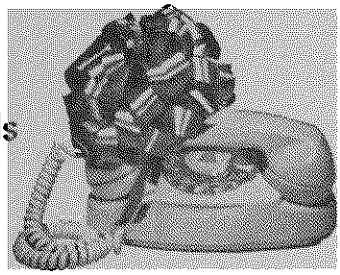
November 8, 1960—Philip J. Arena, Jr., New Orleans; Lee C. Bailey, Jr., Shreveport; Paul S. Beyt, Jr., New Iberia; Charles B. Bland, Jr., Memphis, Tenn.; Edward J. Breckwoldt, Baker; Hoyt W. Brown, Jr., New Orleans; Robert E. Carlile, Ruston; William E. Dalton, Houston, Tex.; Lawrence L. Elkind, New York, N. Y.; Macon D. Faulkner, Crowley; Edward P. Fitzgerald, Stamford, Conn.; William G. Gill, Arlington, Va.; Raymond J. Greenich, Bastrop; Harold J. Grunsky, New Orleans; Rudolf Hertzberg, New Orleans; Thomas Z. James, North Little Rock, Ark.; Eliot C. Labbe, Jr., Algiers; Paul O. McCord, Shreveport; Arthur S. McMeans, Bastrop; Norbert W. Markel, New Orleans; Vernon F. Meyer, Lake Charles; Robert L. Owens, Lake Charles; Joe T. Patterson, New Orleans; Ormand K. Philson, Bossier City; Joseph J. Picarazzi, Lake Charles; Francis R. Prybylowski, Decatur, Ga.; Walter E. Richard, Lake Charles; James R. Riquelmy, Lake Charles; George J. Ritz, St. Petersburg, Fla.; Johan Ruinen, New Orleans; Thomas E. Simmons, Shreveport; Walton Smith, Metairie; Raymond E. Storms, Ruston; Dan W. Whitaker, Houston, Tex.; Wayne E. Wright, Bastrop.

The Gift that really extends Greetings



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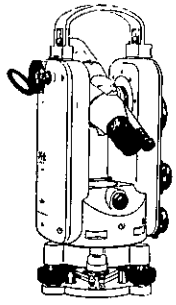

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RATHBONE DE BUYS

WHEREAS, the Louisiana Engineering Society, through the death of Rathbone De Buys, has lost one of its charter and outstanding members; and

WHEREAS, he was a distinguished and capable engineer-architect; and

WHEREAS, he unstintingly devoted his time and efforts to the solution of the problems in his profession; and

WHEREAS, he cooperated wholeheartedly with all of those with whom he was associated; and

WHEREAS, he gave generously in help and assistance to those in the profession who had not yet made their mark; and

WHEREAS, his decisions regarding the work of others was always prompted by fairness and equity; and

WHEREAS, his loyalty and interest in his community were an obligation to him; and

WHEREAS, all of us who were connected with him will always bear an indelible mark;

NOW THEREFORE, we, the members of the Louisiana Engineering Society, extend our sincere condolences to the members of the family of the late Rathbone De Buys and express the privilege and the pride of having worked with him and the deep loss we have sustained in his death.

Claiborne Perrilliat.

JOHN R. HORTON

John R. Norton, general superintendent of power for Louisiana Power & Light Company, died May 9 in New Orleans following an illness of several months. He was 63.

A native of Helena, Arkansas, Mr. Horton began his professional engineering career with Arkansas Power & Light Company in Pine Bluff in 1919. He joined Louisiana Power & Light Company in 1925 as station chief in Sterlington. He was named station superintendent at the Company's Ninemile Point Steam Electric Generating Station near New Orleans in 1950.

Mr. Horton was a resident of Harahan near New Orleans at the time of his death. He had worked in the electric power industry for 41 years, and was credited by LP&L officials with spearheading the decision to construct the first steam electric generating station capable of fully automatic operation. The station, called Little Gypsy, is being built by LP&L 25 miles upstream from New Orleans. A Navy veteran of World War I, Mr. Horton was a member of the Engineers Club and the Masonic Order. He attended Louisiana Polytechnic Institute where an engineering scholarship has been started in his memory.

He is survived by his widow, the former Miss Agnes Ethelle Humphries of Grayson; his mother, Mrs. Emma Fiske Horton of Monroe; three daughters, Mrs. Carlton C. Salley of Shreveport, Mrs. W. M. Fortenberry of Georgetown, S. C., and Mrs. A. E. Henderson, Jr., of New Orleans; three sisters, Mrs. Alberta Bush of Tiller, Arkansas, Mrs. Ray D. Magruder of Monroe, and Mrs. Lillian Brown of Greenwood, Louisiana; three brothers, Van Noy and Richard Horton, both of Los Angeles, and Dave Norton of Tulsa; and 11 grandchildren.

Calvin T. Watts, W. T. Hess, Roy T. Sessums.

Baton Rouge Council

(Continued from Page 12)

Purpose of the council is to unite efforts on the matters concerning engineers and scientists in the area.

Among those recognized were:

HEAD TABLE—Very Rev. Msgr. Louis E. Marionneaux; Mayor-President Jack Christian; Wilbur Epting, Jr., Allied Chemical Corporation—Manager, Baton Rouge Solvay Process Plant; Kerby Fisk, Chairman of the Board and Chief Executive Officer, Allied Chemical Corp.; Tom Alexander, President, Baton Rouge Council; Henry Allen, Vice President, Baton Rouge Council; Vic Ehr, Executive Vice President, Baton Rouge Chamber of Commerce; Gerald Kelley, Secretary-Treasurer, Baton Rouge Council; Frank Carroll, Allied Chemical Corporation—Manager, Baton Rouge General Chemical Plant; William Holland, Past President, Baton Rouge Council. (Presented with plaque.)

SOCIETY PRESIDENTS—Dr. Frank Conrad—ACS—Ethyl Corporation; B. G. Caldwell—AICHE—Dow Chemical Corp.; Raoul Levy — AIEE — Bodman, Murrel & Smith; C. D. Scoggins—AIIE—Kaiser Aluminum & Chemical Corp.; Joseph L. Smiley—ASAE—Louisiana State University; Ralph Dupuy—ASHAE—Ethyl Corp.; Edward Adler—ASME—LSU; W. B. Heck—ASSE—Ethyl Corp.; Douglas Latimer—LES—Gulf States Utilities Company.

GUESTS—Edward McLellan, Pres., LES—McLellan Equipment Company; H. J. Foreman, Chairman, Louisiana Agriculture Engineering Association; G. Jack Groh, Chairman, New Orleans Section, ASME—R. J. Tricon; Walter Criley, Vice President, District 13, AIEE—Vanderbilt University; H. E. Brown, Vice President,Gulf States Utilities Company; Bryan Clemmons, Sheriff, East Baton Rouge Parish; Wallace F. Armstrong, Resident Manager, Ethyl Corp.; C. J. Gilbert, Supervisor, East Baton Rouge Parish School Board; E. L. Ray, Allied Chemical Corp.—Nitrogen Division, Orange Plant Manager; Charles Barnard, Barnard & Burk; Jack Burk, Barnard & Burk; George McCollough, Plant Manager, Wyandotte Chemicals; Dr. Arthur Chopin, Dean, Chemistry & Physics, LSU; Dr. Dan Borth, Executive Vice President, LSU; Judge Joe Sanders, State Supreme Court.

MEMBERS OF COUNCIL—Eric Breidenbach, Ethyl Corp.; Jim Sparkman, Kaiser Aluminum & Chemical Corp.; Tom Moore, Kaiser Aluminum & Chemical Corp.; Ray Felton, Esso; Connell Roughton, Kaiser Aluminum & Chemical Corp.; L. F. Curtis, Anhydrous Ammonia Commission; Mansel Mayeux, LSU; W. LeBlanc, Metrailer & Assoc.; W. H. Carter, LSU; John Jones, Department of Public Works; Alan Matthews, Kaiser Aluminum & Chemical Corp.; Steven Henry, Ethyl Corporation, Emeritus; Thomas Pugh, Judge-Elect of City Court.

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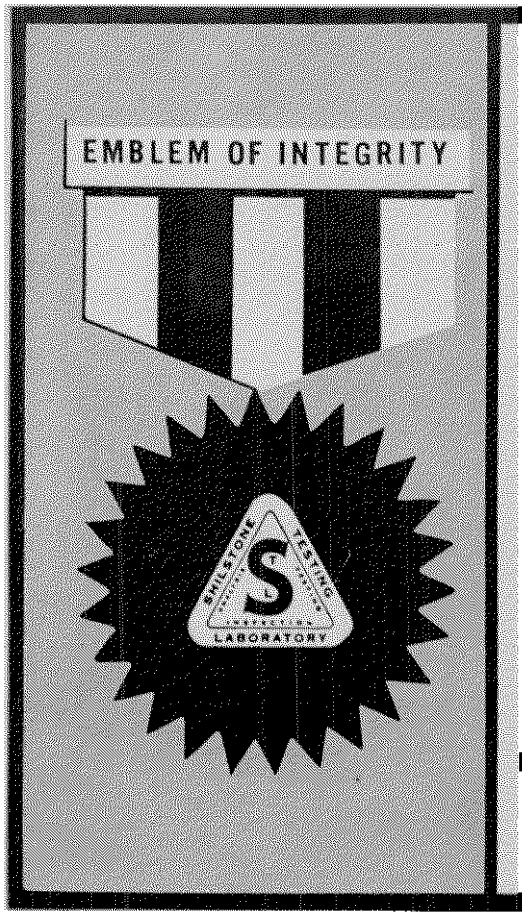

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Other communities everywhere are also finding that concrete pipe can be designed precisely to solve their sewer problems. And concrete pipe are readily available. For the giant Pittsburgh project, special casting yards—including all test equipment—were set up at convenient close-in locations to speed up schedules, keep costs low.

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For the Allegheny County Sanitary Authority: John F. Laboon, Executive Director and Chief Engineer; Lawrence M. Gentleman. Deputy Chief Engineer; Richard J. Dougherty, Construction Engineer.

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