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the LOUISIANA ENGINEER

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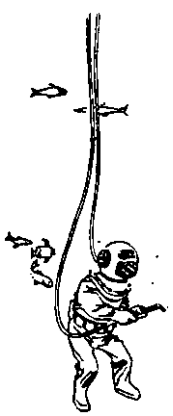

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THE LOUISIANA ENGINEER

Vol. 47 February, 1961 No. 1

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William H. Rhodes ..... ***Editor***
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Publication supervised by
ALLEN JOHNSON & ASSOCIATES
921 Carondelet Building **New Orleans 12, La.**
Address LES Communications and Change of Address Forms to J. P. Fernandez, Secretary-Treasurer, 404 Baronne Street, New Orleans 12, La.

The LOUISIANA ENGINEER is the official publication of the Louisiana Engineering Society and of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors and is published in February, April, June, August, October and December. Subscription $2.00 per annum; single copy 50 cents.

Second class mailing privileges authorized at New Orleans, Louisiana. Acceptance for mailing at special rate of postage provided for in Section 1105, Act of October 3, 1917, authorized August 1, 1918.

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.

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OUR COVER: 1960 Civic Affairs Award—A. M. Lockett Medal winner Clayton L. Nairne (center), executive vice-president, New Orleans Public Service Inc., shows award to newly-installed LES President Ben T. Bogard (left) and Harold A. Mosher, Rochester, N. Y., past president of NSPE and main speaker at Annual Meeting in Baton Rouge Jan. 12-13, 1961. Dean Bogard succeeded Edward A. McLellan as top officer of LES.

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Minutes Of The Board, La. Engineering Society

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, November 14, 1960

The meeting was called to order by President McLellan with Messrs. Bogard, Carter, Duclos, Janssen, Landry, Watts and Fernandez present. Mr. Duclos moved that minutes of the preceding meeting be accepted as distributed to board members by mail, seconded by Mr. Watts and carried.

President McLellan asked whether the LES should invite NSPE to hold a meeting in New Orleans during 1963, whereupon Mr. Watts moved that the national society be invited for its Fall meeting. The motion was seconded by Mr. Janssen and carried.

The proposed revisions to the constitution and by-laws were discussed and Mr. Janssen moved that they be presented to the membership at the general meeting for discussion and approval for insertion in the December letter-ballot. The motion was seconded by Mr. Duclos and carried.

Mr. Bogard, Finance Committee Chairman, presented a statement of income and expenditures for the first nine months of 1960. The report was accepted upon motion by Mr. Janssen, seconded by Mr. Watts.

A financial report on the Annual Outing held in September, showing a net deficit of $219.94, was presented and accepted upon motion by Mr. Bogard, seconded by Mr. Duclos. The Board also noted with appreciation a written report of the chairman, Mr. Claude Kelly, Jr., containing valuable suggestions for the handling of future outings.

A note of thanks from Mrs. James P. Henderson was read in which she expressed appreciation for the memorial resolution published in THE LOUISIANA ENGINEER in honor of her late husband.

The secretary read a communication from the State Board of Registration commenting upon the proposed state civil service classifications for Engineering Assistant I and II positions.

A letter from R. W. Beck & Assocates, Columbus, Nebraska, was read in which they requested information on the definition and legal implications of the terms "supervision of construction" and "resident inspection of construction." The secretary's reply to this inquiry also was read.

Photographs of the Louisiana Engineering Society's booth at the North Louisiana State Fair were presented. The exhibit was organized and handled by the Shreveport Section.

Renewal of the Public Relations contract was discussed and the secretary was instructed to prepare a new contract to be submitted to board members for review.

Mr. Henry L. Landry, General Chairman of the 1961 Annual Meeting, presented a tentative program and the secretary was instructed to write to all section presidents conveying the board's suggestion that each section charter a bus to transport members to the annual banquet and dance on Friday, January 13th.

It was agreed that President McLellan and First Vice-President Janssen would address a group of students who are interested in forming a student chapter of LES at Tulane University.

Mr. Bogard moved that the resignation of Mr. Harold Leiendecker be accepted with regret and that Mr. Horace B. Rickey, Jr., be dropped in accordance with his request. Motion seconded by Mr. Duclos and carried.

Mr. Bogard moved that the Certificate of Appreciation for 1960 be awarded to Mr. Tom E. Alexander, seconded by Mr. Duclos and carried.

The secretary urged board members to submit their recommendations for 1961 personnel to man the standing committees which each one sponsored during 1960. It was requested that these recommendations be presented at the next meeting of the board.

There being no further business, the meeting adjourned.

Secretary-Treasurer

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, Monday, December 12, 1960

The meeting was called to order by President McLellan with Messrs. Bogard, Carter, Duclos, Janssen and Fernandez present. Messrs. Allen Johnson and W. S. Nelson also were present by invitation. Mr. Janssen moved that minutes of the preceding meeting be accepted as distributed to board members by mail, seconded by Mr. Duclos and carried.

A report of the Honors & Awards Committee was presented and Mr. Bogard moved that Mr. Clayton Nairne be awarded the LES Civic Activities Medal—Andrew M. Lockett Award for 1961. The motion was seconded by Mr. Carter and carried unanimously.

The report of the Nominating Committee was presented by Mr. Nelson and Mr. Carter moved that it be accepted and presented to the membership at the society's regular meeting immediately following this board meeting. The motion was seconded by Mr. Janssen and carried. The committee's nominations are as follows:

For President	Ben T. Bogard
For First Vice-President	James S. Janssen
For Second Vice-President	Calvin T. Watts
For Secretary-Treasurer	John P. Fernandez
For Director for 2 Years	Emery Domingue
For Director for 2 Years	Edward J. McNamara
For Director for 1 Year	Douglas F. Latimer

Mr. McLellan, Chairman of the Honorary Membership Committee without vote, advised that he had polled the committee on the nomination of Dean Emeritus George Griffin Hughes for Honorary Membership and the committee had voted 24 to ?? in favor of granting this honor to Dean Hughes. The Board approved the committee's action upon motion by Mr. Bogard, seconded by Mr. Carter.

The secretary reported that a group of Tulane students had held a meeting with President McLellan and Second Vice-President Janssen as board sponsors, after which a proposed consttiution had been submitted for comment. The students expect to petition for orpanization of a chapter of the society at Tulane University in the very near future.

President McLellan reported the receipt of a letter from the Pennsylvania Society of Professional Engineers in which they asked why Pennsylvania engineers were not granted reciprocal registration in Louisiana; in answer thereto be advised that the Louisiana law permits such registration only to those states which grant reciprocity to Louisiana.

A note of thanks from Mrs. Ernest Lee Jahncke for flowers sent to her late husband was read, and President McLellan advised that he would appoint a committee to prepare Commodore Jahncke's memorial resolution.

Mr. Duclos moved that the following resignations be accepted with regret, seconded by Mr. Bogard and carried: Albert M. Auster, Destrehan; Murray Bass, Jr., Baton Rouge; Broadus M. Bryant, Baton Rouge; Russell G. Cone, California; Arthur J. Ferguson, Shreveport; Henry K. Groves, Baton Rouge; Charles A. Hardie, New Orleans; Edw. A. Hodge, New Orleans; Edwin A. Davis, Baton Rouge; Frank W. Jones, Texas; Elihu R. Lucas, Jr., New Orleans; A. A. Lyons, Shreveport; Frank I. Marion, New Orleans; W. E.

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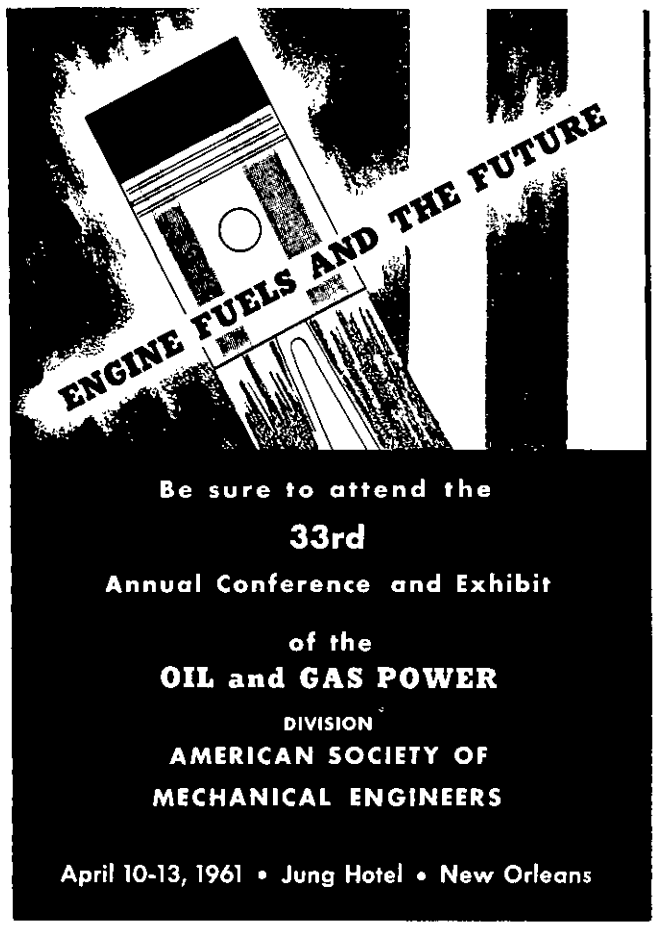

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(Continued from Page 7)

McWhirter, Virginia; Eugene H. Nettles, New Orleans; Homer E. Pittman, Jr., Baton Rouge; F. C. Ratliff, Bogalusa.

Mr. K. H. Woodward, Lafayette, was dropped in accordance with his request.

A letter from Mr. John L. Martinez, suggesting that the President of LES write to each Louisiana semi-finalist in the National Merit competition, was read and Mr. Janssen moved that a letter be sent to these high school honor students congratulating them upon their achievement and recommending the engineering profession as a career.

Mr. Bogard moved that Mr. W. O. Martin be reinstated to the grade of Affiliate Member in the society, seconded by Mr. Carter and carried.

A Public Relations Contract with Allen Johnson & Associates was reviewed and Mr. Carter moved that the contract be approved with corrections indicated, the principal difference from last year's contract being that Allen Johnson & Associates will receive 15% commission on all national advertising contracts secured; this in addition to the 15% that LES will pay the national firms' advertising agencies. Methods of paying expenses also were expanded, after which the motion was seconded by Mr. Bogard and carried.

It was decided to hold the Annual Board Meeting on Friday afternoon, January 13, during the period allocated for plant inspection trips.

Mr. Janssen moved that the following Junior Members who have passed the age limit for that grade be transferred to Affiliate grade, seconded by Mr. Carter and carried: James R. Barfield, Baton Rouge; Robert F. Bland, New Orleans; Wm. O. Crabtree, Baton Rouge; John F. Davis, Jr., Foreign; Harry Dekerlegand, Baton Rouge; Edmond E. Dupre, Jr., Lafayette; Charles H. Filgo, Baton Rouge; Marvin L. Firmin, New Orleans; Bishop B. Graves, Jr., Baton Rouge; Peter L. Green, New Orleans; Isaac M. Gregorie, Baton Rouge; John F. Grosch III, New Orleans; Paul E. Hime, Texas; Malcolm L. Hurstell, New Orleans; Pershing J. LeFort, New Orleans; Ralph R. Mongeau, Baton Rouge; Neville J. Ory, Lafayette; Wm. C. Jones, New Orleans; H. M. King, Jr., Alexandria; E. J. Langhetee, Jr., New Orleans; James L. Peltier, New York; U. L. Pitre, Jr., New Orleans; Frank J. Prehoda, Florida; Stanley B. Reynolds, Jr., Baton Rouge; Michael J. Ruck, New Orleans; Harvey J. Sims, Jr., Lake Charles; Louis G. Spann, Baton Rouge; Robert B. Symon, New Orleans; Charles G. Tullis, Texas; Lucien J. Virgillio, Jr., Baton Rouge; Jack W. White, Jr., Baton Rouge; John S. White, Jr., Baton Rouge.

Mr. Carter moved that the proposed changes in the Lake Charles Section's constitution be approved and that the section be authorized to proceed therewith. The motion was seconded by Mr. Duclos and carried. There being no further business, the meeting adjourned.

Secretary-Treasurer

NEW MEMBERS

Lloyd Alexander, Shreveport; Ara Arman, Lake Charles; Charles Z. Breaux, Jr., Plaquemine; George M. Cookson, New Orleans; Robert L. Couvillion, Baton Rouge; Earl P. Desselle, Chalmette; Clinton R. Griswold, Lake Charles; Harold J. Grunsky, New Orleans; Kenneth "Jack" Hammond, Baton Rouge; Fay N. Hansen, Baton Rouge; Charles D. Paine, New Orleans; Edwin C. Rowan, Monroe.

TRANSFER FROM JUNIOR TO MEMBER

August H. Douglas, Jr., New Orleans; David J. Levine, New Orleans; Joseph G. Richard, Jr., Baton Rouge.

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JUNIOR MEMBERS

Richard L. Bennet, Shreveport; Henry J. Bergeron, Jr., New Orleans; Henry J. Lartigue, Jr., New Orleans; Berton J. Perry, Baton Rouge; Andris A. Poncius, Lake Charles; Kenneth M. Raspberry, Jeanerette; William J. Thevenote, Jr., St. Landry; E. Wayne Tschirn, New Orleans.

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President's Report For 1960

By EDWARD A. McLELLAN

LES President, 1960

I believe it incumbent on every president to make some sort of a report at the end of his term of office. In most cases, an outgoing president is much better equipped to be president at the end of his service than at the beginning. Such is certainly the case with me, so I would like to report to you as I see them, some of the highlights of 1960 for the L. E. S., and tell you the direction I believe the L. E. S. should travel in the future. What I say is strictly my own opinion; it does not have Board approval or disapproval. It is offered to the new administration merely as my summation of "The State of the Nation" and they can use the report as they see fit.

You have in the L. E. S. an organization that is 62 years old, having been founded in 1898. It is a good organization and its purpose in life is more important to our profession now than ever before. In the future, the service of the L. E. S. is going to be absolutely essential in the development of an accurate understanding and appreciation of the professional engineer both by the public and by the professional engineers themselves.

Our most successful activities this past year have been directed toward protecting and strengthening our Registration Law. In the so-called "fiscal session" of the State Legislature in early 1960, two concurrent resolutions were introduced to reopen the Government Service Clause. One bill was introduced to change the Registration Law. These were felt by our Board to be against the best interest of the engineering profession and with lots of cooperation from other organizations we were able to have all of the actions withdrawn.

We also joined with the Gulf Institute of Consulting Engineers in a suit against the State Board of Registration seeking to restrain them from licensing some 129 persons who sought registration under a 1959 Concurrent Resolution, and from renewing the licenses of those few who had earlier been granted a license upon instructions of the Attorney General of the State Board. The suit was not accepted in the lower court on the basis that no true disagreement existed between the parties, but the case was appealed to a higher court which held in favor of the plaintiffs. The verdict on this was just given in late December 1960.

A step we took, that to me seems most important and noteworthy, was the establishment of the Registration Law Fund. This fund will be a permanent thing and will be used only for protecting and strengthening our Registration. Contributions were sought not only from our members, but from all Registered Engineers. We tried to get an average donation of $5.00 each. On the initial solicitation about $2700.00 was received and you will note from the annual statement that about $1300.00 was expended for the suit and for opposition to the concurrent resolutions mentioned earlier. The remaining $1400.00 is at the disposal of our Registration Law Committee.

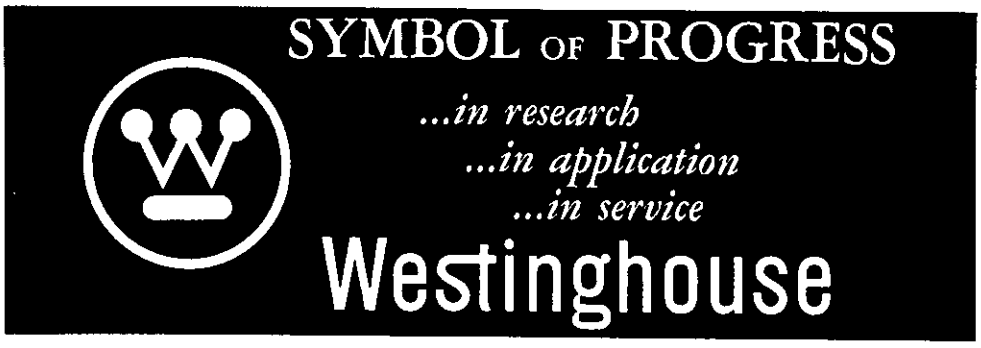
The New Registration Law Committee has been approved and appointed and is now at work. This Committee was appointed to serve through the 1962 session of the State Legislature and its purpose is to draw up changes to our Registration Law, try to get all interested engineering groups agreed on the recommended changes, and then to contact legislators prior to the session so that they will be appraised of what we are trying to do and will realize that the Engineering Profession in the state is agreed on the need and that the public will benefit.

I would like to remind you of the names of the men serving on the committee. They are:

W. S. Nelson, New Orleans, Chairman; L. J. Cucullu, New Orleans; Louis Duclos, Baton Rouge; Francis Sessums, Baton Rouge; Emery Domingue, Lafayette; Charles Stokes, Lake Charles; F. Hugh Coughlin, Alexandria; Orville T. Ice, Shreveport; Arthur Thigpen, Monroe.

Great care should be exercised by the Committee in its deliberations to act as a Committee representing all professional engineers, not just the L. E. S. It may be advisable to take representatives of other organizations of engineers on the Committee if it will promote harmony. The establishment of the Committee and the Fund by the L. E. S. is to afford leadership and permanency to the important work.

(To Be Continued)



Financial Report 1960

STATEMENT OF CASH RECEIPTS AND EXPENDITURES

For the Calendar Year 1960

RECEIPTS:

Advertising	$11,603.73	
Annual Meeting	3,238.82	
Annual Outing	2,166.23	
Certificates and Emblems	97.50	
Dividends & Interest	340.00	
Dues	20,771.25	
Engineers' Week	150.00	
Miscellaneous	235.03	
State Board Contribution	5,830.00	
Monthly Meetings	83.76	$44,516.32

EXPENDITURES:

Advertising Commissions Paid	$ 3,061.00	
Annual Meeting	3,001.45	
Annual Outing	2,391.96	
Awards, Scholarships & Vocational Guidance	330.81	
Engineers' Week	708.53	
Miscellaneous	816.24	
Monthly Meetings	479.98	
Office Supplies	113.00	
Public Relations	6,068.49	
Publication	10,007.23	
Salaries	5,820.00	
Shreveport Fair	150.00	
Stationery, Printing & Postage	2,088.87	
Taxes	154.60	
Travel Expense	253.29	
Dues Rebated	9,126.78	$44,572.23
Cash Deficit		$ 55.91
Increase in Book Value of Bonds		135.83
		$ 79.92
Less Inventory Value of Lapel Emblems Sold		62.50
Net Increase in Liquid Assets		$ 17.42

STATEMENT OF LIQUID ASSETS

December 31, 1960

Cash in Bank		$ 2,657.07
U. S. Savings Bonds:		
June 1950, Series F	$ 1,890.00	
March 1955, Series J	812.00	
April 1955, Series J	812.00	3,514.00
Homestead Stocks:		
Columbia	$ 2,000.00	
Commonwealth	2,000.00	
Greater New Orleans	716.74	
Security	1,500.00	
State	1,500.00	
Union	1,500.00	9,216.74
Lapel Emblems on hand, Value of		214.09
Total Liquid Assets December 31, 1960		$15,601.90
Total Liquid Assets January 1, 1960		14,275.58
Increase in Liquid Assets		$ 1,326.32
Less: Registration Law Fund		1,308.90
Net Increase from L.E.S. Operations		$ 17.42

CASH RECONCILIATION:

Collected for Registration Law Fund	$ 2,716.00
Expened for Registration Law Fund	1,407.10
Balance in Fund	$ 1,308.90
Less Cash Operating Deficit	55.91
Increase in Bank Balance	$ 1,252.99
Cash Balance per December 1960 Financial Report	$ 2,657.07
Cash Balance per January 1, 1960 Financial Report	1,404.08
	$ 1,252.99

1960 Membership Report

GAINS:			
Elected:			
Honorary Member	1		
Members	39		
Affiliate Members	29		
Junior Members	50		
Student Members	29	148	148
TRANSFERS:			
Member to Life Member	3		
Junior to Member	4		
Junior to Affiliate Member	32		
Affiliate to Junior	1		
LOSSES:			
Deceased:			
Charter Member	1		
Life Members	3		
Members	5		
Resigned:			
Members	27		
Affiliate Member	1		
Junior Members	11	39	
Dropped:			
Members	39		
Affiliate Members	7		
Junior Members	22	68	116
NET GAIN			32

SUMMARY:

Honorary Members	16
Life Members	74
Members	1,353
Affiliate Members	191
Junior Members	273
Student Members	29
	1,936

'Thirst' Problem Posed By Miller

By DR. A. L. MILLER
Director of the Office of Saline Water,
U. S. Department of the Interior

Getting a good drink of water in 1980 may become the Number One problem in many communities in the United States.

Reliable estimates indicate we will be short 85 billion gallons of water in 1980.

The water in the lower Mississippi River will become unusable unless put through a distillation plant within the next 20 years if the communities above Baton Rouge continue to pour their untreated sewage, petrolchemical products, garbage and other pollutants into the tributaries. Municipalities are now taxed to the limit to treat some very questionable water and make it suitable for human use. Great stress will be placed upon pollution of water and air in the years ahead.

When the Office of Saline Water was established in 1952 the cost of converted sea water at that time was about $5.00 per thousand gallons. Today, in 40 or 50 million gallons per day production, the cost would be close to 42 cents per thousand gallons. The Office hopes through research and pilot plants to bring this cost down to around 35 cents per thousand gallons. At this price it would be competitive with the price paid by more than two-thirds of the municipalities in the United States.

In 1957 a thousand cities representing 15 per cent of our population were forced to restrict the use of water. The Commerce Department estimates that 40 million people are teetering on the edge of a water shortage.

The oceans contain 320 million cubic miles of unusable salt water. Twenty-four of our states, with 55 per cent of the population and 65 per cent of the industry, border on the ocean. Along many coastal areas there is an invasion of sea water. It is my belief that by 1980 several thousand progressive cities will be getting a part or all of their water from either the ocean or brackish water sources.

The Office of Saline Water carried on 54 different experiments last year in an effort to find a cheaper way of making potable water from the ocean and brackish water sources. We are now in the process of building five demonstration plants to demonstrate the different methods.

We appear before the House Committee on the 16 and 17 of January to outline the progress the Office has made. New legislation has been introduced which passed the Senate last year and should it become law will greatly augment the work of the Office of Saline Water.

The remarks above were abstracted by Dr. Miller for The Louisiana Engineer from a paper he read before the Annual Meeting of LES, Jan. 13, 1961 in Baton Rouge.

Engineers' Week

Engineers Present Report To Public

Louisiana Engineers this month are taking time to present to the public a report on their activities in industry, government, education and private practice.

The reports have as their theme "Engineering—A Career of Opportunity" and will tell of the many opportunities in the field of engineering for Louisiana youth.

Under the direction of James B. Smith, Alexandria, State chairman for Engineers Week Feb. 19-25, LES Sections are planning various events to commemorate that event.

In Baton Rouge, for example, radio-TV and news paper coverage is planned of such activities as Professional Engineer appearances before some 12 civic clubs and groups, JETS activities and a joint meeting of the Baton Rouge Section with the Louisiana Section, A. S. C. E. at 7:30 p. m. Monday, Feb. 20 at the Bellemont Motor Hotel. Downtown and suburban area engineering models will be exhibited. Key figures in this planning are G. R. Dyson, Roger P. Guissinger, James R. Gilbert, W. A. Wintz, E. J. Taylor, W. H. Carter; University High Key Club president Robert Sabatier; James R. Barfield, Lucien J. Virgillo, Jr., A. P. Batchelor.

In New Orleans, Dr. Lee H. Johnson, Dean of the Tulane School of Engineering will speak at the LES meeting at the Engineers Club at 8 p. m. Monday, Feb. 20. Prof. John L. Martinez, assistant dean, will moderate a panel of Tulane students on WYES-TV at 9 p. m. Wednesday, Feb. 22 discussing engineering opportunities. Mason G. Lockwood, a consulting engineer and past president of the Houston Chamber of Commerce, will speak before Members' Council, Chamber of Commerce of the New Orleans Area, at noon Thursday, Feb. 23, as another highlight. Luncheon charge is only $2.00.

Engineers Week chairman is William A. Baker, Jr. His committee includes A. J. Brodtman, vice-chairman; J. L. Martinez, Wendel G. Leibe, Warrington B. Speer, Walter G. Landry and Allen Johnson.

H. L. Henry, Jr., LES Monroe Section Engineers Week chairman and Associate Prof. Francis C. Roy, Louisiana Tech campus chairman for the event, have planned a busy program for the Ruston-Monroe area. Mr. Lionel J. Cucullu, Vice-President of New Orleans Public Service Inc. and a past LES president, will address La. Tech engineering students and faculty at 2 p. m. February 22, and a dinner meeting of area professional societies at 7 p. m. that day. Active in the planning are M. R. Johnson, H. A. Kallsen, J. G. Chumley, J. C. Ramsaur; A. C. Thigpen, dinner chairman; R. A. Smith, J. D. Calhoun, J. S. Tarbutton, R. E. Carlile, J. T. Painter, Lee Denny, all of La. Tech; Ellis Ross, R. G. Hart, Jr., Sidney Gill, LES Monroe Section.

Details of other Section events will appear in a subsequent issue.

Chemical Engineers 'Go On Stream'

General arrangements for the American Institute of Chemical Engineers 44th National Meeting in New Orleans, La., Feb. 26-March 1, 1961, were made by committee at Laplace, La., including (from left, seated), O. F. Wiedeman, R. M. Poe, D. L. Simpson; Mmes. H. E. O'Connell, J. F. Cheely and R. M. Stewart; C. M. Russell, Jr., N. B. O'Donnell; (from left, standing), A. M. Kahn, M. M. Koenecke, M. O. Gernand, A. L. Regnier, R. E. Ringelman, J. F. Cheely, H. E. O'Connell, R. V. Mattern, H. Bernstein III, E. Breidenbach and J. Pominski.

Chemical engineering advances on the Gulf Coast and the Southwest will be the major theme of the 44th National Meeting of the American Institute of Chemical Engineers at the Hotel Roosevelt here Feb. 26-March 1, 1961. It will be held in conjunction with the first Petrochemical and Refining Exposition, sponsored by A. I. Ch. E., in the nearby Municipal Auditorium. It is expected that some hundred of the nation's leading suppliers of equipment for the refining and petrochemical industry will take part.

One of the features of the National Meeting, which 2,000 will attend, will be a Sunday afternoon "brainstorm" symposium on technical problems, under the leadership of G. C. Szego, Space Technology Laboratories, Los Angeles.

The technical program, arranged by a committee headed by A. L. Regnier, Cities Service Research & Development Co., New York will be highlighted by symposiums and papers on growth of refinery and petrochemical plants on the East Coast and the Gulf Coast; plastic and fibre plant growth on the Gulf Coast; the future of the petrochemical industry on the Gulf Coast; new petrochemical processes in that area.

There will also be sessions on mathematics in chemical engineering, thermodynamics, education and professionalism, evaluation of research and development programs, new chemical processes and the international chemical industry.

General arrangements are in charge of O. F. Wiedeman, American Cyanamid Co., New Orleans.

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WHAT IS EJC?—Engineers Joint Council is a federation of professional societies whose memberships total a quarter of a million engineers. It is dedicated to the betterment of the nation and to the professional and sociological development of the individual engineer. Societies in special fields serve members in their particular areas. Engineers Joint Council, however, represents the engineers' broad profession, and works for engineering by promoting sound public recognition of the engineer.

Through EJC, the nation's engineers bring their constructive thoughts to bear on national manpower policy, on engineers' employment conditions in industry, on science and engineering education, on secondary and technical school education, on national resources policies, on international standards, on labor-management relations or in developments such as nuclear energy.

Engineers Joint Council was created in 1945 and modified to its present form upon recommendation of a group representing 15 national engineering societies in 1952. It is the strong body necessary to bring the full opinions of the combined engineering profession to bear upon social and economic questions affecting engineers and upon public policy where engineering aspects are factors. United States Government agencies turn to EJC for advice, counsel and facts as the major "voice" of the engineering profession.

—o—

While engineers and managers in industry pretty well agree on the ingredients of professionalism, they do not always see eye-to-eye on what is being done and what should be done to advance the concept.

The sixth of a series of surveys published by the Professional Engineers Conference Board for Industry in cooperation with NSPE reveals that in general, industrial managers feel that companies are doing more to advance professionalism than engineers give them credit for. The survey, "Engineering Professionalism in Industry," con ducted for PECBI by the Opinion Research Corporation of New Jersey, uncovers the following differences of opinion:

- Fifty-six per cent of managers surveyed felt their companies recognize the professional status of engineers to a "very high" degree, but only 26 per cent of engineers agreed. Most engineers (51 per cent) felt their professional status was recognized by companies to only a "moderate" degree.
- Almost 70 per cent of managers said management shows "genuine respect" for engineers, but only 36 per cent of engineers agreed. Ninety per cent of managers rated engineers among the most valuable employees, but only 52 per cent of engineers felt they are so regarded. "If companies are doing all the things they say they are," concludes the report, "many of these programs and policies are not now getting through to engineers."

Although many differences of opinion crop up in the survey, it is evident that genuine management efforts to improve professional conditions get results. Before interviews were conducted, surveyed companies were analyzed and rated on actual efforts to promote professionalism among engineers.

April Fuel —Field Notes

By Allen Johnson

"Engine Fuels and the Future" will be the theme of the 33rd Annual Conference and Exhibit of the Oil and Gas Power Division of the American Society of Mechanical Engineers at the Jung Hotel and Municipal Auditorium in New Orleans April 10-13, 1961.

General arrangements chairman John F. Vogt, Jr., said that an outstanding technical program has been prepared, in addition to the approximately 30 exhibits that will be on display at the Oil & Gas Power Exhibit in the Auditorium.

Serving on the committee are Forney Fuller, Vice-Chairman; ASME region X vice-president Allen H. Jensen; R. Maddux, A. H. Douglas, E. H. Pavia, C. Geoca, D. J. Burnett and T. B. Lockett. Mrs. Fuller heads the ladies committee, which includes Mmes. R. A. Banck, L. L. Denson, Pavia, G. J. Groh and Jensen. A harbor trip on the Steamer President will be a feature of the program.

The Fifth Annual State Planning Conference of the Louisiana Engineering Society is scheduled for March 17-18, 1961 at the Hotel Bentley, Alexandria, William J. Rountree, Alexandria Section President, informed the January Board of Direction meeting. C. C. Edwards is program chairman for the conference, which has proved invaluable as a means of developing LES activities throughout Louisiana.

Kudos all around to Henry Landry and his committee for planning, pacing and polishing arrangements for the 1961 Annual Meeting in Baton Rouge . . . Notable assists were given by G. R. Dyson and Erroll Laney of the State Department of Public Works, Ralph McCollister and many, many others.

With this issue, the Professional Listings are reduced in size, to conform with standard journal publishing practice.

"In order to understand their roles in society, engineering students must realize a full ectucation experience in professional school which includes a basic liberal arts background," William T. Tucker, III, Tulane assistant professor of mechanical engineering, told the Tulane Baton Rouge Educational Conference Jan. 14, 1961. Tulane Dean of Engineering Lee H. Johnson also addressed the Conference.

—o—

What Every Louisiana P. E. Should Know

This is another in a series of articles prepared by the Editorial Starr 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. And 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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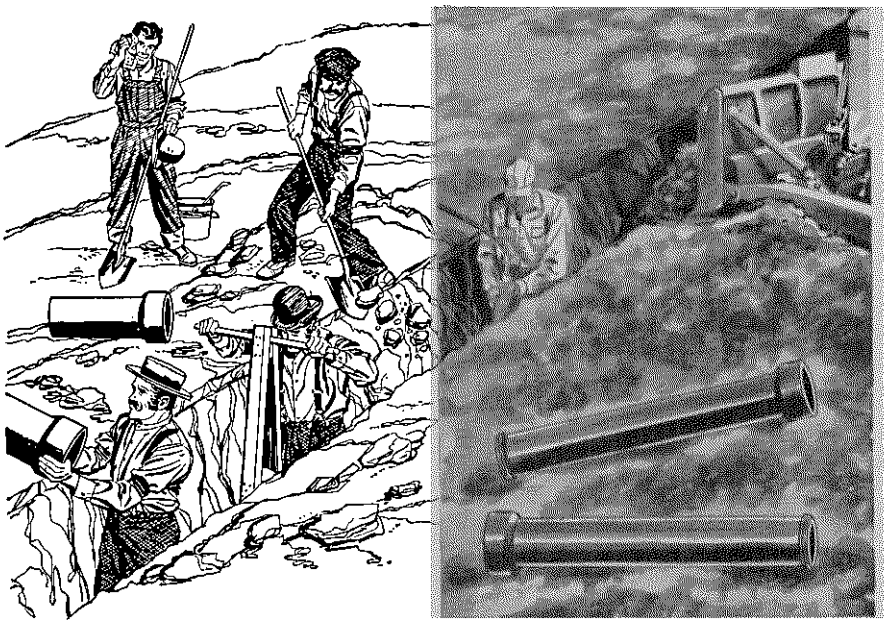

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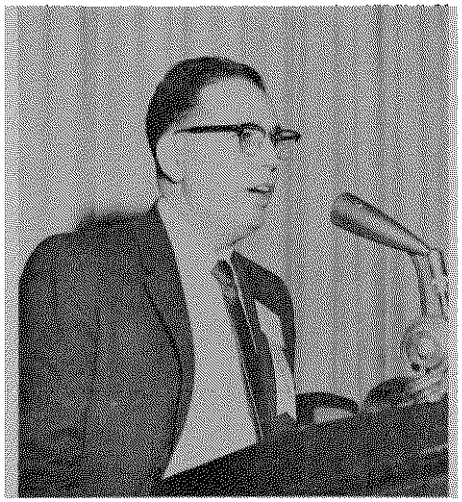
Annual M

LOU

"The Engineer—An Individual" was the theme of a highly-successful 1961 Annual Meeting in Baton Rouge . . . General chairman Henry Landry and his colleagues were genial hosts, and provided a tightly-scheduled, informative program . . . Dean Emeritus George Griffin Hughes of USL was made an Honorary Member; life membership went to Lucien T. Vivien, Ralph E. Lind and Francis B. Grevemberg . . . Winner of the LES Activities-A. M. Lockett Medal was past president ton L. Nairne . . . Baton Rouge Mayor John C. Christian commented: "I don't know where I'd b out my engineers" . . . Brief but impressive cere marked the transfer of the position of LES Pr from Edward A. McLellan to Dean Ben T. Bogard

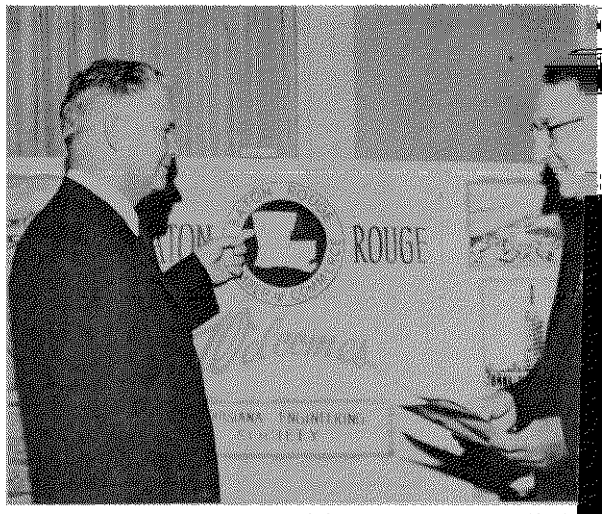
ROY T. SESSUMS
. . . teller's count



JOHN P. FERNANDEZ
. . . secretary-treasurer

W. H. CARTER
. . . opened meetin

EDWARD A. McLELLAN (left), BEN T. BOGARD
. . . turns over gavel to new president

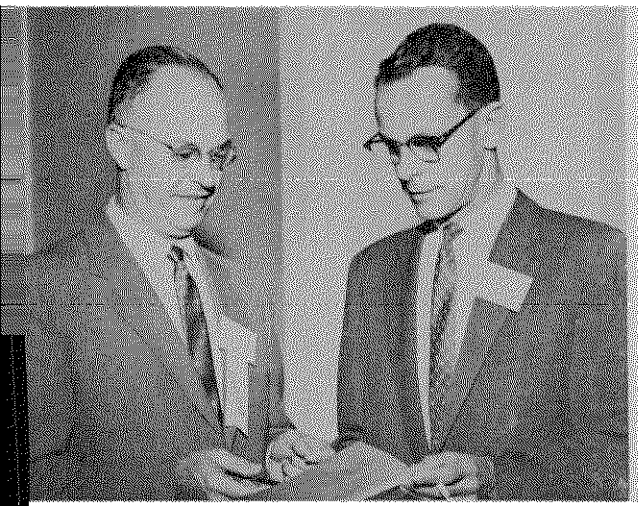


CLIFTON A. FREY (left), MARION C. BUBENZER
. . . Shreveport delegates

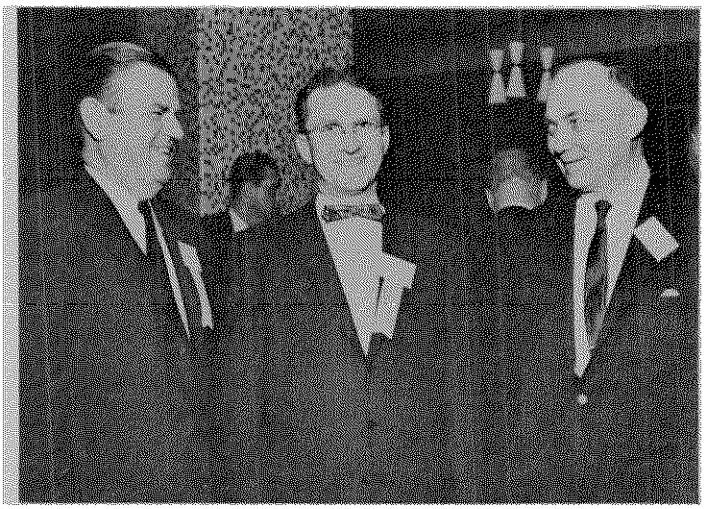
A ENGINEERING SOCIETY

R. E. JENKINS (left), JAMES S. JANSSEN
. . . receives award for Dean Emeritus Hughes

CLAYTON L. NAIRNE (left), DEAN LEE H. JOHNSON
. . . Civic Affairs award presentation



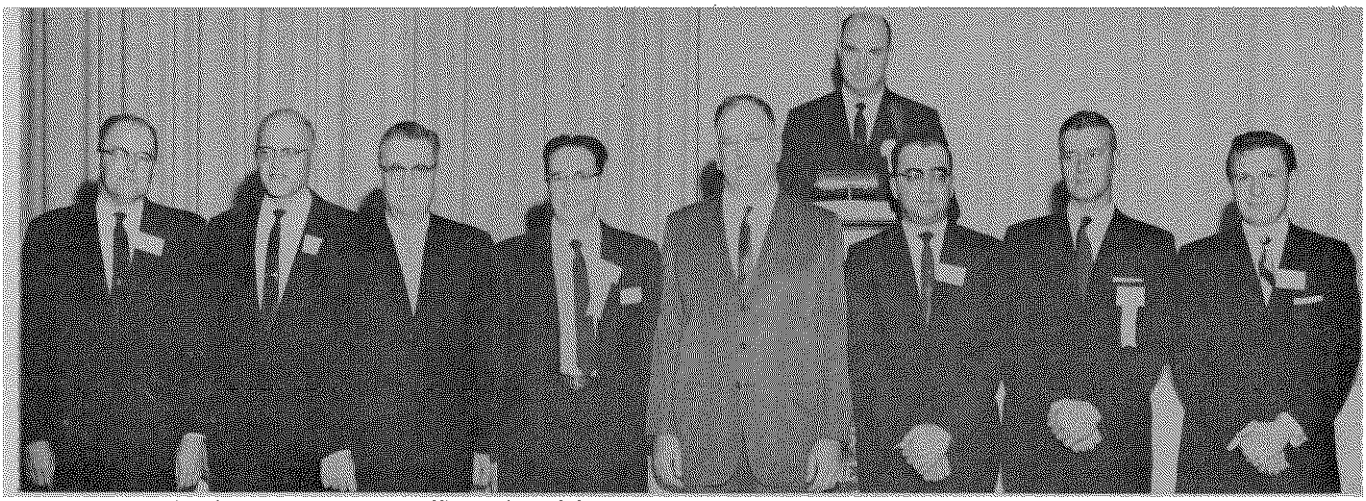
DANIEL B. CRESAP (left), F. L. ARUE, JR.
. . . Alexandria, Lafayette officials



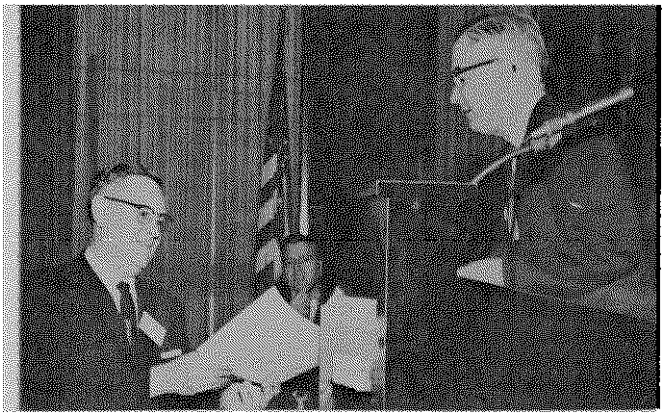
(From left), LOUIS DUCLOS, WAYNE T. WALLACE, LEO ODOM
. . . Registration chairman greets delegates

Annual Meeting

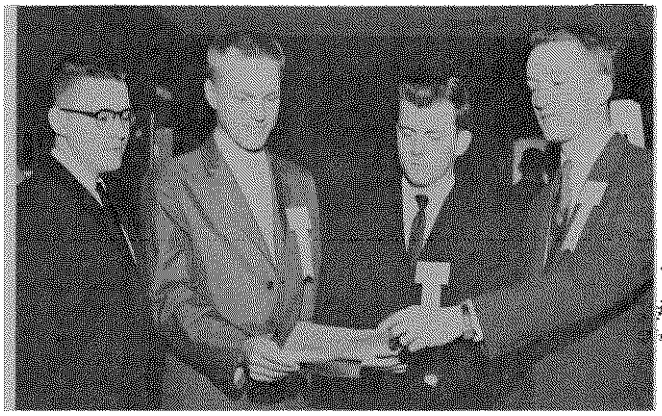
LOUISIANA ENGINEERING SOCIETY



Roy T. Sessums (rear) presents 1961 LES officers (from left), Ben T. Bogard, James S. Janssen, Calvin T. Watts, John P. Fernandez, E. J. McNamara, Emery Domingue, Douglas F. Latimer, Chris Demopulos.

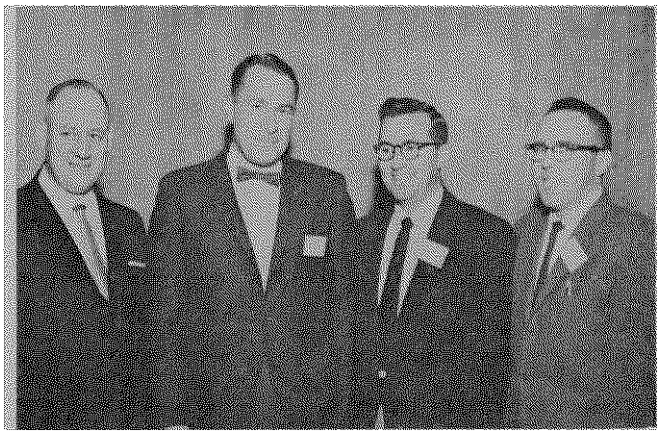


Life Member Lucien T. Vivien (left), receives certificate from President McLellan (not shown: Ralph E. Lind, Francis B. Grevemberg).

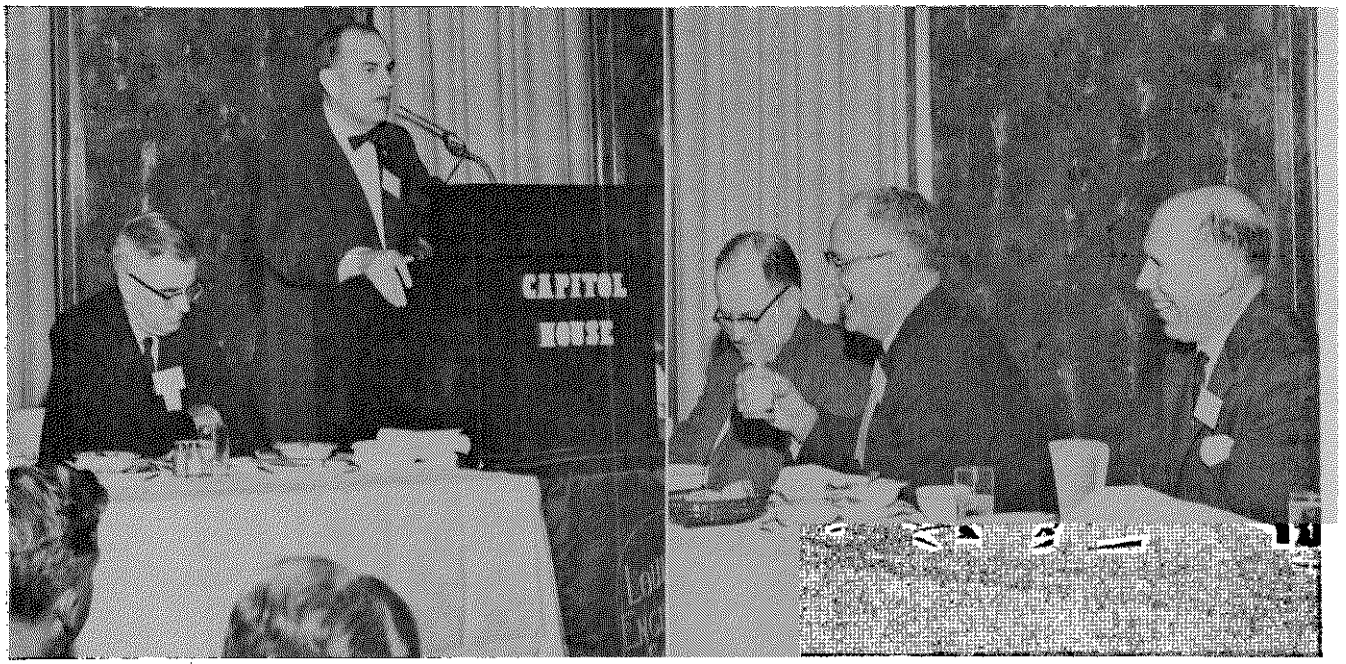


Student speakers (from left), Robert M. Caruthers, Ruston; Wolfgang Neumann, New Orleans; Larn C. Anglin, Baton Rouge, shown with William F. Lytle, LSU professor.

H. L. Henry (right), Ruston, registers with Roger P. Guissinger (left), as registration chairman Duclos looks on.



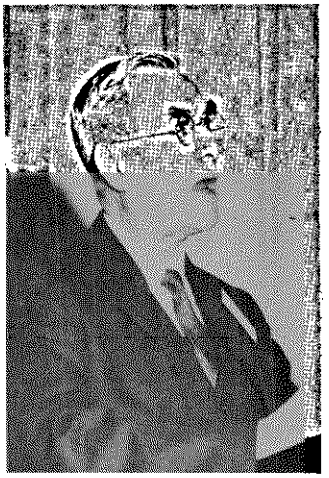
ASME luncheon sponsors included (from left), Grover Trammell; Allen H. Jensen, Region X vice-president; G. J. Groh, E. S. Adler, Jr.



Serious and light aspects of paper read by NSPE past president Harold A. Masher are reflected at head table by (from left), E. A. McLellan; (photo at right), Ben T. Bogard, general chairman Henry Landry, C. W. Stokes.

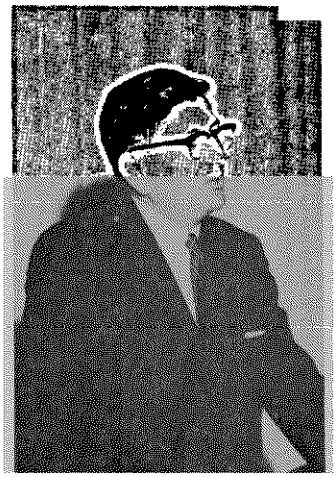
DR. A. L. MILLER (left), CALVIN T. WATTS
. . . talk on water resources

DR. W. LEIGHTON COLLINS
. . . more education



DR. W. K. LEWIS
. . . engineer and society

WILLIAM KEISTER
. . . communications



ALVIN B. RUBIN
. . . liability

MMES. E. A. McLELLAN, FRANK B. FROMHERZ, CALVIN T. WATTS (l to r)
. . . Woman's Auxiliary

Growth, Youth Keynote Engineering

Individual And His Profession

By HAROLD A. MOSHER, P. E.
Past President, NSPE

"Nine of ten engineers who ever lived in all history are living now."

"More than half the engineers now practicing in the United States received their first degree in the dozen-odd years since World War II."

It is not my purpose to argue the validity of these two startling quotations, although the second is incontrovertible. The record indicates about 470,000 engineering degrees awarded by the nation's colleges and universities since 1946, while even highest inventories of qualified engineering manpower do not exceed 600 - 700,000.

The first statement may be more argumentative, but here again it is true that it has only been, approximately, within the last 100 years that so-called "Civil Engineering" has been systematically applied, as an organized discipline, to the non-military, day-to-day problems of people. Similarly, the first state law legally recognizing and regulating the practice of engineering is just 53 years old.

My purpose in presenting these two quotations is to illustrate to you the Sputnik-like growth, the seething youthfulness of engineering as a profession today.

What does this rapid growth in numbers of engineers suggest to you? Probably most of us will visualize only a growing reservoir of people of high technical competence, of trained analytical skills, rich in creative potential and certainly this is an important facet in the whole concept.

But let us consider further:

1) A client who engages the services of a consulting engineer has a right to expect, and does expect more from him than mere high technical competence.

2) Top flight industrial firms all over the country are insisting that engineers on their staff, even though they were originally engaged because of their technical training, are "a part of management."

3) In one recent month, almost 1500 engineers joined with the 50,000 then members of N. S. P. E. Like clients and industrial employers, these engineers were not seeking to enhance their already high technical skills, for N. S. P. E. has long held that this type of growth can best be encouraged through association with one or more of the over 100 technical societies in our country.

Apparently clients of engineers, industrial employers of engineers, and engineers themselves are all in agreement: the engineer must possess the highest technical skill, yes—but he must offer also an additional PLUS. What is the nature of this plus?

Probably it would most commonly be described as "Professionalism," and that is no doubt a proper designation. To my mind it has the limitation, however, of being too vague, of meaning too many things to too many people. To sharpen up the concept, I suggest that the distinction between the professional and the highly skilled technical expert is one of perspective developed in the former.

This perspective insists that the professional see his own contribution as an important, integrated part of the whole economic and social structure. It also demands, for his own personal satisfaction and growth, that that contribution be similarly regarded by the public, and by his associates. Thus, the project designed by the professional must not only fill the intended need, but must be economically sound so as to use most effectively the savings (capital) of society as a whole, as well as that of his client or employer. Similarly, it must post no threat to the safety or well being of the public, present or future; it must be accomplished without prejudice to the personal rights or prerogatives of others, including his fellow engineers.

Dr. Eric A. Walker, Dean of the College of Engineering & Architecture, Pennsylvania State University, expresses the same thought in somewhat different language. He says, "It all adds up to two attitudes, one defining the moral responsibilities of a man to his work, and the other the attitude of the public toward the man as a member of a group. As an attitude, it cannot be legislated—it takes no account of whether the man is a hired hand or a private practitioner, whether he works in his private quarters or in a big office."

Note that phrase, "it cannot be legislated." We do not become professional only by taking an examination in technical principles, by being licensed, even though that license is an important milestone in the career of an engineer. It precludes the necessity of his treading that narrow path between illegal practice on the one hand, and demoting his efforts to that of a sub-professional technician, on the other. Note also Dr. Walker's statement, "the attitude of the public toward the man as a member of a group." That attitude must be promoted and sought, must be wanted, not only by the few of us, but by most or all of the several hundred thousand men and women in our country who are qualified as engineers.

The importance of this "attitude" has been illustrated by Gen. A. M. Minton, U. S. A. F., who recently said that he regards the acquisition of a strong professional attitude by engineers to be a most important factor in America's battle for military survival. General Minton is apparently convinced that such an attitude will provide increased motivation to more creative, fruitful contributions by technically trained engineers.

How then, can this desired attitude be developed among engineers generally? Can one be taught an at-

Harold A. Mosher, Rochester, N. Y., is a past president of NSPE. He spoke on the above topic at the Annual Meeting of LES at Baton Rouge, Jan. 12, 1961. He is in the engineering department at Eastman Kodak Co.

titude? Probably not, for the attitude of which we are speaking is more of a conviction or faith, than a mental skill, although continued exposure to it in college and post college experience might help in setting a right climate in which it may grow. One thing is properly certain, the recipient must want it, must seek it, must take the initiative, must **train himself** in order to acquire it.

Perhaps a review of my favorite definition of the professional person, that by Dr. Vannevar Bush, might be of help in charting a course for this program of self-training. According to Dr. Bush, "In every one of the professional groups will be found the initial, central theme intact—they minister to the people. Otherwise they no longer endure as professional groups. Ministry carries with it the idea of dignity, and authority; it connects no weakness, offers no apology—there is no fog of subservience surrounding the concept. A true profession exists only so long as the people **allow it** to maintain its prerogatives, by reason of their confidence in its integrity, and belief in its general beneficience." Note the key words: service, dignity and authority, integrity, beneficience.

What does it mean to serve with "dignity and authority?" To me, it means knowing one's job, with certainty. We do know it now; will we continue to be up-to-date, authoritative in our rapidly changing technology, 10 years from now? The answer will no doubt depend upon the effort expended by each of us, but association with others in the technical society of our choice will help. When we find ourselves in a field outside our experience or training, have we the dignity and courage to seek the consultative advice which is authoritative? Serving with dignity and authority will require our constant interest and concern in the quality of engineering education offered, taking such individual and group action as may be necessary to revise, broaden and deepen the curricula offered by our schools, so as to meet every demand which may be made upon engineers of present or future generations.

What about serving "with integrity?" It is more than mere honesty, or acting within one's **legal** rights. This is the reason for our code of ethics, and this code can be observed by engineers practicing in the employ of others as well as by those in private practice. How long since each of us has read our code of ethics, or reviewed the findings of N. S. P. E.'s Board of Ethical Review, thoughtfully, and considered their implications in our own day-to-day activities?

Or "serving beneficiently?" Are enough engineers offering their peculiar and valuable talents in analysis and technology to civic groups, such as boards of education, planning commissions, social agencies, political offices, and a host of others? In my own community, the lawyers outnumber us in these spots by approximately 10 to 1, even though the community's opportunities are enjoyed by many more engineers than lawyers. From personal experience, I can assure you that there is no lack of demand for the services of engineers in civic enterprises, no lack of opportunities for engineers to "serve beneficiently."

Perhaps the greatest single opportunity for the engineer to train himself in the attitude of professionalism, however, is in participation in his professional society. I wish it were possible for us to tell you in detail of the many purposeful and effective programs of your National Society of Professional Engineers. For example, you would find satisfaction in its legislative activity; in a typical year N. S. P. E. leaders and staff present many thousands of words of testimony on engineering affairs to congressional committees, and a week rarely passes in which the advice and counsel of your society's officers or staff is not sought on contemplated legislation, or actions of some government agency.

The conflict between the union movement and the professional status of engineers continues. Vigorous work on the part of N. S. P. E., in cooperation with the state societies and local chapters have resulted in important gains in this area during the past several years. However, in spite of the several recent decertification victories, there still remain more than 30,000 qualified engineers in the U. S. who are members of labor organizations, who have not yet recognized the contradiction, the anomaly, between such membership and the professional recognition we all seek. This problem will continue to be a major, important area of activity for your society.

Returning to our introductory theme of engineering as a relatively young and fast growing profession: it is because of this youth and vigor that engineering offers such challenging opportunities for growth and achievement, of both the individual as well as the whole engineering family; it is because of these challenging opportunities for growth that participation in, and support of, the programs of your National Society of Professional Engineering is so vital to today's engineer.

A quotation over the entrance to the Archives Building in Washington, D. C. reads "All Past Is Prologue." There is a story of a visitor to Washington, who asked his taxicab driver what the quotation meant. The driver's reply was—"I guess it means, brother, 'You ain't seen nothing yet' ".

So it is with the potential contributions to American life of our young, vigorous, vital, unsophisticated engineering profession: the curtain hasn't yet gone up on the first act! Each of us can have a role in the growth of our profession from adolescence, by contributing but a small part of our time and our high skills to the work of the National Society of Professional Engineers, as well as to that of our technical society, both of which provide so many opportunities for individual growth. Only thus will the engineering profession be able to build into itself the strength and idealism which will merit its great destiny.

The Place of Engineering In Society and Civilization

By W. K. LEWIS

A few weeks ago two young American tennis players down in Australia, defeated in Davis Cup matches, threw their rackets around, rumpused in the locker room, and then, unhappy at the limitations imposed by amateur status on their money making capacity, turned professional. The incident highlights an important facet of the problem facing American engineers, equally unhappy at what they deem inadequate recognition on the part of the public of them as professional men. The word "professional" has been so debased by its varied uses that to the public it does not carry the meaning imputed to it by the engineer as applied to himself.

The representative man on the street lacks definitions for words and has hazy ideas about them, but he would probably agree that in general the professional is a fellow who does a job requiring unusual skill based on a high degree of ability developed by rigorous training, and does it for all he can get out of it. To the man on the street the definition covers both the tennis player and the engineer. The engineer is convinced that even from the purely professional angle engineering and tennis differ. What is the differentiation?

Now as professions tennis and engineering do indeed differ in two important respects. In the first place, unlike tennis, engineering deals with and endeavors to solve the problems in one of the most vital and important areas of human life and activity. Moreover, in its area engineering has a record of contribution to human welfare and progress second to that of no other of the great professional groups; yet, engineers are unconscious of that achievement and the depth of its human significance. In the second place, the engineering profession has before it an open door of opportunity to contribute in its area a transformation in human thought and attitude that can remold civilization constructively beyond the capacity of imagination to envision. Tennis can't do that.

To appreciate engineering one must know something of the history of civilization. It seems agreed that what we call by that name started when, about seven or eight thousand years ago, man first learned to grow crops in the valleys of the Nile and Mesopotamia (perhaps also the Indus). It involved use of simple types of irrigation to assure moisture during the growing season, while the silt deposits of the yearly floods maintained soil fertility indefinitely. It enabled men for the first time to build settled, stable communities on permanent locations and to produce a certain surplus of food and other material necessities of life beyond the subsistence requirements of the producing workers themselves. For the new type of community the maintenance of public order was more necessary than before and the ruling caste assumed increased importance and grew in numbers; protection against the raids and incursions of barbarian neighbors and of other communities of their own type brought into being a warrior caste; the religious instinct maintained a priesthood and probably enhanced its influence. There thus developed in the communities classes supported by the manual labor of a worker caste, privileged as again unprivileged groups. There is a tendency to describe this state of affairs as exploitation of the poor by the rich, of the weak by the strong, but care and restraint must be exercised in judgment, for the productivity of labor was so low and the lower classes so numerous relative to the upper that uniform distribution of the total wealth produced would have done little to ameliorate the condition of the least fortunate.

This development, which has been called the agricultural revolution, brought about a transformation in human society, the full significance of which is difficult for us to appreciate. For the first time in the life of the race a group in the community—the privileged group—possessed a certain amount of leisure-time which they could use as they pleased—together with the wealth and the conditions which made is possible for them to use it constructively. Doubtless, few of them used it wisely, but from the activities of those that did there was born the thing called civilization and particularly those intellectual, aesthetic and ethical phases and expressions of the flowering of the human spirit enshrined in the word culture. The possibility of culture was born of the agricultural revolution.

Centuries and millenia passed, civilizations rose and fell, but in all those civilizations culture was the privilege of the few based on the drudgery of the many. It could not possibly be otherwise because of the inefficiency of human labor in the production of material things. "Man doth not live by broad alone," but without bread man cannot live. For the man who has leisure someone must produce the bread. It is true that through the generations the efficiency of labor was increased. The quoin was discovered, the wheel was invented, the smelting of metals was mastered, craftsmanship was developed to extraordinary levels of skill and achievement, but the lot of manual labor, especially of the agricultural worker, remained almost unbearable. Moreover, it was still true that the privileged were so few and for most of them their privileges so limited that equalization of distribution of wealth would not only have destroyed culture but also disrupted social and economic organization to such a degree that the resulting drop in efficiency of labor would almost certainly have left those economically least privileged individuals worse off rather than better. Any

W. K. LEWIS, professor emeritus of Massachusetts Institute of Technology in the field of chemical engineering, read this paper before the Annual Meeting of LES in Baton Rouge Jan. 13, 1961.

drastic attempt to remedy the situation would have been distastrous to all.

Two hundred years ago come another revolution that was destined once more to transform the production of the material things men need to live, the industrial revolution. It began with a series of mechanical inventions in the textile industry which were extraordinary exhibitions of versatile craftsmanship but its next step, the introduction of steam power, was the first recourse to science for the solution of an industrial problem. Watt, trying to improve the Newcomen engine, finding himself unsuccessful and frustrated, did a new thing under the sun: he stopped working on the engine and went into the laboratory to study and measure the properties of steam. That is exactly what any top-flight modern engineer finding himself in a similar situation, does today. When he had developed the reciprocating engine, he went on to invent the indicator, to enable him to follow and to measure the performance of the machine, and thus to secure the information necessary for its intelligent control and improvement. By introducing the use of the knowledge and the method of science into the solution of the problems of industry, James Watt became the father of the engineering profession.

The sequel of the industrial revolution is modern western industrial civilization. The trouble is that no one appreciates its significance. Its products are thought of as roads and bridges, as tail-finned cars and jet planes, as ranch houses and skyscrapers and most particularly as gadgets, from space ships to hula hoops. The best of these are but means to an end; the worst are disintegrating in their effect on human personality. The truly important product of the industrial revolution is the increase in the efficiency of human labor; its twofold result is, first, the increase in the material things available for living and, second, the release of time, the creation of leisure for men.

It is difficult indeed for a modern man to appreciate the condition of the working man of two centuries ago, especially the agricultural laborer. Historians tell the story of the privileged, not that of the underprivileged. A few specific illustrations may perhaps give an inkling of the change. The writer's first full-time industrial job a half century (not two hundred years) ago was in a plant with a work week of seventy-eight hours. Little time did that leave for the finer things of life. A century ago only one child in twenty in this country got the equivalent of a high school education. This was not because the parents failed to appreciate the value of education. The economy could not afford it. The child had to go to work. Today, the increased efficiency of human labor in the production of material goods has both released to the child the time for the education and furnished the material and human facilities to enrich the opportunity beyond measure. Consider medicine. Its achievements in mastery of disease and prolonging life are a crowning glory of this last century. However, had the physician of a hundred years ago had the knowledge of today his ability to use it effectively would have been stringently limited. He could not have had the modern hospital with its expensive laboratories, equipment and techniques. These have been made available to him by increased industrial efficiency in production of goods. A similar story could be told concerning the advances in the field of communications, better newspapers and news services, the development of radio and television and the like, and indeed in every field of human activity.

The industrial revolution for the first time in history has created a new civilization in which the privileges of leisure and the material wherewith to use it constructively are available—at least potentially—to every man, barring the one handicap of physical or mental ill health.

The credit for this achievement must of course not be claimed for engineering alone. Our political atmosphere and particularly our economic system have played vital roles. New methods of industrial organization and management have been of inestimable value. Nonetheless, the primary credit for the increased efficiency of labor and hence for those benefits that flow particularly from it belongs to the engineering profession. The achievement has resulted from the use of scientific knowledge and method in the solution of industrial problems and from the introduction and development of the techniques of mass production by the engineer.

While the engineer has a right—indeed a duty—to be proud of his two centuries of achievement in the public interest, he has a second area of truly professional responsibility which he has persistently refused to recognize as within his province, i.e., the question of the relations of the worker in industry to his task. The engineer by his imagination and insight has discovered and invented the products of modern industry, he has developed the processes by which they are produced, he has designed and built the equipment for producing them, he has laid out and constructed the plants, he has assigned the tasks of labor and directed and supervised its operations. Nevertheless he insists that his responsibility is limited to the technical phases of all this activity and that how the industrial worker reacts to the situation and feels about it is no business of the engineer. Every other great profession places top priority on what the work of the profession does to the individual personality. If the engineer continues his attitude of aloofness to the human problem he will never achieve recognition as truly professional but will degenerate to the status of a mere technician. Some other group will take the leadership. The tragedy of this would be the loss by the engineer of the opportunity to render a public service even greater than any he has made in the past.

The reason for this can perhaps best be explained by reference to William James' essay on the Moral Equivalent of War. James points out that, despite its brutality and horror, war does in fact bring out some of the finest qualities of the human spirit. It does this because the mass psychology of the race has through countless generations infused the consciousness of the individual with the conviction that service in war is a positive, constructive service to the whole community. This in turn gives the warrior the sources of two of the deepest satisfactions of the human spirit, first, the sense of contribution, achievement, accomplishment, creativity, and second the exercise of loyalty to the cause, the organization and its leaders, the group and his comrades. James' plea is for the equivalent of this in constructive activity, rather than in the destruction of war.

The engineer gets—or should get—his own greatest reward in exactly this sort of realization that he is participating in and contributing toward the possibility of

(Continued from Page 23)

a higher and nobler civilization and culture, truly democratic in its scope, by his work toward providing the material things and services which form the necessary material foundation for a spiritually more abundant life for men. However, in war this deep sense of inner satisfaction and worthwhileness is shared equally by the humblest soldier in the ranks with the general in command. The worker on the production line in industry has as much right as the engineer to this inner psychological satisfaction, because each is making his own contribution to the same underlying objective. The trouble is that nobody ever told the worker what the purpose and objective of industry really is. Can anyone be so effective as the engineer in explaining what that purpose is?

Hard jobs are what the engineer likes, but this one will really test his relish for them. The hurdle is the fetish of the profit motive. Ever since Adam Smith everyone has said that the only effective reason men go into industry and business is to make a living, make money, make a profit. As a result, men have come to believe it, to accept the statement without question—a thing the engineer should never do. There are indeed men dominated by the profit motive. In the small community in which the writer grew up there were two or three of them. Their fellow citizens called them misers, skinflints, Scrooges. The overwhelming majority of industrial leaders are not motivated by profit, but they all say they are. Freud and Jung convinced the world of the reality and importance of the subconscious mind, but, because they and their successors have focused on psychopathology, one thinks of the elements of the subconscious as always evil. The evidence points to the conclusion that in the subconscious the good transcends the evil. A new breed of psychologists are needed who will bring the good up from the subconscious into the level of consciousness and enthrone it there. These psychologists are desperately needed to treat the leaders of industry, particularly management and engineers, to clarify their concepts and thinking on function of profit in industrial life.

It is not that profit should be exercised from industry. The competitive profit system is probably the second most important and valuable development in the history of economics, second only to the invention of coined money. The inventor of money—whoever he was—undoubtedly recognized its potentialities and social value. He planned it that way. The profit system, like Topsy, "jest growed." It is amazing how few people recognize, let alone appreciate, the economic purpose of profit. The function of profit is to serve as a yardstick to measure the degree of success of individual or organization in competitive industry in the production and distribution of the material goods and services needed to meet the wants of the community.

It is by no means a perfect yardstick, but its advantages far transcend its limitations. The yardstick is objective. The industrial organiztaion that cannot make a profit is a failure, although the yardstick does not tell why it failed. The yardstick tends to put economic power into the hands of those who have already demonstrated their capacity to use it constructively in the public interest, i.e., in the efficient production and distribution of goods. Similarly, it tends to put capital into hands of demonstrated competence. It provides opportunity for the innovator to try out his ideas without upset to the whole economic life of the community, under conditions such that success will be convincing evidence of the value of the ideas. It tends to eliminate incompetent industrial development in the public interest, while retaining the advantages of the system, through wisely setting up the "rules of the game."

There is a very real sense in which the profit motive is indeed the mainspring of the economic system, but it is not the usually accepted one. The military strategist has always distinguished between the ultimate and the limited objective. He must be clear about the former, but, having chosen the latter as the first step to be taken, he focuses solely on this limited objective as if it were the only thing that counts. Similarly, the only way for management in industry to succeed is to concentrate on making a profit. In doing this, all unethical, anti-social action must be avoided, but doing other than this inevitably results in failure because human judgment as a basis for detailed action is always clouded whenever the mind tries to cover too broad an area at once. In industry, wise decision as to immediate action is best assured by the determination, the will to profit.

This is not to say that profit of itself is in no sense an incentive, but that from this point of view it usually is and ought to be secondary. The Olympic cup is not the primary incentive of the athlete but it is the visible evidence of competitive industrial profit is the evidence of controbution and achievement in building the material foundation necessary for a richer and nobled civilization and culture.

Profit making in industry as a hallmark of success is differentiated sharply and importantly from success in areas such as athletics. In the Olympics only one man can win; the others fail. Profit in industry requires the cooperation of everybody in the organization. The worker on the production line makes his contribution to the achievement and has his moral right to the psychological satisfactions that should accrue to him in consequence. This is indeed a moral equivalent of war and the denial to the worker of the privilege that should be his, so often seen in industry, is an ethically intolerable thing.

There is apparently a chasm between the minds of economist and engineer. Science and engineering have based their progress and achievements primarily on the development of methods and standards of quantitative measurements. The engineer takes his measurements so for granted that he fails to appreciate their fundamental importance in his thinking. It is not that his thinking is purely quantitative. Indeed, the most important asset an engineer can possess is that capacity for sound professional judgment which inherently involves an intellectual analysis, not only qualitative, but made of necessity in the face of inadequate knowledge of some at least of the significant facts. Even here his habits of quantitative analysis mold every activity of his mind. Quantitative dependability is always his ultimate goal. The economist on the other hand sometimes seems to lack the very concept of the quantitative and appreciation of its importance and potential value of analysis.

To illustrate the point, consider the attitude of the economists on money. Money clearly has the dual functions of medium of exchange and of standard of economic value. One must not for an instant underestimate the

difficulty of choice of a suitable money standard and the problem has certainly not been solved. Nonetheless, there is a whole school of economists, led by men of outstanding prestige in the profession, who advocate inflation in the sense of an intentional, purposeful, progressively sustained decrease in the purchasing power, i.e., in the economic value of the dollar. Even more amazing, however, is that apparently the rest of the profession, while disagreeing, nonetheless considers the proposal legitimately debatable. How would an engineer who advocated progressive change in the standard of mass, or length, or time be regarded by his fellow engineers? Change from one standard to a new and better one is one thing, but change of standard for the sake of change is to the engineering mind incomprehensible and intolerable,—because it makes clear thinking harder, and the engineer hates anything that obscures the facts and clouds thought.

This difference in mode of thought is perhaps the reason why the economist has never emphasized the function of profit as a measure of quality of economic service,—a standard relative rather than absolute, but a standard of measurement nonetheless.

Americans fail to appreciate it, but this matter of phraseology is tragedy and not cocktail party semantics. We are face to face with the most diabolically efficient despotism the world has ever known. Its objective is our annihilation or at least our conversion into a Hungary or a Thibet. Moreover, its most effective weapon is not atom bamb or space vehicle, but exploitation of world opinion against us. That hostile opinion is our own fault. Asia, Latin America, Africa, all of them despise us, hate us, fear us. Take Cuba as a case in point. The Cubans are convinced that our dominant objective in life is money making, profit. Why shouldn't they be convinced? We told them so and continue to reiterate the assertion. To a degree we utterly fail to understand, little things such as the tennis episode in Australia and the story of the U2 flier over Russia clinch the conviction. The economic and political aid we have given them for over half a century, they describe as a clever trick for their economic enslavement and exploitation. In the light of our record, not only in Cuba but in Puerto Rico and The Philippines as well, they cannot successfully accuse us of colonialism, so they describe our conspiratorial scheme for their subjection, the details of which are not yet fully disclosed, as economic imperialism. They prefer to take their chances with communism. All communism has to do is take them over one at a time. We are doomed unless we break this road block in ideological communication. This demands complete re-analysis of our own thinking on motivation in life, particularly in industrial life, and re-expression, as Wendell put it, not in words that can be understood, but in words that cannot possibly be misunderstood. The engineering profession is the one group in the community which can do the intellectual analysis. In the matter of expression of the results, we had better get help, but let us make sure we subject the help offered us to critical appraisal and keep the final decision as to form of acceptable expression in our own control.

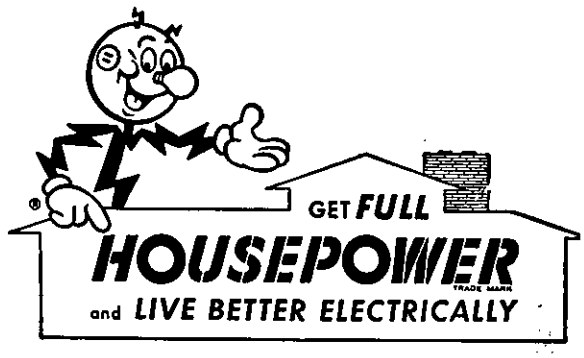
In closing I cannot refrain from quoting a recent translation of Lavoisier's statement about his attack on the phlogiston theory which had dominated chemical thinking for a century before his own revolutionizing contributions to the science:

"I do not expect my ideas to be adopted all at once. The human mind gets creased into a way of seeing things. Those who have envisaged nature according to a certain point of view during much of their career, rise only with difficulty to new ideas."

By doing his part to get these strands of human thinking out of the creases of the human mind, the engineer can help transform the whole temper of our economic life. Everyone in industry from the chairman of the board to the janitor in the basement can find the inner satisfactions of contribution and loyalty in doing his bit in perfecting the necessary physical foundations to make possible a richer, nobler and more democratic culture than the world has ever known. Moreover, these satisfactions tend to develop the personality of the individual motivated by them to the highest levels of potentiality.

One of the glories of modern science is the degree to which during the last three centuries it has pushed back the horizons of knowledge and thought. The time has come for the engineering profession to strike out into those hitherto neglected areas of industry which involve the human factors, using its competence, its integrity, and its idealism for the strengthening and defense of the material basis of our culture, not only to preserve that culture but to make it possible to develop its ultimate potentialities,—using culture in this case to describe the integrated activities of every phase of human life.

How to get men to use wisely the material benefits engineering gives them is another problem.



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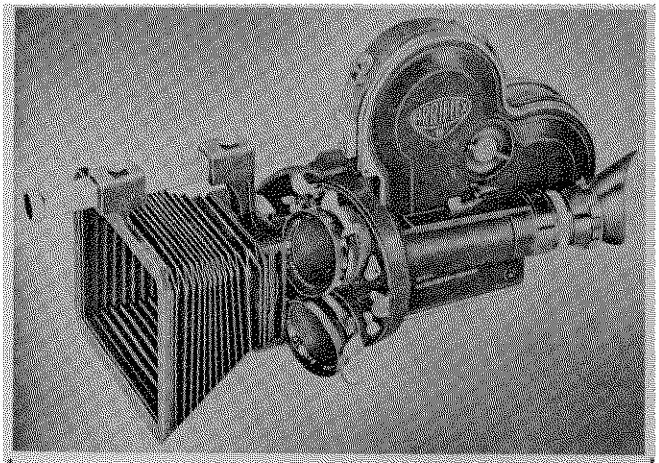

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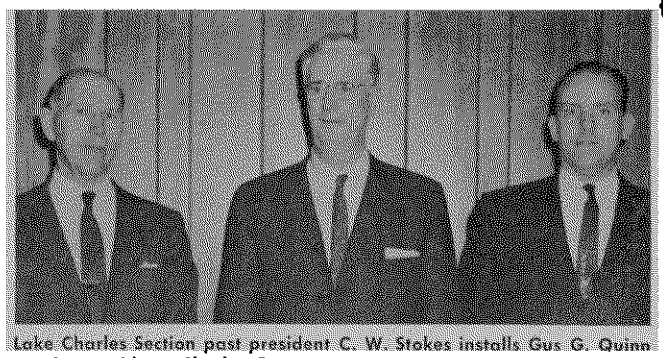

Lake Charles Section past president C. W. Stokes installs Gus G. Quinn as vice-president, Charles Derr as secretary-treasurer for 1961. New president Bailey T. Vincent was absent.

Engineer on Community Development Seminar

Bill M. Ferguson, partner in the consulting engineering firm of Demopulus and Ferguson of Shreveport, will represent the engineering profession at the Louisiana Community Development Seminar being conducted by the Junior Chamber of Commerce in Monroe on Feb. 11.

"The Jaycees are continually striving for more significant projects to improve their localities," stated State Jaycee President Billy Hargiss of Monroe, "and this Seminar is designed to assist the local chapters in attaining a better insight into their community's problems and their solutions."

Ferguson, who is Secretary-Treasurer of the Shreveport Section of the L. E. S., will discuss the engineering aspects of Urban development. He will be joined by four other speakers who will discuss other phases of Community Development. The need for City Planning and Zoning will be outlined by William G. Singleton, a City Planning Consultant from Baton Rouge. The architectural aspects will be explained by Architect Jesse O. Morgan, Jr., of Shreveport.

Monroe Mayor W. L. "Jack" Howard will analyze the problems presented to municipal officials by our rapidly expanding metropolises. Describing how Industrial Development fits into the overall picture will be moderated by Tom Ruffin, President of the Louisiana Engineer Society's Shreveport Section.

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Electricals To Meet

A joint meeting of Districts 4 and 13, American Institute of Electrical Engineers, will be held at the Jung Hotel in New Orleans, La. April 5-7, according to an announcement by J. R. Rombach, Jr., general arrangements chairman.

The meeting is expected to attract electrical engineers from a nine-state area. Technical sessions will cover the latest developments in many fields of interest to AIEE members.

The program encompasses the application of electricity in medicine, power and communications, industry, shipbuilding and missiles.

Together with engineering education, one session—devoted to geophysical exploration—will be of particular regional interest. Student papers will be presented.

Tours include Avondale Shipyards, Inc., American Sugar Refineries, a harbor tour on the N. O. Dock Board yacht "Good Neighbor," Kaiser Aluminum & Chemical Corp.'s aluminum reduction plant at Chalmette, New Orleans Sewerage & Water Board, Jackson Brewery and Louisiana Power & Light Co.'s Little Gypsy Steam Electric Station, the world's first fully automated station.

Ladies events will include a talk by Mr. Charles L. (Pie) Dufour, New Orleans author of "The Day the War Was Lost" and newspaper columnist; a hospitality party and dinner dance.

Registrations ($4 per member, $7 per non-member) should be sent to Mr. P. A. Dimberg, Allis Chalmers Mfg. Co., 2001 Canal Street, New Orleans, La.

AT ANNUAL MEETING of LES Lake Charles Section were (from left), Mr. and Mrs. George Walther; Claude Kirkpatrick, Director of the State Department of Public Works; Mrs. and Mr. C. W. Stakes; Mr. and Mrs. Gus G. Quinn; Mr. and Mrs. James H. Derr; Mrs. R. E. Burgess.

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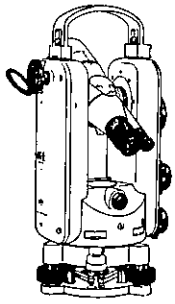

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Memorial

ERNEST LEE JAHNCKE

The Louisiana Engineering Society lost one of its most outstanding members in the passing on November 15, 1960, of Ernest Lee Jahncke, Rear Admiral, U. S. N. R. A graduate engineer of Tulane University before the turn of the century, he followed his profession entirely for a number of years until he later became president of the Jahncke Interests, which included, along with dredging and building materials, a dry dock and shipyard. As a staunch Republican, he was appointed by President Hoover in 1930 as Assistant Secretary of the Navy, and was acting Secretary in the absence of Secretary Adams.

Rear Admiral Jahncke was an avid sports enthusiast, and actively sponsored, among other things, the formation of the Star class of racing boat here. As a member of the International Olympic Commission he strongly opposed holding Olympic games in Germany under Hitler. Among his many accomplishments, he was a past president of the New Orleans Chamber of Commerce, a former Commodore of the Southern Yacht Club, and a former King of Carnival.

To his widow, the former Cora Van Voorhis Stanton, granddaughter of the Secretary of War in Lincoln's cabinet, two daughters and two sons, the officers and members of the Louisiana Engineering Society extend their sincere sympathy. And offer, in the form of a motion before the Society assembled, that we spread these words upon the minutes of our Society, in memory of a member of great stature who has departed from our midst.

Michael C. Abrams
William H. Rhodes

Slidell To Get New Air Traffic Center

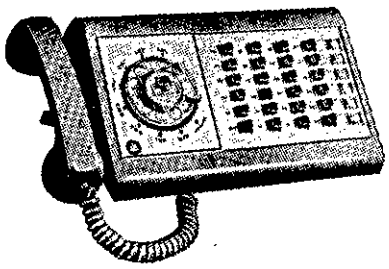
FAA Facility Will Guide Commercial Aircraft

A $1,712,000 Air Traffic Control Center will be built in Slidell, La. for the Federal Aviation Agency by Electronic & Missile Facilities, Inc., of New York.

The facilities will provide for the guidance and control of commercial aircraft in their approach to New Orleans.

Completion of the center is expected in about 11 months.

Mayor Homer G. Fritchie of Slidell, an Honorary Member of LES, said the new facility will provide additional employment and technical skills for the Slidell area. He noted that Slidell, which already boasts leading shipyard, creosote and brick manufacturing plants, has been chosen as residence by a number of people newly employed by the new industrial operations in New Orleans East.



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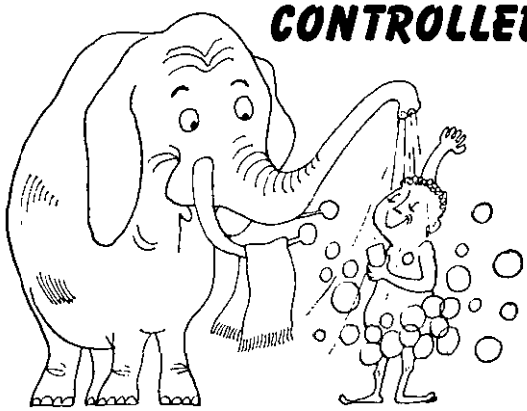

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January 11, 1961—Howard B. Arnold, Jr., Midland, Tex.; Vincent J. Bila, Patterson, La.; Carl T. Brandt, Bartlesville, Okla.; Clyde W. Bryant, Jr., New Orleans; Cleo C. Cassels, Gloster, Miss.; Agustin Chin, Baton Rouge; William R. Enderle, New Orleans; Joseph York Feitel, Jr., New Orleans; Harold F. Kuehn, Excelsior, Minn.; William Davis McRae, Berwick, La.; Jackie D. Nelson, Bossier City, La.; Frank M. O'Quinn, Baton Rouge, La.; James H. Russell, Pasadena, Tex.; Eugene E. Strohbeck, Kenner; Henry T. Waddell, Metairie; Eric S. Warner, Berkeley, Calif.; Edgar L. Watts, Jr., Baton Rouge; Herbert P. Zoch, Houston, Tex.

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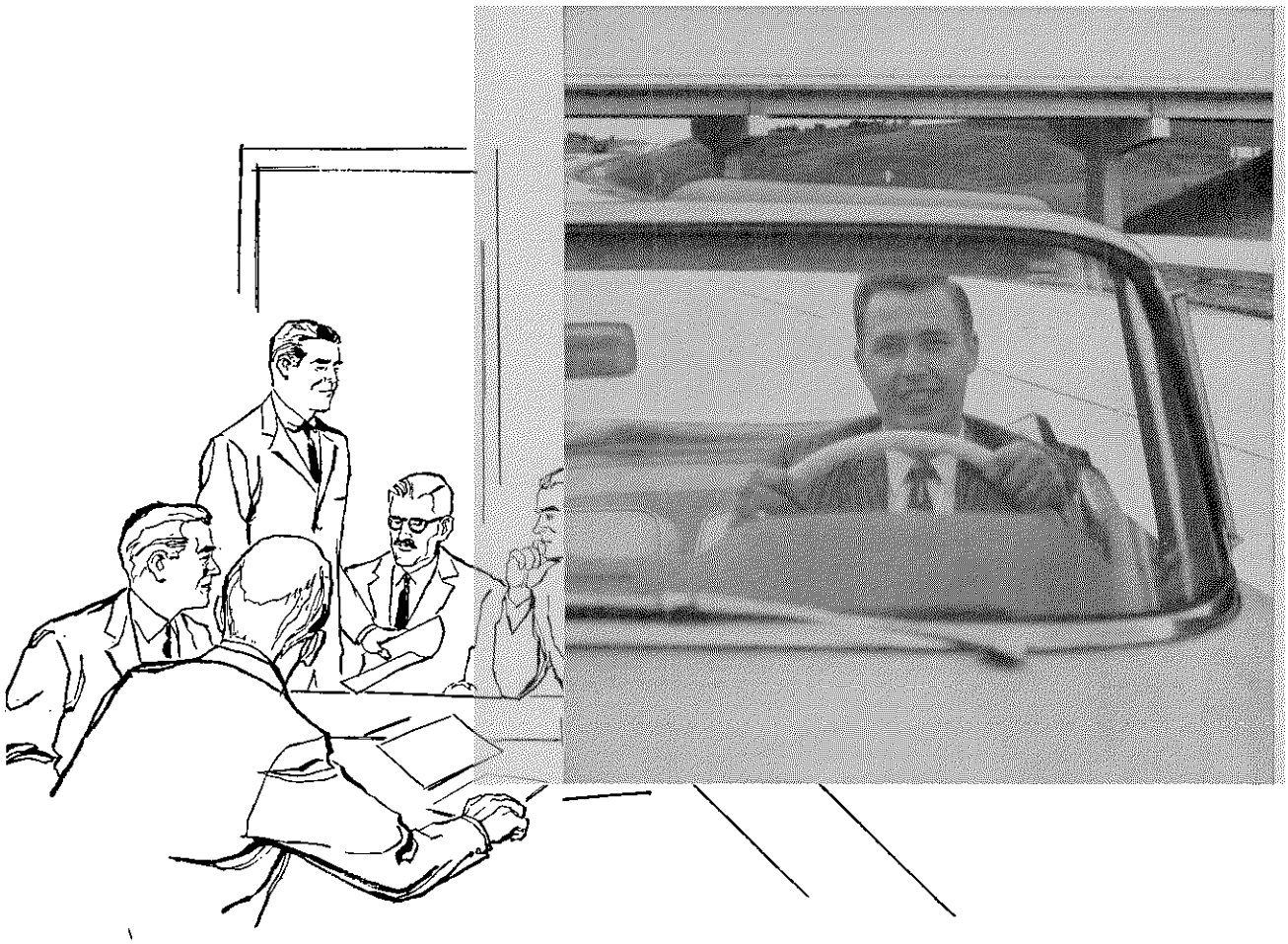

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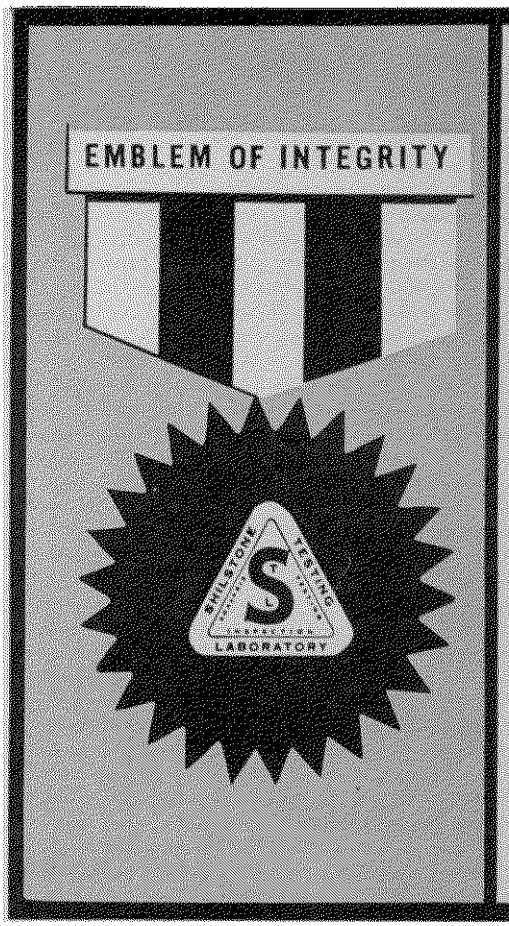

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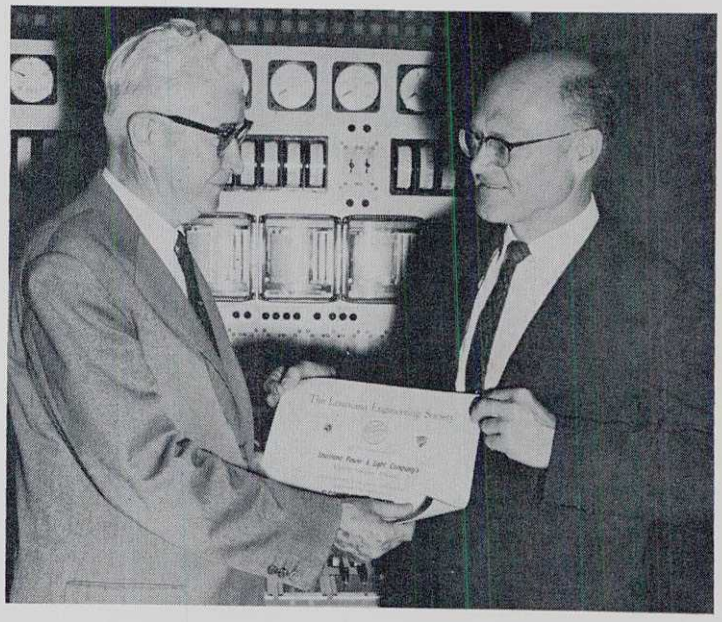

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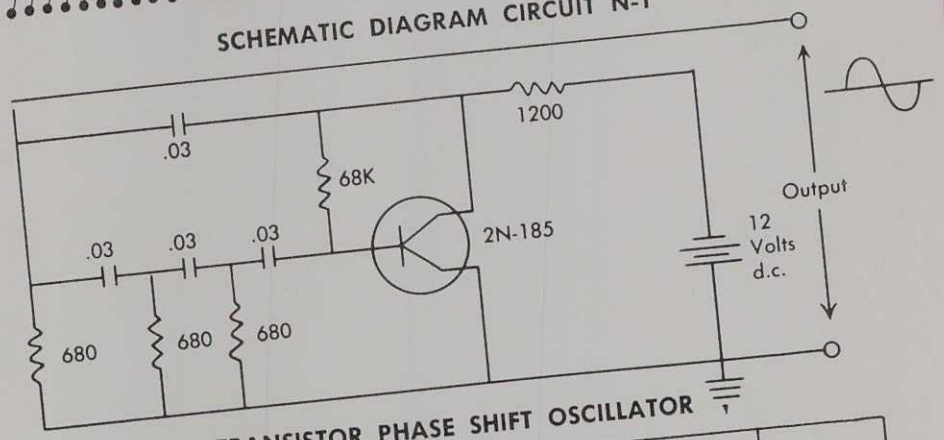

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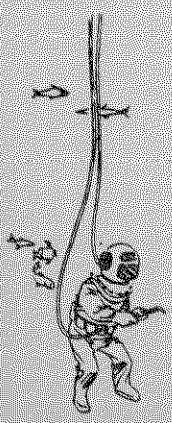

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THE LOUISIANA ENGINEER

Vol. 47 April, 1961 No. 2

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The LOUISIANA ENGINEER is the official publication of the Louisiana Engineering Society and of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors and is published in February, April, June, August, October and December. Subscription $2.00 per annum; single copy 50 cents.

Second class mailing privileges authorized at New Orleans, Louisiana. Acceptance for mailing at special rate of postage provided for in Section 1105, Act of October 3, 1917, authorized August 1, 1918.

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.

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The service we refer to has to do with the individuals and companies who advertise in this publication.

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OUR COVER: A Certificate for an Outstanding Engineering Achievement was awarded Louisiana Power & Light Company during Engineers Week, February 19-25, for the Company's construction of the Little Gypsy Station. W. O. Turner, left, chairman of the board and chief executive officer of the LP&L, accepts the award at the power station from James S. Janssen, first vice president of the Louisiana Engineering Society which made the award.

Prompt Congressional consideration of pending legislation to clarify the legal status of nonbargaining associations of professional employees has been urged by the 54,000-member National Society of Professional Engineers. Paul H. Robbins, the Society's executive director, said that enactment of the proposed "Freedom of Association" bill, introduced for the fifth time by Representative Carroll D. Kearns of Pennsylvania, "is necessary to remove the legal uncertainty which sometimes handicaps associations of professional engineers in meeting their objectives."

Robbins pointed out that the problem stems from the fact that the Taft-Hartley Act is not clear in permitting supervisory and nonsupervisory engineers to discuss matters of a professional nature through a nonbargaining association.

The Kearns' bill H.R. 412, would add language to the Taft-Hartley Act to provide that nonbargaining organizations of professional personnel could not be deemed labor organizations. "This approach toward a solution to the present problem is necessary," Robbins said, "because the Taft-Hartley definition of 'labor organization' is so broad and generalized that engineering sounding boards conceivably could be considered in this category.

Engineers' salary levels rose approximately 5% per year between 1958 and 1960 according to an EMC survey just off the press. The overall median annual salary now stands at $9,600. The recent increase of 5% may be compared with an average annual increase of 6½% between the years 1953-1958. Seven years ago (1953), the first in this series of surveys found the median salary for engineers at $6,500. These findings were made public by the Engineering Manpower Commission in the fourth of a series of surveys entitled, "Professional Income of Engineers—1960" which covers approximately 200,000 engineering graduates in industry, education and government.

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404 Baronne St.
New Orleans 12, La.

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Minutes Of The Board, La. Engineering Society

Minutes of Meeting of the Board of Direction and State Section Officers Held at the Capitol House Hotel, Baton Rouge Friday, January 13, 1961

The meeting was called to order by President Bogard with Messrs. Bubenzer, Carter, Demopulos, Domingue, Janssen, Henry, Latimer, McLellan, McNamara, Rountree, Sessums, Watts and Fernandez present. Others present by invitation were Messrs. James A. Smith, Waldemar S. Nelson and Allen Johnson. The president welcomed those in attendance. Upon motion by Mr. Watts, seconded by Mr. McLellan, the reading of minutes of the board's December meeting was dispensed with. The secretary then read minutes of the last annual meeting of the board.

Discussion followed on operation of the Ethics Committee and it was recommended that this committee be composed of two members from each section, with the section presidents as ex-officio members. The two committeemen would investigate complaints in their area and their findings would be studied by the whole state-wide committee, which in turn report and make recommendations to the Board of Direction. The board then would make its decision and instruct the committee to take any necessary action in the name of the board.

Mr. Rountree stated that he would like to see board meetings held in locations other than New Orleans ,and it was pointed out that the March and June meetings regularly are held at Alexandria and Baton Rouge respectively, and that other locations are not ruled out, since board meetings have been held in Shreveport and Lafayette on certain occasions. Mr. Rountree was advised that his suggestion would be given careful consideration.

Mr. Smith, state-wide Engineers' Week Chairman, expressed a desire that the Engineers' Week Committee be allotted a definite sum of money to cover expenses involved in carrying out its annual program. He also asked the board to appoint a sponsor for his committee. Mr. Smith was advised that all committee chairmen were privileged to submit bills for incidental expenses, and that board members would be appointed to sponsor all committees.

Discussion followed on the Membership Committee and Mr. Sessums remarked that all lawyers are required to become members of the Bar Association in order to obtain their licenses, and that he believed the medical profession may have some arrangement to encourage membership in the Medical Association. He suggested that the Legislative Committee make a study of these two organizations and investigate the possibility of combining automatic membership in LES with the granting of licenses to practice engineering in Louisiana. Mr. McLellan moved that such a study be made, seconded by Mr. Carter and carried.

President Bogard announced that the State Board of Registration had turned down the request of our Board of Direction to include in their roster of registered engineers an asterisk to indicate those who hold membership in the Louisiana Engineering Society. However, they offered to publish a separate roster of LES members and mail it with their roster to all engineers registered in Louisiana, if the cost is reasonable.

Discussion followed on the establishment of a Functional Section for Consulting Engineers and Mr. McLellan moved that a committee be appointed to organize such a functional section for engineers in private practice and to contact all members of the society who are so engaged. The motion was seconded by Mr. Demopulos and carried.

The secretary reported that 402 votes had been cast in the December membership ballot and all those named therein had been selected to their respective grades. Votes on the proposed amendments to the constitution and by-laws were divided as follows:

363 . . . in favor of all amendments
4 . . . against all amendments
48 . . . split votes

Thirty-one ballots were unmarked, indicating no preference for or against the amendments but voting for the officers and directors listed in the same ballot. By amendments, the total vote was as follows:

	For	Ag'nst			For	Ag'nst
Article II, Section 9	398	17	Article III, Section 3		396	19
Article II, Section 10	397	18	Article III, Section 4		385	30
Article III, Section 1	396	19	By-Law (5)		397	18
Article III, Section 2	389	26	By-Law (6)		403	12

Accordingly, all amendments carried and are now officially incorporated in the society's constitution and by-laws.

The secretary also reported that all candidates listed in the officers ballot had been elected. They are as follows:

President.....Ben T. Bogard
First Vice-President.....James S. Janssen
Second Vice-President.....Calvin T. Watts
Secretary-Treasurer.....John P. Fernandez
Director for 2 years.....Emery Domingue
Director for 2 years.....Edward J. McNamara
Director for 1 year.....Douglas F. Latimer

Upon motion by Mr. Watts, seconded by Mr. Domingue, the following resignations were accepted with regret:

C. D. Olivier (Member).....Baton Rouge
Warren M. Robbins (Member).....Baton Rouge
Howard D. Scott, Jr. (Member).....New Orleans
Darrell E. Ward (Member).....Illinois

A petition to establish a Student Chapter of LES at Tulane University was presented and Mr. McLellan moved that the petition be accepted and the chapter recognized, seconded by Mr. Janssen and carried, after which the president appointed Messrs. J. Bres Eustis, Roy E. Johnson, John L. Martinez and Edward A. McLellan as advisors to the chapter.

With the approval of the board, President Bogard appointed Messrs. Janssen, McLellan and Fernandez to constitute the Finance Committee and instructed them to prepare a budget covering 1961 anticipated income and expenses, to be presented at the next board meeting. It was agreed this would be held on Monday, January 30, 6:30 p. m., at the Engineers' Club, New Orleans.

Mr. Latimer moved that the President and the Secretary-Treasurer be authorized to sign checks for the society, seconded by Mr. McNamara and carried.

It was announced that Mr. C. C. Edwards is Program Chairman for the State Planning Conference to be held at Alexandria in the latter part of March, probably the 24th and 25th, all those present were urged to attend.

Mr. Bubenzer reported that the exhibit at the State Fair held in Shreveport last October was a great success and asked whether the Finance Committee could provide $150.00 to cover cost of another exhibit this year. The president thanked the Shreveport Section for initiating and handling the exhibit and advised Mr. Bubenzer that this suggestion would be given careful consideration.

Mr. McNamara moved that the board go on record in a vote of thanks to Mr. Henry L. Landry, General Chairman of the 1961 Annual Meeting, for the fine work of his committee in planning and executing the meeting. The motion was seconded by Mr. Domingue and carried unanimously.

Mr. Allen Johnson reported on the Public Relations Program and briefly outlined long-range plans for THE LOUISIANA ENGINEER. President Bogard thanked Mr. Johnson for his efforts.

It was announced that the selection of committee personnel and board sponsors would be made at the next meeting on January 30, and all board members were urged to do their utmost to attend. The meeting then adjourned.

Secretary-Treasurer

Minutes of Meeting of the Board of Direction Held at the Engineers' Club, New Orleans, Monday, January 30, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Domingue, Janssen, Larue, Latimer, McLellan, McNamara, Rountree, Watts and Fernandez present. Messrs. M. J. Marchese and Allen Johnson also were present by invitation. Mr. Watts moved that minutes of the preceding meeting be accepted as distributed to board members by mail, seconded by Mr. Larue and carried.

Correspondence from JESSI (Junior Engineering and Science Students' Institute) was read, in which the LES was asked to publicize this program. After some discussion the secretary was instructed to refer the correspondence to the Vocational Guidance Committee for study and recommendation with the remainder that, should the LES publicize this project it would be morally bound to secure sponsors for it and that the present finances of the society cannot stand such an expense.

A letter of comment on the 1961 Annual Meeting received from Mr. Raymond P. Maddux was read.

President Bogard appointed Past President Wayne P. Wallace to represent the society at the inauguration of President Longenecker of Tulane University.

It was announced that the State Planning Conference would be held March 17-18, also that the president's letter to National Merit semi-finalists had been mailed.

Selection of the state nominee for the Armco Scholarship was discussed and President Bogard appointed Messrs. Janssen, McNamara and Fernandez to study the applications received and select the Louisiana winner.

Mr. Janssen recommended that all February graduates of the four Louisiana Engineering schools be invited to join LES. Pres-

ident Bogard offered to write to each one if the names of Tulane, LSU and USL graduates would be given to him, whereupon various members of the board agreed to do so directly.

Mr. Janssen, Chairman of the Finance Committee, presented a budget for 1961 and after discussion moved that it be adopted. Motion seconded by Mr. Latimer and carried. A copy of the budget is attached to these minutes.

The secretary advised that a new typewriter was needed and that this would be a capital expense and not chargeable to the 1961 operating budget. Mr. Domingue moved that the secretary be authorized to purchase a typewriter, seconded by Mr. Larue and carried, whereupon Mr. McNamara advised that his company could perhaps secure an electric typewriter for the society at its trade-in value.

A sample page of a 1961 membership list was approved and Mr. Latimer moved that the State Board of Registration be thanked for its service to the profession in subsidizing the printing of this long-needed roster of LES members. Motion seconded by Mr. Domingue and carried.

Upon the recommendation of the Board of Direction, President Bogard appointed personnel to standing committees for 1961, with the understanding that each chairman would be privileged to augment his committee as conditions require. (Names listed on page 6). The meeting then adjourned.

Secretary-Treasurer

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans on Monday, February 20, 1961

The meeting was called to order by President Bogard with Messrs. Domingue, Janssen, McLellan, McNamara, Rountree, Watts and Fernandez present. Messrs. Allen Johnson, Herbert Schaeffer and Waldemar Nelson also were present by invitation. Mr. Rountree moved that minutes of the preceding meeting be accepted with the corrections indicated by the Secretary. Motion seconded by Mr. McLellan and carried.

President Bogard announced that Dr. Frank Macdonald had accepted the appointment as National Director of NSPE but was unable to attend the February meeting at Des Moines because of short notice; however, he does plan to represent LES at future national society meetings.

The president reported the receipt of correspondence from Dean Johnson of Tulane University inquiring whether the LES would cosponsor a Technical Manpower Conference with the engineering schools of Louisiana. Mr. McLellan moved that the society join in sponsoring the conference and contribute financial support to the extent of $125.00, and also circularize the conference program among LES members and registered engineers in the New Orleans area at its own expense and furnish the services of its Public Relations Counsel to obtain maximum publicity. Motion seconded by Mr. Watts and carried.

President Bogard announced that letters had been sent to midterm graduates of Louisiana engineering schools inviting them to join the society.

Mr. Herbert Schaeffer, General Chairman for the 1962 Annual Meeting, recommended that the Sheraton-Charles Hotel be reserved for January 11-12-13, and that the meeting be planned along the lines of past meetings held in New Orleans. Mr. Schaeffer was asked to try to arrange a boat trip or other daytime entertainment for Saturday the 13th and was authorized to proceed with his plans.

Correspondence with Mr. Elmer May, State-Wide Vocational Guidance Chairman, concerning the JESSI (Junior Engineer & Scientist Summer Institute) Program was read and the secretary was instructed to advise Mr. May to take the steps outlined in his letter.

Correspondence with the Professional Engineers Society of North Carolina concerning our invitation to NSPE to meet in New Orleans was read, in which it was revealed that the 1963 Fall meeting would be held in Asheville. The secretary was instructed to advise Dr. Macdonald, our NSPE Director, to invite the national society to hold its Fall 1964 meeting in New Orleans.

The Secretary reported the receipt of $6,742.00 from the Louisiana State Board of Registration as its annual contribution to assist in the Public Relations Program on Professional Engineering and to publish a roster of society members.

The Secretary presented a proposed charter for the Tulane Student Chapter and was instructed to have it reproduced for distribution to charter members at their meeting of March 8.

Mr. Nelson stated he would like to invite people interested in the revision of the present Registration Law to attend his committee workshop at the State Planning Conference in Alexandria. Mr. Nelson was advised that the workshop meeting should be limited to LES members only.

Mr. Watts moved that James R. Bres be reinstated to the grade of Affiliate Member, seconded by Mr. Domingue and carried. Mr. Domingue moved that James R. Sledge be transferred from Junior to Affiliate grade, seconded by Mr. McNamara and carried. Mr. Janssen moved that the resignations of Albert H. Fay (N. Y.) and Frank J. Prehoda (S. C.) be accepted with regret, seconded by Mr. McNamara and carried.

Board members were urged to attend the next meeting of the Board of Direction to be held at Alexandria on March 17. The meeting then adjourned.

Secretary-Treasurer

Distinguished for their services to LES are its HONORARY MEMBERS selected only by a 75% vote of Past Presidents and LIFE MEMBERS who have faithfully belonged to LES for 30 years or more.

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President's Report For 1960

By EDWARD A. McLELLAN
LES President, 1960

(Continued)

Engineers' liability is another subject in which the L. E. S. should be vitally interested. Two of our members are right now defendants in liability lawsuits which, if decided against them, would set a precedent extremely detrimental to engineering practice. These two men have sought help from the L. E. S. We have been of some help, but should be more active than we have been in helping to protect the profession.

This liability matter was discussed in an Engineering-Law Seminar we held at Tulane in the Spring of 1960. It has been written up in "The Louisiana Engineer." There is a session devoted to it in this Annual L. E. S. Meeting in Baton Rouge. Attention to this subject is a real service the L. E. S. is rendering its members and to the profession.

Another field where the L. E. S. can be of service to the profession is in ethics. Questions of ethics are very difficult to judge, but I feel that when controversies do arise, the L. E. S. should have a competent committee to review the questions and to give an opinion and to publish it. The extent to which the L. E. S. should go in prosecuting breaches of ethics has yet to be worked out. You have just changed the by-laws to set up an Ethical Review Committee whose sole obligation will be to investigate and report on ethical controversies that may be brought to its attention.

"The Louisiana Engineer" can and should be used by the Ethics Committee to publicize its findings when it feels publicity is called for. Our magazine has made great progress this past year, as I hope you have all noticed. It is now being sent to all registered engineers and we can approach prospective advertisers and offer them real value for their dollar. "The Engineer" goes to a mailing list of approximately 6000 engineers who direct tremendous purchasing power. Unfortunately the year-end statement shows a loss in the operation of the magazine. I am deeply distressed about this but fully expect 1961 to show a substantial profit. The deficit in 1960 was in a measure due to a cash method of bookkeeping. The accounts receivable and the advertising contracts in force at the end of 1960 far exceed those in existence at the beginning of 1960 and that is not reflected in the statement. The magazine is attractive and quite readable, and I believe we can look to it as a source of much needed income in 1961 and from then on.

We also need a little shifting in our organization to benefit more fully from our N. S. P. E. Association. Through happenstance, after affiliating with the N. S. P. E., our president became National Director of the N. S. P. E., and this should not be. The National Director is expected to attend three national meetings a year, and to be truly effective, a National Director should serve a number of years. It is a physical impossibility for your president to attend three National Meetings as National Director, and one National Meeting of State Presidents, each of which take the better part of a week He also should attend our own State Meeting, and a visit to each of the Sections is usually found desirable. Thus you can see, that if your president attended all the meetings he is supposed to, there would be little time left to earn a living. This year your president will appoint a National Director, and thereafter that position will become elective. A good National Director can be invaluable to the L. E. S. and a real assist to the N. S. P. E.

Another change I believe we should try to pursue is to try to follow the lead of the N. S. P. E. in setting up Functional Sections so that we can better serve the needs of our members. The present N. S. P. E. Sections are engineers in private practice and engineers in government service. We have endeavored to form a Private Practice Group but have not been successful so far. There are practical problems of organization, operating routine, and additional load on an already burdened secretariat, plus there is some resistance from some of our members.

But I still think that these sections who could devote their attentions to the particular professional problems of a specialized membership would better help us to answer the question many ask "What does the L. E. S. do for me?" The N. S. P. E. works on problems of these groups nationally; we could be of service on a state level.

I could go on. There are many problems for the new administration to tackle. The first, and probably the most important, is the appointment of Committees to carry out the Society's work. Dean Ben Bogard is already working on this. His residence in the northern end of the state with the bulk of our membership being in the southern end—makes the active working of the Committees without constant follow-up of paramount importance to the well being of the L. E. S. If you are contacted, rest assured that your ready and willing cooperation will greatly benefit you and the L. E. S.

Most of the Committees appointed during my term have been most cooperative. I will not name them all for I would be sure to omit some one inadvertently, but the efforts have been freely given. I ask that all Committee Chairmen complete their files and make a report to pass on to their successors so the work of the Society can be carried on without a break.

I definitely must call attention to and give thanks for the devoted and untiring work of our secretary, Mr. John Fernandez, and his able assistant, Earline Fernandez and Michael J. Marchese.

One of those things that a president is much more cognizant of at the end of his term than at the beginning, is the multitudinous detail that builds up in the operation of a 2000-member Society with a magazine mailing list of 6000. My deep appreciation to these three.

As I said in opening, we, the L. E. S., have a real purpose in life, let us get on with the job.

Monroe Engineers Tell The World Their Achievements

MONROE — The outstanding activity of Engineers' Week in the Monroe Section was a newspaper supplement by the Monroe Morning World, according to an announcement by H. L. Henry, Jr., chairman of the National Engineers' Week committee.

Other activities in the Monroe area included a mayor's proclamation, spot announcements on radio and television, posters in public places, lapel buttons and bumper stickers and distribution to the high schools of NSPE's booklet, "Engineering, A Career Opportunity," said Mr. J. Ellis Ross, chairman, Monroe section.

Francis C. Roy, Louisiana Tech Campus chairman, summarized the activities in the Ruston area. He said articles and photos appeared in the Ruston Daily Leader, Tech Talk, Shreveport Times, Monroe Morning World, El Dorado Daily News and Shreveport Journal.

A dinner meeting was held on the evening of February 22, at 7:00 p.m., in the banquet room of the Louisiana Tech Student Center. Members of the Monroe Sections of LES, ASME, and AIEE, and members of the Tech engineering faculty along with wives of some of the members were in attendance. The total number present was 90. Mr. H. L. Henry, Jr., emceed the affair.

Mr. Ben T. Bogard, Dean of Engineering at Louisiana Tech, and President of LES, introduced the speaker for the evening, Mr. Lionel J. Cucullu, Vice-President of New Orleans Public Service Incorporated. Mr. Cucullu presented a talk of interest to the group on professionalism in engineering. He pointed out the characteristics of a professional engineer and emphasized the fact that an engineer is not professional simply because he is a member of a professional society. His talk was very well receved by those present. Mr. A. C. Thigpen made the arrangements for what was generally conceded to be a very successful affair.

A proclamation of National Engineers' Week was issued by Mayor T. C. Beasley of Ruston.

Members of the Louisiana Tech engineering faculty spoke to the following area civic clubs at their regular weekly meeting during National Engineers' Week:

Dr. L. R. Daniel, Jr., Professor of Mechanical Engineering, Ruston Junior Chamber of Commerce; Mr. J. H. Barnwell, Professor of Mechanical Engineering, Ruston Lions Club; Mr. R. A. Smith, Professor and Head of Civil Engineering, Ruston Rotary Club; Mr. H. L. Henry, Jr., Professor and Head of General Engineering, Ruston Kiwanis Club; Dr. R. M. Allen, Jr., Professor of Petroleum and Geological Engineering, Jonesboro Lions Club; and Dr. Virgil Orr, Professor of Chemical Engineering and Head of Engineering Research, Ruston Optimist Club.

A 30-minute live program was presented over KNOE-TV in Monroe at 3:00 p.m. on Saturday, February 18, by five engineering freshmen students and five engineering faculty members of Louisiana Tech.

The program was in the form of a question-answer panel discussion. Questions concerning engineering were solicited from area high school students a few weeks prior to the program. During the program the engineering freshmen students asked questions selected from this list and the faculty members on the panel supplied the answers. The program was deemed quite successful and received many favorable comments in this area. Faculty members on the panel were:

Mr. R. E. Carlile, Assistant Professor of Petroleum and Geological Engineering, and Chairman of this activity; Dr. H. A. Kallsen, Professor of Civil Engineering; Mr. H. L. Henry, Jr., Professor and Head of General Engineering; Mr. J. H. Barnwell, Professor of Mechanical Engineering; and Mr. A. C. Thigpen, Professor of Electrical Engineering.

A display of engineering books was arranged by Mr. J. T. Painter in the Tech engineering library.

Three films of engineering interest were shown continuously from 8:00 A. M. to 2:30 P. M. daily in the projection room of the engineering building. The films shown were:

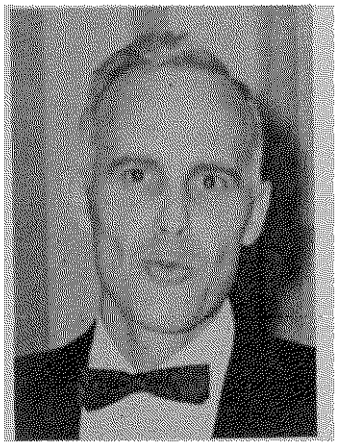
Building for the Nations (Construction of United Nations Building).

Sinews of the South (Steel Production in the South).

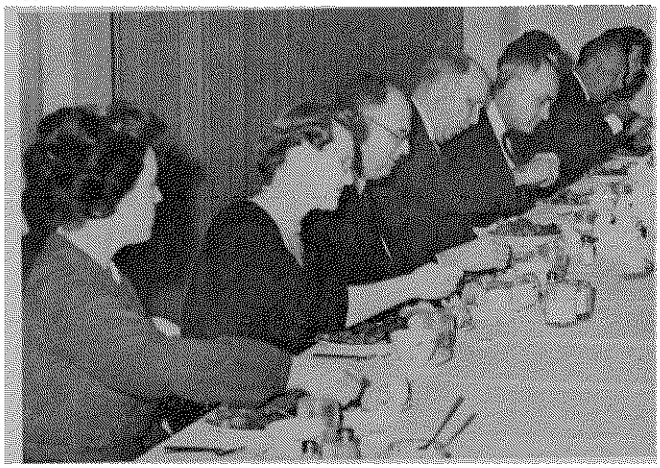
Oil Films in Action.

Engineer's Week Banquet at the Louisiana Tech Student Center in Ruston featured:

Lionel J. Cucullu, Vice President, New Orleans Public Service Inc.



T. R. Henry, Jr., President of the Monroe Section of L.E.S.



Head table (from left) Mrs. T. R. Henry, Mrs. Ben T. Bogard, Dean Ben Bogard, Mr. Cucullu, Mr. H. L. Henry, Jr., Mrs. H. L. Henry, Jr., President and Mrs. R. L. Ropp;

Lake Charles Students Take to Television

LAKE CHARLES—An engineering essay contest open to senior and junior students of high schools located in Calcasieu Parish was one of the programs highlighted during Engineers Week in the Lake Charles area.

An Educational Committee, chairmaned by Mr. Ben E. Kullerd, gained the approval of the superintendents of both the city and parish school systems and asked all high school principals in the parish to appoint a teacher-sponsor to guide students interested in entering the contest. The schools were informed that upon request a practicing professional engineer would be provided to speak to the students on the subject of "Engineering" to promote interest as well as to provide ideas for the essay.

The Educational Committee judged the essays and selected Kerry Cooper of DeQuincy High, as the three Randy Kirchner, both of Lake Charles High, as the three top essayists. The winners read their essays on a thirty-minute television program, and answered questions concerning their plans for higher education in the field of engineering. Also appearing on the program were Mr. Mohns M. Thornton, Deputy Civil Engineer at Chennault AFB, and Professor Rolufs of McNeese State College, who answered students' questions regarding "Engineering as a Career."

The programs were sponsored jointly by LES, the Society of American Military Engineers, American Institute of Chemical Engineers, American Institute of Electrical Engineers, and the American Society of Mechanical Engineers.

A joint banquet held at the Lake Charles Country Club was attended by 250 engineers and their wives, the three top essayists and their teacher-sponsors as guests.

Gus H. Hill, chairman, Lake Charles Engineers' Week. Commander Thomas R. Rhees of the Special Projects Office of the U. S. Navy.

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Field Notes
By Allen Johnson

The Baton Rouge section annual outing will be held at United Commercial Travelers Park, Saturday, May 27. Members from all sections of the Society are invited to attend the event which includes a pleasant afternoon in the Park followed by a robust dinner and the awarding of many, many prizes. This is one of the Society's stand-out events and members are urged to join the fun . . .

James S. Janssen, Society First Vice-President was the Society's representative at the NSPE State Chairman Conference at Purdue University in West Lafayette, Indiana. The three-day meeting annually provides the Louisiana representative with a current report on NSPE activities.

Now, **roofs** and **vertical metal, concrete or masonry surfaces** can be coated with a rugged, durable metallic finish and beautified with lightfast colors at the same time, said Aaron Abramson, longtime LES member associated with The Top-All Co. of New Orleans. He said:

"Colored aluminum paints resist chemical attack, water erosion, weathering and the sun's damaging rays. Now available in a choice of colors—blue, green, silver and copper—developed in cooperation with Alcoa.

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The theme of the 1961 Louisiana College Conference was "The First Year in College." Shown in the picture from left to right are the people who participated in the first program of the Engineering Section: Assistant Dean John L. Martinez, Tulane University; Professor Albert H. Repscha, University of Southwestern Louisiana; Dr. B. J. Covington, Louisiana State University; Dr. Henry A. Kallsen, Professor H. L. Henry, Jr., and Professor Albert G. McKee, all from Louisiana Polytechnic Institute. Dean Ben T. Begard was president of the Louisiana College Conference for 1961. New officers for the 1962 Conference, to be held at the University of Southwestern Louisiana are: Professor Albert H. Repscha, president; Dr. Henry A. Kallsen, vice-president; and Professor Albert G. McKee, secretary.

Ethical Notes

Do Engineers QUALIFY?

By John T. Knight, Jr.

Laws are but rules of conduct established by legislative action, and inforced by the courts. It is a fact with which everyone is familiar than an individual may strictly observe the laws of the City, State, and Nation, and yet be an undesirable citizen, and a poor neighbor. Laws must be established by the majority action of a legislative body, and so with rules of professional conduct of professional engineers, they must be based on the concurrent opinions of all the professional engineers.

It is true that few ethical principles are applicable exactly as written or stated, and an individual must be aware of the spirit behind the principle involved if he is to give proper interpretation and live within the limitations of a Code of Ethics.

All Codes of Ethics for Professional Engineers imply that a "Pro" in this field of activity must first be a man of honor, integrity, technical ability and business capacity. Lets stop right there, look into a mirror and ask ourselves, "Do we Qualify" ?

We have been told that the engineer of advanced age, and long experience would normally have adjusted himself to an acceptable ethical code of conduct. If this be entirely true then why the current agitation concerning ethics and professional conduct? It is reasonable to believe that every "oldster" in the ranks of the professional engineers has an obligation, to so conduct himself, and his affairs, that he will be a living example of Ethics and the Professional Engineer to all with whom he comes in contact.

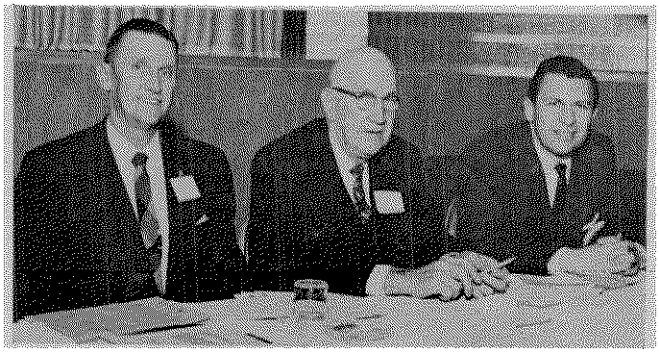
Discussing LES activities at Alexandria recently are, from left to right: Roy A. Johnson, Marvin G. Tullis, J. P. Fernandez, C. C. Edwards, P. P. Angier, and D. D. Sandifur.

Above are the members of LES Women's Auxiliary at the State Planning Conference last month. Chairlady of the group is Mrs. Frank C. Fromherz.

Louisiana Engineering Society's Fifth Annual State Planning Conference was held March 17 & 18, 1961 at the Hotel Bentley, Alexandria. C. C. Edwards, Alexandria, was program chairman for the conference which has proved invaluable as a means of developing LES activities throughout Louisiana.

Registration took place from 4 to 7 p.m. March 17 followed by a cocktail hour and a Board of Direction meeting at 8 p.m.

Workshop meetings were held Saturday, March 18 under the supervision of the following: Mrs. Frank C. Fromherz, Women's Auxiliary; Robert O. Williams, Membership; Henry L. Landry, Legislation; William A. Baker, Engineers' Week; H. L. Henry, Vocational Guidance; A. M. Fromherz, Functional Section; C. C. Edwards, Jr., Section Coordination; John P. Fernandez, Secretaries' Workshop; W. K. Bankston, Public Relations; Waldemar S. Nelson, Registration Law; Col. J. T. Knight, Jr., Ethics & Professional Affairs.



Members of the Functional Section, LES, are from left, Frank Newman, NSPE, Houston, Texas, A. W. Fromherz, Chairman of the committee, New Orleans, and Chris Demopulos, Shreveport.

Following a luncheon at noon, there was a general assembly with committee reports. The women's auxiliary toured Alexandria during the afternoon.

"Urges $100 Per Diem"

A maximum per diem rate of $100 for experts and consultants temporarily engaged by Federal departments and agencies has been urged by the National Society of Professional Engineers in statements to both House and Senate Appropriations Committees.

Paul H. Robbins, executive director of the 54,000-member national engineering group, cited an apparent trend in appropriation measures to reduce the maximum per diem allowance for experts and consultants. Present rates of $50 or $75, which in some instances formerly were $100, are inadequate for the economically feasible performance of consulting engineering services due to existing high overhead expenses, he told the Congressmen.

"The net result of a Federal limitation less than $100 per day could very well be that the most qualified engineering firms would refrain from undertaking projects for the Government, leaving the Government's choice to less qualified consultants," Robbins said. "This is a situation in which, the Federal agencies can ill afford to be planned."

The National Society spokesman pointed out that laws creating the National Aeronautics and Space Administration and the Federal Aviation Agency have recognized the need for adequate per diem compensation in that both contain provisions permitting a maximum per diem allowance of $100.

Robbins informed both committees that official Society policy endorses the utilization of engineering consultants by the Federal Government.

The Society's executive director also pointed out that many state societies of professional engineers have established recommended fee schedules, each of which calls for at least a $100 per diem rate.

Letters

Phoenix, Arizona
March 15, 1961

Mr. William H. Rhodes, Editor
"The Louisiana Engineer"
921 Carondelet Building
New Orleans 12, Louisiana

Dear Sir:

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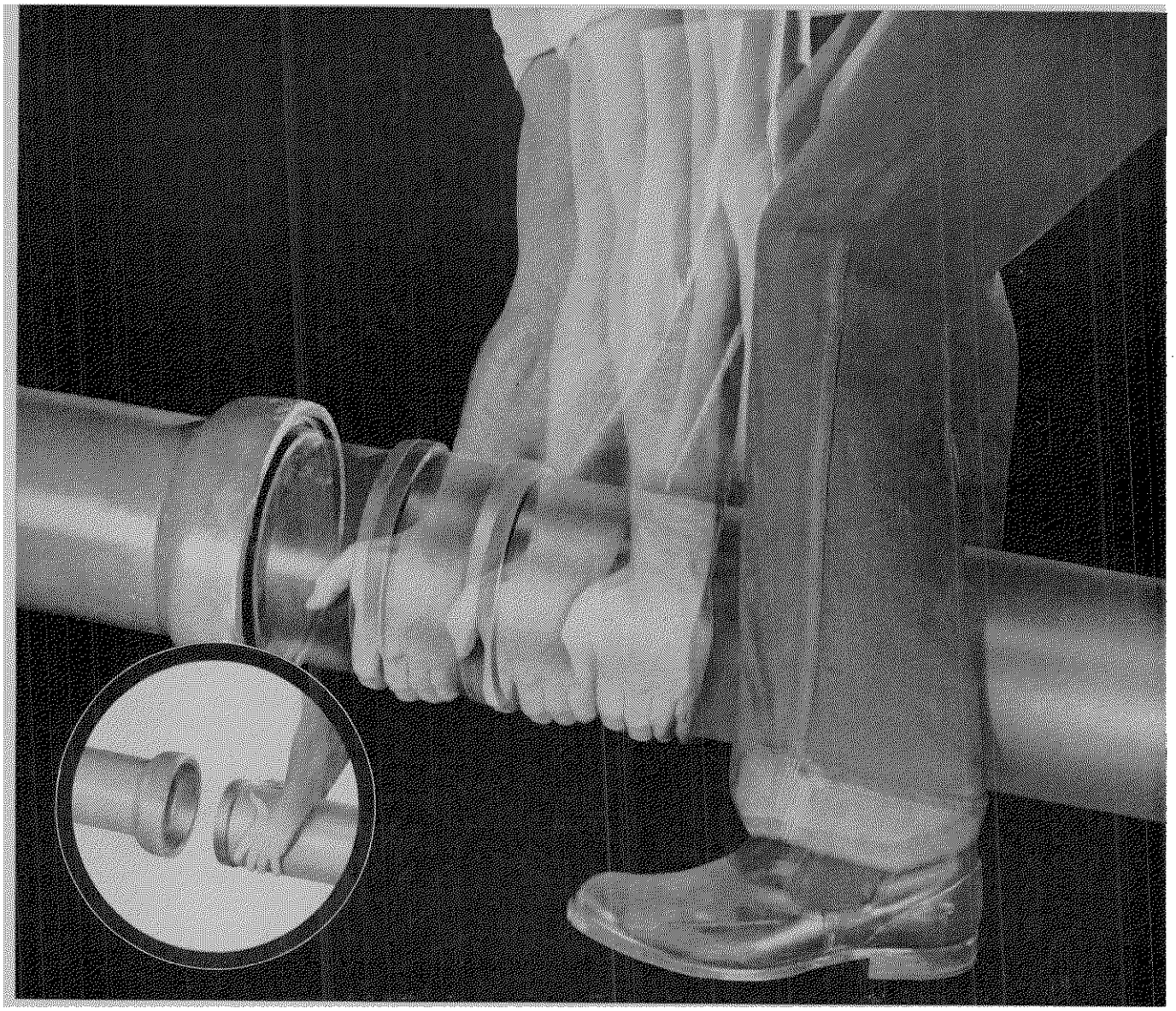

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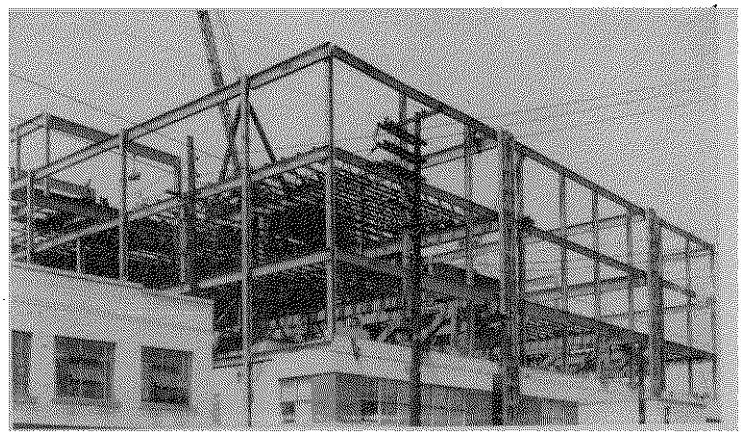

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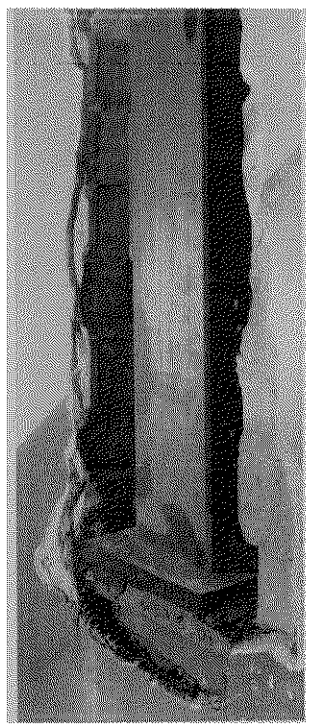

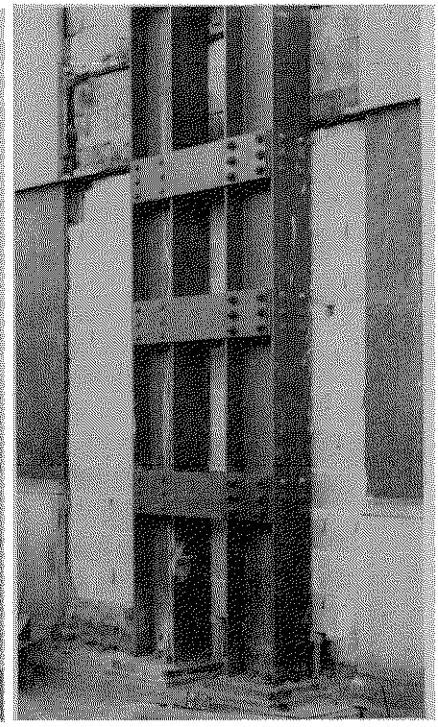

An odd construction problem developed when three floors were added to the two-story Social Security Building in Birmingham, Alabama. The building's old foundation wasn't strong enough to support three new floors, so they switched foundations! Concrete columns were ripped out of the basement and replaced with 41 steel H-beams to give the building additional strength. And the crew worked at night so that office business could continue during the day.

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Louisiana Engineering Society, Tulane Student Chapter charter is presented to chapter president James Benedict by LES president Ben T. Bogarde, Ruston, at Tulane University Center. Others shown are, from left: W. J. Jeansonne, vice president; Diane Newman, secretary; Lester Shackford, chapter organizer; and Melvyn Backes, treasurer. Top New Orleans engineers and Tulane engineering faculty members participated in the ceremonies.

Tulane Student Chapter Gets New LES Charter

Dean Ben T. Bogard, dean of La. Polytechnic Institute School of Engineering, Ruston, La., and president of Louisiana Engineering Society formally presented a charter to James V. Benedict, president of the newly-formed LES Tulane University Student Chapter at University Center, 7:30 p.m., Wednesday, March 8.

Participating in the ceremonies were LES board members E. J. McNamara and John P. Fernandez, New Orleans; LES Student Advistory Committeemen J. Bres Eustis and Roy A. Johnson, New Orleans; Tulane Engineering Dean Lee H. Johnson and Tulane Associate Professor of Mechanical Engineering John Martinez.

Other officers of the LES Student Chapter are W. J. Jeansonne, vice president; Diane E. Newman, secretary; and Melvyn V. Backes, treasurer.

A group of Tulane University students attend the first meeting of the newly organized Tulane Student Chapter of LES.

Award Winning Projects Displayed

First place winners in the following science subjects at the Regional Science Fair displayed their award-winning projects I, on Monday, April 10, 1961, at 8:00 P. M. in the Engineers' Club at the DeSoto Hotel, 404 Baronne Street.

As we go to press winners in N. O. Jr. Academy of Sciences paper competition held March 26, 1961, were announced: Physics: Edward Tsoi—Benjamin Franklin High School (Project entered in Science Fair also placed first). Chemistry: E. Fred Schultz III—Benjamin Franklin High School (Project entered in Science Fair received grand prize. Earth Science (Tie for first place): Jeffrey Bodie—Benjamin Franklin High School; Henry Folse, Jr.—Benjamin Franklin High School. Mathematics: Miss Kathleen Tinsley—St. James Major School. Botany: Miss Adele E. Leslie—Benjamin Franklin High School. Zoology: Miss Adrienne Cox—Dominican High School. Social Science: Miss Carol Eckelmann—Benjamin Franklin High School. Junior High School Division: Biological Science: Miss Julia D. Wachtel—Prytania Private School. Social Sciences: Miss Carol Colclough—Gregory Junior High. Physical Sciences: Allyn Lambert—Wright Junior High (Project entered in Science Fair also placed first).

Edward Tsoi and E. Fred Schultz III presented their papers at the meeting:

Winners in Science Fair presented March 18, 1961 are: Sweepstakes winners: Miss Julianne Reich—Benjamin Franklin High School; E. Fred Schultz III—Benjamin Franklin High School. (Paper entered in N. O. Jr. Academy of Sciences' competition also placed first). Winners in individual categories: Electronics: Bill Syre—Mid-City Baptist High School. Physics: Edward Tsoi—Benjamin Franklin High School (Paper entered in N. O. Jr. Academy of Sciences' competition also placed first). Chemistry: Henry L. Jaubert—Fortier High School. Biology: Miss Patricia Ann Adam—Fortier. Earth Science: David Friedman—Benjamin Franklin High School. Social Science: James Estiponal—Fortier. Mathematics: Winston W. Walker, Jr.—Benjamin Franklin High School. Junior High School Division: Biological Sciences: Miss Elizabeth Schultz—Gregory Junior High. Physical Sciences: Allyn Lambert—Wright Junior High (Paper entered in N. O. Jr. Academy of Sciences' competition also placed first). Junior Mathematics: Msis Lynda Friedmann—Isodore Newman School.

Two of the first-place winners for technical papers in the New Orleans Junior Academy of Sciences Regional competition read their papers, said D. L. Morris, chairman, New Orleans Section Vocational Guidance Committee.

This meeting was planned by the committee to give recognition to these outstanding stdents and to highlight the work being accomplished in the high schools by the Science Fair and New Orleans Junior Academy of Sciences.

Mr. James Gusman of Shell Oil Company, Director of the Science Fair for this region, said there were over 600 projects entered in the local regional finals from Orleans, Jefferson, Plaquemines, and St. Bernard Parishes and probably several thousand more were assembled by the students in the various schools.

Education:

There's Room For Improvement

By Ben T. Bogard
LES President

It has been said the development of mechanical power which was initiated with the power revolution of the 17th and 18th century has done more toward developing civilization and affecting human welfare than any other combination of factors. We now find that the development of automatic controls in the 20th century may have as great an effect on human welfare as mechanical power. The social significance of the introduction of automatic controls certainly as analagous to that of the power revolution of the Middle Ages, whereby mechanical power made it possible to increase the welfare of man by relieving him of the drudgery of hard muscular effort such as pulling an oar, dragging a plow, sledge, or cart, or lifting water. With the invention of the steam engine in the 18th century, and turbines, internal-combustion engines and electric generators and motors in the 19th century, new applications of power to perform heavy tasks have recurred at an ever-increasing rate. The average power which a man can exert by muscular effort throughout the day has been estimated to be about 35 watts (1/20 horsepower). If he worked 240 eight-hour days in a year, this would amount to 67 kilowatthours per year. Edison Electric Institute statistics indicate that the electrical energy used by each worker in industry in the United States amounted in 1954 to about 17,314 kilowatthours per worker. Electricity furnishes approximately 95 per cent of power used by industry. On this basis each individual engaged in manufacture had under his control an amount of energy equivalent to the muscular effort of 244 men! The average family in the United States used about 2,549 kilowatthours in 1954. On the same basis of calculation the family employed the equivalent of about thirty-three laborers each day to help in the household duties! Each driver of a 100-horsepower automobile has under his control the equivalent in mechanical effort of more than two thousand slaves to speed him on the road! The world will more and more belong to the scientifically educated man, the engineer, the physicist, the chemist, the mathematician, the biologist, who through training and knowledge, can create and master the new technologies which increasingly are forming the broad base on which our civilization rests. The time necessary for this revolution to change the world completely will, in large measure, depend on the numbers of people who are competent to bring about this new age. These numbers are prodigious.

For example, Dr. Willard Libby says that the Atomic Energy Commission has estimated that by 1975 approximately sixty thousand engineers and scientists will be needed in the United States for our atomic energy program alone. The very successes of science and technology which we have witnessed during our lifetime suggest that there are certain habits of mind and a certain spirit and outlook on life which commend themselves in dealing with problems that are not the primary concern of scientists and technicians. The first of these traits is imagination, a prime quality of the scientific discipline. And then there is the appeal to reason rather than bowing to authority or to arbitrary power. Science is realistic. The scientist and engineer must always face the facts, or he cannot perform his function successfully.

What "ought to be" cannot long be confused with "what is." David Lilienthal, a former chairman of the TVA and of the Atomic Energy Commission, says "resorting to slogans and catch phrases, to creaky 19th century legalism, which are the substance of so-called thinking in the current story of diplomacy in government, would not stand up for a day in the world of science." The world's statesmen like to picture themselves as realists and some of them are; but they often dismiss scientists as habitually naive and gullible. The deeper into a mess the world gets, the more assured most statesmen are that politics is realistic and practical; whereas, science is "theoretical" (as they say). Tragic are the number of instances where the reverse has been the case. Most statesmen, generals, and admirals were obsessed by the comfortable idea that we had the atomic bomb, that if we filled the place with security officers and classified everything secret, our atomic monopoly would endure. On the other hand, scientists almost to the man warned that this was not so. Their scientific training had taught them that scientific ideas are universal, not national ideas. Being realists, they warned against underestimating what the Soviets could do; and for the most part their warnings were totally ignored.

For years the American people lived in a world of fantasy. Our government, the military, and the press were dominated by the idea held by grown-up men that secrecy and security were one and the same thing. And then one day nine years ago the Soviets fired an atomic blast that woke us up out of our dream and burst our bubble. We soon returned to our unrealistic beliefs and went to sleep until they fired a man-made moon into the sky and again brought the facts home to us. We soon, thereafter, fired a satellite into the sky the size of a grapefruit; and with our grapefruit whirling around the earth in orbit, we lapsed back into our state of self-satisfaction and complacency.

Another quality of science and technology is the intrinsic habit of intellectual independence. The idea of sticking up for one's beliefs until they are demonstrated to be unsound by the criticism of those equally competent in scientific analysis. Also science is not provincial. The body of scientific and technical knowledge is international, since the facts of nature with which the scientist and engineer are concerned are not Russian nor British nor American, but are universal facts.

This article was abstracted from remarks made by Dean Bogard at Tulane University LES Student Chapter Charter presentation

Take for example the matter of the Tennessee Valley Authority. Regardless of what you may have read or may now think of the TVA, the engineering feat accomplished by it has been nothing short of a miracle as evidenced in many ways. For at least forty years before the TVA began in 1933, leading civil engineers of our nation knew the way to control the wild, temperamental and rambunctious rivers of this country. They offered quietly, but repeatedly, the knowledge that rivers should be engineered as a single unit, not with structures built hit or miss, but viewing the river valley as a whole. This, of course, was the scientific method and got very little attention. Until the TVA was created, the scientific method was never tried. Instead, at terrific public expense, a system of piecemeal dealing with the rivers by political pork barrel method was used. Influential congressmen, contractors, and others would have a dam or a levee built in their own district; and the result was a mess. For floods grew greater and greater, and the assets of the river were not put to use.

In the TVA Act, Congress kicked the pork barrel aside. The river and its entire valley were planned as a unit. Structures were built as parts of an inter-related whole, and they have been operated that way. This method has worked for years just as the best civil engineering minds said that it would.

Not the only result of this great technological accomplishment, however, has been technical. One of the greatest results has been that the people of that valley saw the advantage of throwing the pork barrel method out the window and following the prescription of honest, competent engineers as to how the valley should be developed.

Mr. Barry Shelton, a newspaper publisher in a medium-sized Alabama town, said: "We can write of great dams, of the building of home-grown industry, and of electricity at last coming to the farms of thousands of farm people in the valley; yet the significant advance has been made in the thinking of a people. They are no longer afraid. They have caught the vision of their own powers."

The point I am making by these comments is that where engineering problems exist and engineering thinking has been allowed to predominate in their solution, the lay public has been enabled to conceive of the value of the engineer and to appreciate his contributions. Unfortunately, not enough such engineering contributions as TVA and larger engineering feats and accomplishments have come to the attention of the hearts and minds of the layman. There is definite lack of understanding and appreciation of the engineer and the engineering profession.

A recent questionnaire produced a clear picture of this problem. People in Washington State ranging in age from 21 to 60 and representing various stations in life from an occupational and educational standpoint were asked a series of questions regarding professions, with physicians excluded from the listing of professions. Some of the questions asked and the replies were as follows:

(1) Which of the professions and occupations would you say requires the most education and training?
Answers: Lawyer, 34%; teacher, 30%; engineer, 24%, clergyman, 13%, public official, 8%.

(2) Which of these professions and occupations do you think is the most important to your community?
Answers: Teacher, 59%; clergyman, 13%; public official, 13%; engineer, 3%; lawyer, 2%.

(3) In which of these professions and occupations does the person do the most good for the people?
Answers: Clergyman, 57%; teacher, 36%; public official, 8%; lawer, 3%; engineer, 2%.

(4) Which profession or occupation has the most prestige?
Answers: Clergyman, 35%; public official, 26%; lawyer, 20%; teacher, 10%; engineer, 3%.

I imagine these answers would be fairly representative of what could be found throughout the country, and the result is very revealing as to the sad position we occupy in the eyes of the public. Why aren't we recognized as having a profession and as being professional practitioners?

Dr. Art K. Doolittle gave the following list as representative of a professional attitude:

(1) To be of service to society.
(2) A highly professional reputation.
(3) The opportunity to make progress.
(4) Creative work.
(5) Have an adequate salary.
(6) Steady job.

He then gave results of a survey of the technical employees of a large company. There were 1300 replies received from the engineers of the company, and their order of importance of the items was as follows:

(1) The opportunity to make progress.
(2) An adequate salary.
(3) Creative work.
(4) Steady job.
(5) A highly professional reputation.
(6) To be of service to society.

Though the definitions of professionalism stress service to society as number one in importance, these 1300 engineers considered it last in importance. Should we wonder if people don't like us and why they don't want to assign us the professional status that we believe to be rightly ours.

Dr. John J. McKetta, head of chemical engineering at the University of Texas, says "in contemplating professional problems, the medical profession is always cited as an ideal. Doctors have an unexcelled technological education, a central and unifying organization, and a code of ethics strictly enforced, known and accepted by themselves, their clients, politicians, the armed services, and the general public. Engineers have a code of ethics also, but it is unknown to the public, and it is scarcely known by the engineers themselves. While the doctors have an undisputed legal status, engineers have a legal status on the law books, but it is rejected by large number of qualified engineers. The doctors also have a highly developed group consciousness so vital to genuine group professional status, and the engineers almost totally lack this. Most important of all, the doctor knows who is a doctor and what a doctor does. We do not even have a satisfactory single definition of the word "Engineer." As Dr. McKetta says "professional recognition for engineers will always be pretty much of a mutual admiration proposition."

You cannot expect the housewife to admire the man

that produced a more efficient engine half as much as she does a surgeon who sewed up her six-year-old son's head after he fell out of a tree, or the lawyer who cleared her husband of a murder charge. People want doctors and people want clergymen, but people do not want engineers. Never does a person have an acute personal need for an engineer; and that is why in a nutshell the engineering profession will never be as highly regarded as the other two. The engineer can never demand respect from the public, for this is folly. He must earn this respect, and he must achieve it by action. Engineers must participate in civic affairs and must bring a new insight and possibly a new solution to bear on a problem. Prestige is something that you cannot buy. You must win it. You don't get it because you are affiliated with an organization. The individual engineer must gain prestige by his knowledge and actions, and the standing of the profession will be gained only from the accumulated individual accomplishments of its members. The individual engineer can expect certain things from the industry that employs him, and he can, by analysis, determine whether the industry encourages and enhances his professional status. He may as an individual do little to change his company's attitudes and methods, but he can control himself, and sometimes he may have to change companies to be recognized as a professional engineer. Again quoting Dr. McKetta, "there is much the individual engineer can do to grow both technically and personally." Among other things, he mentions:

Strive to understand fundamentals.
Avail yourself of additional training.
Participate in technical societies.
Learn how to get along with others.
Learn how to express your thoughts clearly.

Work efficiently, diligently, and reliably and with a regard for your personal integrity as one of your most important assets.

Let us isolate or regionalize our problems for a few minutes. In other words, where do we stand in the South, in Louisiana? What are our weaknesses and our strengths? If we trace the development of industry and of technical education in this country, we must of course start with New England, the section of the nation that was first settled. The New Englanders were aggressive and ingenious people. They developed the mechanical capital of this country. Many of the inventions and industries of this nation were started by them working as individuals, one or two or a few in a barn or a shed, to develop a new product and then a new industry to produce it. Along with this they found a need for technical and scientific education, and it was a parallel development resulting in the great schools of the northeast such as M. I. T., Cornell, Harvard, and others. This development progressed across the nation to the Midwest to Chicago, to Michigan, in the Northern states, and then it jumped to the West Coast where the people of California, Oregon, and Washington have shown extreme progressiveness in industrial development. Paralleling their industrial progress has been the development of educational institutions such as California Institute of Technology, the University of California, Oregon State College, and the University of Washington, which is becoming one of the better known highest paying engineering colleges in the nation. Hardly had the West Coast development hit full stride until the frontier of industrial progress jumped to the Gulf South. Our industrial progress throughout this Southern area has been fabulous.

For example, a few years ago during the first six months of one year a new chemical plant was completed in the Gulf South every single day for 180 days. But where do we stand in our development of technical and scientific education. We look at Texas with two or three strong technical schools, and then we look across the South to Georgia with Georgia Tech; and truthfully in between we must admit there is no adequately supported exceptionally strong technical institution. In the eyes of those of us in engineering teaching, Louisiana is lagging behind badly in technical education. We have 6000 registered professional engineers in Louisiana which places us in 11th position among the states of the nation. Engineering education is the bedrock, the very foundation, of our profession. Throughout our nation, engineering education has suffered in recent years. In fact, it has been down on the floor and hearing the count of five or six. Fortunately, the count has slowed and the voice has weakened. In some sections of our country, there is even evidence that the count has been stopped. But hardly so in Louisiana.

We need leaders among you engineers, leaders with vision, interest, and determination to develop the technical institutions of the state and of the South. We do not need leaders with an ear to the ground, those who are waiting to see how the wind blows before they decide whether they'll jump in front of the band and lead the procession or not. In fact, I have always been somewhat leary of the leader with an ear to the ground. It just seems to me that he's got the wrong end to the ground to do much leading. I know there is a tendency to be complacent, to say we are doing pretty well. Let's just let things go as they are: But let me repeat for you a statement made by Dr. Lee DuBridge, the president of California Institute of Technology, in a speech he made in Chicago sometime ago. Dr. DuBridge said, "In 1908 a great scientist and scientific leader named George Ellery Hale became a trustee of a private manual training school in Pasadena, California. He persuaded the other trustees that Southern California needed a technical university second to none in the nation. Fortunately, he wasn't laughed at, and within two years Troop Polytechnic School had transferred to other schools its 600 elementary and high school students, had retained its best thirty college students, moved them to a new campus, and established a policy and a program which led straight to the California Institute of Technology of today.

"Leadership with vision and with determination brought to reality what in 1908 must have seemed to many to be a hollow boast or an empty dream."

I say to you, gentlemen, we need leaders among you to accomplish real developments in our system of higher technical education in Louisiana and the South. Let's accelerate the building of a few peaks. Let's make the peaks higher. Where you find inspired leadership or superb quality, support it to the limit. Let's make the peaks higher instead of trying to fill the valleys to equate everything in our educational system to a level of mediocrity. It's up to us to develop the group con-

sciousness and the singleness of purpose to win recognition for our profession and to build solidly our technical schools in Louisiana and the South, which will be the germinating place for the profession's welfare in this state.

Going again to Dr. McKetta's comments, he says that a most serious failure has been the lack of group consciousness among the engineers. Why do less than one-third of all practicing engineers in the United States belong to any of the engineering societies? Why do so few of them who belong take an active part in the affairs? Why do we have only a handful engaging in furthering the professional aspects of engineering? I do not recall that I have ever known a single person who has stood high in his profession or in his business who has not actively affiliated himself with organizations, attended meetings and read magazines concerned with his affairs. These seem to be the only ways in which people keep up to date and alert in the things which are going on. The engineers who are non-joiners of professional societies and non-participants in civic affairs are the followers. They are not the leaders. Society membership and participation in civic affairs do not in themselves create a professional man, but they do symbolize an attitude, and in part strongly aid the man toward professional status.

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First Phase of New Gulf Outlet Ended

NEW ORLEANS, LA.—The last land separating the Mississippi River-Gulf Outlet from open water was cut as contract dredge broke through to Breton Sound, March 18.

Col. George M. Cookson, District Engineer, New Orleans District, in making the announcement, noted that a significant point had been reached in the construction of New Orleans' shortest route to the Gulf.

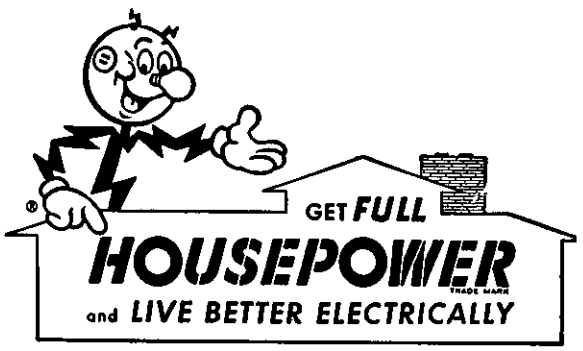
This marked the completion of the first of three stages of channel excavation. This is the access channel, 18 feet deep by 140 feet wide. The second stage is the enlarging of the access channel to an interim channel, 36 feet in depth by 250 feet in width. The completion of the Interim Channel will permit its limited use by ocean-going vessels. The third and final stage will be the enlarging of the interim channel to the full project channel of 36 feet deep by 500 feet wide.

The Mississippi River-Gulf Outlet is to be a 36' x 500' (bottom width) navigation channel from New Orleans to the Gulf of Mexico—a distance of 76 miles. This will provide additional sites for industrial development.

Further benefits should be a reduction in sailing time of coast-wise vessels, reduction in hazards to navigation such as excessive fog conditions in the Passes of the Mississippi River and the ever present floating debris, savings in terminal handling charges and enhancement in water-front property.

To date, Congress has appropriated $18.6 million, 17 contracts have been awarded and $14,650,000 expended. The total project is 15% completed.

Original plans call for the completion of the full project dimension channel by June of 1967 at a cost of $105,000,000.



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Engineering Freeport's Offshore Sulphur Mine

By E. J. McNAMARA and W. S. NELSON

The Freeport Sulphur Company has constructed and placed in operation a major new sulphur mine for the extraction of sulphur by the Frasch process. An unusual feature of the mine is that it is located in the open waters of the Gulf of Mexico, some seven miles offshore from Grand Isle, Louisiana, where the water is approximately fifty feet deep. This paper discusses some of the engineering considerations involved in this unusual location, and their influence on the design, construction and operation of the mine.

The Frasch process of sulphur mining employs hot water to melt the mineral out of the rock formation in which it is found, the ore remaining in its original location, only the sulphur being brought to the surface. Wells are drilled to the depth of the sulphur deposit (usually 1800 to 2500 feet below the surface), using rotary drilling techniques similar to those used for oil wells. Steel pipe casings are set, perforated at the level of the sulphur bearing ore; and heated water is pumped into the porous formation. Sulphur melts at a temperature of approximately 245° F. and having a specific gravity of 1.78, collects in a pool about the bottom of the well, whence it flows into a sulphur pipe set inside the hot water pipe, and thence is pumped to the surface by compressed air lift.

This procedure requires several million gallons per day of water, heated well above the normal boiling point and kept under pressure to prevent flashing. Thus, after discovering a suitable ore deposit, the first consideration in developing a Frasch-process mine is to locate an adequate water supply. The second consideration is to obtain an economical source of fuel. In arid and remote regions satisfying these considerations is usually difficult, and promising sulphur deposits have been abandoned because of unavailability of one or both of these requisites.

The supplying of these essentials to a site seven miles at sea would at first appear to present insurmountable obstacles. True, there is an ocean of salt water available, but the engineering problems associated with continuously heating sea water are traditionally formidable; anyone with experience in maintaining a marine evaporator or sea water cooling system will confirm this. Freeport's engineers and chemists, starting in the 1940's, had developed and patented a process employing special methods, equipment and materials, that would continuously heat sea water to the elevated temperatures required in sulphur mining, and had applied this process in full-scale operations at the Bay Ste. Elaine mine in 1952. Further development of this process adapted it to the conditions at the offshore mine and enabled the first essential, water, to be obtained directly from the sea.

The second essential, an economical fuel supply, was readily obtained due to the fortunate circumstance that natural gas production was available nearby, and could be supplied by submarine pipeline, the construction and operation of which has become commonplace in the offshore fields. Dual supplies, from two different sources, were obtained to insure reliability of service.

A third major consideration in Frasch-process mining is the assurance of a continuous supply of superheated water, at uniform temperature and pressure, absolutely dependable and free from accidental interruptions. The fact that sulphur mine power plants at some properties have maintained the flow of hot water uninterrupted for more than twenty-five years indicate the degree of reliability desired. This is necessary because a pumping sulphur well represents a very critical balance of conditions, between water flow, sulphur flow, air flow, water pressure and density, air pressure, and static level of the molten sulphur pool. Perfect balance of these conditions, keen judgment, and a "sixth sense" on the part of the operator are necessary to "seal" a well and keep it pumping. Any sudden change in these conditions can disrupt the balance and cause the well to "blow" or to "freeze," either of which interrupts sulphur production from the well. Sudden interruption of the entire mine water supply can easily result in the loss of production from all wells in the field, until the wells are worked over or until new wells are drilled and equipped.

The difficulty of providing such dependability at a site such as the Grand Isle offshore mine is readily apparent, located as it is in the open Gulf, with no land within seven miles; subject to all the forces of wind, waves, currents and storms of the ocean and accessible by boat only on relatively calm days, and by helicopter only when the winds are moderate. Add to this a water depth sufficient to create the maximum breaking wave, and a sea-bottom and sub-strata of soft mud in which structures must be founded, and it can be seen that the offshore sulphur deposoit created great problems to be solved for assuring continuity of operation.

The next consideration, then, was the provision of a stable foundation from which to work. This problem is difficult on shore, for the reason that the mining operation, removing millions of tons of sulphur from beneath the surface of the earth, creates voids that are filled by subsidence of the overlying strata. In some existing onshore mines this subsidence has amounted to more than 30′ in the mining area. For this reason the power plant is usually placed at some distance from the mining area to remove it from the region of the worst subsidence. Similar practice was followed offshore, with the power plant being located approximately one-half mile from the center of the producing area.

The stable foundations for the power plant and other structures are provided in the form of platforms, elevated above the surface of the sea sufficiently to be above the crest of the maximum breaking wave predicted to occur, supported on tubular steel piling, and framed with tubular steel bracing and structural steel beams and joists. The pilings are typically 30″ outside diameter, with penetrations up to 165′ into the Gulf bottom. With a water depth of 50′, and a structure deck

This article was written for The Engineer by Mr. McNamara, Manager of Engineering, Freeport Sulphur Co., and Mr. Nelson, President, Bedell & Nelson Engineers, Inc.

height of 75' above the water, the pile lengths are as much as 290' overall.

The drilling and sulphur production operations are carried on from a platform located over the sulphur deposit. This platform is connected with the power plant platform by means of series of bridges supported on towers spaced on 250' centers. The bridges are of deck-truss design, the roadway deck being carried on the top chord and a series of pipe lines being carried on the bottom chord. Living quarters are placed on a separate platform near the power plant to be removed as far as possible from the subsidence area, conveniently close to the power plant operation, but removed from the noise of the boilers and other equipment.

It was anticipated that the bridge support towers and production platforms would settle with the subsidence of the mining area and it was considered that the settlement might not be uniform; and further, that it could over a long period of years lower the structures to a level where they would be subject to wave damage. For this reason provisions were made in the legs of the towers supporting the bridges to cut the tubular columns supporting the deck and jack the towers up, alignment being maintained by internal sliding sleeves provided in the columns. Since estimated subsidence at the production platform is 25 feet, these platforms are not permanent. After some 10-15 feet of subsidence has occurred the platforms will be salvaged and reconstructed at their original elevations.

It was also anticipated that differential subsidence might cause lateral movement of the drilling and production platform and of the towers supporting the bridges connecting this platform with the power plant. Accordingly, the end bearings of the bridges were designed to permit as much as 2.5 feet of movement of the bridge support at each end of each bridge without creating stress conditions in the bridge or tower beyond the permissible limits.

As noted above, these bridges carry on their lower chords a series of pipes for the mining operation. These pipes conduct superheated water, steam, high pressure air, gas, and service water from the plant to the production area and return molten sulphur and condensate from the production area to the plant. Large expansion loops were constructed in these lines to provide for thermal expansion and contraction, and the dimensions and clearances of these loops were increased to permit additional movement due to differential subsidence of the structure. Thus, there is provided a flexible design taking into consideration the movement of the foundation due to subsidence.

In additional to the normal difficulties attending the design of structures in the mining area, the offshore mine was faced with the necessity of providing stability against wind and wave conditions arising from storms, hurricanes and other disturbances. Detailed meteorological and oceanographic studies were made in which it was determined that the structures at this location might be subjected to forces from breaking waves 43 feet high and wind pressure resulting from hurricane winds of 120 miles per hour velocity. It was found that the wave crest pressure created the most severe forces to be met and therefore, all structures were raised to an elevation sufficient to clear the maximum wave expected. In the mining areas an additional height was added to this clearance to allow for some subsidence of the structure before it became necessary to resort to raising the platforms. Furthermore, a minimum of structural framing was permitted between the normal water level and wave crest level, where wave pressure is high. These considerations resulted in structures with very substantial bracing patterns at the ocean bottom; at a short distance above water level; at the bottom chord level of the structure; and at the top chord level of the structure. The portion between the water level and the bracing at the bottom chord level in the area of maximum wave pressure, is braced by moment connection of the columns to the frame work, top and bottom. This results in a flexible design permitting slight movement of the superstructure to ease the effects of shock loading from lateral wave, wind, or other forces.

A further major consideration for dependable and economical operation of the mine was the provision of adequate means of manning the installation. The problem has been met in several ways at different properties. Methods employed by offshore oil operations were studied and found to vary from a practice of changing crews by helicopter on each shift, to a practice of working men for extended periods on sea going vessels modified as drilling tenders for stationary platforms. The sulphur operation varies markedly from oil production in that a great many wells are required to produce sulphur and these must be frequently reworked, requiring continuous operation of one or more drilling crews. In addition the operation of the power plant, sulphur relay station, maintenance facilities, and auxiliary installations require fair sized crews on a continuous around the clock basis.

Transport of personnel by boat is extremely uncertain in the open Gulf, in that operation of the crew boats is frequently interrupted by wind, waves and fog conditions making transportation of passengers extremely uncomfortable and transfer from the boat to the platforms extremely dangerous if not actually impossible. From these considerations it was decided to provide large living quarters at the mine for the full complement of men required for its operation and to change crews out at the end of a period of duty. For most personnel this amounts to a five-day-on, five-day-off schedule with each man working 12 hours on and 12 hours off when on duty at the mine. This schedule is well liked because it allows the employee three 5-day intervals in the month during which he can attend to farming, ranching, fishing, citrus growing, or other secondary occupation. The living quarters are spacious, air conditioned, and provided with recreation facilities, including radio, television, pool tables, movies, library and facility to pursue correspondence courses with guided study. An excellent cafeteria style dining room feeds regular meals and provides between-meals snacks and beverages.

A heliport is provided, located adjacent to the living quarters and crews are transferred to and from the

(Continued from Page 23)

base at Grand Isle in any flyable weather in a matter of 10 minutes or less.

Special considerations govern the handling of sulphur from the mine. Sulphur is a solid at normal room temperature and must be kept heated to remain liquid. It is rather heavy and the provision of extensive storage at the marine platforms would be quite expensive. For this reason it was decided to transport the sulphur to shore continuously by submarine pipelines discharging into barges at Grand Isle. These barges, operating in protected waters carry the sulphur to a shipping terminal on the Mississippi River at Port Sulphur. Special features of the design and construction of the necessary pipe lines have been discussed elsewhere.

It will be seen that this unusual site for a sulphur mine involved many special problems. Proper engineering consideration of these problems during the planning stage backed by the experience of the Freeport Sulphur Company and its engineers in designing sulphur mines has created an offshore mining plant which can reasonably be expected to operate with a high degree of reliability. Safe and comfortable working conditions have been provided for the operating personnel. Experience in operation of the mine and continuing development of engineering techniques will undoubtedly suggest improvements in the structure, equipment and operating practices as the deposit is developed and these improvements can be embodied in extensions of the present plant and in the mining of future deposits which the company may discover or acquire under marine waters.

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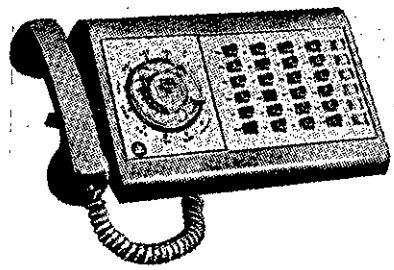

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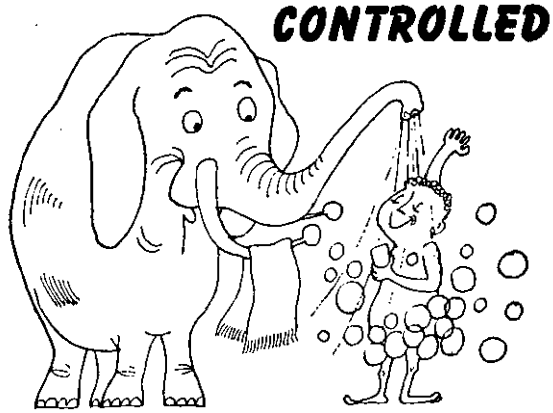

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Registration : Optional Or Required?

By **TED F. MEINHOLD**, Associate Editor
Chemical Processing

PROFESSIONAL REGISTRATION of engineers is here to stay—there is no doubt about it. An increasing number of engineers—in both industry and government—are hanging up new, crisp certificates. Records show that there are now over 250,000 licensed engineers in the U.S. —an increase of over 65% in the last 10 years.

How does the chemical industry feel about registration? We have just felt its pulse by querying a dozen major chemical companies. Among these were Allied Chemical, Dow Chemical, Du Pont, Grace, Hercules, Hooker, Monsanto, Phillips Petroleum, Reichhold, Shell Chemical, U.S.I. and Witco.

The majority make no bones about it . . . they encourage licensing for their engineers. Although three reported "no official policy," none discouraged the action. Some typical comments were: . . . "we feel that it helps to make a better engineer" . . . "registration is considered a mark of progress and carries with it recognition that the individual has reached a professional level" . . . "it serves an important function not only professionally, but is also in the best interests of the public" . . . "the man who is licensed has shown more initiative and desire for professional recognition and competence than those who are not."

When asked **how** they encouraged registration, only two firms reported that they had any sort of a formal assistance program (license fees, refresher course tuition, etc.) Most stated that they utilized other means of personal encouragement, such as occasional letters and memorandums from supervisors pointing out benefits of registration, and by giving public recognition to newly licensed engineers in company newspapers, magazines or bulletins.

The question, "Do you hire registered engineers only?" brought a resounding "no" from all the organizations surveyed. A few revealed, however, that a certificate is considered a plus factor. One company expressed it this way: "If two men of similar abilities were to apply, one with and one without the PE license, we would probably hire the one with the license."

It was also pointed out that in some cases local regulations may require that a man filling a specific job in a certain department (central engineering group, for example) be a registered professional engineer. This has not presented much of a problem, though, because most companies have such personnel available or can retain some local person with the necessary qualifications when required.

Generally, licensed engineers receive no preference in advancement considerations. Promotions usually are based on performance alone.

However, some companies are quick to add that registration is often the mark of the better man. They point out that experience seems to indicate that the engineer who possesses a license is usually the same person who has demonstrated superior competence and drive.

One firm that employs over 2000 graduate engineers—40% of whom are registered—slyly expressed its viewpoints this way: "Nearly all of our engineers in supervisory positions are already licensed; so registration as a consideration for promotion is not of particular concern to us!"

One-third of the organizations surveyed expected registration to play a larger role in the future. The remainder visualized little or no change and saw no need to modify their current policies.

One of the largest companies included in our survey made this comment: "The time may be approaching when **all** engineers will be required by law (and it would be enforced) to register . . . whether they are doing what is now defined as public works, consulting, or privately employed. Customer-service work might be construed as consultation when engineering advice is given to customers."

Based on the results of the survey, there is an obvious conclusion that can be reached: Registration is rapidly gaining in importance and it will continue to do so in the future.

The registration trend being what it is, we offer this advice: Engineers would be wise to obtain their license as soon as possible after graduating from college! This will also be the easiest time for them to pass the registration examination, since all of their academic training will still be fresh in their minds.

Why take chances? Registration in all likelihood will play a big part in helping these engineers protect the investment that they have made in their education.

We are not alone in this belief either. The Engineers Council for Professional Development, an organization made up of eight engineering societies, cites this advice in its "Guide for Young Engineers": "If the rapid growth in registration continues, it is safe to predict that by the time today's graduates reach maturity the practice will be practically universal.

"The young graduate must want to keep all doors of opportunity open until he is firmly settled in his career, and there are some he cannot enter without a license as a key. Registration will help the engineer obtain professional status in any other state or country to which his work may take him."

Although a member of ECPD, The American Institute of Chemical Engineers is a bit more reserved in this respect. In a statement released by the group's council its position was outlined as follows: " . . . Although AIChE does not believe that registration of itself contributes significantly to professional responsibility and professional development, it recognizes that in some cases, registration is considered to be one mark of public recognition of professional status.

"Registration should be accorded no greater importance than is placed on other indications of professional status, such as academic degrees, membership in professional organizations, technical publications, and advancement in industrial, academic and governmental careers."

Continuing, the Institute flatly states that it is not in favor of **compulsory** registration for all engineers. It recognizes, however, that all states have now enacted engineering registration laws, and it is possible that any

engineer in the course of his career may wish to become engaged in activities requiring registration.

Therefore, AIChE recommends that its members should, as a practical expedient, become registered in their respective states as soon as possible after entering the profession.

Turning again to the results of our survey, we can safely assure our readers that registration for engineers in the chemical industry is—and will continue to be for sometime—optional. To the best of our knowledge, no chemical firm has as yet made it a condition for employment.

However, continuous pressure is being exerted by powerful organizations to change this.

One chemical industry spokesman offered this comment: "There seems to be a definite tie between registration and membership in NSPE (National Society of Professional Engineers). The possibility exists that this organization may emerge as the ethical and legal watchdog of the engineering profession, somewhat like the American Bar Association and American Medical Association in their professions." If this happens, there will no longer be much doubt as to the outcome of the registration issue. NSPE has made it quite clear as to what its position is.

This article on registration is reproduced from Chemical Processing Magazine, at the suggestion of Dr. Donald Derickson, chairman, State Board of Registration for Professional Engineers and Land Surveyors.

Hercules Dedicates At Lake Charles

Special to The Engineer

Hercules Powder Company has dedicated its new and second polyolefins plant at Lake Charles.

The Lake Charles plant has a capacity of 60 million pounds a year and augments Hercules' first polyolefins plant which has been operating at Parlin, New Jersey, since 1955.

While Governor Jimmie H. Davis of Louisiana and Albert E. Forster, president and board chairman of Hercules, were making dedication speeches, construction work continued unabated on a second 60-million-pound unit at the Lake Charles site.

When completed in 1962, the 120-million-pound capacity at Lake Charles, plus 80 million pounds a year at Parlin, will enable Hercules to produce 200 million pounds annually of high-density polyethylene and crystalline polypropylene.

Other Hercules executives participating in the dedication ceremony were Werner C. Brown, general manager of Hercules' Cellulose Products Department, which operates the Lake Charles plant; David S. Bruce, the department's director of operations; and Earp F. Jennings, Jr., manager of the plant.

An ultra-modern plant, completely automated, the Hercules polyolefins facility gets its propylene raw material from Petroleum Chemicals, Inc.

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Memorial

ALVIN CLAUDE VOLK

Alvin Claude Volk was born in St. Louis, Missouri, December 3, 1892. He worked his way through the University of Illinois and graduated in 1916 in Civil Engineering. After finishing college, he worked as engineer with the Missouri Pacific Railroad. This work brought him to Louisiana where he met and married Launa Arant of Monroe.

In 1917 he received his commission as Second Lieutenant in the army and served in France throughout World War I in the 32nd Engineering. He studied engineering at the University of Paris at Sorbonne while in France. He was discharged from the army in 1919 as a captain.

He returned to his job with the Missouri Pacific Railroad and remained with it until 1922 when he came to Bastrop and opened his office in private practice.

For 38 years he practiced engineering in Bastrop, La. As City Engineer and Parish Surveyor, he worked on all the major engineering projects of the parish. He worked in designing and supervising the original paving of the town, all the sewer systems, most of the streets, and numerous subdivisions. He designed East Madison City Park and swimming pool. As a charter member of the Morehouse Parish Country Club he designed and laid out the golf course.

A. C. Volk was a loyal member of the First Methodist Church. He designed the church, supervised its building, and worked hard for many years to help pay its debt. He served as Chairman of the Board of Stewards for 11 years, and was on the Board of Trustees for 25 years—active until his death.

"Al" Volk was a charter member of the Kiwanis Club of Bastrop and on the original Chamber of Commerce. He received his 40-year service pin from the American Legion only four days before he passed on. He also belonged to the Masonic Lodge and was a Shriner.

Mayor A. P. Carter of Bastrop said, "Bastrop grew up under A. C. Volk's guidance. Speaking for the City, I would like to say that Volk's death was a great loss to Bastrop."

GEORGE D. WADDILL

It is with deep regret that the Louisiana Engineering Society records the passing on of our fellow engineer, George D. Waddill.

He was born in the City of Baton Rouge on June 5, 1877, and he was graduated from Louisiana State University in June of 1897. From 1897 to 1943 he was employed by the U. S. Army Engineer District, New Orleans, starting as a temporary rodman and advancing to the position of Senior Engineer. In March of 1943 he transferred to the office of the Mississippi River Commission, Vicksburg, Miss., where he remained until his retirement in June of 1947.

Mr. Waddill was, in a peculiar sense, devoted to the Mississippi River. His major interests were in bank revetment, levees, flood-fighting, and the control of Old River when that problem consisted of getting sufficient water for 7-foot navigation by the Railroad Car ferry operating from Angola to Naples on the Red River.

In the bank revetment field he had much to do with perfecting the radial sounding method of hydrographic surveying, which made it possible to know rather precisely what goes on in the river bed in depths up to 125 or 175 feet of water. Mr. Waddill's chief love was the willow frame mattress, which he insisted upon having constructed in accordance with rigid specifications and placed on the river bed with meticulous accuracy. His interest was comprehensive and included every aspect of planning, construction, and maintenance.

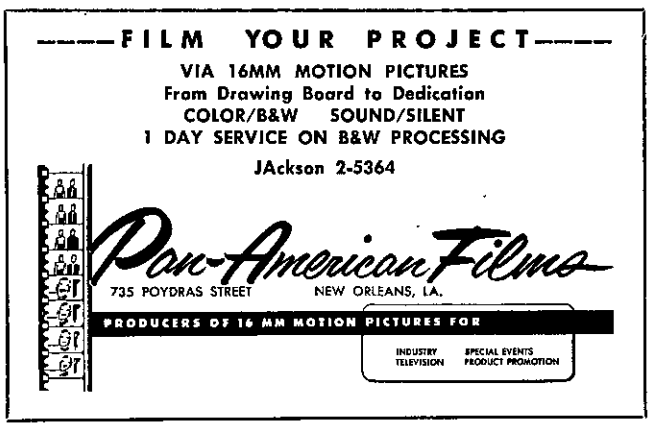
In levee construction Mr. Waddill again insisted on the highest standards. Here, however, he was particularly alert to the weaknesses developed by l e v e e s and levee foundations during great floods. He probably originated the idea of hydraulically placed landside berms in areas where dangerous sand boils or excessive seepage developed during floods. He was also a great exponent of a flood-fighting technique that tends to be lost to the present generation of flood-fighters; i. e., the remarkably effective river side earth blanket placed to dry up and strengthen seeping, saturated levees.

Perhaps it was in flood-fighting that Mr. Waddill did his outstanding work: With his knowledge and experience in extensive bank revetment and levee construction operations, he understood the handling of large numbers of men and coordinating floating plant operations, so it was only reasonable that he would shine here. After rendering efficient service on a local basis in many floods since the turn of the century, the high point of his flood-fighting work came in the 1922 and 1927 high waters; in the 1922 high water, in particular, he was personally responsible for recognizing the danger of that flood and of initiating effective flood-fighting steps in time.

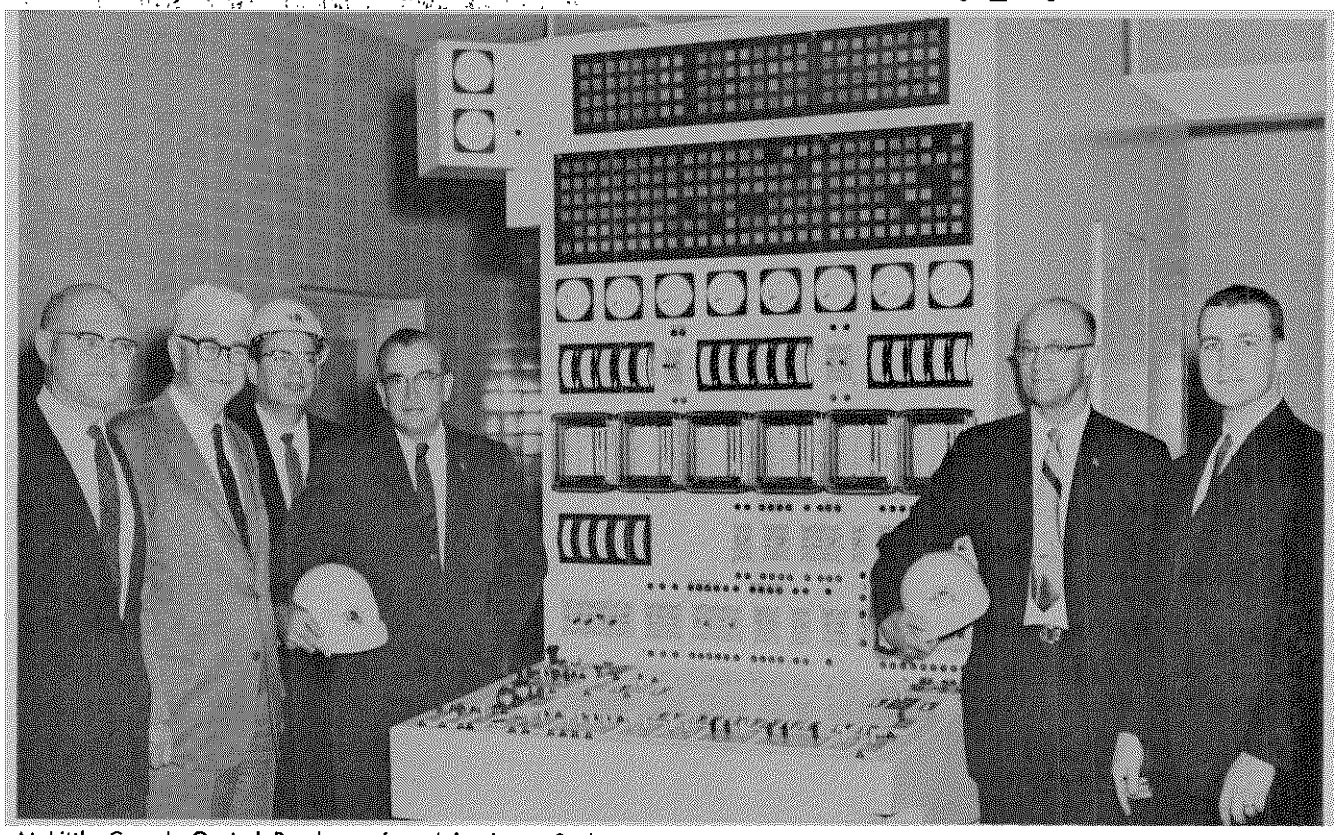
In addition to skill and effectiveness in his work, Mr. Waddill was a delightful fishing companion. Unfortunately, he was only too effective in this endeavor, and he counted his catches by the "dozen" when others in the party counted "individual fishes."

Bt It Resolved, that the membership of the Louisiana Engineering Society express hereby its feeling of loss at the passing of George D. Waddill; that this resolution become a part of the minutes of the Louisiana Engineering Society; and that a copy be sent to the family of the deceased.

JOHN S. GENTILICH
JEROME C. BAEHR
F. M. CHATRY
W. C. CAREY



LES Certificate Goes to 'Little Gypsy' Plant



At Little Gypsy's Control Panel are, from left: James S. Janssen, first vice president of the Louisiana Engineering Society; W. O. Turner, chairman of the board and chief executive officer of Louisiana Power & Light Company; Donald L. Aswell, station superintendent at Little Gypsy; W. T. Hess, vice president and chief engineer for Louisiana Power & Light Company; G. C. Rawls, president of Louisiana Power & Light Company; and William A. Baker, Jr., chairman of Engineers' Week in the Greater New Orleans area.

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March 8, 1961—Alfred Abboud, Toledo, Ohio; Gabriel R. Agullar Cobar, Baton Rouge; Yilmaz M. Akdoruk, Miami, Fla.; Bobbie F. Anderson, Monroe; John Wesley Andrus, Jr., Crowley; Walter W. Blain, Mt. Olive, Miss.; James B. Boulet, Lake Charles; Lester E. Bradberry, Grand Isle; Larry Thaxton Byrd, Haynesville; Gabriel J. Callol, New Orleans; William H. Drake, Maplewood; James S. Eads, Jr., Lafayette; Saul O. Garcia, Ruston; Yett L. Gee, Jackson, Miss.; George R. Grim, Jr., Laurel, Miss.; Wallace J. Hargrave, Baton Rouge; Bobby J. Hebert, Jr., Cut Off; Robert H. Homer, Sherborn, Mass.; William H. Jarrell, Jr., Opelousas; Thomas M. Johnson, Jr., Houston, Tex.; Charles T. Kearney, Crowley; Richard F. Kluge, Hammond; Billy C. Koy, Corpus Christi, Tex.; Forrest M. Lotz, Jr., New Orleans; Jackson M. Miles, Minden; Nyles A. Nielsen, Dallas, Tex.; Theron Norman Riley, Houston, Tex.; Thomas A. Roy, Baton Rouge; Joseph W. Rutledge, Nederland, Tex.; Warren W. Rutz, Houston, Tex.; Charles E. Settoon, New Orleans; Bernice F. Shell, Jr., Ruston; Paul Simpson, Jr., Berwick; Charles E. Sterling, Baton Rouge; Nestor O. Torra Fernandez, Lake Charles; Thomas M. Wakefield, Metairie; Lawrence F. Weiss, Coral Gables; Lawrence D. White, Ft. Worth, Tex.; Leonard J. Wickenhauser, Laurel, Miss.; all engineers; Kenneth D. Boatman, New Iberia; Ray D. Gray, Bossier City; Robert K. McDaniel, Jr., Baton Rouge; Edward C. Moore, Hammond; Alven B. Spence, Monroe; all land surveyors.

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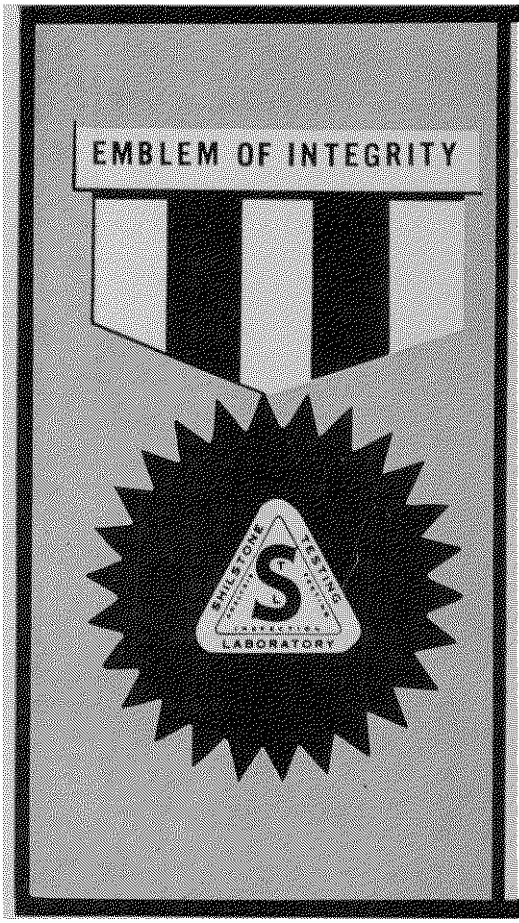

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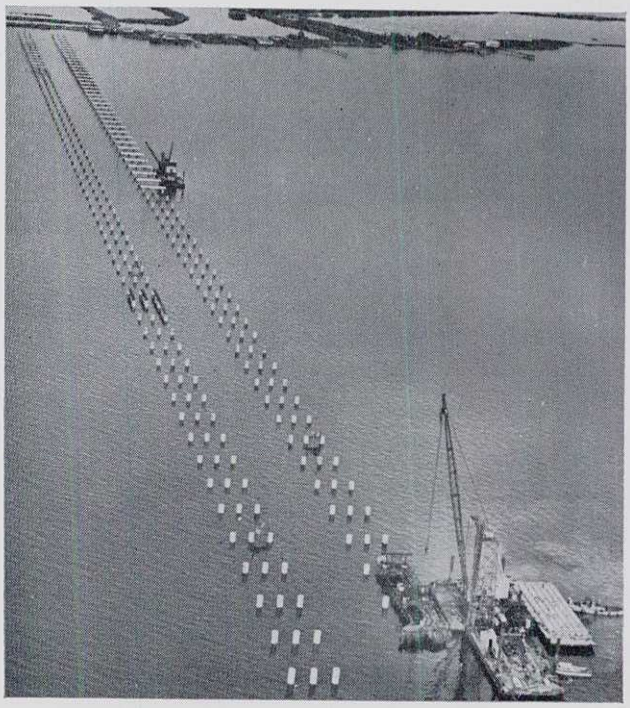

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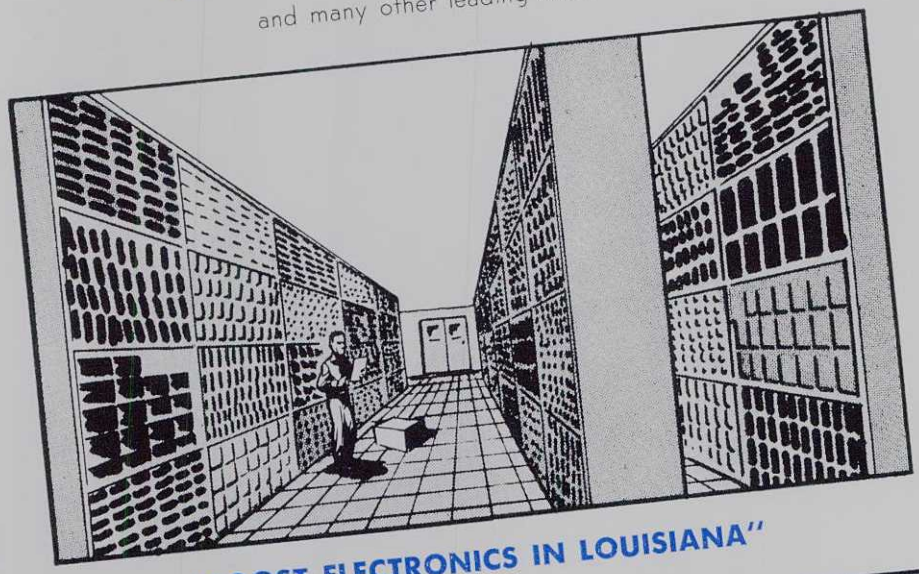

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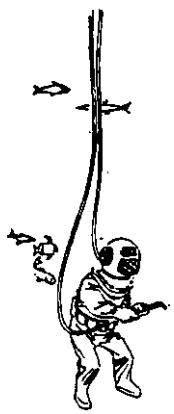

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THE LOUISIANA ENGINEER

Vol. 47 June, 1961 No. 3

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The LOUISIANA ENGINEER is the official publication of the Louisiana Engineering Society and of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors and is published in February, April, June, August, October and December. Subscription $2.00 per annum; single copy 50 cents.

Second class mailing privileges authorized at New Orleans, Louisiana. Acceptance for mailing at special rate of postage provided for in Section 1105, Act of October 3, 1917, authorized August 1, 1918.

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.

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OUR COVER: First piling driven on the twin bridges across Lake Pontchartrain as part of the Federal-Interstate Highway system are shown. Pilings are being driven from the Slidell side of the lake, about 9000 feet east of the existing five-mile lake bridge. (Photo by Frank Methe, New Orleans Times-Picayune).

Out of twenty industrial firms recently surveyed by *Management Record,* seventeen have specific procedural statements covering payment of professional and technical society membership expenses for their professional employees:

- One of the seventeen considers such expenses to be the "personal responsibility" of the engineer.
- Full costs of memberships in approved professional and technical societies are paid by seven companies.
- Three expect employees to pay for the first organization they join, but promise to pay for any subsequent affiliation.
- In two companies, expenses are paid only when management specifically requests the employee to join.
- Two pay expenses only when memberships can be maintained in the name of the company.
- The remaining two of the seventeen pay full expenses when the employee is requested to join, and split costs with him when he joins on his own.

For the last three years, the actual number of engineering freshmen fell from 78,750 (1957) to 70,050 (1958) to 67,700 (1959) to 67,550 (1960). Since the last drop was only 150, many saw a reversal in trend.

The Engineering Manpower Commission, however, draws attention to the **relative** aspects of these data. Among the freshman class as a whole, the proportional standing of engineers tells a dramatically different story. The proportion of engineering candidates to all freshman dropped from 10.8% (1957), to 7.3% (1960).

Unless the pattern of transfers and retention rates changes dramatically (and there is little reason to believe it will) the supply of engineering graduates will be at or below the present level of 37,500 for the next four to six years.

In the present depressed state of our economy this may not seem so important, but two, four or six years from now may tell a different story.

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Minutes Of The Board, La. Engineering Society

Minutes of Meeting of the Board of Direction Held at the Hotel Bentley, Alexandria, on Friday, March 17, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Demopulos, Domingue, Henry, Janssen, Larue, Latimer, McLellan, McNamara, Rountree, Watts and Fernandez present. Messrs. Allen Johnson, Public Relations Counsel, J. T. Knight, Jr., R. A. Smith, M. C. Bubenzer, Alvin M. Fromherz, Fred C. Brownlee, Robert O. Williams and other members-at-large were present by invitation. Mr. Larue moved that the reading of minutes be dispensed with and approved as distributed to board members by mail, seconded by Mr. Carter and carried.

President Bogard announced that the Tulane Student Chapter had been presented a charter at a meeting held on March 8 and was now an official chapter of the society. He also reported on the proposed Technical Manpower Conference and on correspondence concerning the motion passed at the board's February meeting. Mr. Larue moved that a committee be appointed to confer with Dean Johnson of Tulane University and that the committee be empowered to act at its discretion. The motion was seconded by Mr. Rountree and carried. Mr. Janssen suggested that the deans of the various engineering schools be appointed to this committee, but after some discussion President Bogard appointed Mr. Janssen to head a committee of his own choice to implement the motion.

President Bogard informed the board that he had written personal letters to 135 mid-term engineering graduates inviting them to join LES and so far, only one of these graduates has requested an application form. Discussion followed on the March ballot, in which only one applicant was listed as a candidate for full membership grade. Mr. McLellan moved that the Society contact affiliate members who are qualified and try to get them to transfer to the higher grade. Motion seconded by Mr. McNamara and carried. During the discussion that folowed it was pointed out that the dues for affiliate grade might be progressively increased, or that registered professional engineers might be allowed only a certain number of years in affiliate grade, after which they would be required to transfer to full membership.

A letter from Dr. Donald Derickson was read in which he called attention to an article on registration appearing in a current technical magazine. Mr. Latimer moved that the article be printed in THE LOUISIANA ENGINEER if permission to do so can be obtained. Motion seconded by Mr. Larue and carried.

The secretary read a letter from Mr. Edward C. Moore informing the board that the formation of a Florida Parishes Section is now under way. He also read a letter from Mrs. Ernest Lee Jahncke thanking the society and the obituary committee for the tribute to her late husband which appeared in THE LOUISIANA ENGINEER.

Mr. McLellan announced that the Annual Outing would be held at the Colonial Country Club in New Orleans on September 28.

It was decided to publish a list of Honorary Members and Life Members in THE LOUISIANA ENGINEER.

A list of delinquent members was distributed and section representatives were asked to urge these members to send in their dues.

Printed copies of recent amendments to the constitution were distributed, after which the meeting adjourned.

Secretary-Treasurer

Minutes of Meeting of the Board of Direction Monday, April 11, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Janssen, Latimer, McLellan, Rountree and Fernandez present. Messrs. Allen Johnson and A. M. Fromherz also were present by invitation. Mr. Latimer moved that minutes of the preceding meeting be accepted as distributed to board members by mail, seconded by Mr. Carter and carried.

The secretary announced that 408 ballots had been cast in the March membership election and that all applicants had been admitted to their respective grades. He also read a report from the Monroe Section Engineers' Week Committee. The board commended both the Monroe and Alexandria Sections for their success in arranging for special newspaper supplements during Engineers' Week.

The resignation of Stanley B. Reynolds, Jr. (Baton Rouge) was accepted with regret upon motion by Mr. Latimer, seconded by Mr. McLellan.

A letter from Mr. Pierre Stouse was read in which he declined with regret the vice-chairmanship of the New Orleans Vocational Guidance Committee for 1961-62. The secretary was instructed to request Mr. Wallace de Gruy, Chairman, to appoint a vice-chairman of his own choice to replace Mr. Stouse.

President Bogard reported that the proposed Manpower Conference had been the subject of correspondence between himself and Dean Johnson of Tulane, and it was agreed that, should the conference be held, it would be sponsored by L.E.S. with the four Louisiana engineering schools participating and would take place in the autumn of 1961.

Following the suggestion made at the last board meeting, the secretary reported having written to four newly elected members who had requested Affiliate membership, advising that they were qualified for full member grade according to the findings of the Membership Qualifications Committee. As a result of this advice, Mr. Frank H. Koger of Baton Rouge requested transfer from Affiliate to Full Member grade and this was granted upon motion by Mr. Janssen, seconded by Mr. Latimer.

Mr. McLellan moved that the election of David L. Stinson (Affiliate Member, Shreveport) be declared void for the reason that he has not acknowledged his election to membership on December 31, 1960 by a remittance of dues. Motion seconded by Mr. Carter and carried.

The secretary reported that a borrowed transit used in an Engineers' Week window display had been damaged. Mr. McLellan moved that the secretary be authorized to pay one-third of the damage if such a bill is submitted. Motion seconded by Mr. Rountree and carried.

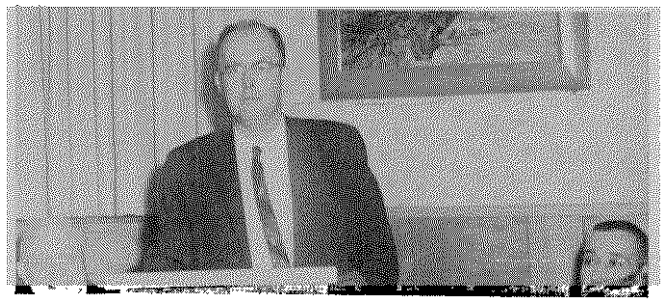
Mr. Rountree reported that there were 109 paid registrations and 5 guests at the Planning Conference and the deficit amounted to $165.65. The Alexandria Section had committed itself to pay $43.98 of expenses incurred by the Woman's Auxiliary, thus the amount to be borne by LES would be $121.67. The board concurred in President Bogard's expressed opinion that the State Planning Conference had been highly successful and the society is very much indebted to the Alexandria Section for serving as hosts year after year.

Mr. Alvin Fromherz, Chairman of the Functional Section for Engineers in Private Practice, discussed his report and the board authorized him to proceed with his plans. Discussion followed on the report of the Membership Committee. It was decided that a letter would be sent to all newly registered Professional Engineers inviting them to join LES, and that a continuous campaign would be started in which individual members would be asked to submit the names of prospective members. Other points in the report were tabled until the next meeting because of lack of time. The meeting then adjourned so that the society's regular meeting could begin on schedule.

Secretary-Treasurer

The Lake Charles Section of L. E. S. held its annual "President's Night" meeting Monday, June 12, 1961. State President Ben L. Bogard spoke on "Professionalism."

The second annual award for the outstanding engineering student at McNeese State College was presented by the Section. One plaque was presented to the college and one to the student. This year's student was Robert Lasater of Sulphur, La.



Dean Ben T. Bogard (center) is shown above addressing the Lake Charles Section. Seated on his right is Mr. Bailey Vincent, President of the Lake Charles Section and left is Dr. T. P. Zolki of McNeese State College.

Left to right are Dr. Zolki holding the plaque that was presented to McNeese College; Mr. Truman Stagg who made the presentation for the Section and Mr. Robert Lasater holding the plaque that was presented to him.

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SUPREME COURT RULES

On April 24, 1961, (Case No. 45059) the Louisiana Supreme Court reversed a decision rendered by the Court of Appeals involving Mrs. Cecilia LeBlanc Day, individually and as natural tutrix, etc. versus National U. S. Radiator Corporation, et al to receive damages for the death of her husband, Willie Day.

The facts of the case, as outlined in the decision, were as follows:

Day was killed in a boiler explosion which occurred while his employer, Vince Plumbing & Heating Co., a subcontractor, was installing a hot water system in a new building of the tuberculosis hospital at Greenwell Springs, Louisiana.

The District Court gave judgment for plaintiff against Wilson & Coleman, architects on the buildings, and its insuror.

The point on which the Supreme Court reversed the decision involved the fact that the specifications plainly stated that boilers were to be provided with a thermostat and that the contractor was to equip them with relief valves.

The shop drawings were prepared for Vince by Amstan Supply Division of American Radiator & Sanitary Corp.

These did not include a pressure relief valve for the boiler which exploded and testimony revealed that these were actually lists of only items to be purchased from Amstan.

In addition, under the original contract, the architects were not charged with the duty of inspection, and it was Vince who ordered the boiler tested, according to court records.

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Registration Law Report:

Confer With Architects, Industrial Engineers

Recommendations for amendment to the Louisiana Registration Law were discussed by the LES Registration Law Committee with Louisiana architects and industrial engineers in Baton Rouge May 27. Waldemar S. Nelson, New Orleans Committee Chairman, said that the Society had also received a communique concerning registration of Naval Architects and Marine Engineers.

At the meeting, Nelson said the Committee was informed by Louisiana representatives of the American Institute of Industrial Engineers that:

84% of the states presently register industrial engineers.

38 colleges and institutions of higher learning give degrees in Industrial Engineering accredited by Engineers Council for Professional Development (ECPD).

9 additional institutions give the Industrial Engineering option in courses accredited by ECPD.

There are between 180 and 220 Industrial Engineers working for such firms as Kaiser Aluminum, Ethyl Corp., Johns-Manville Products Corp., Continental Can Co. and Crown-Zellerbach. Approximately 60 of these engineers belong to two Louisiana chapters of the AIIE, one in Baton Rouge and the other in New Orleans.

Nelson also reported the receipt of a letter from Arthur Darden, New Orleans Naval Architect, who pointed out that undergraduate degrees in Naval Architecture and Marine Engineering are available from Webb Institute, M.I.T. and University of Michigan. These degrees are recognized by the National Council of State Boards of Engineering Examiners. Darden also said that Virginia and Texas register Naval Architects and Marine Engineers, and added that there are no provisions in Louisiana for registering them although he said that this has become a most important field of practice in the State.

Commenting on the Darden letter, Nelson said, "We feel this is a strong point for registration of Naval Architects and Marine Engineers. Recently a Merchant vessel was placed in commission designed by Louisiana Naval Architects and Marine Engineers, built in a Louisiana shipyard and operated by a Louisiana shipping firm. This is the first of a series of such vessels in a multi-million dollar program."

Nelson also reported that the committee had an extended discussion with representatives of the Louisiana Architects Association, whose parent is the American Institute of Architects. The association represents chapters of the American Institute of Architects in all principal cities of Louisiana. Wayne Stoffle, New Orleans Architect, and the chairman of the Engineering Liaison Committee of the Louisiana Architects Association said that apparently the interests of LES and LAIA go hand in hand and assured the committee that the architects would like to cooperate closely with the engineers for the mutual good of the professions.

Nelson concluded that two principal suggestions resulting from the viewpoints expressed at this meeting would be: one, to permit the State Board to license additional branches, and two, to specify a four year experience requirement for registration.

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Review Key Engineering Feats in La.

NATIONAL ENGINEERS' WEEK, BATON ROUGE

National Engineers' Week this year was recognized in the Baton Rouge area through a coordinated program of radio and TV, local Engineer speakers, poster distribution, engineering model displays, entertainment of high school groups and a local L.E.S. meeting.

Live announcements were made on local radio stations calling attention to and describing Engineers' Week and paying tribute to the Professional Engineer.

Local Engineers representing several of the major branches of engineering spoke before some of the Baton Rouge Civic groups. Engineers presenting speeches and the groups they addressed are: Samuel J. Helfman at the Lakeshore Lions Club on Monday, February 20; C. K. Oakes at the Downtown Lions Club, Tuesday, February 21; W. H. Carter at the Metropolitan Kiwanis Club, Tuesday, February 21; Dr. H. T. Turner at the Red Stick Kiwanis Club, Wednesday, February 22; Henry L. Landry at the North Baton Rouge Lions Club, Wednesday, February 22.

Two hundred of the 9" x 11" posters were distributed throughout the business and shopping areas of Baton Rouge. An excellent job of distribution was performed by the University High School Key Club, Robert Sabatier, President.

High School groups and JETS Clubs in the area were entertained with special programs, conducted industrial plant tours and competitive events between the different groups.

The highlight of Engineers' Week in Baton Rouge came Monday evening when the Baton Rouge Section, L.E.S., and the Louisiana Section A.S.C.E. held a joint meeting to further bring notice to National Engineers' Week. A.S.C.E. President, Francis Sessums, and Baton Rouge Section President, W. H. Carter, jointly offered special attention to this particular time of the year. The program at this meeting was one that held everyone's attention until completed.

Dr. Beverly J. Covington, Professor of Civil Engineering at L.S.U. discussed "The Causes of Failures of Major Engineering Structures in the Last 5,000 Years." Some of the significant projects reviewed were the Tay Bridge in Scotland and the South Fork Dam, the cause of the Johnstown Flood, and finally the Texas Tower disaster.

Observance of Engineers' Week in the Baton Rouge area was under the general direction of G. R. Dyson, Chairman, Engineers' Week Committee, with special counsel from W. H. Carter, President. Committee members were: Roger P. Guissinger, Vice-Chairman; James R. Gilbert; E. J. Taylor; W. A. Wintz and the JETS Committee consisting of: James R. Barfield, Chairman; Lucien J. Virgillo, Jr.; A. P. Batchelor.

NATIONAL ENGINEERS' WEEK, LAFAYETTE

Lafayette Engineers' Week included the following activities: "Louisiana Reports" TV program sponsored by the Greater Lafayette Chamber of Commerce on KLFY-TV, Channel 10 Sunday, February 19th from 4:00 to 4:30 p.m. Four local engineer panel members from Industry, Management, Education and Contracting discussed engineering in practice.

A Public Library books display on engineering and related works in the local libraries of cities in this section, and a public showing of film "The American Engineer" with a still display by the Louisiana Department of Highways and slide films by the City of Lafayette Utilities System on Thursday, February 23rd at 7:30 p.m. in the Hamilton Training School Auditorium on the campus of the University of Southwestern Louisiana in Lafayette.

The film "The American Engineer" was shown to local civic groups.

A different TV spot slide for each day with brief comment on KLFY-TV throughout the day and spot radio announcements of twenty to sixty seconds duration on each Lafayette Section radio station with different comments for each day were heard.

National Engineers' Week posters were displayed throughout the cities included in the Lafayette section and newspaper ads proclaiming National Engineers' Week in all cities for this section, with three newspaper mats in all newspapers in this section.

A TV interview was held on Monday, February 20th at noon to outline the activities for the week and news releases were sent to all news media concerning the Library display, the Thursday night program and the TV panel show.

A concerted membership drive was conducted by the membership chairman during the week.

NATIONAL ENGINEERS' WEEK, NEW ORLEANS

February 20—Monday at 10:30 A.M.—Engineers Week Proclamation at City Hall, deLesseps S. Morrison, Mayor of New Orleans and at 8:00 P.M. LES held a meeting at the Engineers' Club, Dr. Lee H. Johnson, Dean of the School of Engineering at Tulane University was the speaker. A cocktail party followed the meeting.

On Tuesday, a special part of the Times Picayune was dedicated to the observance of Engineers' Week and Wednesday, a special TV program appeared on WYES-TV (Channel 8 at 9:00 P.M.) This program presented Tulane students from the various branches of engineering who discribed the subjects studied in their respective fields and gave opinions about opportunities in engineering. Professor John L. Martinez, Assistant Dean of the Tulane Engineering School, acted as Moderator.

Thursday—Chamber of Commerce, Members' Council Meeting, Roosevelt Hotel, featured Mr. Mason G. Lockwood, a consulting engineer and Past President of the Chamber of Commerce, Houston, Texas, as speaker.

Sunday—a special TV program was presented at 10:00 A.M. on WWL-TV (Channel 4). This program was a panel discusion among graduates who are successful in other kinds of business. The theme "Engineering as a Background for Management and Other Fields" was moderated by Professor John L. Martinez.

Also during Engineers' Week, window displays at New Orleans Public Service, on Baronne St. and at the New Orleans Public Library on Loyola Ave. were well received. An article describing the significance of Engineers' Week appeared during the week's issue of *RIDERS DIGEST*. Mr. Mel Leavitt of WDSU-TV (Channel 6) interviewed Mr. Mason G. Lockwood on Mr. Leavitt's "BYLINE" show following the 5:30 P.M. news. The Engineers' Week Committee for the New Orleans area were: William A. Baker, Jr., Chairman; August J. Brodtman, Vice-Chairman; John L. Martinez; Wendel G. Leibe; Warrington B. Speer, and Walter G. Landry.

NATIONAL ENGINEERS' WEEK, ALEXANDRIA

Mayors W. George Bowdon Jr. of Alexandria and George Hoffman of Pineville issued a joint proclamation for observance of Engineers' Week in Alexandria.

The program was put on by the Alexandria section as part of a statewide program put on by various sections of the Louisiana Engineering Society.

Local observances of the week were under the general direction of William J. Rountree, president of the Alex andria section.

Climax of the week was a banquet Thursday, Feb. 23 at Hotel Bentley. F. H. Coughlin of the Central Louisiana Electric Co. was the speaker for the event.

A. M. Moore was chairman for the week's program, assisted by Wallace P. DeNux.

O. E. Barron headed the sub-committee in charge of the newspaper tabloid section. He was assisted by L. J. Melancon, news articles, and N. J. Gorsha, ad sales.

Other subcommittee chairmen included W. J. Keating, civic clubs; C. R. Westerchil, banquet; George A. DeWolf, poster and window displays, and Dan Cresap and Rountree, awards.

Following is an example of the articles that appeared in the Alexandria Town Talk during Engineers' Week.

Plant to Prove Value of Engineer

By Thomas C. David

The importance of the engineer's work in developing a community was made apparent recently in Alexandria by the decision of a large valve manufacturing company to construct a new plant on the Pineville side of the river north of Tioga.

The plant will be a major facility of one of the nation's largest manufacturers of valves, gages, and hoists. Manning, Maxwell & Moore, Inc., of Stratford, Conn. has been engaged for more than 100 years in the manufactuer of engineering equipment.

The construction of their new plant in Central Louisiana will put into play the many skills of engineering.

One of the first things the company had to do was to set its own engineers to making cost estimates, market surveys, production cost comparisons, building construction cost estimates and other studies. They worked together with the auditing, cost accounting, legal and other management specialties, in order to make certain that the decision would be founded on definite facts and solid conclusions.

The expenditure of approximately $2,250,000 to construct a new plant and move in equipment and set the plant into operation is in itself a major decision to any company. More important still, to the future fortunes of the company are the soundness of the decisions from the business and profit standpoint.

Although it is not well recognized, the part played by the company's engineers in making this decision have played a vital part in the decision of the company to construct a new plant.

When this plant is put into operation if the engineers in charge of the production of the plant are not able to produce as efficiently as their predictions have set out, the fortunes of the company could be heavliy and adversly affected.

The success of the company through many years of progress with the changing times gives every indication that the thoroughness and skill of the company engineers will amount to great progress for the company.

There is no doubt that the location of the plant in our area will be of great benefit to our community. The location of a heavy manufacturing enterprise here will help to balance off our economy with engineering and metal working skills on one hand to supplement the agricultural and timber pursuits which predominate in our economy now.

The economy, permanence and utility of the building to be constructed will, in a large measure, rest on the skill and knowledge of local engineers assisting architects in the design of the facilities.

The architects will rely upon their engineers to give them assistance in the design of such things as plumbing and drainage of the building, the electrical distribution and lighting, the erection of special air compressor units and extremely high pressure steam boilers for testing of valves, the structural framework of the building including the foundations; the sanitary drainage for the disposal of sewage waste; the development of drainage, driveways and parking in and around the building, and special fire protection facilities.

Of major importance to the operation of the plant will be the running of new utility services to the plant. This will bring into play the skill and knowledge of the engineers connected with the power company to bring in new electric power lines; the engineers of the gas company to construct a new and large service line; the engineers working for the water department to construct a large water supply main to the plant area, and the engineers working for the contractors and agencies which will be doing the construction of these utilities.

American industry is built upon the proper use of engineering talents to develop new component parts of industry's plant and our local engineers are being relied upon quite heavily in the development of this new and fine addition to our economy.

Purdue—Field Notes
By Allen Johnson

James S. Janssen, LES First Vice-President, represented LES at the NSPE President's conference at Purdue University at Lafayette, Indiana. Some of the key points stressed were the effective indoctrination of new officers and means of attracting young engineers to active participation in Society work.

Chemical engineers are recruiting new members, said M. J. Auzine, Membership Chairman, American Institute of Chemical Engineers, New Orleans Section.

Erwin O. Dykes, Past Chairman of the New Orleans Chapter, ASSE, Past President, Delta Safety Society, Vice-Chairman of the Industrial Division of the Metropolitan New Orleans Safety Council and Chairman of the New Orleans Chapter of the Veterans of Safety has been selected to head the Engineering Division of the New Amsterdam Casualty Company at its home office in Baltimore, Maryland.

New officers of the New Orleans section of ASME are: Edgar H. Pavia, Chairman; Leonidas L. Denson, Vice-Chairman; Forney Fuller, Secretary; and Frank H. Walk, Treasurer.

A large group of consulting engineers of Baton Rouge heard Alvin M. Fromherz, Chairman of Functional Section, outline the aims of the NSPE Functional Section for consulting engineers. He showed how the NSPE Section provides valuable data on such things as professionalism, registration and fee schedules. Presiding was W. H. Carter, Baton Rouge Section President.

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Engineering Ethics And Professional Conduct

By MARION C. BUBENZER

Member, Ethics & Professional Affairs Committee

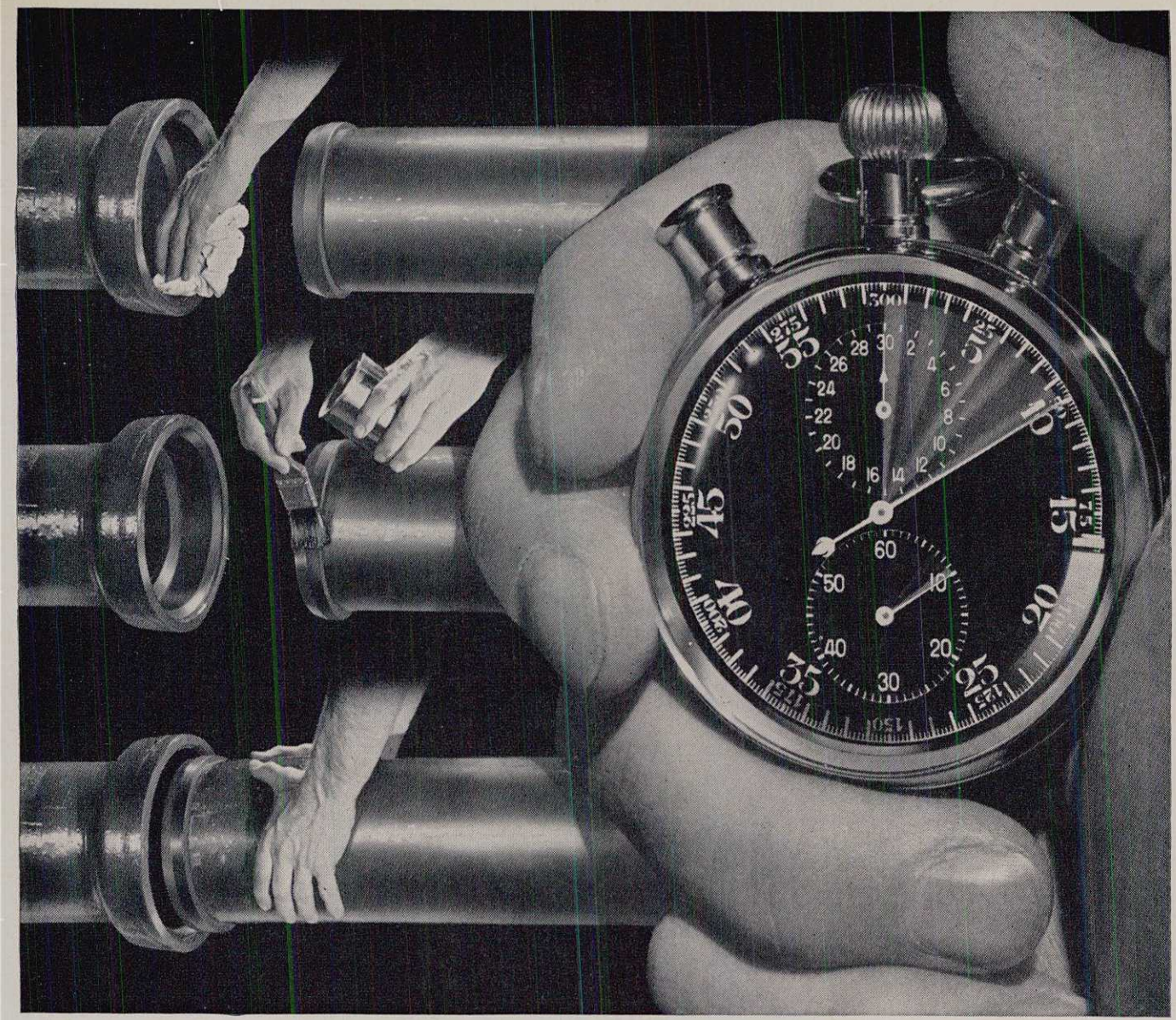
The above title is the name that is perhaps the more proper name for the L. E. S. Committee charged with considering such items. For example let's consider the Foreward of the statement of the Canons of Ethics for Engineers.

> "Honesty, justice, and courtesy form a moral philosophy which, associated with mutual interest among men, constitutes the foundation of ethics. The engineer should recognize such a standard, not in passive observance, but as a set of dynamic principles guiding his conduct and way of life. It is his duty to practice his profession according to these Canons of Ethics."
>
> "As the keystone of professional conduct is integrity, the engineer will discharge his duties with fidelity to the public, his employers, and clients, and with fairness and impartiality to all. It is his duty to interest himself in public welfare, and to be ready to apply his special knowledge for the benefit of mankind. He should uphold the honor and dignity of his profession and also avoid association with any enterprise of questionable character. In his dealings with fellow engineers he should be fair and tolerant."

It is therefore the duty of each practicing Professional Engineer to uphold the honor and dignity of the profession and to properly discharge his duties to the public.

The profession has been criticized for being reserved and to some extent "non-cooperative." This criticism has been especially leveled at Engineering students. Perhaps the Engineering students, carrying a heavy load of technical subjects, have some valid excuse for being so considered.

The practicing Professional Engineer, whether in industry or in consulting work, has no such valid excuse. If the practicing Professional Engineer is to live up to the Canon of Ethics he should assume his proportionate part of civic duties, interest in the public welfare and similar "non-remunerative jobs" which are necessary for the advancement of all. The practicing Professional Engineer, whether in industry or in consulting work, should also associate himself with the organization which has for its object the advancement of the profession, so that the profession will attain the public recognition to which it is so justly entitled. The diligent practice of "Professional Engineering" by each practicing Professional Engineer and cooperation with L. E. S. is necessary in our state to so advance our profession.



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This is another in 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 feeling 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. And 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 requirements for registration as a Land Surveyor?

ANSWER—Either one of two requirements must be met by a Land Surveyor desiring registration:

1) Graduation plus experience. To be registered, a Land Surveyor must be a graduate of a school or college approved by the Board and must have a specific record of a character, education and ability satisfactory to the Board and indicating that the applicant is competent to practice surveying.

If the evidence presented doesn't appear conclusive to warrant the issuing of a certificate of registration, the applicant may be required to present further evidence and may also be required to pass a written or oral examination, or both.

2) Experience plus examination. A certificate of registration may be issued a Land Surveyor with a specific record of six years or more of experience in surveying work of a satisfactory character indicating that he is competent to practice land surveying if a written, or written and oral, examination prescribed by the Board is successfully completed. The registration for Land Surveyors is $15.00 and accompanies the application.

QUESTION—Can a certificate of registration be reissued to any person whose certificate has been revoked?

ANSWER—Yes. The Board may reissue a certificate of registration to any person whose certificate has been revoked provided four or more members of the Board vote in favor of the reissuance.

QUESTION—How can a certificate of registration be replaced if the original is lost or destroyed?

ANSWER—A new certificate of registration to replace any certificate revoked, lost, destroyed or mutilated will be issued, subject to the rules of the Board, for a charge of five dollars.

DID YOU KNOW THAT

In 1908 the Louisiana Legislature passed Act 308 which became the law regulating the practice of Civil Engineering and created the Louisiana State Board of Engineering Examiners. This was shortly after Wyoming became the first state to enact a law regulating the practice of engineering in 1907.

Act 308 was passed at the request of the Louisiana Engineering Society. Passage of the act was a case of **caveat emptor.** Public safety was endangered by the practice of unqualified and sometimes unscrupulous persons, and such a law was essential and badly needed.

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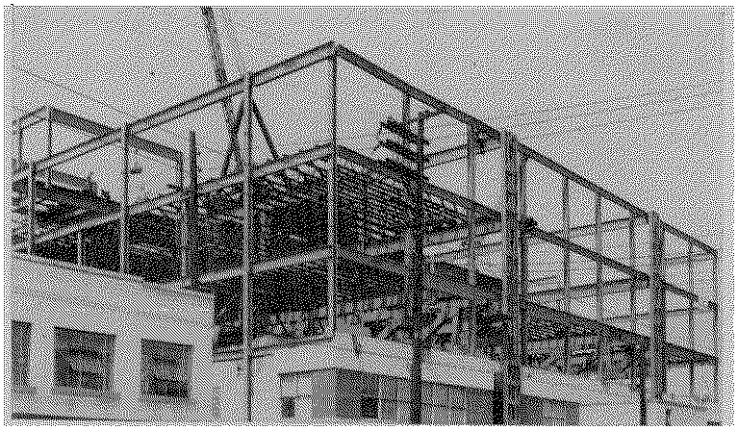
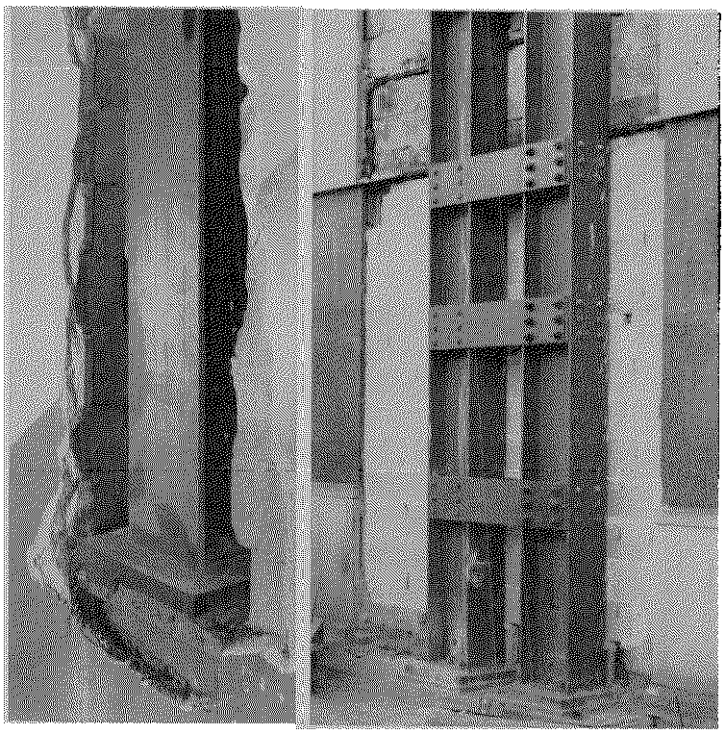


Designer: C. H. McCauley, Architect, Birmingham, Alabama
General Contractor: G. W. Hallmark & Sons, Inc.
Steel Fabricator: O'Neal Steel, Inc.
Owner: City of Birmingham

This building got old age security from steel



An odd construction problem developed when three floors were added to the two-story Social Security Building in Birmingham, Alabama. The building's old foundation wasn't strong enough to support three new floors, so they switched foundations! Concrete columns were ripped out of the basement and replaced with 41 steel H-beams to give the building additional strength. And the crew worked at night so that office business could continue during the day.

When unusual construction challenges occur, it usually takes steel to solve them. Make TCI your source for quality steel and on-time deliveries.

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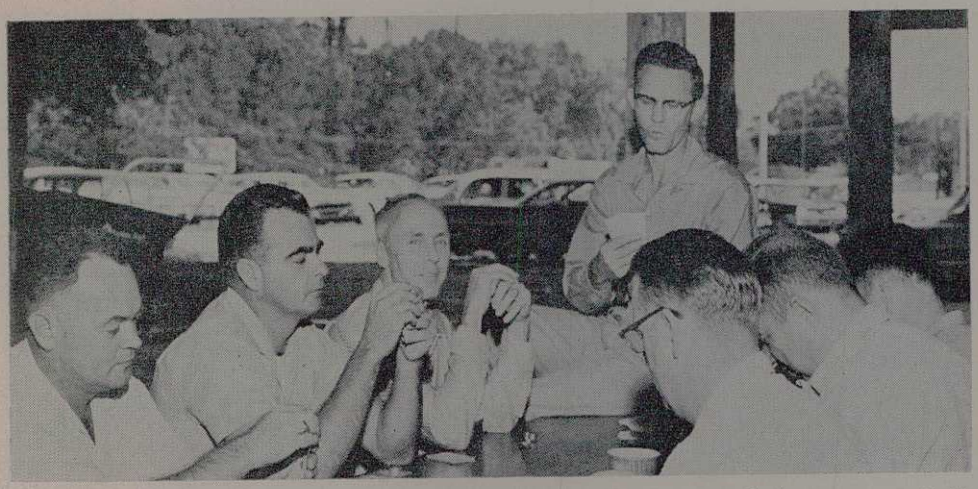


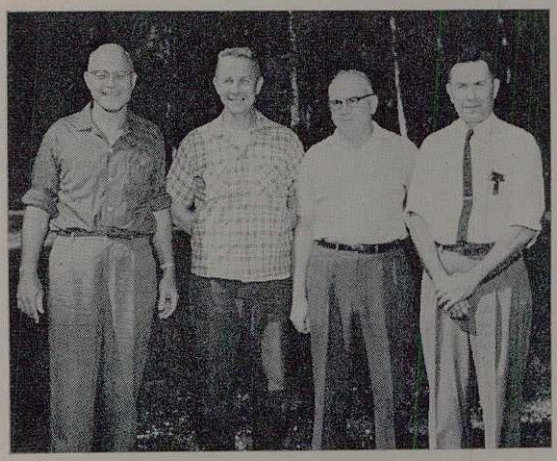
Facing camera: E. L. Gish, A. E. Hutchinson, Dave Brown, Scott Young. Back to camera: J. H. Brewer, Steve Nasca, Clyde M. Badon, Jr.

Douglas F. Latimer

Outings Are In

Hal Branch, Ralph Mongeau, Bob Collier.

Joseph V. Roy, Kay Thomas, Jim Janssen, Ed McNamara, Alvin Fromherz.



Jim Janssen, Wayne Randall, David J. Carville, W. H. Carter.

Facing camera: Waldemar Nelson, Emery Domingue, Allen Johnson, Calvin Watts. Back to camera: Jim Janssen, John Fernandez, Ben T. Bogard, W. H. Carter.

David J. Carville, Clyde M. Badon, Jr.

Ray Maddux

Compete for Prizes in Horseshoes, Shotput

Horseshoe and shotput competition highlighted the Annual Outing May 27 of the Baton Rouge Section of LES, at UCT Park on the New Hammond Highway.

William A. Wintz

The group's Annual banquet followed at the Log Cabin.

W. H. Carter, Section President, presided at the Dinner and introduced Dean Ben T. Bogard of the Louisiana Tech School of Engineering, Ruston, LES President.

Other top officials of the Society present included James S. Janssen, New Orleans, First Vice-President; Calvin R. Watts, Baton Rouge, Second Vice-President; John P. Fernandez, New Orleans, Secretary-Treasurer; Board Members Emery Domingue, Lafayette; and Ed McNamara, New Orleans.

Other out-of-town Society officials include Lionel Cucullu and Waldemar S. Nelson, both Past Presidents; Alvin Fromherz, Chairman of the Functional Section for Consulting Engineers; Warren Bankston, Business Manager of the Louisiana Engineer; all of New Orleans.

Arrangements for the Outing were handled by Wayne Randall. Awards Chairman was Dave Carville, Baton Rouge, Second Vice-President. Other Section officers present were Truman Pounds, first Vice-President; and William O. Crabtree, Secretary-Treasurer; Gerald Dyson and Alan T. Blackwood, Committee Chairmen.

Winner of the shotput event was Clyde Badon, Jr., Baton Rouge, with a heave of 48 feet 8 inches. Singles horseshoe champion was Ray Maddux, New Orleans, who teamed with W. A. Wintz, Jr., Baton Rouge, to win the doubles event.

Names of recipients in the order of prizes awarded:

Elroy L. Gish, Baton Rouge, saw provided by La. Concrete Products Co.; W. H. Carter, Baton Rouge, saw donated by Humble Oil & Refining Co.; James S. Janssen, New Orleans, oiler provided by Pacific Pumps, Inc.; C. A. Menville, Baton Rouge, oiler donated by Sachse Electric, Inc.; Douglas F. Latimer, Baton Rouge, vise pliers provided by Pacific Pumps, Inc.; Wayne C. Randall, Baton Rouge, frozen quail donated by Mongeau Consulting Engineers; Carl H. Thomas, Baton Rouge, electric toaster accessory donated by Wilson Steel Co.; Benny J. Swindler, Baton Rouge, ruler provided by Creole Engineering Co.; Norman K. Richmond, New Orleans, grass shears provided by A. M. Lockett & Co., Ltd.; Ralph R. Mongeau, Baton Rouge, grass shears donated by Humble Oil & Refining Co.; John P. Fernandez, New Orleans, garden hose provided by Creole Engineering Co.; John A. De Monte, Baton Rouge, wheelbarrow donated by Power Packing Co.; David J. Carville, Baton Rouge, vice pliers provided by Pacific Pumps, Inc.; Joseph V. Roy, Baton Rouge, 50' tape donated by Baton Rouge Blue Print Co.; J. Price, Baton Rouge, sunglasses donated by Foster Grant Co., Inc.; Lawrence J. Law, extension cord and light provided by A. M. Lockett & Co., Ltd.; Alvin Fromherz, New Orleans, oscillating sprinkler provided by Ingersoll-Rand Co.; Warren E. Marcum, Baton Rouge, fishing reel donated by Copolymer Rubber & Chemical Corp.; Allen Johnson, New Orleans, ruler provided by Creole Engineering Co.; Scott Young, Baton Rouge, grass shears provided by A. M. Lockett & Co., Ltd.; Joe L. Smilie, Baton Rouge, slide rule donated by Gates Rubber Co.; Calvin T. Watts, Baton Rouge, oil donated by Humble Oil & Refining Co.; Ben T. Bogard, Ruston, sun glasses donated by Foster Grant Co., Inc.; Warren K. Bankston, New Orleans, extension cord and light provided by A. M. Lockett & Co., Ltd.; Clyde M. Badon, Jr., Baton Rouge, light provided by Barnard & Burk, Inc.; Everett A. Daily, Guest, saw provided by Louisiana Concrete Products Co.; Louis C. Christian, Jr., assortment donated by Humble Oil & Refining Co.; Delroy Spawn, electric can opener donated by Gulf States Utilities Co., and Jesse D. Roberts, assortment donated by Humble Oil & Refining Co.

—o—

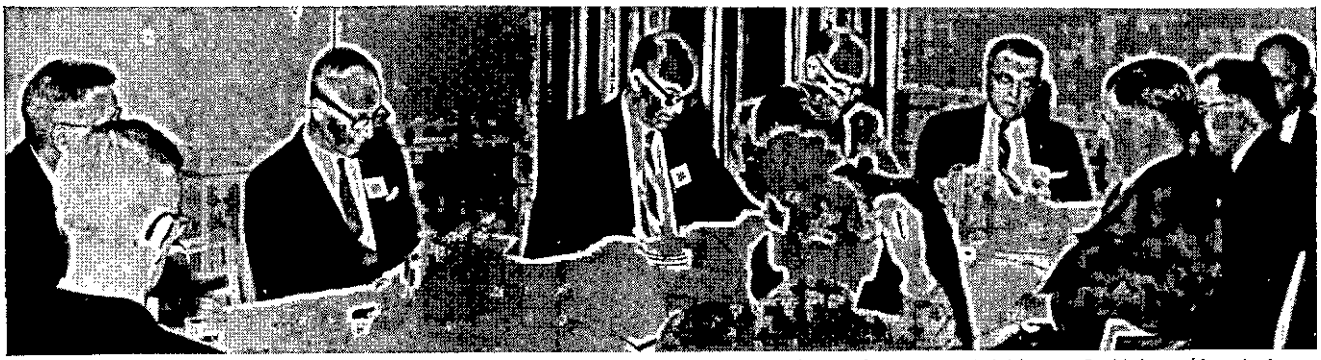
Big Marine Repair Yard Under Construction in La.

BATON ROUGE, La.—A $1.5 million marine repair yard is being built near here on the Mississippi by Dravo Corp., one of the nation's builders of tugs, towboats and barges.

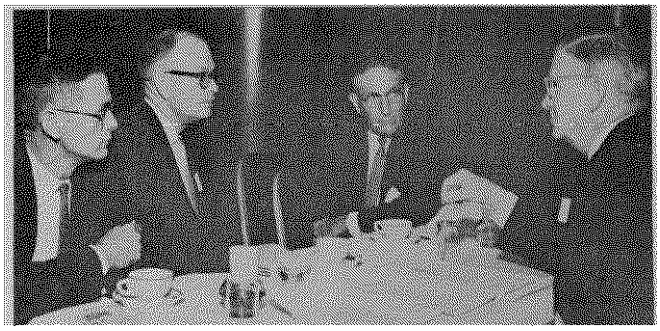
A "considerable expansion" is planned by the company for future years on the tract. The facility, to be operational this summer, will extend 2,000 feet along the riverfront, and will eventually employ 100 persons. Three floating dry docks of a size for handling largest Mississippi towboats and barges, will be provided. Also included will be a 25-ton derrick boat.

The Dravo property is part of a 300-acre tract owned by the Baton Rouge Port Commission.

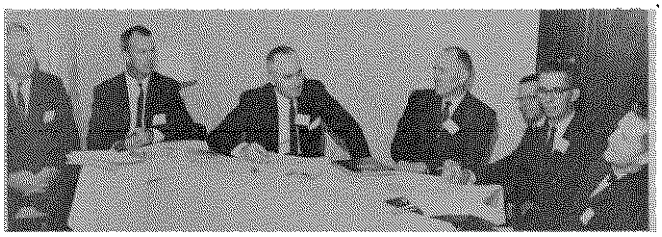
Alexandria: Focal Point of Planning



The Registration Law Committee discusses Engineers registration in Louisiana, and in other states. Waldemar S. Nelson (fourth from left), is Chairman.

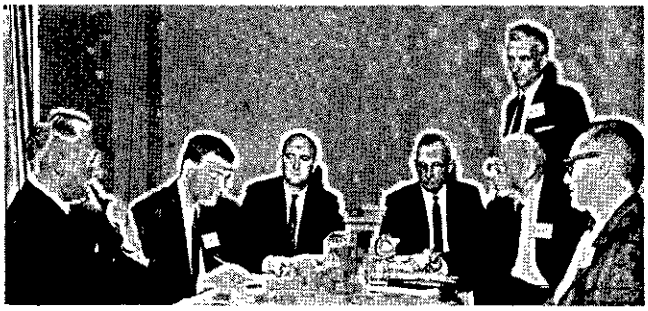


Ethics and Professional Affairs are the subjects of the meeting of that Committee. J. T. Knight (right), is Chairman.

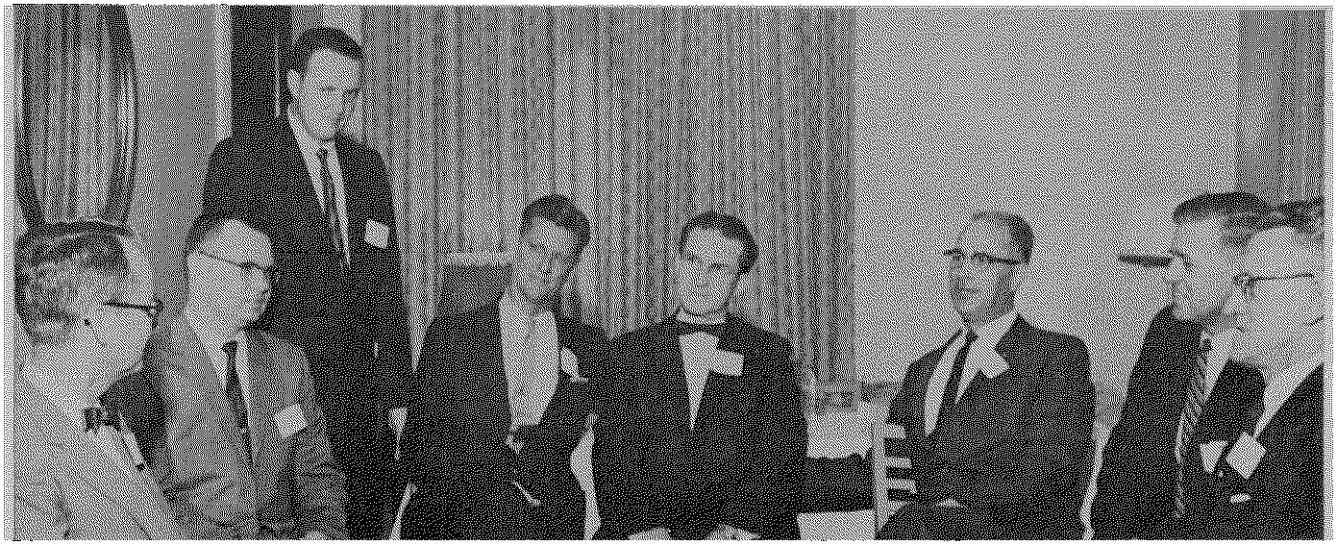


The Vocational Guidance Committee talks about this year's graduates. H. L. Henry, Jr. (third from left), is Chairman.

Above is Membership Committee discussing plans to attract new members. Robert O. Williams, Chairman, is second from right.



Engineers' Week Committee discusses the various activities throughout the state. William A. Baker, Jr., Chairman, is second from left.



The Legislative Committee had a big turnout for their meeting. Henry L. Landry (third from right), is Chairman.

Engineer In State Government

By ALVIN M. FROMHERZ, Chairman
Functional Section Committee

In this rapidly changing age of phenomenal technological advancements, the role of the engineer has become increasingly significant and vital to the efficient and expeditious solution of many complex and novel problems. While rocketry, missiles and space travel have been making headlines in all of the country's news media, our burgeoning population and industrial productivity have created domestic engineering problems no less demanding and urgent.

Urbanization, super speed highways, irrigation, water and air pollution, conservation and variety of public works needs have, each in its own way, added tremendously to the many problems of state and local governments. And solutions to practically all of these problems will require a commensurate growth in the quantity and quality of public engineering services.

Of paramount importance in assuring a steady expansion to meet society's needs are the recruitment and retention of adequate numbers of qualified engineers for government service. If state and local governments are to be successful in building up and retaining their engineering staffs to meet expanding needs, it is important that they provide every opportunity for engineering personnel to carry out the duties and responsibilities in a working atmosphere that is satisfying and professionally rewarding.

The need for a well-trained, conscientious and energetic permanent engineering staff is vitally important under a wide variety of circumstances. Utilization of the services of private consulting engineers, for example, requires governmental engineering staffs for effective discharge of the agency's responsibility to the tax-paying public.

An NSPE study of the merit system and personnel policies and practices affecting engineers used by the state government in Louisiana reveals the following:

The merit system in Louisiana covers the majority of engineers in the State. Registration is a prerequisite for employment of engineering personnel. Subprofessional personnel are encouraged to take further study in the accredited colleges of the State which may lead to qualification for registration. Registration is a prerequisite for promotion from a subprofessional to a professional level job.

Educational leave without pay is granted engineering employees for graduate study in civil engineering. Where the job permits, part time leave without pay is granted to take graduate courses. Employees are also encouraged to enroll for graduate study in the various night course offered. Subprofessional employees are also encouraged to take courses leading to a degree in civil engineering by permitting part time work where possible. In no case is direct financial assistance granted.

In the Department of Highways engineering employees are granted time off with pay and travel expenses to attend professional meetings, although such time and expenses are usually limited to those employees who hold offices, committee chairmanships, or are actually participating in the program by the presentation of a paper, etc.

We would like to urge all engineers in State government to join LES and the Functional section of NSPE as a means of gaining access to information such as the above which works to improve the professional status and financial rewards of those dedicated engineers who devote their careers to the service of the public.

For membership applications and other details, write J. P. Fernandez, Secretary-Treasurer, LES, 404 Baronne Street, New Orleans.

Alvin M. Fromherz is partner in the firm of Fromherz Engineers, one of the oldest engineering firms in the United States, founded in 1867. He is Chairman of the Functional Sections Committee of LES.

Raymond Award Set

The fourth annual Alfred A. Raymond award of one thousand dollars will be awarded for the original manuscript judged best in the field of Foundation Engineering as related to the "Foundation for Structures." Construction and practicing engineers, engineering faculty, graduates and undergraduates are invited to compete. The future publication of manuscripts will not be affected by entry herein.

The judges are: Frank A. Marston, Partner, Metcalf & Eddy, Consulting Engineers, Boston, Massachusetts; William W. Moore, Partner, Dames & Moore, Consulting Engineers, San Francisco, California; and Jorj O. Osterberg, Professor of Foundation Engineering, Northwestern University, Evanston, Illinois.

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NEW ORLEANS Public Service INC.

Nashville Ave. Wharf Construction Underway

A portion of a new $12 million wharf being built by the Board of Commissioners, Port of New Orleans, should be in use by the end of this year. Construction of the Nashville Avenue wharf started last June, with total completion scheduled for next summer.

Included in the modern equipment of the multi-million dollar wharf is a heavy-lift crane mounted on rubber tires, which will perform from the wharf apron many loading and unloading operations and thus eliminate many operations now being handled by waterborne cranes mounted on lighters.

The river side apron will be 62 feet wide and will be able to accommodate marginal rail tracks and modern mechanical unloading equipment.

The new wharf will be able to handle four large ocean-going vessels at one time along its 2,400 foot length, and will help ease crowded conditions at older wharves which are slated for renovation. It will have a deck-load capacity of 850 pounds per square foot.

The wharf's 315 foot wide shed will almost double the width of older wharves and will lessen the turn-around time of ships berthing there. By handling both import and export cargoes the wharf will eliminate the necessity of moving a ship from one berth to another.

Four large truck wells have been incorporated into the wharf's design by port engineers and will enable some 64 trucks to load and unload at tailgate height.

An underpass being constructed below the Public Belt railroad tracks serving the wharf will facilitate both rail and truck movement at the wharf and eliminate delays caused by one movement interfering with another.

In order to eliminate the necessity for shifting ships to fueling terminals at other points along the river bunkering facilities have been included in the wharf design.

Williams-McWilliams Industries, Inc. are the general contractors in the construction of the new wharf.

MEMORIAL

IRVING B. RAU

With sad regret the Louisiana Engineering Society records the passing of a promising young engineer, Irving B. Rau.

Irving was a graduate of Louisiana State University and also held a Master of Science degree in Civil Engineering from Massachusetts Institute of Technology. His professional career included six years of experience with local civil engineering firms, after which he opened his own office and practiced as a consulting civil and structural engineer from 1955 until his death early this year at age 34.

He was a capable engineer whose standards were of the highest, and his loyal interest in his profession was recognized and admired by all of his associates. His untimely departure from our midst at the following point of his career is a distinct loss to the engineering profession and, we, his friends and fellow-members of LES, hereby record our sincere regret at this passing and express our kindest thoughts of condolence to his bereaved family.

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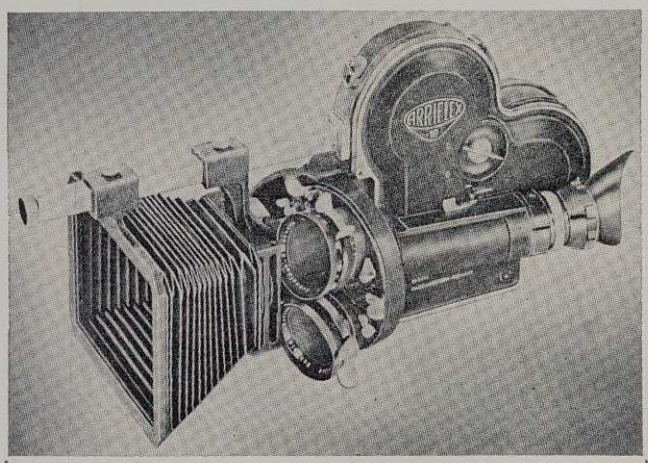

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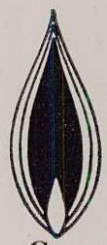

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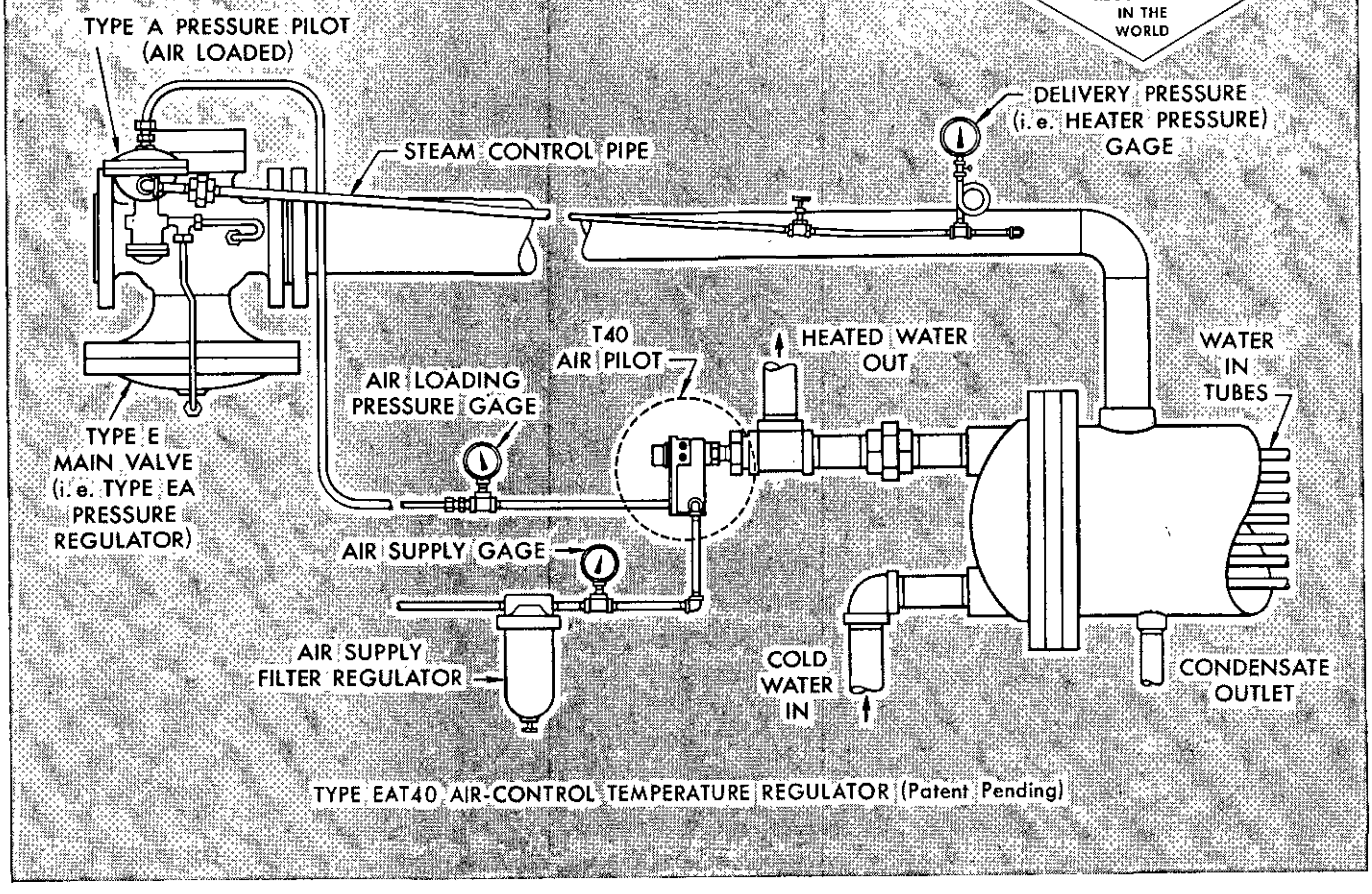

In a recent installation the new Spence air-control temperature regulating system provided:

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- Up to 50% reduction in cost as compared to instrument systems of similar accuracy.

This unique cascade-type control with throttling range adjustment independent of maximum heater pressure was developed to meet today's demand for greater control accuracy.

Additional features of the new Spence Temperature Control System include:

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The Spence Type EAT Air Control Temperature System, when properly installed, will tame wide ranging, fast changing loads of instantaneous heaters and modern heat exchangers. The cascade principle plus the use of an extremely fast responding bi-metal temperature sensing element reduce time lags and provide control stability.

Here's how the new Spence system operates:

Quick response is based on a bi-metal temperature sensing element. Temperature pilot continuously regulates a loading air pressure.

This loading signal, when applied to a pressure regulator to reflect heater temperatures, causes it to adjust the main valve as changes in load require.

Spence has also developed a new pressure control system based on this same cascade principle. This system has a control accuracy of ½ psi or better from positive pressures through the vacuum range to 30" Hg.

For complete information on these new air controlled temperature and pressure control systems, write for your copy of Bulletin 9.

SPENCE ENGINEERING COMPANY, INC.
Walden 1, New York

SE-148

Putting Engineering Graduates to Work in La.

The majority of the '61 June graduates of the Tulane School of Engineering, with the possible exception of Electrical Engineers, could probably find employment in Louisiana, according to Dean Lee Johnson of the Tulane School of Engineering.

"There are approximately 550 engineering graduates from Tulane, LSU, La. Tech and USL this year," he estimated. "There may be some difficulty in placing all of them in the state," he added.

"Most of the new industries moving into Louisiana are looking for engineers," Dean Johnson said, "so it shouldn't be difficult for a good student to find a job in the state if he wants one."

The dean said that a good student receives as many as four or five offers from various industries throughout the country before graduation, and that he should be able to choose the job and location that most appeals to him.

"Tulane University assists all graduates in finding employment through the office of the Placement Director," Dean Johnson explained. "The director schedules interviews between students and potential employers from throughout the country, and distributes bulletins to the students listing and explaining job opportunities," Dean Johnson said. "The service is also extended to former graduates who have returned from a tour of duty with the Armed Forces," he said.

Asked about the physical facilities of the school, Dean Johnson explained that the Tulane Engineering Department underwent a major rehabilitation program about three years ago and that no major changes are being planned for about five years, though some minor changes will be made.

"Because of the limited space in the Tulane Engineering Department, we put emphasis on acquiring only well-qualified students," Dean Johnson said.

To this end, the Director of Admissions at Tulane holds annual conferences with high school counselors, and faculty members and officials from the university cooperate by visiting high schools throughout the area and speaking with qualified students in the graduating classes, he said.

In a survey taken in May by the Tulane School of Engineering the following facts concerning future plans of Louisiana Engineering graduates from Tulane were revealed:

Of eight Louisiana graduates in Chemical Engineering three have found employment in Louisiana, two are going into the Armed Forces, two will continue their education, and one found employment out of the state.

Of nine Louisiana graduates in Civil Engineering one has found employment in Louisiana, one is going into the Armed Forces, five will continue their education, and two had not yet found employment in May.

Of twelve Louisiana graduates in Electrical Engineering one has found employment in Louisiana, four are going into the Armed Forces, three have found employment out of state, and four had not yet found employment in May.

Of nineteen graduates in Mechanical Engineering, three have found employment in Louisiana, eight are going into the Armed Forces, two will continue their education, two found employment out of state, and four had not yet found employment in May.

—o—

Engineers in Government

Louisiana State University reported that industrial engineering graduates seems to be much sought after. They said they had 40 job offers for only five graduates and that there is also a great demand for electrical engineers.

LSU said that 60 per cent of their students had jobs waiting for them and only 10 per cent were still looking for employment.

New Orleans, La., June, 1961

. . . let us commence!

May we be among the first to congratulate the engineering graduate of 1961 . . . adding this note of time-honored advice, "Look before you leap."

Now is the time for all graduates to register with us in order to obtain a firm foundation in the employment market. Employment agencies maintain a constant link between manangement and employee prospects.

The scientific approach to employment throughout your career is via your employment agency counselor. Good luck to all! Let us commence.

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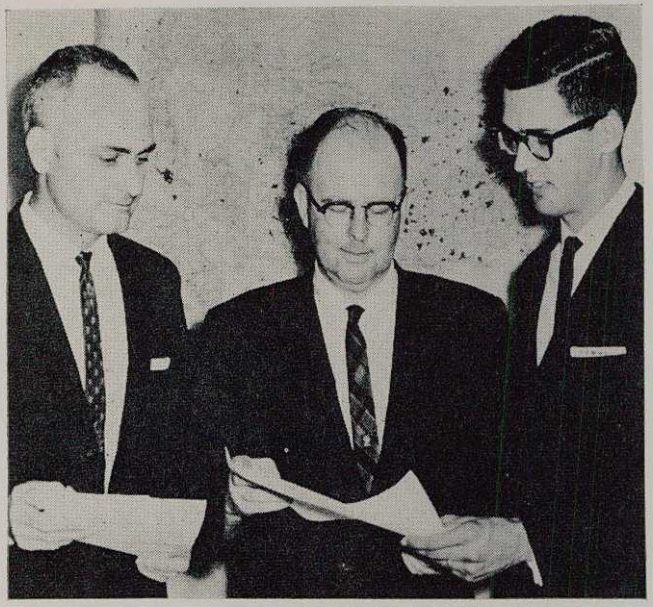

Louisiana Engineering Society President Dean Ben T. Bogard of Louisiana Tech presents the Society's Junior Membership Award to Kenneth Coyle of Springhill, Louisiana. The award consists of a three-year dues-paid Junior Membership in the Society. The award is made each year to one outstanding engineering graduate from each of the four engineering schools in the state. Coyle is graduating in Mechanical Engineering. He has accepted a position with the International Paper Company and will reside in Springhill.

Shown in the picture at the left is H. L. Henry, Jr. of Louisiana Tech, Chairman of the Faculty Committee on Awards and Scholarships and also First Vice President of the Monroe Section of the Louisiana Engineering Society.

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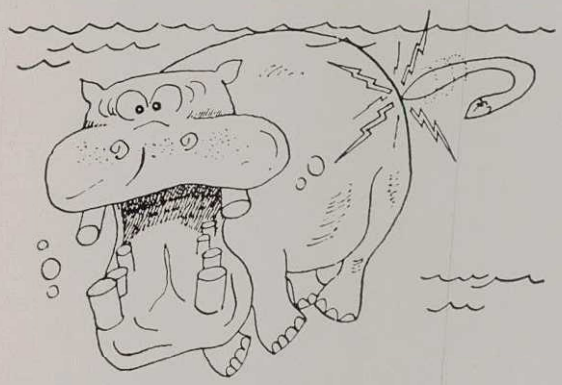

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Products News:

Theodolites

Keuffel & Esser, developers and manufacturers of theodolites for the military government during World War II, recently presented three new theodolites meeting a set of specifications and quality standards geared to the refined needs of today's American and Canadian practice.

The three new models, KE-2, KE-1 and KE-6e, were developed after three years of research to determine what new improvements engineers and surveyors wanted in any new theodolites introduced to the market.

The new K&E theodolites are available at New Orleans Blue Print and Supply Co., Inc.

—o—

Refractory

Kast-O-Lite, a lightweight insulating castable refractory for complete furnace linings, combines insulating properties with light weight and strength in one dependable, easy-to-use refractory. It is used in furnace linings to prevent heat loss. It does the job ordinarily requiring two or more materials. Lightweight linings afford faster heating and cooling, better combustion, less heat loss, and more even heat distribution. With fewer joints, air infiltration is reduced to a minimum—increasing operating efficiency.

Kast-O-Lite may be cast with the use of simple formwork as with structural concrete. It is hydraulic-setting, and matures without application of heat. Kast-O-Lite will withstand direct exposure to flame and furnace gases up to 2500°F. Kast-O-Lite is shipped in 50 and 100-pound bags and is available at La-Mo Refractory Supply Co., Inc.

—o—

Capacity for Tabular Alumina At Baton Rouge Being Jumped

BATON ROUGE, La.—An addition to its plant here which manufactures tabular alumina will be built by Kaiser Aluminum & Chemical Corp. to increase fivefold the company's capacity for this product.

Tabular alumina is a high-purity aluminum oxide which has been converted into a very hard, compact form. It is used in the manufacture of high temperature refractories, auto spark plugs and in electrical and electronic components.

—o—

Westinghouse Sturtevant Division announces the appointment of Forney Fuller & Associates as Manufacturers Representatives for heavy duty and mechanical draft fans in Louisiana, Mississippi, Texas, Southern Arkansas and Western Tennessee.

—o—

CONTRACT AWARDED TO BEDELL, NELSON

An architect engineer contract for the design of a new Coast Guard primary radio station here has been awarded to Bedell and Nelson Engineers, Inc., of New Orleans.

The estimated cost of the project is $1 million. Announcement of the award was made by Rear Adm. Carl B. Olsen, commander of the Eighth Coast Guard District.

Petrochemical Plant Planned

Plans to construct a petrochemical plant at Lake Charles, which will produce annually some 60,000,000 pounds of methyl chloride for use in a variety of chemical products, were announced jointly Saturday by Robert C. Hood, president of Ansul Chemical Company, Marinette, Wisc., and L. F. McCollum, president of Continental Oil Company, Houston.

Cost of the new Lake Charles facility, which will be owned 50 per cent each by Ansul and Conoco, is in excess of $1,000,000, the announcement stated.

There has been a steady growth in demand in recent years for methyl chloride, which is used primarily in the manufacture of butyl rubber, tetramethylead, silicones, methyl cellulose and quaternary ammonium compounds.

Work on the plant is expected to start immediately, with completion scheduled for early 1962. Ansul Chemical Company will be the exclusive distributor of the plant's output of methyl chloride.

"Ansul currently operates a methyl chloride facility at Marinette and the addition of the Lake Charles plant should enable our firm to give better service to customers in all parts of the country," said Hood.

At Lake Charles, Continental operates a large refinery and a natural gasoline unit and has under construction a $10,000,000 "Alfol" plant which will be the world's first installation to produce industrial alcohols from petroleum rather than from natural oils and fats. Conoco also is part owner of Lake Charles petrochemical plants producing lubricating oil and wax, carbon black, butadiene rubber, anyhrdrous, ammonia, ethylene and antifreeze products.

Ansul's present methyl chloride facility at Marinette is part of a diverse operation which includes the manufacture of a major line of dry chemical fire fighting equipment and a number of components for the air-conditioning and refrigeration industry. Ansul also manufactures other industrial chemicals at Marinette, including sulphur dioxide, sodium bisulfonate, organic arsenicals and a variety of chemical intermediates and solvents.

Petrochemicals. The Borden Company and United States Rubber Company, who previously announced the formation of a new petrochemical company, Monochem, and plans to construct a $50 million chemical complex near Geismar, have revealed that three separate petrochemical plants will be constructed on the 800-acre site.

Alumina. Kaiser Aluminum and Chemical Corp. announced plans to construct a $750,000 facility at Baton Rouge to manufacture tabular alumina.

Paperboard. A new bleached paperboard company will be formed by Lily-Tulip Cup Corp. and International Paper Company to be known as Red River Paper Mill. The plant will be located at Springhill and will have a production capacity of 250 tons/day of bleached paperboard for the manufacture of cups, milk and food containers and other products. Slush-pulp will come from International's Springhill plant adjacent to the new site.

Col. Jennings Named To N. O.

Col. Edward B. Jennings, area engineer, Schilling Air Force base, Salina, Kan., has been named to succeed Col. George M. Cookson as New Orleans district engineer, United States Army corps of engineers.

The change, announced by Lt. Gen. W. K. Wilson, new commander of the Army Engineers, is to take effect in September.

Col. Cookson, district engineer, will attend the Industrial College of the Armed Forces in Washington, D. C.

Col. Jennings, 43, is a native of Westport, Conn. He received a bachelor of science degree in civil engineering at Syracuse university in 1941 and then entered the corps.

In World War II, he served first as company commander, 30th Engineer Topographic Battalion, Ft. Belvoir, Va., and then as supply officer, 350th Engineer General Service Regiment, Camp Shelby, Miss.

Still with the 350th, he went overseas to the South Pacific as a battalion commander. From 1944 to 1945, he was commander, 168th Engineer Combat Battalion, at Camp Polk, La. Then he returned to the Pacific until 1947.

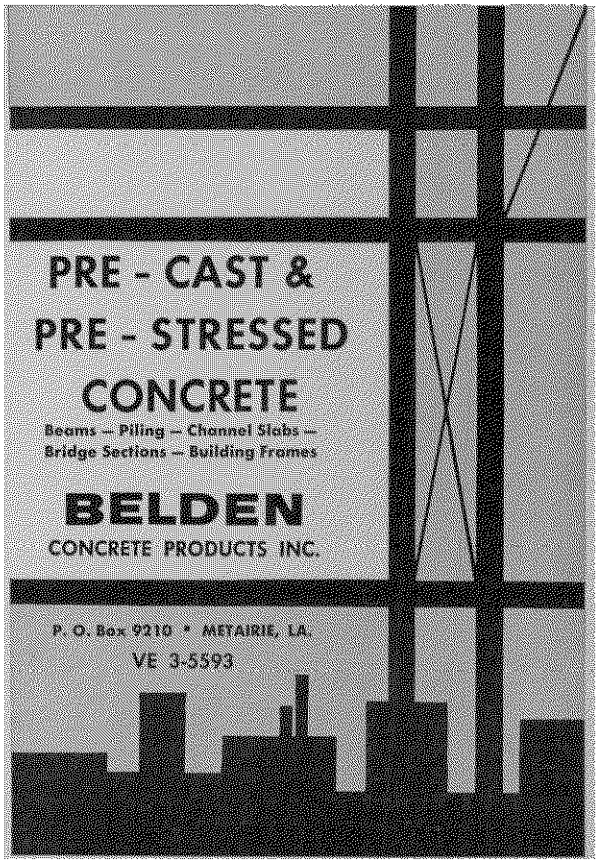
After a tour as commander of the First Cavalry Division's 8th Engineer Squadron, he returned to the states to attend the University of Iowa. He received a master's degree in civil engineering in 1948, then returned to Ft. Belvoir to teach at the engineer school until 1951. He then attended the Command and General Staff college, Ft. Leavenworth, Kans.

From 1952 to 1954 he was assistant district engineer, Nashville, Tenn. From 1954 until 1957, he was a project engineer, Panama Canal Company, Balboa Heights, C. Z.

After attending the Armed Forces Staff college, he was commander of the 937th Engineer Group, Ft. Campbell, Ky. In 1959, he went to Washington, where he finished his tour as chief of the safety and facilities division, office of the director of Army aviation.

Then, he moved to his present assignment where he is responsible for construction of an inter-continental ballistic missile facility.

He is married and has three children.



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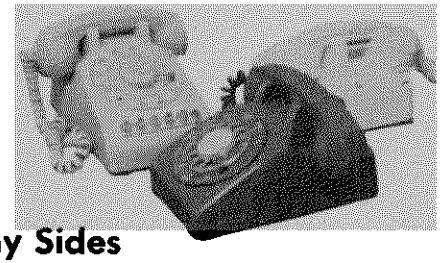

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Shreveport Builds New Road Network

BATON ROUGE — Construction now underway and planned on the big Interstate-20 Superhighwey through the Shreveport area will cost approximately $54,000,000, Highway Director Ray W. Burgess revealed.

The acquisition of right of way through highly developed cities such as Shreveport plays a leading part in the high construction costs on the Interstate, Burgess said.

As an example, he said the cost of right of way along some sections of the Shreveport Expressway sometimes almost equals the total construction cost.

In all of its planning in the Interstate System through urban areas, Burgess said, the Department of Highways schedules interlocking projects as much as possible so that usable portions can be opened to traffic as quickly as possible. The department also used designs that will cause a minimum of property damage and the least interference with existing city streets.

Now under construction on the main route of the Interstate through Shreveport is the section from Allen Street to Spring Street costing a total of $15,200,000. Of this total cost, Burgess pointed out that $8,000,000 was for construction and $7,200,000 for right of way costs.

This section of the Interstate includes the main Expressway from Allen to Marshall and connecting ramps to Market and Spring Streets. Market Street is one way South and Spring Street one way North, Burgess said.

Also under construction at the present time is the substructure (river piers) for the new bridge across the Red River between Shreveport and Bosier City. This work is progressing under a $1,000,000 contract.

And in July of this year, the highway department expects to award contracts for the bridge approaches to connect the main paving at Marshall Street in Shreveport and the Interchange at the east end of the bridge which will tie into Traffic Street in Bossier Sity. The estimated construction cost of these approaches is $4,400,000 with an additional $2,000,000 earmarked for right of way acquisition, Burgess explained.

He said construction of the bridge approaches on the Shreveport side includes the main roadway pavement to Marshall Street and in addition the ramps to Spring Street and Market Street which will provide a complete interchange of these major streets with the Interstate Highway.

In order to provide an uninterrupted traffic flow without traffic signals or stop signs which are not permitted on the Interstate System, the ramps to Spring and Market Streets are designed to cross at different elevations under the main roadways of the Interstate Highway. This results in three tier construction above ground level, Burgess said.

The highway director said that these improvement projects will provide a direct traffic flow from Bossier City to Spring and Market Streets in downtown Shreveport. At the same time it should substantially reduce traffic on the Texas Street bridge.

Burgess said the next leg of the Interstate will extend from Allen Street to Hearne Street, providing an important and vital north-south route in the city. This project is expected to be placed under contract during the 1962-63 fiscal year. Total estimated cost of this work is $11,600,000 with $5,600,000, allocated for construction and $5,000,000 for the right of way costs.

During the 1963-64 fiscal year, Burgess said the Interstate will be extended from Hearne Street to Buncombe Road with the anticipated cost being $6,100,000 for construction and $4,000,000 for right of way.

Included in this project will be an interchange at Monkhouse Drive to service the Greater Shreveport Municipal Airport.

Burgess said that the section of the Interstate from Curtis Lane east will be routed along an abandoned Illinois Central Roilroad right of way. This will save considerable money in right of way acquisition, he explained, since the former railroad acted as a barrier in property ownership, and it will not cause much severance damage by splitting up property.

On the Bossier side, Burgess said the highway department has earmarked the Traffic Street to U. S. 71 portion of the Interstate for construction in the 1965-66 fiscal year. Expected construction cost of this section is $6,900,000 with right of way accounting for an additional $1,700,000 expenditure. This section of the Interstate will connect the major north-south routing of U. S. 71 and Traffic Street in Bossier City.

Burgess said that as money becomes available for Interstate construction the highway department will extend the superhighway from U. S. 71 east to Foster, connecting old U. S. 80, and thence from Foster to Minden.

The highway director said a four lane highway now extends from Bossier City to Minden, but it is not a part of the Interstate. However, this highway will serve traffic needs until money is made available to finish the Interstate in that section outside of Shreveport.

Burgess said that in no case will the new Interstate Highway use an existing roadway since none are up to the high design standards required for the superhighway. However, he reminded that U. S. 80 which traverses the state will still serve a vital traffic need even after the giant Interchange Program is completed across the northern section of Louisiana from Mississippi to Texas.

Interstate-20 from Shreveport west to the Texas line will also be scheduled for construction along a new location as money is made available, Burgess said.

In addition to the main route of the Interstate through the city, a By-Pass route will also be constructed through the northern part of Shreveport. This By-Pass route will begin in the vicinity of the Greater Shreveport Municipal Airport and circle the city, rejoining the main Interstate route east of Bossier City, the highway director said.

Burgess said Interstate-20, together with a similar route across south Louisiana, will total 670 miles of the best highways known. It is part of the huge 41,000 mile network of highways across the nation and will represent the greatest public works program ever undertaken by man.

PROFESSIONAL ENGINEERS GRANTED REGISTRATION, APRIL 4, 1961

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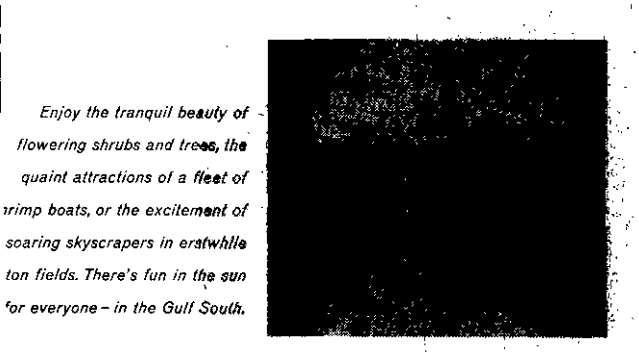
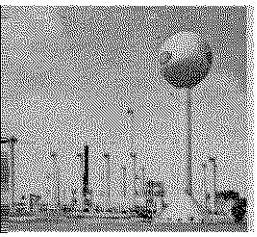
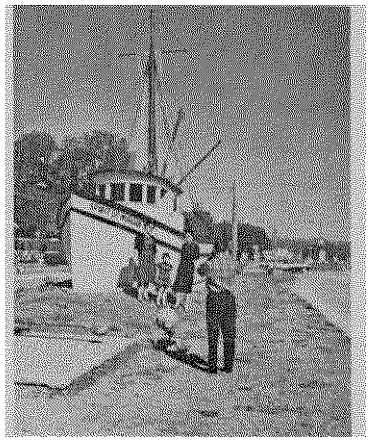


CATION FUN for Everyone...in the Gulf South

hile the family plays, take time to investigate
dvantages this dynamic area offers to your
industry... dependable supplies of natural
gas, friendly, cooperative local governments,
ior transportation facilities – to name only a
of the factors in the steady industrial growth
f the Gulf South area served by United Gas.





HEADQUARTERS, SHREVEPORT, LA

UNITED GAS CORPORATION
Serving The Gulf South

Top—Tyler, Texas, is the center of an area producing more than half of the nation's rose bushes.
Below—Shrimp boat is symbolic of an industry moving Morgan City, La., and many other Gulf South cities famous.
Left, below—One of many United Gas plants where gasoline and other products are extracted from natural gas.

United Gas Ads Invite Tourists and Industries to the Gulf South

Another in the long series of United Gas advertisements promoting industrialization and tourist traffic for the Gulf South is appearing currently in three national magazines. It is scheduled in the May 26 issue of TIME, the June 5 issue of NEWSWEEK and the June 12 issue of U. S. NEWS & WORLD REPORT. This is one of the ways in which United Gas seeks to build the economy of the areas it serves in Texas, Louisiana, Mississippi, Alabama and Florida . . . the Gulf South.

UNITED GAS
SERVING THE GULF SOUTH

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Projectors, Screens, Closed Circuit TV. Ideal for lectures, sales meetings and presentations of every type.

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715 GIROD ST., NEW ORLEANS, LA.

JAckson 5-9061

500 films on industry available at no cost.

New Automatic Packaging Machine

WEST MONROE, La.—Olin Mathieson Chemical Corp. packaging division has a new machine, called "Synchro-packer," which packages one-way bottles or cans in a new carton having either bottle or can attachments, or both.

The machine and carton provides a single, straight-line packaging operation with carton blanks fed directly from hopper to bottles or cans.

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American Creosote Works, Inc.

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ENJOYING THAT SMOOTH, SMOOTH RIDE?

Thank the men who plan and build your new concrete highways!

Next time you're cruising smoothly along on a modern concrete highway, give a nod of thanks to the men responsible for your comfort and safety. When your state highway commissioners and highway engineers choose concrete, you know they are giving you the best.

Important advances in pavement design make it possible for engineers to give you an expected 50 years and more of superb driving pleasure from every mile of concrete highway.

Many of the advances in highway planning and construction methods have been brought about through the efforts of skilled engineers in state highway departments across the nation. And as the new Interstate System highway program swings into full speed, the responsibilities of these men grow heavier day by day. The decisions they make—in the best interests of all the people—will affect your welfare and prosperity for generations to come. They deserve your enthusiastic support and cooperation.

No pavement could be stronger even if carved from solid rock!

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A national organization to improve and extend the uses of concrete

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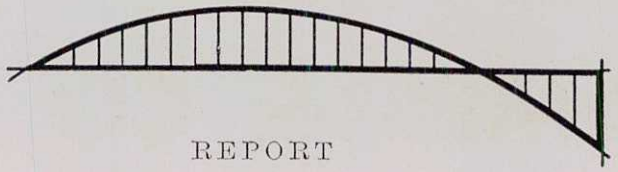
the LOUISIANA ENGINEER



REPORT

UPON THE

PHYSICS AND HYDRAULICS

OF THE

MISSISSIPPI RIVER;

UPON THE

PROTECTION OF THE ALLUVIAL REGION AGAINST OVERFLOW;

AND UPON THE

DEEPENING OF THE MOUTHS:

BASED UPON

SURVEYS AND INVESTIGATIONS

MADE UNDER THE ACTS OF CONGRESS DIRECTING THE TOPOGRAPHICAL AND HYDROGRAPHICAL SURVEY OF THE DELTA OF THE MISSISSIPPI RIVER, WITH SUCH INVESTIGATIONS AS MIGHT LEAD TO DETERMINE THE MOST PRACTICABLE PLAN FOR SECURING IT FROM INUNDATION, AND THE BEST MODE OF DEEPENING THE CHANNELS AT THE MOUTHS OF THE RIVER.

SUBMITTED TO THE BUREAU OF TOPOGRAPHICAL ENGINEERS, WAR DEPARTMENT, 1861.

[REPRINTED WITH ADDITIONS.]

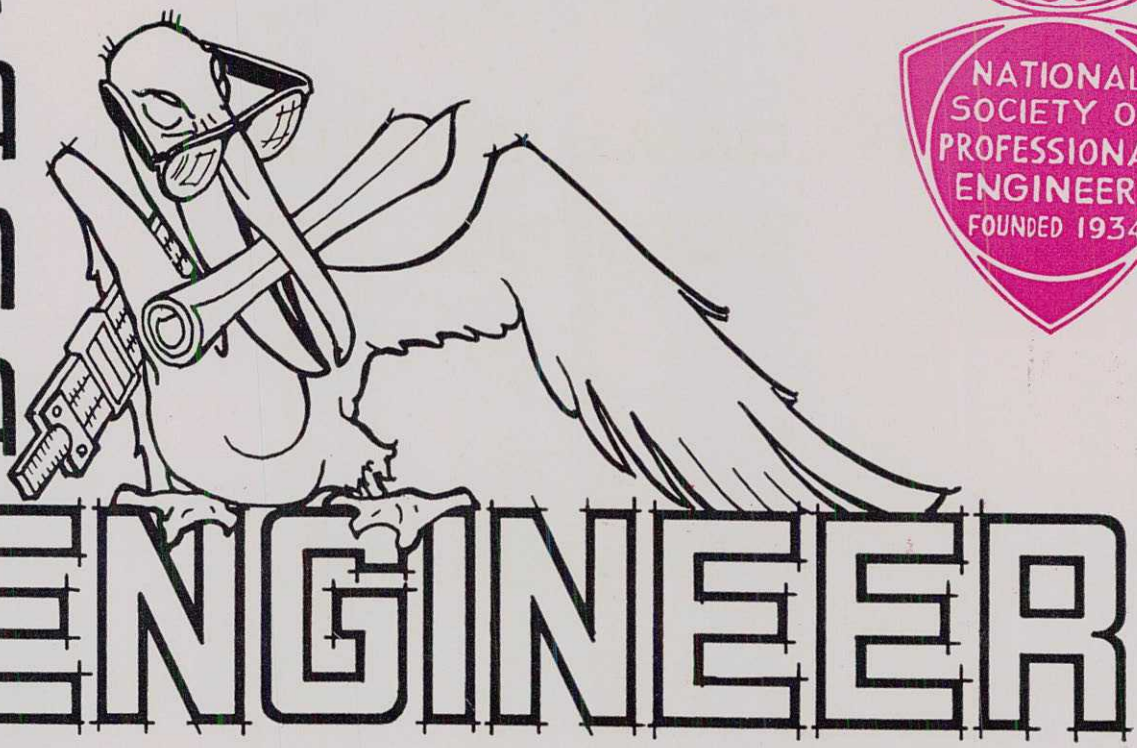
PREPARED BY

CAPTAIN A. A. HUMPHREYS AND LIEUT. H. L. ABBOT,

CORPS OF TOPOGRAPHICAL ENGINEERS, UNITED STATES ARMY.

"I approve much more your method of philosophizing, which proceeds upon actual observation, makes a collection of facts, and concludes no further than those facts will warrant."—DR. FRANKLIN TO ADAM SMITH, 1780.

U. S. ARMY
CORPS OF ENGINEERS
1861 100th ANNIVERSARY OF THE HUMPHREYS AND ABBOT REPORT 1961



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ENGINEERS JOINT COUNCIL EJC

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

Vol. 47 No. 4
August, 1961

EPCOR TECHNI-NOTES

From the desk of Marion Aime

YOUR INDUSTRIAL DISTRIBUTOR . . .
CARRYING THE TOP LINES OF THE ELECTRONIC INDUSTRY

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- Central Lab
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- General Electric Tubes
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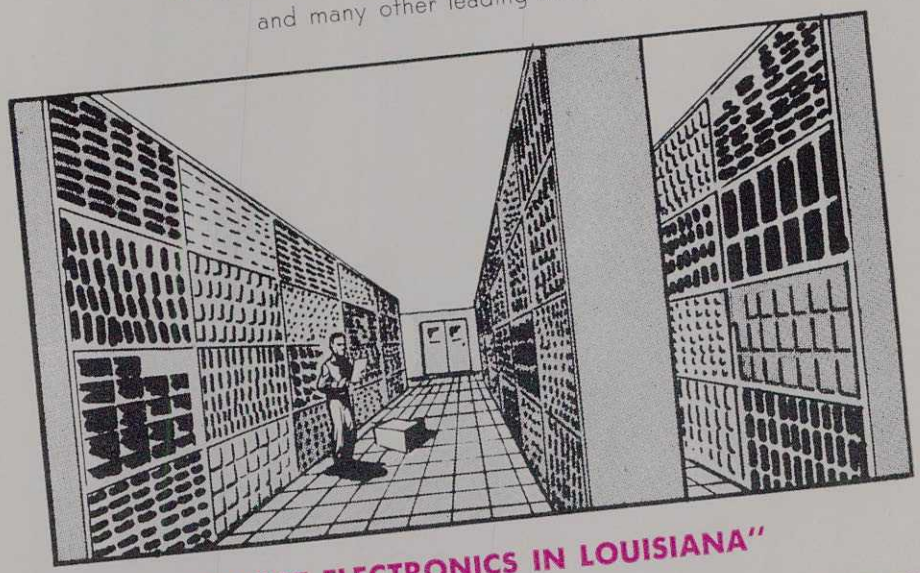
- Texas Instrument Semi-Conductors
- R.M.E. Walkie Talkies

and many other leading lines.



"BOOST ELECTRONICS IN LOUISIANA"

Epcor

ELECTRONICS PRODUCTS CORPORATION

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*WORTHINGTON—V-Belt Drives
*JOHNSON BRONZE—The most complete sleeve bearing service in the world.

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Waukesha MOTOR

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MARINE

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& PUMPING UNITS

REAGAN Equipment Co.

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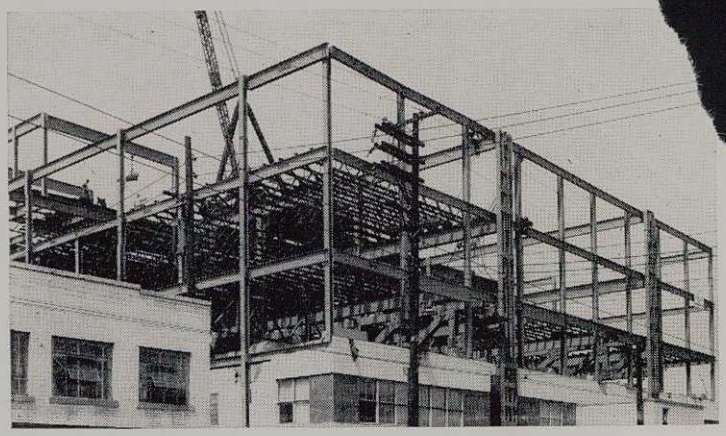
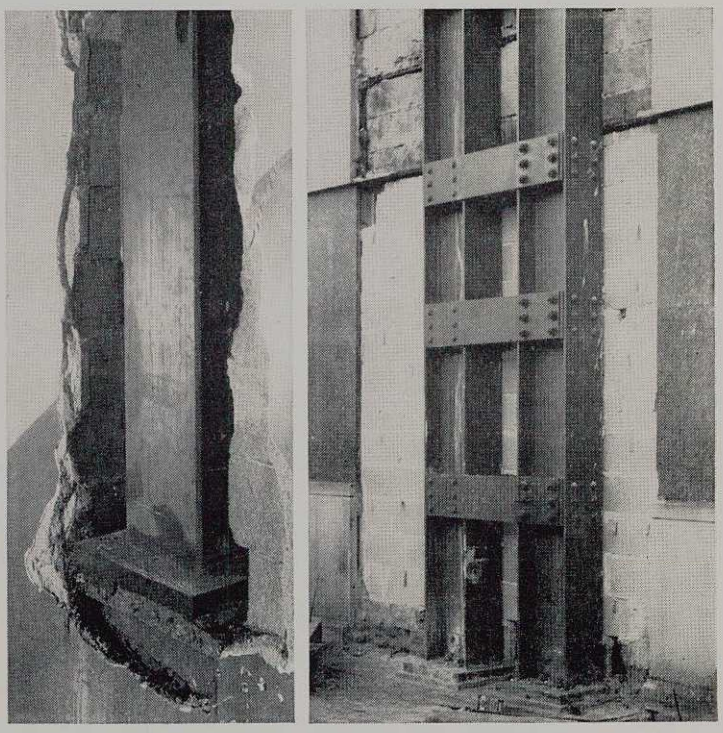
Hwy. 80 East • Jackson, Miss. • Fleetwood 4-3446

This mark tells you a product is made of modern, dependable Steel.



Designer: C. H. McCauley, Architect, Birmingham, Alabama
General Contractor: G. W. Hallmark & Sons, Inc.
Steel Fabricator: O'Neal Steel, Inc.
Owner: City of Birmingham

This building got old age security from steel



An odd construction problem developed when three floors were added to the two-story Social Security Building in Birmingham, Alabama. The building's old foundation wasn't strong enough to support three new floors, so they switched foundations! Concrete columns were ripped out of the basement and replaced with 41 steel H-beams to give the building additional strength. And the crew worked at night so that office business could continue during the day.

When unusual construction challenges occur, it usually takes steel to solve them. Make TCI your source for quality steel and on-time deliveries. *USS is a registered trademark*

Tennessee Coal & Iron
Division of
United States Steel

USS

THE LOUISIANA ENGINEER

Vol. 47 August, 1961 No. 4

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

Publication supervised by
ALLEN JOHNSON & ASSOCIATES
921 Carondelet Building **New Orleans 12, La.**

Address LES Communications and Change of Address Forms to J. P. Fernandez, Secretary-Treasurer, 404 Baronne Street, New Orleans 12, La.

The LOUISIANA ENGINEER is the official publication of the Louisiana Engineering Society and of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors and is published in February, April, June, August, October and December. Subscription $2.00 per annum; single copy 50 cents.

Second class mailing privileges authorized at New Orleans, Louisiana. Acceptance for mailing at special rate of postage provided for in Section 1105, Act of October 8, 1917, authorized August 1, 1918.

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.

A Word About Our Advertisers

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.

The service we refer to has to do with the individuals and companies who advertise in this publication.

So that you, a busy engineer, may be relieved of the necessity of performing your own investigations, the Louisiana Engineering Society is assuming part of this responsibility for you by accepting advertising only from proven reliable companies. By this, we do not intend to infer that these are the only reliable ones, but we do point out the fact that, from our knowledge of past performance, you may, in our best judgment do business with our advertisers with complete confidence.

Our Cover: A copy of the cover of the Humphreys and Abbot report on the physics and hydraulics of the Mississippi River submitted to the Bureau of Topographical Engineer, War Department, 1861.

The engineer in industry has made consistent professional gains in the past decade, but much still remains to be done before true professionalism is accepted as the industrial standard.

• The goals of the engineer today are much the same as they were ten years ago. He still wants to be considered as part of the management team, to use his professional training to the fullest, to gain proper professional recognition, and to be paid a salary equal to his contribution.

• Recent studies show gains in many areas, but indicate further room for improvement. The engineer now retains his starting salary advantage over graduating classmates in the fields of accounting, sales and general business. He formerly fell behind them within ten years of graduation.

• A comprehensive study of the history of engineering unions shows that engineers are less and less inclined to turn to unionism to achieve their aims. The failure of several unions has been laid to the basic conflict between unionism and professionalism.

• the number of moves to affiliate non-bargaining groups of employed engineers with NSPE chapters has increased. Such affiliations offer advantages to both the "sounding board" groups and NSPE through mutual support.

Although there has been much concern over the tightening market for this year's crop of graduating engineers, a survey conducted by the Engineering Manpower Commission shows no slackening in the rate at which they are being committed to definite plans following graduation.

A comparison of 49 schools shows 83.8% definitely committed (with jobs, entering military service, entering graduate studies or with other definite plans) as of May 19th, 1961. The comparable percentage for 1960 was 84.4%. Although there was a 3% drop among those with jobs, this was compensated by a 2.5% increase in the number going into graduate study, and a .9% increase in the number going into military service.

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404 Baronne St.

New Orleans 12, La.

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W. C. Gaddy
F. C. Gault
R. E. Jenkins
H. H. McClelland
J. H. Peebles
J. B. Smith
(Board Sponsor: Edward J. McNamara)

New Orleans Committees

Annual Outing:
August H. Douglas, Jr., Chairman
Russell A. Hall, Vice-Chairman
William Becker
Lawrence G. Bodet
Robert H. Boh
Henry St. Paul, Jr.
(Board Sponsor: Edward A. McLellan)

Engineers Week:
Warrington B. Speer, Chairman
Hoyt W. Brown
John F. Vogt, Jr.
(Board Sponsor: Calvin T. Watts)

Technical Papers:
Spencer G. Smith, Chairman
Fred R. Adams, Vice-Chairman
L. L. Denson
R. P. Maddux
(Board Sponsor: Edward J. McNamara)

Vocational Guidance:
Wallace V. deGruy, Chairman
Robert H. Boh
J. Howell Peebles, Jr.
(Board Sponsor: Edw. J. McNamara)

Tulane Student Chapter Advisors:
J. Bres Eustis
Roy E. Johnson
John L. Martinez
(Board Sponsor: Edw. A. McLellan)

Chamber of Commerce Representative:
Frank C. Fromherz

Greater N. O. Code Committee Representatives:
Henry G. Buse
Mario G. Zervigon

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Minutes Of The Board, La. Engineering Society

Minutes of Meeting of the Board of Direction Held at the Engineers' Club, New Orleans, Monday, May 8, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Domingue, Latimer, McNamara, Roundtree, Watts and Fernandez present. Messrs. Alvin Fromherz and Allen Johnson also were present by invitation.

The order of business was dispensed with so that Mr. Fromherz, Chairman of the Functional Section for Engineers in Private Consulting Practice, could give his report. The secretary read a letter written by Mr. Fromherz to Mr. George Healy, Jr., Editor of The Times-Picayune, concerning the employment of Louisiana engineers on Louisiana projects. Mr. Fromherz then reported on his trips to Chicago and to Alexandria in behalf of his committee. Mr. Watts inquired whether any plans had been made to prepare a fee schedule and Mr. Fromherz advised that he was anxious to get this started as soon as his committee would be completed with full representation from every local section of the society. President Bogard thanked Mr. Fromherz for his generous efforts and personal expenditure in the work of this important committee.

Mr. Watts moved that minutes of the preceding meeting be accepted as distributed to board members by mail, seconded by Mr. Roundtree and carried, after which the president reported that Messrs. Janssen and Fernandez had conferred with Dean Johnson of Tulane University on the proposed Technical Manpower Conference and that he had been requested to invite Dean Fenn of L. S. U. and Dean zur Burg of U. S. L. to participate with Tulane and Louisiana Polytechnic Institute in sporing the conference. A favorable reply has since been received from Dean zur Burg. President Bogard also reported that he had been requested to speak at several section meetings and civic gatherings and that his itinerary was well filled.

Mr. Allen Johnson gave a brief report on publication and public relations activities, after which a financial report for the first quarter of 1961 was presented by the treasurer and accepted.

President Bogard called attention to the large expenditure for the Public Relations and Publication programs, and requested Mr. Allen Johnson to prepare reports for presentation at the next board meeting, to be held on May 27, showing what progress is being made to develop the two programs on a self-sustaining basis by means of increased revenues for the publication.

Correspondence addressed to Mr. Ed McLellan, requesting the society's endorsement of Mrs. Martha Robinson as a candidate for The Times-Picayune Loving Cup for 1960, was read and Mr. Rountree moved that the board endorse Mrs. Robinson, seconded by Mr. McNamara and carried.

The resignation of Mr. Wm. H. Dudley III was read, and the board instructed the secretary to ask the Membership Committee to contact Mr. Dudley and request him to reconsider his resignation.

A communication from Mr. Stanley B. Shirk, Executive Director of the JESSI Program, requesting financial aid for a Louisiana applicant, was referred to the Vocational Guidance Committee with the recommendation that the committee's funds be used for group activity rather than for individual assistance; however, the committee was privileged to use its own judgment in seeking a private donor.

The secretary reported the receipt of a request from NSPE'S Legal Counsel for a copy of the Louisiana Supreme Court's decision reversing the Court of Appeals ruling in the case of Day vs. National U. S. Radiator Corporation. Because this decision is of great interest to engineers, Mr. Johnson was instructed to brief the ruling in the next issue of THE LOUISIANA ENGINEER. The secretary also read a ruling of the Federal Court declaring the Michigan law covering the registration of engineers and architects unconstitutional.

The secretary presented a proposed amendment to the constitution submitted by the Ethics and Professional Affairs Committee Chairman, whereupon President Bogard offered to get an opinion of counsel on the legality of the amendment.

A note of thanks from family of the late Daniel B. McCarty was read.

Mr. McNamara moved that the technical paper competition sponsored by Raymond Concrete Pile Company be advertised in The Louisiana Engineer, seconded by Mr. Latimer and carried. The secretary then announced that discussion on the Registration Law Committee and other committee activities, as well as the dropping of delinquent members, would be on the agenda of the May 27 meeting of the board to be held in Baton Rouge. The meeting then adjourned so that the society's regular meeting could begin on time.

J. P. FERNANDEZ,
Secretary-Treasurer

Minutes of Meeting of the Board of Direction
Held at UCT Camp, Baton Rouge
Saturday, May 27, 1961

The meeting was called to order by President Bogard with board members Carter, Domingue, Janssen, Latimer, McNamara, Watts and Fernandez present. Messrs. L. J. Cucullu, A. M. Fromherz, W. S. Nelson and Allen Johnson also were present by invitation.

The order of business was dispensed with so that Messrs. Nelson and Cucullu of the Registration Law Committee could be heard. They reported that their committee had held separate meetings with the Industrial Engineers, the Naval Architects & Marine Engineers, and with representatives of the Louisiana Architects' Association, and that the committee presently is planning to submit two amendments to the Registration Act:

(1) an amendment to permit the Louisiana State Board of Registration for Professional Engineers and Land Surveyors to issue registration certificates to qualified engineers, at its discretion, in branches other than those listed. This would satisfy both the Industrial Engineers and the Naval Architects & Marine Engineers.

(2) to require four years of professional experience as set forth in the model law and as required by many other states.

Mr. Watts asked whetner tne committee nad considered, as an alternate to the first proposed amendment, abolishment of registration in separate branches and the issuing of an over-all Professional Engineer license that would enable the holder to practice in any branch in which he considered himself qualified. Mr. Nelson stated this had been considered and not ruled out, but that the committee believed the amendment it proposed would have a better chance of passing the legislature. Messrs. Cucullu and Nelson were thanked for their efforts and encouraged to continue the fine work of the Registration Law Committee, which plans an intensive program of activity prior to the opening of the next legislative session.

The following omission in the minutes of the board's meeting of May 8 was noted, after which Mr. Watts moved that the minutes be accepted as corrected, seconded by Mr. Domingue and carried:

"President Bogard called attention to the large expenditures for the Public Relations and Publication programs, and requested Mr. Allen Johnson to prepare reports for presentation at the next board meeting to be held on May 27, such reports to show what progress is being made to develop the two programs on a self-sustaining basis by means of increased revenues for the publication."

President Bogard reported that Dean Fenn of LSU had accepted our invitation to co-sponsor the Technical Manpower Conference, which now assures participation by all four engineering schools of Louisiana. President Bogard requested the special conference committee to proceed with its plans to hold the meeting in New Orleans on or about October 20-21, 1961.

President Bogard also advised that a proposed amendment to the society's constitution prepared by the Ethics & Professional Affairs Committee had been forwarded to Mr. Wood Brown, Attorney for the State Board of Registration, for an opinion on its legality. His reply has not yet been received.

Mr. Janssen reported on the recent conference of presidents and presidents-elect of NSPE state societies held in Purdue, and advised that it had been most instructive. Discussion followed on the possibility of holding a similar conference for LES Section Presidents and those present considered it advisable and preferable to be held in an outlying city. It was agreed this would be further explored at another meeting.

Mr. Fromherz, Chairman of the Functional Section for Engineers in private practice, reported that he had met with opposition or reluctance on the part of consulting engineers to cooperate with his committee. For example, after considerable ground-work forty invitations were issued by President Carter of the Baton Rouge Section and only six persons responded. Mr. Fromherz stated, however, that he realized the formation of this Functional Section would require two years, that he was not discouraged and would continue to work in its behalf.

Correspondence concerning the Baton Rouge Jet Program of the Vocational Guidance Committee was read and Mr. McNamara moved that the Vocational Guidance Committee Chairman be advised that the society would underwrite the Baton Rouge Jet Program to the extent of $50 for this year, but that it is the opinion of the Board of Direction that the Vocational Guidance program of each state section should be supported by the local organization. Motion seconded by Mr. Domingue and carried.

Mr. Watts moved that the resignation of W. H. Dudley III (Jr.-N. O.) be accepted with regret, seconded by Mr. McNamara and carried.

Mr. Janssen moved that the following delinquent members be dropped from the rolls in compliance with Article IX of the constitution, seconded by Mr. Watts and carried:

Adam, Verdi (Jr.-B. R.); Aicken, Wm. E. Jr. (N. O.); Atkinson, Robert. J. Jr. (Fla.); Bailey, Robt. E. (Jr.-Bogalusa); Barnett, James V. (NSPE-Unknown); Barousse, Carlos J. (Aff.-N. O.); Barron, Edw. L. (Jr.-Laf.); Bundy, Allan R. (Jr.-Unknown); Burdette, J. R. (Unknown); Carver, Dale R. (Baton Rouge); DeMarche, John M. (Baton Rouge); Dietz, Wilson R. (Jr.-Unknown); Dyer, Wm. H. Jr. (B. R.); Eldred, James W. (Aff.-Texas); Firesheets, Wm. T. (B. R.); Fuccich, Gerald R. (Jr.-N. O.); Garner, Patrick E. (Thailand); Hanks, Robt. C. (Jr.-Ala.); Heard, Edw. T. Jr. (Monroe); Hendrick, David C. (NSPE-L. C.); Hime, Paul E. (Aff.-Texas); Hoyt, Chas. P. (B. R.); Jenkins, Benj. S. (Aff.-N. O.); Wallace, John E. (Bogalusa); Warriner, S. R. Jr. (Penna.); Young, Alberta M. (N. O.); Ziercher, John R. (Jr.-Tenn.); Keith, Donald B. (Jr.-Wash); Lais, Irwin M. (Unknown); Leffers, John F. (Jr.-Kenner); Loyd, Odie (Shreveport); McCormick, Dana D. (Aff.-Sport); McGehee, Lucius (Tenn.); McInnis, Sam S. (Aff.-Ark.); McKay, Chas. M. (B. R.); McKinney, M. W. Jr. (Jr.-Monroe); McNamara, John P. (NSPE-N. O.); Mouton, Curtis J. (Jr.-L. C.); O'Brien, Jos. T. (B. R.); Oertling, John M. (Jr.-L. C.); Parish, J. M. (NSPE-Texas); Payne, Burt McC. (NSPE-B. R.); Riedel, Richard W. (Unknown); Romano, Joe (Jr.-Luling); Romeu, G. D. (Jr.-Laf.); Salassi, Henry D. (B. R.); Stephenson, John C. (Aff.-Houma); Stevens, Paul N. (NSPE-N. O.); Stewart, Eugene Y. (L. C.); Stewart, James M. (NSPE-L. C.); Sullivan, Richard J. (NSPE-Unknown); Symon, Robt. B. (-Aff.-N. O.); Tabony, Harry L. (Jr.-Unknown); Tufts, James D. (N. O.); Vondenstein, H. A. (Jr.-Unknown).

A report of the Public Relations Counsel was presented by Mr. Johnson, who then retired from the meeting. After some discussion, Mr. Watts stated that he would prepare a statement of the board's wishes concerning the Public Relations Program.

President Bogard asked that the subject of a change in dues of Affiliate Members be a special item on the agenda for the next meeting. He then adjourned the meeting so that the dinner program sponsored by the Baton Rouge Section as a part of its annual outing could begin on time.

J. P. FERNANDEZ,
Secretary-Treasurer

Minutes of Meeting of Baton Rouge Section of Functional Sections Committee of L.E.S. Held June 29, 1961 at 5:30 P.M. in the Office of John I. McCain & Associates

Meeting was called to order by temporary president, John I. McCain.

Minutes of a meeting of the organizational group on June 26, 1961 were read.

Mr. McCain relayed a request of Mr. Fromherz that reports of section meetings be released to the local press were applicable.

Discussed the press coverage of a recent appearance of Mr. Fromherz before the Board of Highways on June 27, 1961. Members of the Board and the Director of the Department reportedly listened carefully to Mr. Fromherz's comments relative to use of independent engineers by State Departments, but stated that the message had "hit them cold."

Election of officers was held with nominations from the floor. The following were elected and assumed their duties:

Col. J. Lester White, President; Mr. John I. McCain, Vice President; Mr. J. R. Whipple, Secretary-Treasurer.

Mr. Kirstens discussed desirability of full activity and an effective program of direct benefit to members of a group such as the L.E.S. Others admitted desirability of increased activity but pointed out that the present registration law was largely the result of L.E.S. committee work. Mr. McCain described a present L.E.S. project to have the law revised to provide for a 4 year "Engineer in Training" status prior to full licensing.

Motion made by Mr. A. J. Mayers, Jr. and seconded by Mr. R. Dale Hodges, that a committee of 5 be appointed to attend the July 28 meeting of the Board of the Louisiana State Department of Commerce and Industry with Mr. Fromherz. Motion passed. Committee to attend if desired by Mr. Fromherz.

Discussed the assigned project of Baton Rouge Section to prepare a "Manual of Practice" for Louisiana and mentioned that Lake Charles was to develop by-laws.

Discussion of qualifications for office developed two technicalities which could be referred to Lake Charles for discusion and recommendations. These were:

(1) Membership in L.E.S. (versus application pending).

(2) Actively engaged in independent practice of Consulting Engineering (versus inclusion of employees of Consulting Engineers and versus persons eligible to practice but not actively practicing).

Meeting was officially adjourned after about one hour as planned.

Report on the meeting activities was prepared by the new officers and telephones to State Times-Morning Advocate.

Attending the meeting were: S. Steve Carnegie, Alvin M. Bridges, Albert Mayers, J. C. Kerstens, A. B. Williamson, Wallace DeBosier, Julian Tablata, R. Dale Hodges, Otis Miller, John W. Kellen, Jr., Lester White, Toxie Gratt, J. R. Whipple, John I McCain, Sam S. Dupree.

J. R. WHIPPLE
Secretary-Treasurer

Minutes of Meeting of the Board of Direction
Held on July 10, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Domingue, Janssen, Larue, Latimer, McLellan, Rountree, Ruffin, Watts and Fernandez present. Messrs. J. T. Knight and Allen Johnson also were present by invitation.

The secretary announced that the name of Mr. McNamara had been omitted from the minutes of the May 26th meeting. Mr. McLellan moved that the minutes be accepted as read and corrected, seconded by Mr. Domingue and carried.

President Bogard announced that he had been busy traveling in behalf of LES matters, having met twice in Shreveport and once in Monroe, Lake Charles and New Orleans in the week of June 6-12.

Mr. Janssen reported on the desirability of holding a President-Elect conference. Mr. Ruffin's suggestion to have the first conference during the Annual Meeting rather than in the fall was approved by those present. President Bogard appointed Mr. McLellan to head a committee of his choice to submit plans for the conference to be held on Saturday, January 13, 1962.

Mr. Janssen announced that the Technical Manpower Conference had been rescheduled for November instead of October as originally planned. Mr. Larue moved that the dates November 20-21, 1961 be acceptable to LES, seconded by Mr. Carter and carried.

The secretary reported that 473 ballots had been cast during June and that all applicants appearing on the June Membership Ballot had been elected to the grades shown, with the exception that Mr. Robert E. Carlile had been elected to the grade of Junior Member.

A note from the Norman H. Ross family thanking the society for its expression of sympathy was read.

Mr. Janssen moved that the United Fund be advised that its representative could address the society's October meeting for a period of five minutes, seconded by Mr. Watts and carried.

Colonel Knight, Chairman of the Ethical Practices Committee, explained that on request of the State Bond & Building Commission a Shreveport Architectural firm had advertised for bids for land surveying work. He advised that both the architect and Colonel Atkins, Director of the Commission, had been advised that competitive bidding for the services of a Professional Engineer or Land Surveyor is contrary to LES and NSPE policy and it was hoped that both parties would desist from such practices.

Mr. Latimer moved that the Secretary be authorized to attend the NSPE Secertary's Conference in Atlanta. Motion seconded by Mr. Larue and carried.

President Bogard appointed a committee consisting of Messrs. Latimer, Chairman Larue, McLellan, Ruffin and Fernandez to prepare a report on the subject of increasing dues for Affiliate Members.

The proposed amendment to Article X of the Constitution was tabled.

On motion by Mr. Watts, seconded by Mr. Larue the resignations of Messrs. Marvin T. Bond (N.O.), Wm. D. Tabor (Thibodaux), and J. M. Semmes (Baton Rouge) were accepted with regret.

Mr. Latimer moved that the reinstatement of James R. Bres, Jr. (Baton Rouge) be declared void, seconded by Mr. Carter and carried.

Mr. Janssen moved that Mesrs. Allen J. Rogers (Ohio), and Jos. D. Weldon (Port Allen) be dropped in accordance with their requests, seconded by Mr. Larue and carried.

Mr. Larue moved that the following personnel be appointed to Annual Meeting Committees, seconded by Mr. Janssen and carried:

General Chairman	Herbert A. Schaeffer, Jr.
General Vice-Chairman	John F. Vogt, Jr.
Banquet Chairman	George M. Baccich
Vice-Chairman	R. F. Muller, Jr.
	C. Palmer Jones
	Claude Kelly, Jr.
	Pierre Stouse
	W. J. Verlander
Technical Papers Chairman	Francis J. Favaloro
Vice-Chairman	Raymond P. Maddux
	H. William Herbst
	Cecil M. Shilstone
Program Chairman	George J. Groh
Vice-Chairman	Joseph W. Sears
	Edgar H. Pavia
Publicity Chairman	Roy E. Johnson
Vice-Chairman	Ben Louviere
	Frank S. Foster, Jr.
Registration Chairman	Arnold L. Farmer
Vice-Chairman	Malcolm L. Hurstell
	A. L. Wallace
	H. R. Davies
	G. H. Kellermann
Student Conference Chairman	L. L. Denson
Vice-Chairman	Jack W. Allen
	Edmond M. Brignac, Jr.
	A. W. Durning
Reception Chairman	Roy T. Sessums
Coordination With Woman's Auxiliary	Waldemar S. Nelson

Mr. Ruffin moved that the revised Constitution and By-Laws submitted by the Alexandria Section be approved, seconded by Mr. Janssen and carried.

Upon motion duly made and seconded, the meeting adjourned.

J. P. FERNANDEZ
Secretary-Treasurer

Pictured left to right at a joint meeting of the Louisiana Post, SAME and LES held July 10 at the Engineers Club of New Orleans are Ben Bogard, President, LES; Gerald J. Gallinghouse, President of the Board of Levee Commissioners, New Orleans Levee District; R. L. Shortle, incoming President, Louisiana Post, SAME; and Comdr. T. W. Beck, Program Chairman.

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Observe Centennial Of Classic Engineering Report

THE 100th ANNIVERSARY of the Humphreys and Abbot Report on "The Physics and Hydraulics of the Mississippi River," Made 5 August, 1861

NOTE: The importance of the Humphreys and Abbot Report on the Mississippi River, to the advancement of river engineering and progress of flood control and other river development will be commemorated by the Corps of Engineers, the American Society of Civil Engineers, and other organizations upon suitable occasions during the succeeding months.

I — THE SIGNIFICANCE OF THE HUMPHREYS AND ABBOT REPORT

On August 5, 1861, a report on "The Physics and Hydraulics of the Mississippi River" was filed with the Bureau of Topographical Engineers of the United States Army.

Over the years, this document has become recognized as one of the classics of engineering literature. Its influence on the art of river engineering has been profound and its effect on the economic advancement of the United States has been far-reaching.

Underlying it was more than a decade of pioneer scientific effort by two men called upon to find out how to measure the flows and forces of the largest river on the American continent, how to predict their effects and how to build works to protect life and property from the floods which periodically brought catastrophe to the alluvial lands of the Lower Misisissippi valley.

No one had ever tackled such a job before. There was little to guide these men. Even the available tools and techniques were inadequate for such a task. Undaunted, though, they set out to explore the mysteries of the Mississippi River, and chart the way for men to control great rivers.

The "Lewis and Clark" of the Engineering Frontier

These two men, Captain A. A. Humphreys and Lieutenant H. L. Abbot of the Army's Topographical Engineers, became in fact the "Lewis and Clark" of river engineering, exploring the frontiers of engineering knowledge and contributing much to engineering progress. Both were members of an Army Engineer organization trained and dedicated to assault the frontiers of science and engineering, to explore, map and build for the expansion of American civilization across a wild continent, and to fight when necessary to defend it. Both men later made their mark as Union Commanders in the Civil War. Humphreys, in fact, became known as "The Fighting Fool" of the Battle of Gettysburg.

Their task on the Mississippi took 11 years, in which the river, itself, was literally turned into a giant laboratory for unprecedented experiments.

Captain Humphreys wrote[1] that he "entered upon the laws of flowing water in natural channels, as enunciated in treatises upon the hydraulics of rivers, were not based upon sufficiently extended experiments upon natural streams, and, hence, that the treatises found in them could not be relied upon for the solution of the questions upon which the plans of protection against inundation from overflow depended."

Used the Mississippi as Giant Laboratory

Humphreys and Abbot, with their little band of military and civilian engineer assistants, probed the flow and behavior of the river, often with instruments and techniques of their own devising. As Humphreys[2] put it, they determined "by experiments on a far more extended scale than any ever before attempted, the laws governing the flow of water in natural channels and (means of) expressing them in formulae that could be safely and readily used in practical applications. The success that has attended this part of the work has even exceeded my expectations. Laws have been revealed that were before unknown; new formulae have been prepared, possessing far greater precision than the old; and improved methods of gauging streams have been devised."

Applying their findings, they established new formulas for measuring the flows of large rivers, proposed a system of levees and other works to control the Lower Mississippi, and set generations of engineers on the path of further engineering progress. Their efforts have since led to the successful improvement of the Mississippi and other great rivers.

Report Won International Fame

The Humphreys and Abbot Report on the Mississippi, published[3] first in 1861, and again in 1876, was translated into the principal European languages and received attention from eminent hydraulic engineers and scientists in various countries.

In 1878 Humphreys (by then a Major General and Chief of the Army Corps of Engineers) wrote[4] that "The tone of criticism from this class of writers (engineers and scientists) has generally been favorable, and has uniformly been courteous, with one distinguished exception—Dr. G. Hagen, Director General of Public Works in Prussia.

"This gentlemen, one of the most widely known hy-

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[1]From Humphreys' letter of August 5, 1861, transmitting Report to Bureau of Topographical Engineers. execution of that duty with an apprehension that the

[2]From Humphreys' letter of August 5, 1861, transmitting Report to Bureau of Topographical Engineers.

[3]The Report was published in 1861 by J. B. Lippincott & Co., Philadelphia, and was reprinted with revisions by the U.S. Government Printing Office in 1876.

[4]Reply to Dr. Hagen, by Humphreys and Abbot, Van Nostrand's Eclectic Engineering, Magazine, Jan. 1878.

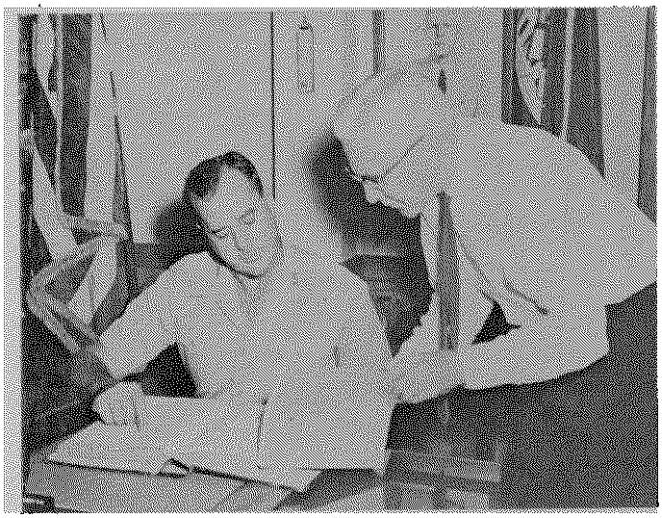
draulicians of Germany, had published an extensive work on hydraulics in 1844; but it happened not to be accessible to the writers of The Physics and Hydraulics of the Mississippi, and, in the hurry of finishing the Report at the outbreak of the late Civil War, no reference to it was made in their somewhat full historical resume of the subject."

Dr. Hagen never forgave them, and carried on long efforts to discredit their work; though without success.

Charted the Way
for Taming Great Rivers

Though the techniques and formulas for measuring the flows and forces of great rivers devised by Humphreys and Abbot have since been improved, they made marked contribution to engineering capability. The findings, conclusions and recommendations of these men gave engineers of their day the initial knowledge and confidence to tackle the large and difficult job of controlling the Mississippi and to continue the effort to its successful conclusion.

—o—



Colonel George M. Cookson, seated, District Engineer, New Orleans Engineer District, and Walter C. Carey, Chief of the Design Branch of the District, compare a point in a reprint of the letter of transmittal filed by Captain A. A. Humphreys with the 100 year old original report.

Deputy Orleans Engineer Named

Lt. Col. Harry N. Tufts has been named deputy district engineer, US Army Engineer District, New Orleans, it was announced recently by Col. George M. Cookson, New Orleans District Engineer.

Col. Tufts arrived at the district here following almost four year's duty with headquarters, US Army, Pacific, stationed at Fort Shafter, Hawaii.

During his tour of duty in Hawaii, Col. Tufts was in the office of the assistant chief of staff, G4, primarily as chief of the installation branch.

He received the Army Commendation Medal for his work in Hawaii.

A native of Denver, Colo., Col. Tufts is a graduate of the Colorado School of Mines. He was commissioned a second lieutenant in the Army Reserve in 1939.

His active duty had included World War II tours in India, Burma, and China, primarily engaged in airfield construction. He also served in Korea from May, 1952, to August, 1953.

He is married to the former Miss Barbara Skerry of Bedford, N. H., and has one daughter, Susan, 14. Col. Tufts and his family reside at 1627 Jefferson Ave.

Cookson Bid Farewell

About 500 public officials, civic leaders and friends said bon voyage to Col. George M. Cookson, New Orleans district engineer for the US Corps of Engineers since 1958, on the eve of his transfer to a new post.

Col. Cookson has been newly assigned to the industrial College of the Armed Forces in Washington, D. C.

The testimonial dinner held for Col. Cookson in the Roosevelt hotel was co-ordinated by the national security committee of the Chamber of Commerce of the New Orleans Area. General chairman of the occasion was William G. Zetzmann, president of International Trade Mart, and state treasurer and public works board chairman of the National Rivers and Harbors Congress.

Growing tributes were paid to Col. Cookson by city councilman Henry B. Curtis, state public works department director Claude Kirkpatrick and director of the port of New Orleans, W. J. Amoss.

"Now I think I know how the pancake feels when the syrup is poured on it," quipped Col. Cookson, after hearing a flood of complimentary comments. "You usually don't hear things like this till after you're dead."

In another vein, Col. Cookson said, "As a poet once said, each day we die a little, but when we say good-bye, we die a lot."

He said he felt that the testimonial luncheon was actually a tribute to the thousands of men and women who work in the Corps of Engineers.

Corps of Engineers civil works projects such as levee systems, waterways, flood control and other programs have contributed to the progress of the entire Gulf coast area, he said.

Zetzmann noted that Col. Cookson was an engineer of "rare talent" and a man who can still retain the friendship and respect of people who whom he might disagree. He repeatedly praised Col. Cookson's humility.

The entire Louisiana delegation in Congress wired congratulatory messages to Col. Cookson.

Sam Giallanza, executive director of the New Orleans Steamship Association, presented Col. and Mrs. Cookson with a silver punch bowl and cups.

Among the persons who attended the testimonial honoring Col. Cookson were L. Roy Matthias of Shreveport, executive vice-president of the Red River Valley Association; Bruce Tucker of Memphis, executive vice-president of the Lower Mississippi Valley Flood Control Association; James M. O'Grady, head of the U. S. state department reception center in New Orleans; Henri Wolbrette II, representing the Louisiana Chemical Association; Munger T. Ball of Port Arthur, Tex., president of the Intracoastal Canal Association of Louisiana and Texas; Bailey T. DeBardeleben, president of the American Waterways Operators, Inc., and Col. E. B. Downing, deputy division engineer of the Lower Mississippi Valley for the corps of engineers.

Ethical Practice

Professionalism and The Professional

By Walter H. Scales, P. E.

Member, LES Committee on Ethics & Professional Affairs

"Professional" and the designation of a person as a "Professional" are terms which embrace a broad field. For the purposes of this discussion, let us apply them to the Professional Engineer.

Many articles have been written about "Professionalism" and the "Professional"; mostly based on Codes of Ethics, which in turn are primarily detailed applications of the Golden Rule.

While these are important, there are other aspects not often mentioned but which are essential to a true and full "Professionalism" as practiced by a "Professional."

The man who does only work which is of a professional character, or is a part of a professional vocation, is in reality little more than a technician.

The terms "professionalism" and "professional" carry with them more than merely technical aptitude, or skill and responsibility. This is right and proper, because a professionally trained and experienced man should possess superior qualifications which should qualify him, at least, for active participation and as a leader in the affairs of his community. By this, we mean that a true "professional" should devote a reasonable amount of his time, talents, and income to:

(a) his profession ,
(b) his community in civic activities and
(c) politics

Let's analyse these areas of activity further:

His Profession: It should be axiomatic that the professional engineer support, and actively participate in the affairs of the engineering profession, both on the broad basis affecting all engineers, as well as those pertaining more specifically to his branch or specialty field. Obviously, this means active membership in at least two engineering societies; for example, the Louisiana Engineering Society and the American Society of Civil Engineers. Merely paying dues, reading the Society journals, and attending one or two meetings a year is not active membership.

Others have made similar statements, but Theodore Roosevelt put it squarely on the line when he said:

"Every man owes a part of his time and money to the business or profession in which he is engaged." "No man has a moral right to withhold his support from an organization that is trying to improve conditions within his sphere."

Civic Activities: The Engineer, by reason of his training and experience, should be a prime mover and leader in community activities. There are so many fields in which to operate and things to be done, that obviously he cannot be active in all, but should choose two or three in which he is interested or for which he has particular talents. He may not be interested in soliciting funds for such worthy causes as the United Fund, the Boy Scouts, or the Red Cross; but he could be a real and beneficial worker in his Ward Improvement League, or in Traffic Safety, or in zoning, or the "Clean City" movement, or activities for which an engineer is particularly qualified.

Politics: The great American "gripe" is about politics and politicians; but to paraphase an old saying, "No one does anything about it." There is plenty of room and need for activity in politics from the precinct to the national level. "Actions speak louder than words," is particularly true in politics. To many, the word "politics" is a "dirty word." If that be true, then the results can be expected to be "dirty," if nothing is done about it. Many a questionable candidate has been elected because the intelligent, upstanding, God-fearing, "good citizens" have failed to vote. One good way to "play politics" is to do something about getting out the vote. If every engineer would see to it that he and the members of his family voted in every election, and then endeavored to get his co-workers, friends, and neighbors to do likewise (take them to the polls in his car, if necessary) there might be a different tale—and less "griping" afterwards—after an important election. An engineer's political motto could well be "Stand up and be counted."

The engineer who does these things will find much to reward him; he will be respected in his community, and an honor to his profession; he will be truly a "Professional."

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Outing Time—Field Notes By Allen Johnson

The Annual Outing of the Louisiana Engineering Society this year will be held at the Colonial Country Club in New Orleans on September 28, according to August H. Douglas, Annual Outing chairman.

Major events will be golf, horseshoes, and putting climaxed by the Annual Outing banquet, said Douglas.

Prizes for the high scorers in the sports events, and for attendance, will be awarded.

Scheduled emcee is George Nusloch, Olin Mathieson Chemical Corp. official noted for his humorous repartee.

Committee chairman for the Annual Outing are Russell Hall, vice chairman; Henry St. Paul, golf; Lawrence Bodet, horseshoes; Robert H. Boh, putting; C. Palmer Jones, putting; W. P. Musgrave and Frank Foster, prizes; Pierre J. Stouse, refreshments and banquet; J. Rogers Cox, tickets and publicity. Board sponsor for the Annual Outing is Mr. Edward A. McLellan.

LES Members are talking about the 8th annual electrical conference of the petroleum industry committee of the AIEE, meeting in New Orleans September 17-20, chairman of arrangements is W. D. Stroud; vice chairman, Earl S. Dobbs, secretary, Malcolm L. Hurstell.

Committee chairmen include J. W. Barnes, printing & program; Hugh Blair, registration & hotel; Harold Deloney, reception; Todd Sutton, technical; Leonard Ramon, finance & budget; Stanley Bird, inspection trips; L. B. Davis, publicity; Jim Cronvich, student activities; O. E. Barron, ladies activities; Jim Warren, banquet; C. P. Knost, arrangements.

LES has proved helpful in recruiting engineers for the National Aeronautics and Space Administration, according to Jesse H. Hall, chief of the Instrument and Computer Research Division at Lewis Research Center, Cleveland. Hall recently visited New Orleans and Shreveport, recruiting engineers and others to work on the Apollo (manned-flight to the Moon) project.

Dr. Lee H. Johnson, dean of the Tulane universitly school of engineering, was elected recently as Sacretry of the engineering college administrative council of the American Society's annual meeting at the University of Kentucky.

Robert H. Roy, vice-president of the ASEE, said that the administrative council is designed to deal specifically with administrative problems of engineering colleges.

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What Is Future Of Louisiana Research?

Deans of Louisiana engineering schools say money — even the $50 billions the National Science Foundation says is needed for U. S. science education and basic research between now and 1970 — won't automatically produce the scientists and technologists this country must have.

Dean Ben T. Bogard, Louisiana Polytechnic Institute engineering school and president, Louisiana Engineering Society, says Louisiana has 6000 registered engineers but that the state lags seriously behind some neighbors in technical education. Bogard hopes that Louisiana can have a purely technical school in a league with Georgia Tech to the Southeast and Rice Institute to the Southwest.

Bogard also said, "leaders are needed among engineers with vision, interest and determination to develop the technical institutions needed not only in Louisiana but throughout the South."

Dean Lee H. Johnson of the Tulane School of Engineering said that it is noteworthy that the combination of "science and engineering" was mentioned frequently by the National Science Foundation in their statement.

"This indicates something that most people may not be aware of, that both are equally important to our domestic growth and our survival as a nation," he said.

"It used to be that 'lead time' between a scientific discovery by scientists and its practical application by an engineer was a matter of years. Today it has shrunk to months and in some instances, almost days."

The dean said that increasing pressures, both domestic and international, do not permit much time between discovery and application.

Dean Fred H. Fenn of Louisiana State University's school of engineering, said he shares a general alarm, that, with enrollments in technical schools falling off, the U. S. may lose the "battle of the engineers" to the Russians, who are turning out technologists at a faster clip than we are.

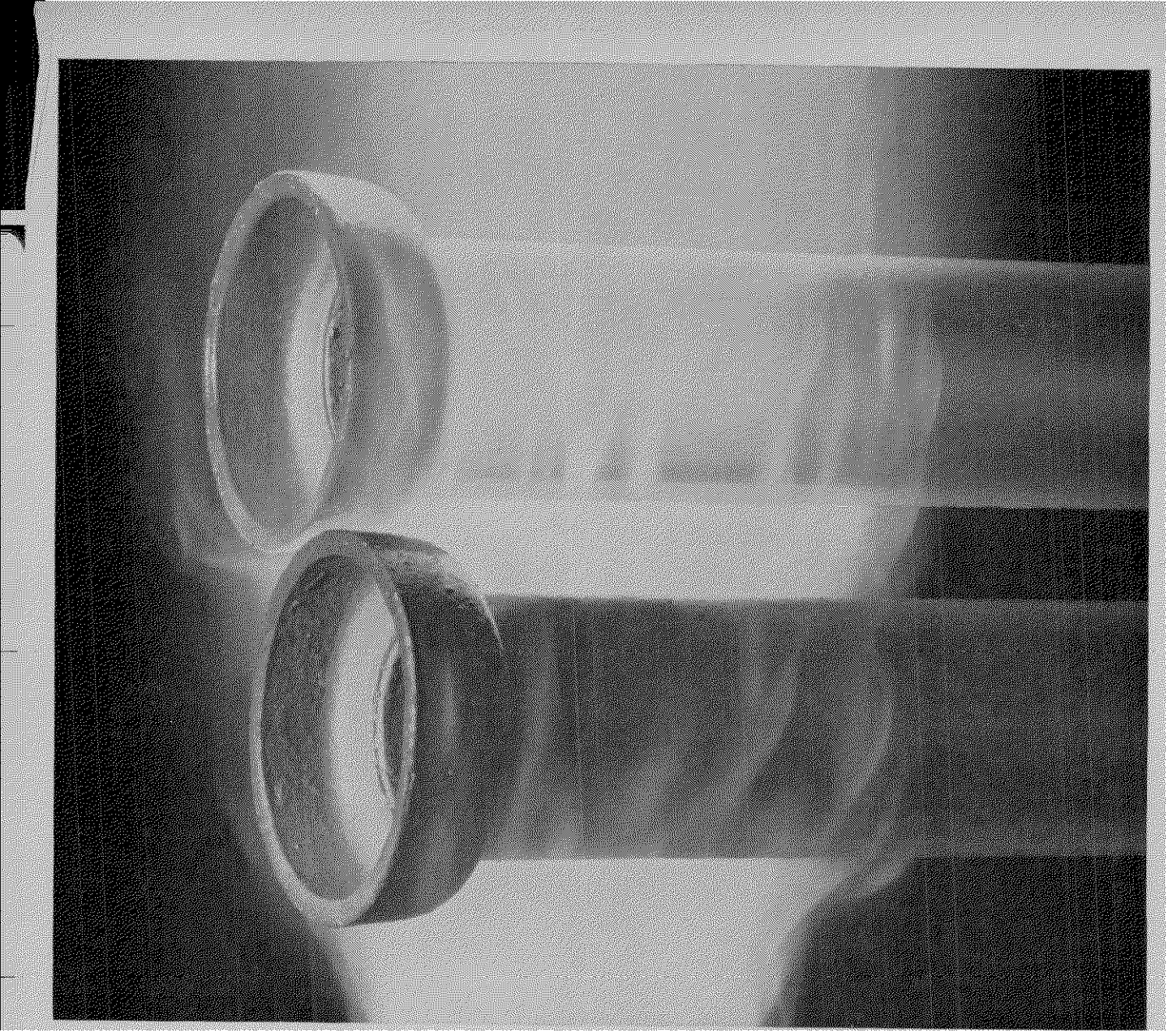
Nationally, for the past three consecutive years, enrollment in technical schools has fallen off — the first two years by 11 per cent, while enrollments generally were up 11 per cent. This is a 22 per cent difference.

The Russians in 1960 had a force of some 108,000 graduate engineers, while the U. S. had 38,000.

President Kennedy backed up the major policy statement issued recently by the NSF which called for an investment in science training and research in an amount greater than has been asked for shooting a man to the moon by 1970.

The President declared: "Our scientific progress not only benefits everyone, but it is the responsibility of everyone."

NSF said during the fiscal year of 1961 the U. S. invested $3 billion from all sources in colleges and universities for science and engineering education and for basic research.



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What Every Louisiana P. E. Should Know

This is another in a series of articles prepared by the Editorial Starr 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. And any other questions our readers might wish to submit, pertaining to the Engineering Profession, will be welcomed by the Editorial Staff.

QUESTION—Is it necessary that an applicant for registration as a Professional Engineers be practicing his profession at time of making application?

ANSWER—No. The Louisiana Act states that any person, having the necessary qualifications prescribed in the act to entitle him to registration, shall be eligible for registration although he may not be practicing his profession at the time of making application.

QUESTION—Are copies of the roster of Louisiana registered Professional Engineers available to the public?

ANSWER—Yes. Copies are furnished to the public upon request of the Executive Secretary, F. W. Macdonald, Civil Engineering Building, Tulane University, New Orleans 18, Louisiana. Copies are also placed on file with the Secretary of State and the libraries of all engineering colleges and universities in the State.

QUESTION—Is it possible to register as a Professional Engineer in Louisiana without graduation from an engineering college?

ANSWER—Yes, provided the applicant fulfills the following requirements:

1. He must present a specific record of eight years or more of experience in engineering work of a character satisfactory to the Board and indicate that he is competent to practice engineering.
2. He must successfully pass a written or (at the option of the Board) written and oral examination designed to show knowledge and skill approximating that attained through graduation in an approved four-year engineering curriculum.

QUESTION—May a contractor, executing work designed by a Professional Engineer, obtain credit for such work toward registration as a Professional Engineer in Louisiana?

ANSWER—Yes. The Louisiana Act states that such work may be considered toward qualification for registration.

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Engineering Approaches To An Airport

By Lawrence A. Waite, Captain, U. S. Navy (Retired)
Aviation and Airport Operations Consultant
Bedell & Nelson Engineers, Inc.

The necessity for community land use planning on a professional level has become increasingly obvious as urban expansion continues to accelerate. Indeed, the cancerous spread of "blight" in older metropolitan areas caused by congestion and unchecked obolescense is a grim reminder of what happens when community planning fails. One vital aspect of planning today involves integrating the jet airport into the community structure. An airport is no longer an isolated entity as it was in the early days of aviation. It must now be considered as a unit in a densely populated area, whatever the development of that area may be presently. The introduction of jet powered aircraft in the larger urban areas has intensified the community reaction to the noise generated in the airport area and emphasizes the necessity for a detailed study of compatible land use. This study is essential to the protection of investments in public airports and to the protection of persons and property in the airport environment.

The immediate need for such studies was accentuated by a recent action of the Federal Housing Authority. The FHA decreed that no loans would be granted for housing in "noisy areas near jet airports," because it considers such housing a bad financial risk. This area was tentatively defined as being three miles long and one mile wide measuring from the ends of the dominant runways. It should be stressed that at best this is a very general definition as certain determining factors such as terrain, existing structures, flight patterns and location of runways will vary with each airport. Consequently individual acoustical studies of each airport should be made so that proper zoning of adjacent areas may be acomplished.

The FHA decision certainly stressed the fact that there must be as little conflict as possible between the airport and its surrounding area, let BOTH suffer. For example, military jet bases have reported that friction with local residents over the highly irritating jet noise has resulted in numerous complaints and even lawsuits and eventually caused severe curtailment of base operations and prevented full utilization of these multi-million dollar facilities. Obviously a vital community asset such as a jet terminal cannot risk this sort of interference. Another factor to consider is the value of land around the airport. It is agreed that certain types of industrial and administrative activities can function efficiently in an area where a residential zone would lose a large part of its value due to noise annoyance. It is elementary, then, that although adjacent land has to be carefully and rigidly zoned by professionals, the land subject to the higher levels of jet noise can certainly be profitably utilized.

An airport land use study is vital to both new AND old airports. The benefits to a new airport are obvious. The acoustical survey and resulting zoning plan precludes future land use conflict and insures the maximum utilization of the airport and adjacent area. It will enable each property owner to derive the maximum value from the use of the land since the purposes for which the land may be used will be definitely known by the owner. Consequently, a better relationship between the community, the Airport officials and hose responsible for enforcing the zoning regulations is bound to result.

The benefits to an older airport in a developed area are less obvious but are equally important. In view of the present FHA ruling (and inevitable future federal regulations) an acoustical study of an old airport is an absolute necessity. Only by making such a study can the "noisy area" be accurately measured. Certain factors previously mentioned make this area vary with each airport. Consequently individual studies must be made. This study will enable all concerned property owners to know where they stand relative to the FHA ruling. Blind acceptance of the "noisy area" dimensions as given by the FHA might well bring property owners under the ruling when an acoustical survey would show them to be well out of the "noisy area."

ONLY AN INDIVIDUAL ACOUSTICAL SURVEY OF EACH AIRPORT CAN ACCURATELY DEFINE THIS AREA.

The solution of these problems is the purpose of an Airport Land Use Study. It is no job for amateurs. Only impartial professionals with long experience in designing and airport AND in laying out residential and industrial sites are properly qualified to make such a study. Now, when urban expansion threatens to engulf and strangle many airports, it is imperative that the development of a comprehensive land use plan based upon acoustical studies and implemented by the adoption of appropriate zoning ordinances be initiated at the earliest possible itme.

Lawrence A. Waite

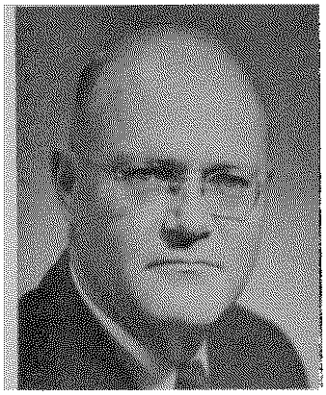
Captain Waite has been the Aviation and Airport Operations Consultant for Bedell & Nelson Engineers, Inc. for the past five years. Prior to joining the company he was the Navy member of the Airport Use Panel of the President's Air Coordinating Committee, facilities and field services officer of the Chief of Naval Operations and Navy liaison officer to the Assistant Secretary of Defense (Properties and Installations). He has had numerous assignments with executive or command responsibilities in Naval Aviation. He was a Naval Aviator for 32 years and has broad experience in all types of aircraft and air operations.

Notes from Purdue

Improving NSPE Communications

By James S. Janssen
President Elect, Louisiana Engineering Society

The State Presidents meeting of the National Society of Professional Engineers is held annually to acquaint new state presidents and presidents-elect with the procedures and policies of the NSPE and to enable them to discuss mutual problems and to swap ideas.



The 1961 meeting was a very productive conference, with almost all states (including Alaska and Hawaii), District of Columbia, Canal Zone, and Puerto Rico being represented. The Louisiana Engineering Society should plan to send its representative to this meeting each year.

It might be well to have a similar meeting in Louisiana each fall to be attended by the presidents-elect of the various section chapters and to be sponsored by one of these chapters in a manner similar to the State Planning Meeting held in Alexandria each spring.

At the meeting we learned that NSPE has a film called "Building for Professional Growth," 15 minutes, black and white, which is available on a rental basis of $10 per usage. This might be worth showing at a meeting, perhaps at the annual meeting or elsewhere. NSPE is also having a new film made, called "Professional Concepts for Students and Young Engineers." These might prove useful in convincing state members of the value of national membership.

It was brought out that many states have a program of activity to welcome young engineers into the society. This is sometimes handled through a special Young Engineers Committee. If the Louisiana licensing law is amended to include Engineer-in-Training requirements, we could perhaps arrange to have the EIT certificate awarded at an LES meeting. Some states (Indiana, for instance) present engineering licenses at a state society meeting with a Registration Board member doing the presenting. This certainly lends prestige to the state society.

Quite a few states give a one year free 'introductory membership" to all newly registered engineers (not to EIT's since many leave state and never register). Retention rate with first year runs from 10% to 85%, averaging 43%, and depends largely on follow-up. This looks very promising and should be seriously considered for Louisiana. The membership certificate could be presented along with the registration certificate at the meeting as suggested above.

It was brought out that relatively few engineering college educators are members of NSPE and some are not registered engineers. Some school catalogs give credit for NSPE membership and registration but this is not the general rule. It would be helpful and meaningfull if ECPD (Engineers Council for Professional Development) would give such credit when certifying schools. There seems to be a trend among national engineering societies to require registration for full membership.

Some state registration boards combat misuse of the word 'engineer" by having their attorney contact the attorney for the offender. Being professional men, the attorneys are usually interested in and understand ethics and can convince their clients to cease and desist from such misuse without further action being necessary.

The "functional plan for unity" (EJC for technical matters, NSPE for professional matters and ECPD for educational matters) as suggested by AIEE seems to be gaining support.

Texas has developed a speakers bureau to supply speakers on request to non-engineering as well as engineering groups (chapter meetings, engineers week, service clubs, etc.) Speakers are not necessarily members or even engineers. A file is maintained, cataloged by subjects and by speakers. The original basis of this file was obtained by circularizing members but it has been supplemented from other sources.

The importance of having national directors attend local general meetings and local board meetings as well as national meetings so as to more ably perform their duties as liaison between the state societies and the national society was emphasized.

Total annual dues (national, state and local) run from a minimum of $25 (Louisiana) to $35 (many states) with the great majority being between $32 and $35. Some of these allow two payments per year.

———o———

NEW BRIDGE DISCUSSED

Construction of a multimillion dollar four-lane high level fixed bridge over the Missssippi river-Gulf outlet was the subject of a Washington conference at the office of Sen. Allen J. Ellender.

Congress has authorized construction of a "suitable" bridge which would carry Paris rd. traffic over the tidewater channel.

The fixed bridge could be built for an estimated $12 million. According to Army engineers, a movable-type bridge would cost about $70 million.

A spokesman for Sen. Ellender said after the meeting recently that its purpose was to work out an agreement with Army engineers pertaining to the high-level-type bridge.

Attending with Ellender were Sen. Russell B. Long, Rep. F. Edward Hebert and Rep. Hale Boggs; Ray W. Burgess, director of the Louisiana highway department; Anthony G. DeVoney, Jr., a member of the highway board from New Orleans; W. J. Amoss and Col. William Lewis of the Dock Board in New Orleans, and Calvin Watts, Louisiana department of public works.

State, Local Agencies And The Consultant

The Sewerage & Water Board of New Orleans has gone on record favoring the employment of Louisiana engineers in private practice to assist various city and state agencies engineering staffs when the volume of work becomes excessive.

This was announced by Arthur C. Waters, president pro tem of the Board in a letter to Alvin M. Fromherz, chairman of the Functional Section Committee of the National Society of Professional Engineers and the Louisiana Engineering Society.

Last month, Gerald J. Gallinghouse, Orleans levee board president, told a joint meeting of the Louisiana Engineering Society and the Louisiana Post, Society of American Military Engineers that state and local agencies should utilize the services of Louisiana professional engineers rather than go out of state for those services.

Fromherz has been actively seeking endorsement of such policies from various state and local boards which engage consulting engineers in private practice in Louisiana. On June 29, he appeared before the Board of the State Department of Highways in Baton Rouge. He has also consulted with officials of the Board of Commissioners, Port of New Orleans..

Concern over professional ethics in the field of engineering prompted Lake Charles engineers to undertake the organization of a special group to watchdog violations.

Regulations for membership are being drawn up by a Lake Charles group, at the request of Alvin M. Fromherz. Members of the group include: C. W. Stokes, Cities Service Refining Corp.; Steve Rice, Platt & Rice, consulting engineers; Ernest Levingston, Augenstein Construction Co.; R. M. Primeaux, M. Mohns Thornton and G. L. Wedemeyer, all of Chennault AFB; Bailey C. Vincent, State Department of Highways and Lake Charles LES Section president; Elmer E. Shutts, F. Shutts & Sons, consulting engineers, and J. B. Shipp, J. B. Shipp & Associates, Consulting engineers.

"It is vital," said Fromherz, "to Louisiana to develop the technical abilities of our young men and women because they may be greatly needed in future emergencies, and there is no better place to do that than to have them work in the various staffs of consulting engineers who teach them to design various types of projects, to be unfettered by orthodox methods, and to live by their talents and nimble wits rather than seek less difficult positions."

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Looking Backward

Petroleum 'Engineering' In 1861

The following article on the oil well drilling techniques of the last century should prove of particular interest to Louisiana Petroleum Engineers. The pioneer oilmen who followed Colonel Edwin L. Drake into the oil fields around Titusville, Penn. lacked even the basic knowledge of drilling techniques, but were goaded on by visions of the riches to be gleaned from the "black gold." Their primitive methods often proved more costly than rewarding, and when contrasted with the efficient methods of today shows the advances made in one phase of the petroleum industry over the past hundred years.

The article is abstracted from "The American Petroleum Industry" (pp. 94-100), by Harold F. Williamson and Arnold R. Daum with research associates Ralph L. Andreano, Gilbert C. Klose and Paul A. Weinstein and published by Northwestern University Press, 1959.

While most of the United States was feeling the impact of Civil War a war of a different sort was being fought in Western Pennsylvania. It was a war waged by man against the earth itself. The prize of battle was oil.

Man was ill-equipped for battle during the early years. Drilling techniques were of the most primitive sort, and in many instances manuel power was depended upon. Among the several methods of manuel power used, "jigging it down" was probably the most common. A small wooden platform was attached to the side of the derrick with a connection to the pole, from which the cable and tools were suspended. Two men would step on the outer side of the platform to obtain the downward stroke of the drill, and would then trod on the derrick side to bring the beam back into normal position. A third man guided the drill to make a round hole.

Another method, known as "kicking it down," was faster. Stirrups were arranged near the fulcrum of a 10 or 15-foot pole. Two men each placed a foot in a stirrup, and by kicking outward and downawrd forced the pole to plunge downward and spring back. It is said that experienced kickers could produce two strokes in one minute.

Horses were primarily used for draying oil, but occasionally would supply the drilling power following a similar plan used with early threshing machines. The horses walked around the center and over a horizontal tumbling shaft that supplied the perpendicular motion to the drilling bit.

Other methods, such as water power, were occasionally used to power the drilling, but often more laborious techniques had to be employed. Though steam engines were available, they were scarce and expensive and were usually reserved for the all-important job of pumping.

As techniques improved, rope was often substituted as the cable from which the drilling tools were suspended, but many men still relied on the "chain-gang" system of chain cables, despite the excessive weight, poorer flexibility, and the ear-shattering clanging heard a half-mile away.

Tool strings seldom weighing more than 150 pounds were the lightest in the history of petroleum drilling. At the bottom of the string was the steel center bit, about 3½ feet long, with a shaft 1½ inches in diameter that flared into a cutting edge about 3 inches wide. The threaded top end of the bit screwed into the auger stem, a device that permitted the driller to manipulate the cable so that each stroke of the bit would fall across the preceding cut.

Because the center bit usually became blunt after drilling 2 feet, it would be interchanged with a larger and blunter reamer, a process that usually required at least two laborious withdrawals of the entire tool string. Accumulated rock and water often remained after reaming, and two added toolstring withdrawals would be necessary to lower and raise a copper sand pump about 6 feet long and 1½ inches in diameter. Sometimes pumping had to be followed by another reaming operation before reinserting a sharpened center bit with which to continue drilling.

Immediately above the interchangeable bits and reamers was the auger stem, a shaft 20 feet long and heavy enough to supply striking force to the percussion drilling. The "jars," two looped irons that gave a play of at least a foot to each drilling stroke, were attached to the auger stem. They reduced the breakage of the heavy tool string and supplied leverage for jarring loose tools stuck in the hole. At the top of the tool string was a rope socket with a metal clamp which attached the string to the cable.

Early drilling operations and costs were highly uncertain and variable. Flooded holes, lost tools, cave-ins, crooked holes and broken strings were just many of the X-factors involved, and few of them were ever considered by the novice driller. If reasonably favorable conditions prevailed, contemporary estimates indicate that to drill to the usual depths of 200 feet might cost $1,000 to $1,200 and more. However, the need to go to greater depths raised many drilling outlays to $2,000 and more.

Though drilling costs were high, they generally comprised the least expensive and variable part of production costs. The pioneer method of drilling wells, considering their shallow depth, undoubtedly contributed to the highest production costs in relation to pay-off periods in the history of petroleum. The ratio of producing wells was no higher than one in twenty, and much drilling on unproved territory abnormally inflated exploration and development costs.

The low yields of pumping wells in a period of high transportation costs, the inexperience of operators, the inadequacy of techniques, and the soaring land values all contributed to the prolonged pay-out periods.

Though the drilling techniques were primitive and uncertain, more time and expense usually was incurred in testing and proving a well than in drilling it. It was even difficult to determine at what depth to test a well. A show of oil in the mud brought up by the sand pump or a showing of gas that made the mud bubble was construed by early operators to be a favorable sign, though some also recognized that good wells had come in without these showings.

Registration Law Report:

Asks Further Law Change Ideas

The Registration Law Committee of LES plans to meet in September to review as many suggestions on amendment to the state's engineering law as it can obtain with a view to getting the broadest thinking possible, according to Waldemar S. Nelson, chairman.

"The basic intent of such changes is reinforcing the state law for the protection of the public through higher standards in engineering," said Nelson.

"In September, we'll begin a thorough review of all these recommendations. Subsequent meetings will be given to developing a definite program based on these recommendations. We are most anxious to obtain the fullest possible cooperation from all interested parties."

The committee has had discussions and correspondence with Louisiana architects, industrial engineers, naval architects and marine engineers.

Wayne Stoffle, New Orleans architect and chairman of the Engineering Liaison Committee of the Louisiana Architects Association stressed the mutual interests of architects and engineers in promoting improved professional practices in recommending changes to the basic Louisiana statute which affects both architects and engineers.

Louisiana representatives of the American Institute of Industrial Engineers told the committee that Louisiana is one of only eight states that do not presently register industrial engineers and that 38 colleges and institutions of higher learning give degrees in Industrial Engineering accredited by Engineers Council for Professional Development (ECPD). Approximately 200 industrial engineeds are employed by Louisiana industry.

The committee was told by Arthur Darden, New Orleans Naval Architect, that there is no provision in Louisiana for registering naval architects and marine engineers although this has become a most important practice in the state.

In noting Darden's comment, Nelson said, "We feel this is a strong point for registration of naval architects and marine engineers. This summer a merchant vessel was placed in commission after being designed by Louisiana naval architects and marine engineers, built in a Louisiana shipyard and operated by a Louisiana shipping firm. This is the first of a series of such vessels in a multi-million dollar program.

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BASIC REQUIREMENTS FOR A PROFESSIONAL ENGINEER

Those who would practice professitonal engineering should strive to have:

I. The ability to render satisfactory technical service which includes:
   - A. An understanding of the forces of nature.
   - B. A knowledge of materials.
   - C. Ability to apply the knowledge of forces and materials to the anailysis of engineering problems.
   - D. Efforts to preserve and extend the knowledge of forces and materials.
   - E. Familiarity with engineering machines, structures, processes and products.
   - F. Ability to analyze the financial economic aspects of engineering projects.
   - G. Facility in the presentation of engineering information orally or in written form.

II. The ability to cooperate with other men and to organize or direct their efforts which includes:
   - A. A readiness and ability to perform assigned tasks as problems of labor.
   - B. Familiarity with the principles of management.
   - C. Compliance with accepted code of professional ethics.
   - D. An understanding of and an interest in the sociological member of a staff or organization.

III. A serious desire to play an appropriate part in the management of our social organism and in government:
   - A. By becoming informed regarding movements for social betterment and participating actively in them, especially with regard to the social problems presented by the industrial life of a community.
   - B. By assuming the formal duties of citizenship such as voting, performing jury service and accepting appointments of public office.
   - C. By cooperating with other engineers and public officials in promoting wise management in the engineering phases of government.
   - D. By the promotion of a serious attitude toward law and law enforcement.

IV. Normality as an individual which may be promoted by:
   - A. A training that will result in reasonably secure professional conections.
   - B. Employment in a field that is stimulating and in harmony with individual aptitudes.
   - C. The acquisition of a taste for esthetic participation and relaxation.
   - D. Conformity with recognized standards of speech, etiquette, dress and personal habits.
   - E. A sensible policy in personal finances.
   - F. Proper orientation with reference to religion and reasonable participation in social service.
   - G. A normal family life.

IOWA STATE BOARD OF ENGINEERING EXAMINERS, 1961.

New Orleans Firm Awarded Missile Recovery Contract

Effective July 1, 1961, Underwater Services, Inc., became responsible, under a subcontract with Pan American World Airways' Guided Missiles Range Division, for locating and recovering components of missiles which impact in Cape Canaveral, Florida's offshore waters.

Under the subcontract announced by James R. Taylor, Contract Administration Manager for Pan American, this responsibility is a part of Pan American's overall missile support obligations under its prime contract to the Air Force Missile Test Center at Patrick Air Force Base for the planning, engineering, operation and maintenance of the Atlantic Missile Range.

Underwater Services will operate three "T-Boats," 65-foot steel hull diesel-powered boats and perform pre-launch Range clearance work as well as post-launch recovery.

It is their responsibility to warn any marine craft located within launch danger zones during missile test operations.

Underwater Services employs a total staff of 27 for the missile recovery work who will work in waters up to 150 feet deep. The company will also be responsible for routine repair and maintenance of all equipment furnished them. Pan Am's one-year contract with Underwater Services expires June 30, 1962.

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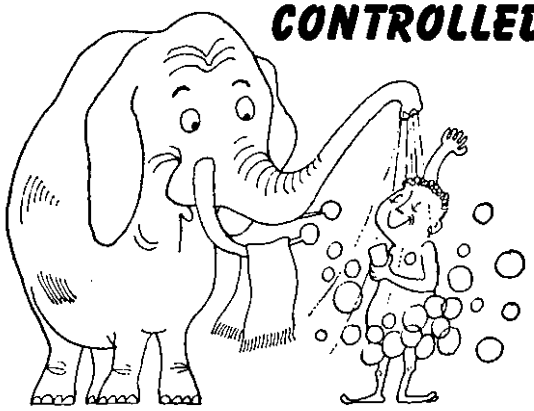

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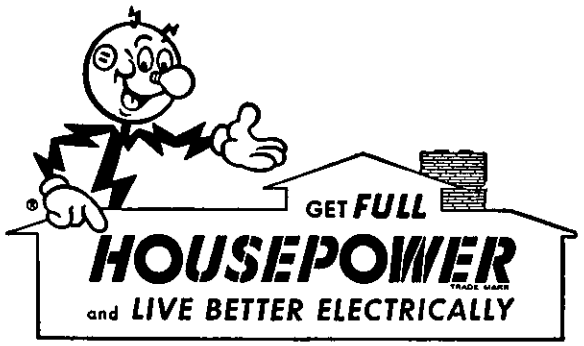

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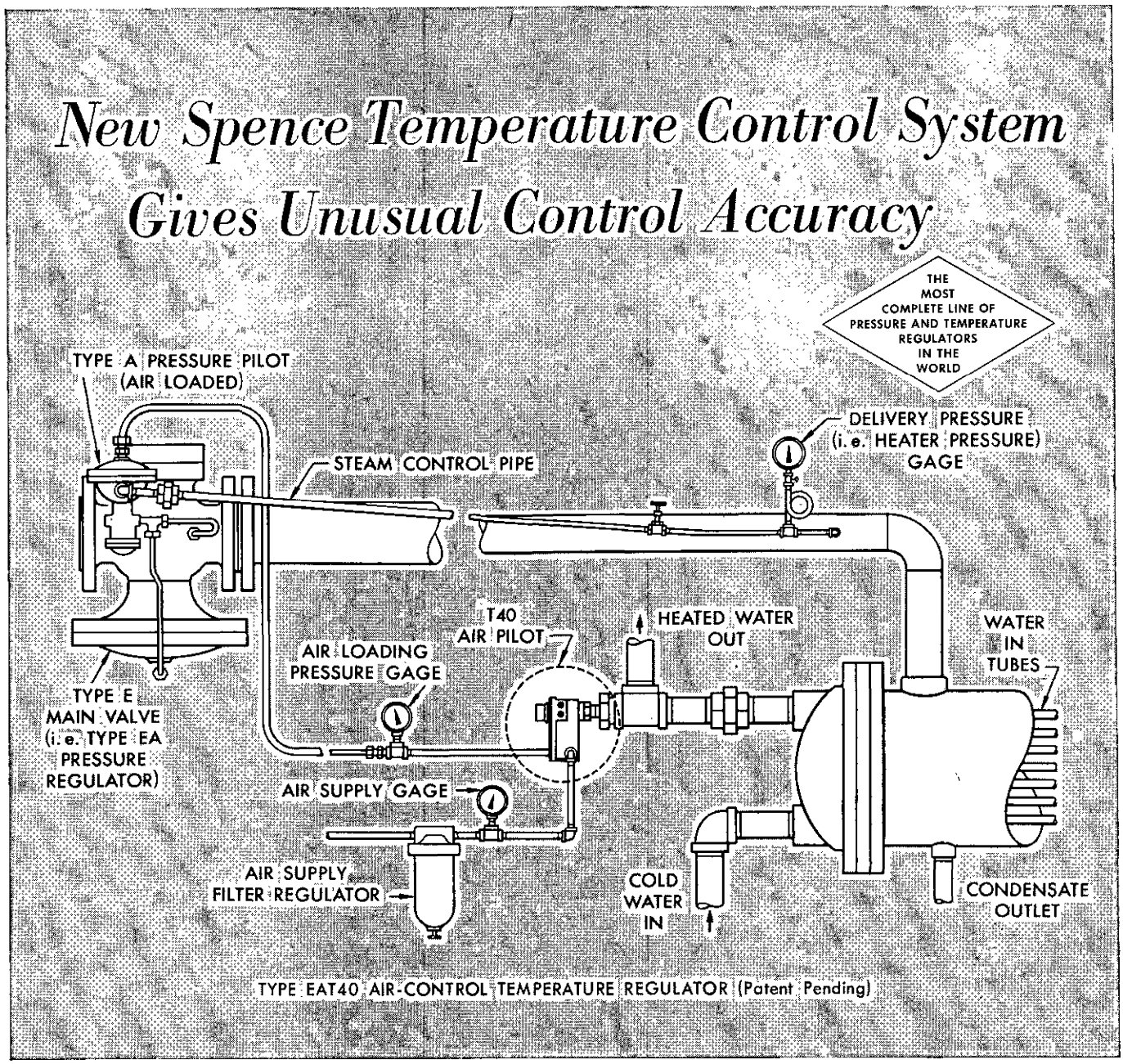
VALVE TIPS:

New Spence Temperature Control System Gives Unusual Control Accuracy



In a recent installation the new Spence air-control temperature regulating system provided:

- ±5°F control accuracy under wide and instantaneous load swings of 210 to 80 gallons per minute.
- Up to 50% reduction in cost as compared to instrument systems of similar accuracy.

This unique cascade-type control with throttling range adjustment independent of maximum heater pressure was developed to meet today's demand for greater control accuracy.

Additional features of the new Spence Temperature Control System include:

- 200°F wide adjustable temperature range
- Adjustable speed of steam pressure change
- Over and under temperature protection
- Pressure limit control
- Fast response
- Very low air consumption
- Field reversible for heating or cooling

The Spence Type EAT Air Control Temperature System, when properly installed, will tame wide ranging, fast changing loads of instantaneous heaters and modern heat exchangers. The cascade principle plus the use of an extremely fast responding bi-metal temperature sensing element reduce time lags and provide control stability.

Here's how the new Spence system operates:

Quick response is based on a bi-metal temperature sensing element.

Temperature pilot continuously regulates a loading air pressure.

This loading signal, when applied to a pressure regulator to reflect heater temperatures, causes it to adjust the main valve as changes in load require.

Spence has also developed a new pressure control system based on this same cascade principle. This system has a control accuracy of ½ psi or better from positive pressures through the vacuum range to 30" Hg.

For complete information on these new air controlled temperature and pressure control systems, write for your copy of Bulletin 9.

SPENCE ENGINEERING COMPANY, INC.
Walden 1, New York

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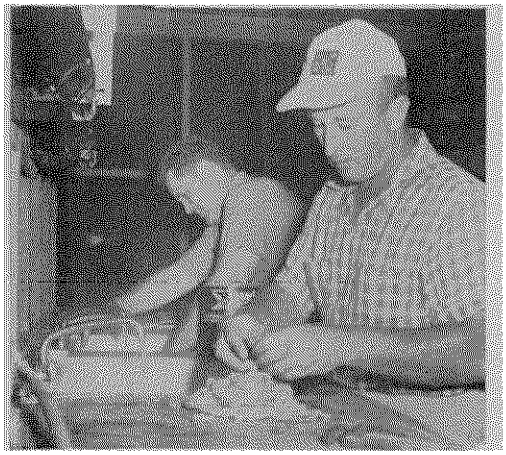
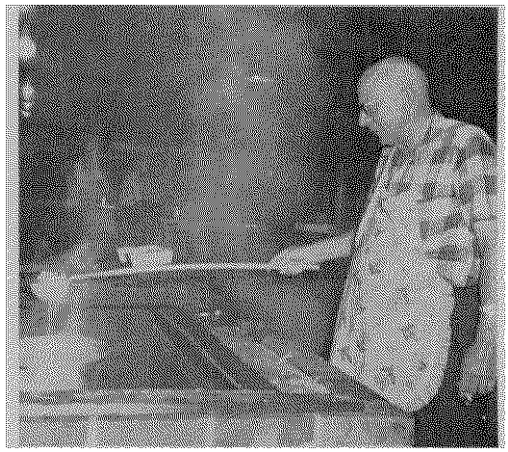


The Lake Charles Section of LES had their annual fellowship meeting and shrimp boil at the Cities Service Park near the city on July 10. 1961.

The picture at right shows (left to right) George Walther and J. B. Chesson, members of the arrangement committee, washing shrimp. The picture at left shows Bailey Vincent, President of the Lake Charles Section, removing shrimp from the boiling kettle.



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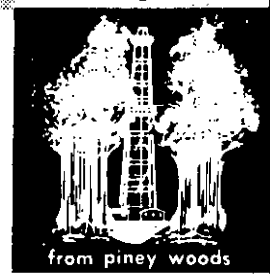

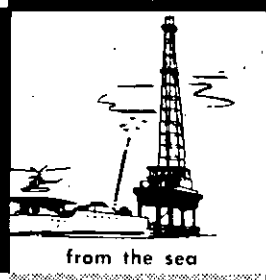

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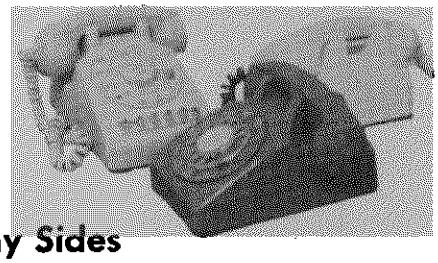

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Products News:

A 13-ton oil transfer centrifugal pump driven by a Waukesha Model LRZU standard oil field power unit has been installed by Reagan Equipment Co. of New Orleans atop an oil production gathering structure in oil-productive Bay Marchand offshore in the Gulf of Mexico.

Designed for long life and heavy duty, the pump is notable for reduction of vibration (vs. reciprocating power pumps), self-cooling features and vapor-tight ignition. The unit is mounted on a specially designed skid of galvanized steel which prevents contamination of surrounding waters by waste, in conformity with State Conservation Department regulations.

The pump used in this package is a United Centrifugal 4-inch BFDHHH-B-4-stage heavy duty oil field type horizontal pump. When operating at the selected designed speed of 3025 rpms, it will deliver 35,000 barrels per day of crude oil, having a specific gravity of 0.85 and a viscosity of 170 ssu, at the 400 psig. Features of the pump include a heavy steel case, 113 chrome impellers, 410 chrome hardened rotating wearing parts and ductile ni-resist stationary wearing parts.

Prime mover is a Waukesha Model LRZU standard oil field power unit running at 1100 rpms. The 312-hp 6-cylinder engine has a 9⅜" bore x 8½" stroke and 3520 cubic-inch displacement.

———o———

Gurtler, Hebert & Company, Inc., Tuesday night was presented an industrial safety award for development of an outstanding industrial safety program during the past two years, resulting in a reduced accident rate.

The award was presented jointly by Delta Safety Society and the New Orleans chapter of the American Society of Safety Engineers at a dinner in Commander's Palace restaurant.

Making the presentation were Stanley V. Asbury, Delta president, and Henry E. White, immediate past chairman of the safety engineers society. Receiving the award on behalf of employes and management was Martin M. Gurtler II, president of the general contracting firm.

A speaker at the event was Arthur J. Naquin, chairman of the industrial committee of the safety engineers society. Emerson W. Simmons Jr., safety councillor of the Gurtler, Hebert Company, was toastmaster.

———o———

Owesson & Co., featuring electrical supplies and equipment, and Moer Services, Inc., designers, manufacturers and repair specialists are available for service seven days a week around the clock.

Owesson & Co. has a complete line of electrical supplies and maintains a stock of marine wire and portable cord in all sizes. The company features all electrical equipment for multiple fields including the marine and oil industry, for AC and DC motors, controls, fixtures, floodlights and telephones.

Moer Service, Inc., specializes in motor rewinding, designing, manufacturing and installation of electrical equipment.

———o———

An automated North Star dry ice plant was installed recently in Cameron by Equitable Equipment Co., Inc., with a 60-ton per day capacity and space for additional 30-ton icemaking machine, raising the total to 90 tons per day.

A 200-ton storage capacity and 30-ton per hour loading capacity make it a real boon for the fishing fleets of Cameron.

The plant was engineered by Equitable Equipment Co., Inc., of New Orleans, whose know how and 40 years of experience in the field qualify them as experts.

A marvel of automation, the plant requires only one man in attendance, yet boats can be loaded at the rate of 30 tons of ice per hour.

A main feature of the North Star flake ice is the fact that it can be stored under refrigeration without losing its friability. The ice is produced in perfectly dry flakes at zero to ten degrees, and the flakes stay separate in refrigerated storage.

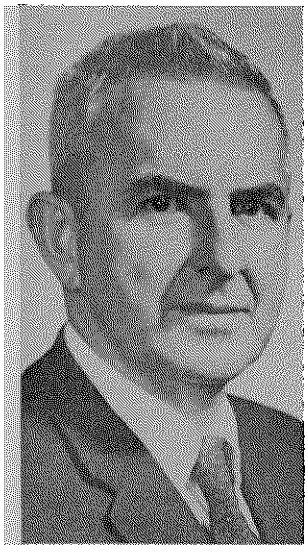
The ice makers are actually huge cylinders with chilled water flowing over and freezing to the inner walls, from which it is scraped by a continuously rotating blade to fall as perfectly dry flakes into one of the two storage bins on the ground floor. Deflectors direct it to either bin.

Equitable's veteran refrigeration engineers can also take care of your refrigeration and air conditioning problems.

The refrigerating equipment for the ice makers is housed in a bright, spacious and immaculately clean engine room. The ammonia system, using Vilter equipment, for which Equitable is also distributor, includes two vertical multiple 8-cylinder Vilter compressors with 100 hp, 1200 rpm direct Westinghouse motors and two Vilter evaporative condensers.

———o———

The Badger Manufacturing Co. announces that Mr. George B. McGuire has recently joined its organization as Vice-President and Construction Manager for all its foreign and domestic construction operations. Prior to joining Badger, Mr. McGuire was Assistant Director of Esso Research & Engineering Co. In his 24 years with Esso he served in a number of engineering and construction management positions. These were world-wide, involving multimillion dollar oil refinery and petrochemical plants. He is a civil engineering graduate of Rutgers University. Mrs. McGuire (BS in Commerce-LSU) is the former Elizabeth S. Gilford of Tallulah and Baton Rouge.



MR. McGUIRE

———o———

From mops to industrial vacuums, Malter Supply Company, Inc., an expert in the janitorial supply field, carries an inventory of over 1700 different items.

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Teaching Our Future Engineers

By W. LEIGHTON COLLINS

Before projecting ahead take a good look at where we are now. First of all, the world in which we live and the things in it are changing rapidly. We hear about population explosions, exhaustion of raw materials, a 20 fold increase in generation of electrical energy in the next 10 years, etc. We are reducing scientific truths to machines, processes, methods, materials, etc. which are useful in our daily lives at ever increasing speeds; the curve is exponential! Some do predict a plateau, but where it no one knows. But man and human nature change more slowly.

An appraisal of the present requires that we consider the labor force. It is estimated that in the U. S. in the next ten years it will increase 18%. But production must increase by 50% in the same length of time if we are to maintain our standard of living. The gap, I am sure, will not be closed by longer working hours. Rather it means that each man must have more and better tools, more power at his command; he must produce more in a given time with the same or less effort. This is what now is called automation. It is not new and is something we must have more of if there is to be a better way of life for the underprivileged millions in the world. We should not fear it even though there will be changes in manpower and engineering needs as it develops. Our history indicates that the large scale employment has come because of machines and not in spite of them; abundance is the consequence and not the cause.

All of this means that the engineer will have to play an ever increasing key rote in all our developments. It means that his horizons must be broadened, that his vision be extended, that he must have a greater social consciousness, that he must have a versatility undreamed of in the past and that with increasing urgency he must strive to make man's efforts wise and humane and purposeful. In terms of an engineer's education it means he has to look forward to a lifetime of learning. The experience in nuclear energy since World War II and in electronics are sign posts, and space technology is another. Obsolescence of the engineer will become an increasing problem. I have heard it said that even now it can come in a period of less than ten years if the engineer isn't willing to learn new developments, new processes, new methods. The engineer and the scientist will continue to work close together to reduce the time lag between the scientific discovery and the ultimate use of the knowledge in the useful and successful functioning of a machine or process, etc.

Now let's take a close look at recent developments in engineering education. In 1955 ASEE published its "Report on the Evaluation of Engineering Education," emphasizing the great need for a stronger foundation in the basic sciences of chemistry, physics, and mathematics and an increased emphasis on the engineering sciences, mechanics of solids, mechanics of fluids, transfer and rate processes, thermodynamics, electrical sciences, and nature and properties of materials. It is reasonable to say that almost every engineering curriculum in the United States has changed since then. Some have changed more than others and some perhaps so much so that one must question if the graduates really are engineers. Raising the question casts no reflection on the programs; they may be excellent, but may be producing scientists and not engineers. Also, it might become necessary for colleges of engineering to educate scientists if our colleges of arts and sciences do not or are incapable of giving the rigorous education demanded.

The Evaluation Report also reemphasized the need for a significant amount of the humanities and social sciences in engineering curricula. Progress is being made here, perhaps not as great as in the more scientific approach, but improvements have been made as evidenced by ASEE's follow-up of the 1956 report, "General Education in Engineering." Now what is coming to the fore? It is the real ingredient of engineering, that item that distinguishes engineering from other professions—engineering design. This doesn't mean a reversal of the swing of the pendulum; it merely means that still another important phase of engineering education is being studied to make certain of the proper approach and to be sure the student is getting the best that can be given. It also means that the ability of the engineering student to apply his knowledge is not being overlooked. And then when this is straightened out and an appropriate emphasis on a fluency in foreign languages is considered, all corners of engineering education will have been housecleaned.

The ASEE study made a few years ago indicated a need for 1,000 new engineering teachers each year for the years through 1970. The greatest source of new teachers, of course, is the crop of new doctorates. Perhaps this has been overemphasized in some places, but basically the idea has been sound. The number of Ph. D's. however, must be shared with industry, the governmental laboratories, and the armed services. As a result, only some 20% go into teaching. That means that about 600 teachers per year must come from other sources or the positions go unfilled. And when one realizes that one large employer of engineers a few years ago said his company looked forward to the employment of 1,000 Ph. D's. per year, you can imagine the seriousness of the problem. It thus becomes apparent that the supply of qualified teachers for the years ahead is engineering education's most serious problem. That is why ASEE is promoting graduate work among the upper 25% of senior classes and why ASEE encourages part-time teaching for graduate students, particularly those seeking the Ph. D. degree.

Where will the 600 extra teachers per year come from? That is difficult to answer, but one source is industry. Really from industry in two ways; one, by having quali-

fied young men transfer from industry to teaching, and two, by industry recognizing that it's future lies in making certain that the colleges of engineering are adequately staffed. This means industry must encourage the able students to continue in **resident** graduate study and not entice them away from the university by saying they should get their graduate work while on the job at the company's expense, or some similar plan.

Getting men with adequate education and experience in planning, evaluation, design, supervision, etc. into teaching will not be easy. The colleges, of course, will have to be competitive in what they have to offer; this isn't a one-way street.

If all of these ideas now are related to curricula one envisages programs strong in the basic and engineering sciences, strong in engineering design, and with a good humanistic-social core. Some wonder if the strength in the sciences and design are competitive or incompatable because the designer probably doesn't have the strong research urge and is more interested in the complex decisions involving the daily problems of life, health, property, public welfare, utility, and economy. If so, perhaps we ultimately will have two types of curricula, or colleges of engineering emphasizing two types of programs. Don't ask what this would do to the accreditation problem or to state licensing, for my answer will have to be to cross that bridge when we get there. Don't believe that this is just an academic problem. The Graduate Studies Division of ASEE recently adopted a resolution which will be distributed to the deans of engineering encouraging them to consider the establishment of different programs and different graduate degrees for those who primarily are interested in design rather than in research and development.

And while considering the problem of accreditation and licensing still another problem might arise. Most of our engineering schools now are organized along the traditional lines of C. E., M. E., E. E., etc. A few like UCLA, grant only degrees in engineering, and others, like Johns Hopkins, are combining aeronautical, civil, and mechanical engineering into a single department of mechanics. How much more of this will come? I believe quite a little. There is much more need for interdisciplinary programs and activities than years ago, and, actually, if one could forget the past he today probably would divide engineering into entirely different categories than we now have—perhaps only into areas such as communications, energy, and materials.

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If we just consider materials, for example, we get a good example of a problem the future must solve. The engineer works with all kinds of materials—metals, ceramics, plastics, soils, etc., and as a group they form the bottleneck of almost everything the engineer wants to do today. What should be taught in the undergraduate engineering program and who should teach it? The metallurgist, the ceramist, the physicist, the chemist, etc., all make contributions to the areas of knowledge pertaining to materials.

Memorials

HARRY PAUL NEWTON

It is with profound sorrow that we record the death on May 20, 1961, of our highly esteemed friend and fellow member, Brigadier General (Retired) Harry Paul Newton.

Harry was born in Iredell, Texas, on March 10, 1896. He received the A.B. degree in 1918 and the M.A. degree in 1919 from Baylor University. During 1920 he taught at Baylor and during 1920 to 1924 at Georgetown College, Kentucky. Industrial experience included several years as Chemist with College Inn Food Products Co. during 1925 to 1927. In 1927 he joined the Bureau of Chemistry and Soils, U. S. Department of Agriculture as Associate Chemist, and on January 16, 1939, became Assistant to the Director of the Southern Regional Research Laboratory in New Orleans. Except for his military service in World War II, from October 1942 to November 1945, he continued in this position until July 1951, when he became Special Consultant to the Director, Utilization Research, ARS, USDA, and Liaison Officer with the Department of Defense at Fort Detrick, Frederick, Md.

In World War I he was a coast artillery officer; in World War II he commanded anti-airfraft artillery forces at Utah Beach, Cherbourg, St. Lo, Paris, Meuse River, and Remagen. He won special recognition at Remagen for his command of the anti-aircraft guns which successfully defended the bridgehead from the frantic efforts of the enemy to retake it. Recognition for his wartime services included such honors as the Bronze Star, Legion of Merit, Purple Heart, and the Croix de Guerre with palm. He was buried on May 24, 1961, in Arlington Cemetery with full military honors.

He was active in professional and social organizations; serving as general chairman of the 1946 and 1947 annual meetings of the American Oil Chemists' Society; Chairman of the Louisiana Section of the American Chemical Society in 1947; President of the Federal Business Men's Association in 1942; and President of the Louisiana Engineering Society in 1951. He was active in several New Orleans Carnival organizations.

Harry lived a very full life and his activities and interests were many and varied. He achieved success as a scientist and a research administrator and as an officer in the U. S. Army, and will be especially remembered for his friendliness and service to those about him.

Gen. Newton retired in 1956 and moved to DeBary, Florida. Harry took with him into retirement the same

enthusiasm and drive which characterized his professional and military careers.

Since his retirement, Gen Newton was President of the DeBary Chamber of Commerce, a member of the West Volusia Hospital Authority, and a member of the DeBary Planning Board. He was active in raising funds and in planning for a new building for the First Presbyterian Church in DeBary. His hobbies were bowling, golf, stamp collecting, woodworking, bridge, and gardening.

He is survived by his widow, Mrs. Mildred Newton (affectionately known as "Peggy"); his mother, Mrs. Della Newton of Sherman, Texas; and a brother, Clyde, of Dallas, Texas.

WHEREAS the members of the Louisiana Engineering Society feel a deep sense of loss in the passing of this highly respected and esteemed member whose cheerful services and valuable advice have contributed markedly to the advancement of the Society,

BE IT THEREFORE RESOLVED that the membership of the Louisiana Engineering Society express hereby its gratitude for the meritorious services of Harry Paul Newton and its deep sense of loss in the passing of this good friend and fellow member; that these resolutions become a part of the Minutes of the Louisiana Engineering Society; be published in the Louisiana Engineer; and that a copy be sent to Mrs. Mildred Newton, his widow; to Mrs. Della Newton, his mother; and to Mr. Clyde Newton, his brother.

Respectfully submitted,
E. FRED POLLARD,
RALPH M. PERSELL,
EDWARD A. GASTROCK,
Chairman.

—o—

NORMAN HUNTER ROSS

With sincere regret the Louisiana Engineering Society hereby records the passing of one of its long-time members, Norman Hunter Ross, who departed from our midst on May 20, 1961, at the age of 66.

Norman was a native New Orleanian, educated here and pursued most of his career in this city. He attended the old Boys' High School of New Orleans and studied Naval Architecture at Loyola University.

He was employed in 1917 by Jahncke Dry Dock & Shipbuilding Company, and the following year joined the firm of Ole K. Olsen & Company, with whom he remained through the years in positions of increasing responsibility and was associated as Partner and Secretary at the time of his death.

In addition to his membership in the Louisiana Engineering Society and the Engineers' Club of New Orleans, he was a member of Kiwanis International and was active in Boy Scout work. He was also affiliated with the Grand Consistory of Louisiana, A&ASRM, Jerusalem Temple, AAONMS, and Level Lodge No. 373, F&AM.

Be it resolved, that the Louisiana Engineering Society hereby express its sorrow and regret at the loss of its esteemed member, Norman Hunter Ross.

Be it further resolved, that this memorial be placed in the permanent records of the society and that copies be forwarded to the family of the deceased.

ROBERT ALLEN BANCK

With the passing of Robert Allen Banck on July 29, 1961, the Louisiana Engineering Society has lost an outstanding member, and many of us, individually, have lost a fine friend.

Bob was born in Milwaukee, April 18, 1915. He attended the Unviersity of Illinois, graduating with BSME degree in 1939, and entered the employ of Bigelow-Liptak, Detorit, in June of 1939 as an engineering draftsman. He rose quite rapidly in this firm, becoming their Chief Engineer at the age of 32. Early in 1953 he came to New Orleans as District Manager of the Riley Stoker Corporation. His father had been an engineer before him, having been educated in Gothenburg, Sweden, and was for some years Chief Engineer of the Springfield Boiler Co.

Bob and his wife, son, Robbie and daughter, Karen found New Orleans to their liking, with sailing on Lake Pontchartrain so convenient. He had become quite proficient at this hobby, and, in fact, the whole family enjoyed the sport. Bridge was his other hobby. Bob's genial disposition and thoughtfulness resulted in many close friends, and he will be very much missed by them. Besides his membership in the Louisiana Engineering Society, he was a member of the National Society of Professional Engineers, the Engineers Club of New Orleans, the American Society of Mechanical Engineers, and the Southern Yacht Club. He was a licensed professional engineer in the States of Michigan and Louisiana.

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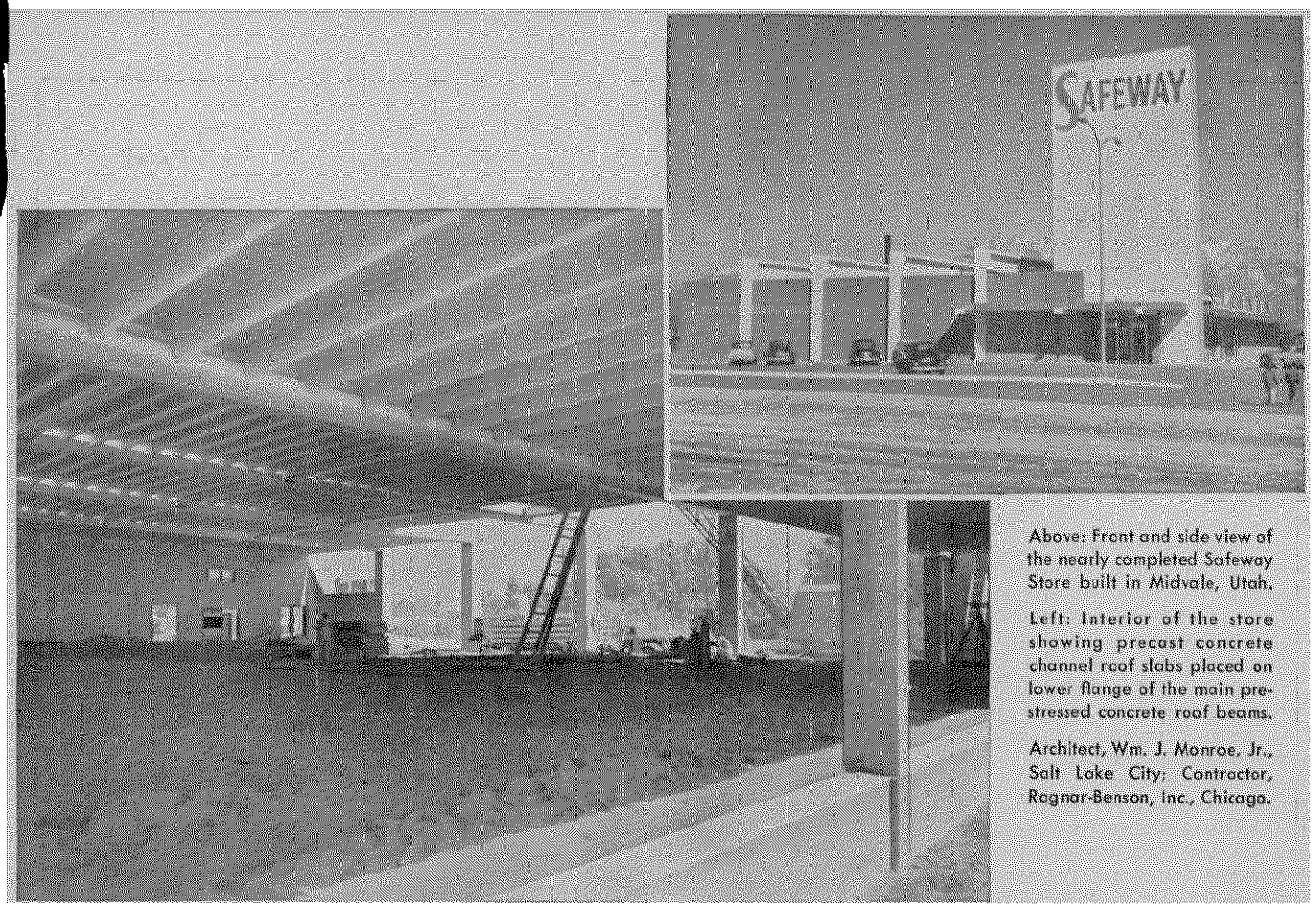

Above: Front and side view of the nearly completed Safeway Store built in Midvale, Utah.

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.

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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.

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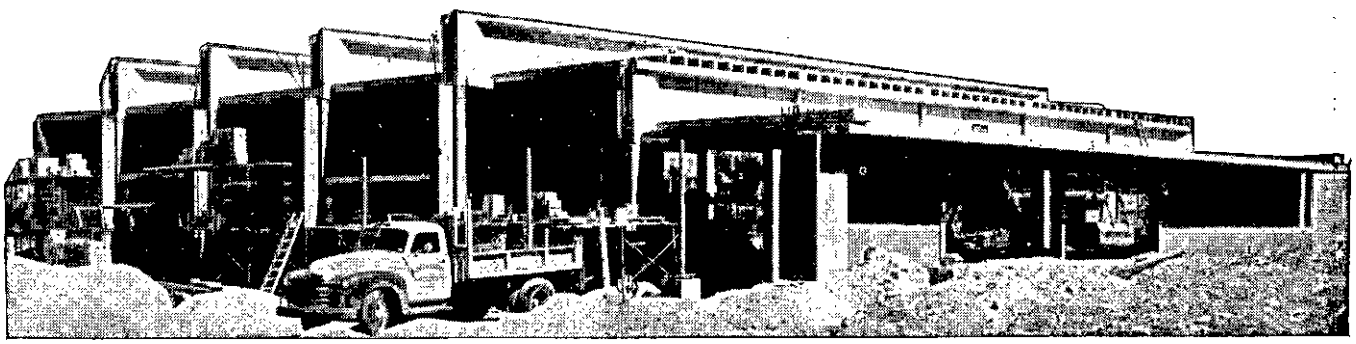

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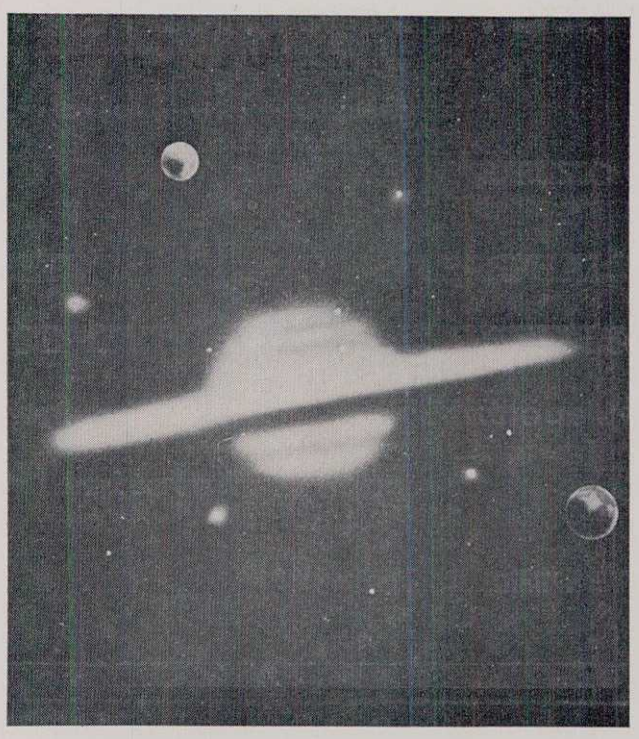

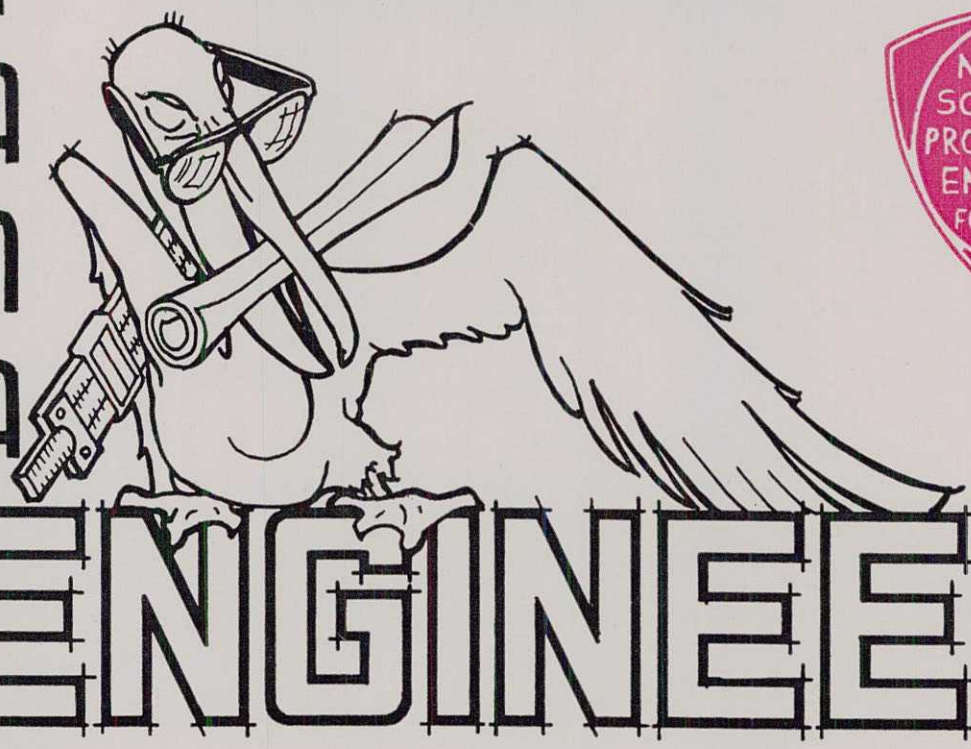

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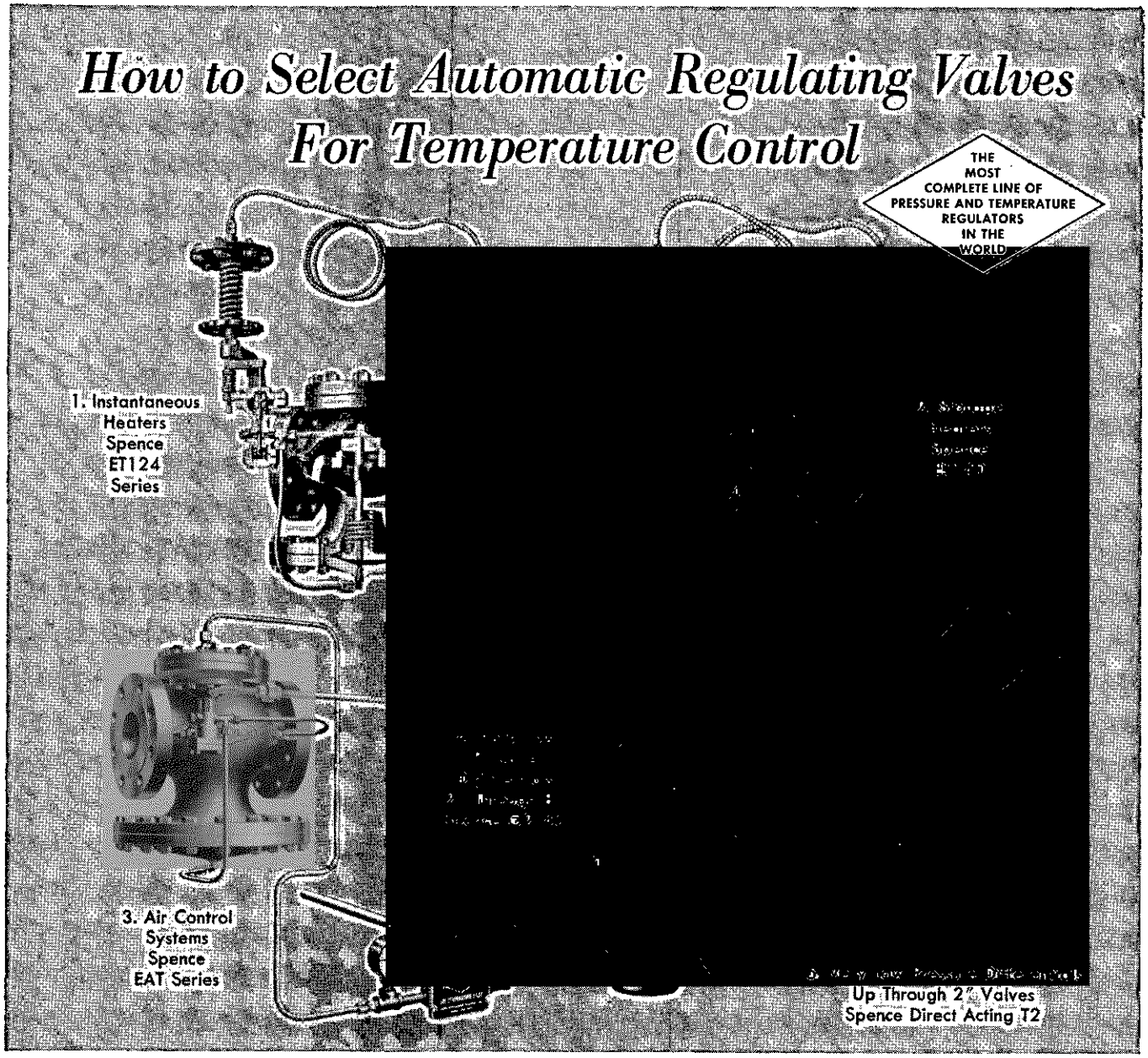
Vol. 47 No. 5
October, 1961

VALVE TIPS:

How to Select Automatic Regulating Valves For Temperature Control



During the past year, our field representatives have reported many cases of improperly, and uneconomically, applied temperature regulators. To help you avoid some of these costly mistakes, here are a few tips on selecting the most effective and economical temperature regulating valves for your applications.

1. Instantaneous heaters require a special action for close temperature control and freedom from hunting. In the Spence ET124 series, steam pressure is modulated according to temperature (demand) and is automatically regulated at any pressure established by the demand.
2. Storage heaters, on the other hand, are more economically controlled by the Spence ET14D, which includes a simple temperature-actuated pilot that opens and closes the main valve to maintain a constant temperature.
3. Air control systems can now have a ±5°F control accuracy under wide and instantaneous load swings with the Spence EAT regulator. Engineers report savings of up to 50% in installed costs with this recently developed Spence cascade system when it has been used in place of conventional instrumentation.
4. For the combination of very low pressure differentials and air or water control, Spence recommends Type G2T40. This single seated valve provides fast, positive response in 2" through 8" valves. Double seat Type G22 is also available in 10" through 12".
5. When very low pressure differential is encountered with valves of 2" or less, the Spence direct operated T2 is recommended. The sensitive vapor tension thermostat responds quickly to small changes in bulb temperature for continuous, accurate control.

In this brief description of industrial process and heating temperature control, we have given a few important tips in proper regulator selection. If you would like more detailed information on these control applications, write for the new Spence Temperature Control Bulletin IV 1014. SE-150

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THE LOUISIANA ENGINEER

Vol. 47 October, 1961 No. 5

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The LOUISIANA ENGINEER is the official publication of the Louisiana Engineering Society and of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors and is published in February, April, June, August, October and December. Subscription $2.00 per annum; single copy 50 cents.

Second class mailing privileges authorized at New Orleans, Louisiana. Acceptance for mailing at special rate of postage provided for in Section 1105, Act of October 3, 1917, authorized August 1, 1918.

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OUR COVER: The planet *"Saturn"* for which the rocket booster that will send a man to the moon is named. The Saturn will be fabricated and assembled at Michoud, 15 miles east of New Orleans.

The National Society of Professional Engineers told a Senate Education Subcommittee that "the real problem facing the nation with respect to engineering manpower lies at two poles—the need to expand and stimulate graduate education, and the need to encourage and support technician education programs." Testifying on behalf of the 56,000 member engineering organization, Paul H. Robbins, executive director, said the Administration's proposed undergraduate scholarship program places the emphasis in the wrong area.

"We believe," he said, "that the primary concern of the Federal Government should be with improving the quality of our college students, not their quantity. In other words, it is our opinion that the greatest need lies in the field of postgraduate education and fellowships, rather than in undergraduate scholarships."

Robbins told the Subcommittee that an improvement in quality can be assured through expanded opportunities for postgraduate education. "Only after quality is adequate should the Government concern itself with the quantity of our college and university students." The National Society's spokesman explained that an extensive undergraduate scholarship financing program would place the emphasis on the need for more students, at a time when enrollments in U. S. colleges and universities are at an all time high and are growing rapidly.

Engineer Attitudes

In a recent survey titled, "A New Look at Engineer Attitudes", less than 60% of the engineers questioned felt the flow of technical information was sufficient. The study concludes that technical men are still discontented with their lot in industry. More than one-quarter of the respondents were not satisfied with current jobs. Though there is a natural reluctance to make job changes, 80% felt that changing jobs brought better professional opportunities and better salaries. Inadequate recognition for contributions to the company were among the strongest reactions from engineers. Copies of the report are available from Industrial Relations News, 230 West 31st Street ,New York 36, N. Y. at a cost of $3.50.

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Minutes Of The Board, LES

Minutes of Meeting of the Board of Direction
Held on Monday, August 8, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Demopulos, Domingue, Janssen, Macdonald, Larue, Latimer, McLellan, Rountree, Watts and Fernandez present. Messrs. A. M. Fromherz, Allen Johnson and M. J. Marchese also were present by invitation.

The secretary reported an error in the minutes of the board's last meeting wherein the names of members resigned and dropped were transposed. The minutes then were accepted as corrected.

President Bogard read correspondence between himself and U. S. Senator Russell Long concerning H. R. #10, a bill to permit self-employed individuals to annually deduct a portion of their income set aside for retirement purposes. This legislation is favored by the society inasmuch as many of its members are self-employed.

Dr. Macdonald, National Director, reported on the NSPE Annual Meeting held in Seattle July 4-7, 1961 and outlined a plan to admit to N. S. P. E. membership unregistered persons who are members of approved national engineering societies. This plan is to be voted upon at the fall meeting, and national directors were asked to determine their state organization's reaction to same. Mr. Latimer moved that the LES Board of Direction go on record as opposed to admitting non-registered persons to NSPE membership. Motion seconded by Mr. Rountree and carried.

Mr. Larue moved that, in the event NSPE adopts the proposed plan, the LES national director should request that serious consideration be given to the designation of membership grade for such persons, and recommend that **Associate** or **Affiliate** be used to designate the non-registered grade rather than **Member** as suggested in the proposed plan. Motion seconded by Mr. McLellan and carried.

Mr. Alvin Fromherz, Chairman, Functional Section for Engineers in Private Practice, reported on his committee's activities, stating that the N. O. Sewerage & Water Board, Orleans Levee Board and La. Department of Highways had been contacted on the subject of engaging Louisiana consulting firms for their engineering projects. He also advised that the Baton Rouge group under the leadership of Col. J. Lester White were preparing a minimum fee schedule, and the Lake Charles group were preparing a revised Constitution and Bylaws for Functional Sections, both to be submitted to the board for approval before the end of the year. The board thanked Mr. Fromherz for his efforts.

The Treasurer presented a semi-annual report and pointed out that the society was in slightly better financial position than at the same time last year; he cautioned, however, that expenditures must be carefully watched as usual.

Col. J. T. Knight, Jr., Chairman of the Ethical Practices Committee, read comments from Messrs. W. H. Scales and Wood Brown on the proposed revision of Article X of the constitution. After much discussion Col. Knight was requested to submit a final draft of the article incorporating the ideas presented by Messrs. Scales and Brown and the board's discussion.

Mr. Latimer presented his committee's report on the advisability of increasing Affiliate membership dues, and President Bogard requested the committee to study and recommend an amount for such increase at the next board meeting.

Mr. Watts reported on the Public Relations and Publication programs and advised that Allen Johnson and Associates had agreed to accept commissions on advertising contracts as collections are received and not in advance as heretofore required; also that National advertising commissions would be 30% for the first year and 25% thereafter instead of a straight 30%.

Discussion followed on a resolution passed by the board on July 11, 1960, recommending establishment of additional Engineering Aide grades in the State Civil Service system, in order to adequately compensate employees who are not eligible for Professional Engineer ratings. The president appointed Mr. Watts to investigate and recommend action to be taken to follow up this resolution.

Messrs. M. C. Abrahm and J. F. Vogt, Jr. were appointed to prepare a memorial resolution for the late Robert A. Banck.

Upon motions duly made and seconded, the resignation of Wm. F. Lytle (Baton Rouge) was accepted with regret and Messrs. Chester R. Best and Burris D. Wood, Baton Rouge, were dropped in accordance with their requests. The meeting then adjourned.

J. P. FERNANDEZ
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Minutes of Meeting of the Board of Direction
held at the Engineers' Club, New Orleans
September 19, 1961

The meeting was called to order by President Bogard with Messrs. Demopulos, Latimer, McLellan, McNamara, Rountree, Vincent and Fernandez in attendance. Messrs. A. M. Fromherz, Allen Johnson, J. T. Knight, Jr. and Frank Walk also were present by invitation. Minutes of the board of meeting of August 8 were accepted as read by the secretary and distributed with the meeting notice.

President Bogard reported that the State Board of Registration had required about possible follow-up action on the LES Board of Direction's resolution adopted in July 1960 recommending establishment of Engineer Aide grades V and VI in the State Civil Service System. Mr. Watts, appointed at the August meeting to handle this assignment, had arranged tentatively a meeting of Mr. McDougal, Director of the State Civil Service Commission, with the State Board of Registration for Professional Engineers & Land Surveyors, for September 19, but this tentative meeting date had been postponed to October 6. Because the outcome of this meeting may greatly affect both the State Board of Regisrtation and the Registration Law for Engineers, he requested that an L.E.S. representative attend this meeting.

Mr. McLellan reviewed his committee's proposed program for the initial Presidents' Conference to be held on January 13, 1962. It was the consensus of opinion among those present that four officers from each section should be invited to attend and that the name of the conference should be changed to "State Officers' Conference". It was also suggested to include in the agenda a discussion of the duties of section presidents and plans for future conferences, which Mr. McLellan agreed to do.

Colonel Knight presented a revied draft of Article X of the society's constitution, and stated his committee's recommendation that its name be changed to Ethics & Professional Conduct Committee and that it consist of two members from each section and three members from New Orleans ,with section members appointed for two-year terms and New Orleans members for three year terms each and all appointments to be staggered. Mr. McLellan moved that the committee's recommendations be approved by the Board and that the constitutional amendment be submitted to the membership. Motion seconded by Mr. Rountree and carried.

Colonel Knight then presented his committee's recommendations on the Gorsha-Daigre ethical practice case, explaining its findings and submitting the ommicial file to the secretary. Mr. Latimer moved that the committee's recommendations on the Ethical Practice case be accepted and carried out, i.e., that both parties be notified by President Bogard of the committee's findings. Motion seconded by Mr. McNamara and carried.

Reporting for the Special Committee on Proposed Dues Increase, Mr. Latimer moved that the following dues schedule be approved by the board and submitted to the membership:

Local Members	$25.00
State Members	25.00
Local Affiliate Members	14.00
State Affiliate Members	14.00
Junior Members	8.00
Non-Resident Members or Affiliates	5.00
Non-Resident Juniors	3.00
Student Members	1.00
Members who did not elect to become NSPE members at the time of affiliation	
Local Members	12.00
State Members	12.00

The motion was seconded by Mr. Demopulos and carried.

The Secretary reported on the forthcoming Technical Manpower Conference,stating that the committee had decided on topics for the four panel discussions dealing with effective recruitment, training and utilization of engineers and scientists. He also explained about the luncheon, dinner, general interest program and the budget for same.

Messrs. Fromherz and Walk discussed activities of the Functional Section for Engineers in Private Practice and advised the board of action taken at their committee meeting held that afternoon. At the request of the Functional Section Chairman, President Bogard appointed a committee consisting of Messrs. Janssen, McLellan, Bogard and Fernandez to delineate the duties and responsibilities of the Functional Section for Engineers in Private Practice.

Mr. Rountree reported that, because adverse comment had been received on the Alexandria Section's endorsement of a controversial bond issue, the following resolution had been adopted by the Alexandria Section:

"Be It Resolved, that the Alexandria Section of LES refrain from publicly endorsing any matters of civic nature unless such matters directly affect the engineering profession; and then only after the written approval of the Board of Direction of the State Society."

The Board commended the Alexandria Section fo rits action, after which Mr. Rountree moved that the resolution be called to the attention of the other state sections. The motion was seconded by Mr. Vincent and carried.

A report from Mr. Roy Sessums, Chairman of the Honors & Awards Committee, was read wherein it was reported that no recommendations for medal candidates had been received and further instructions were requested. Mr. McLellan moved that the committee be instructed not to make further effort to seek candidates for the society's honors. Motion seconded by Mr. McNamara and carried.

A report submitted by Mr. Henry G. Buse, LES Representative on the Greater New Orleans Code Committee, was read. The subject matter of the report concerned the proposed licensing of air-conditioning technicians.

Discussion followed on whether the board should submit the names of candidates for NSPE offices .Mr. Latimer moved that the secretary inquire whether Mr. Roy T. Sessums would serve if elected to the Regional Vice-Presidency of NSPE. Motion seconded by Mr. McLellan and carried.

Mr. Allen Johnson presented his monthly Public Relations Report.

During the discussion it was stated that the Mayor of New Orleans was planning to appoint Mr. Janssen to head a committee of representatives of technical organizations to assist NASA in establishing their Saturn Missle Booster Plant at Michoud. Those present were of the opinion that Mr. Janssen should accept this chairmanship if it is forthcoming.

Mr. Rountree moved that Messrs. Marvin T. Bond (Hong Kong) and Z. L. Loflin (Lafayette) be reinstated to the grade of Member. Motion seconded by Mr. Vincent and carried.

A letter from Mr. Donald Boudreaux was read in which he requested that the society sponsor a seminar on Fallout Shelter Design similar to the Engineering-Law seminar held last year. The secretary was instructed to advise Mr. Boudreaux that, due to the heavy schedule already planned, including the Manpower Utilization Conference, Annual Meeting and State Officers' Conference, his suggestion could not be taken up this year; however, it would be brought to the attention of the 1962 Technical Papers Chairman.

The secretary reported that word had been received of the death of Professor B. W. Pegues, Honorary Member, and of Messrs. S. A. Theard, Life Member, and Virgil S. Garnett, Member.

With the approval of the Board, President Bogard appointed Messrs. E. A. McLellan, Chairman, F. W. Macdonald, W. S. Nelson and R. M. Seago to constitute the Nominating Committee for 1962 officers.

A draft of a circular to be used in the membership drive was distributed and board members were requested to submit their suggestions for the improvement of same, after which the meeting adjourned.

J. P. FERNANDEZ, Secretary-Treasurer

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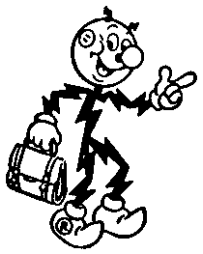

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LES Starts Countdown at Michoud

The Louisiana Engineering Society, at the invitation of New Orleans Mayor Victor H. Schiro, is serving on a special committee established to serve as the area's liaison with the National Aeronautics and Space Administration (NASA) and prime contractors submitting bids at the new Saturn Missile Base at Michoud. James S. Janssen, first vice-president of LES, was chosen to lead the efforts for LES.

Michoud was selected for the site of the $50 million plant by NASA for the fabrication of the first stage (S-1) of the Saturn vehicle and large booster.

The Saturn rocket is the largest space vehicle under development in the United States. It will be capable of sending payloads of several tons into earth orbit, to the moon and into deep space. A main purpose of Saturn is manned space exploration leading to lunar landings of men and equipment within this decade.

The Saturn development program is under the direction of the NASA George C. Marshall Space Flight Center, Huntsville, Ala., headed by Dr. Wernher von Braun. Hundreds of industrial contractors and suppliers are participating.

Several versions of the rocket are planned, each one more powerful and a logical follow-up to its predecessor. The initial experimental flight of the booster with inert upper stages will occur late in 1961. Saturn uses conventional chemical propellants in upper stages. Later Saturns may use nuclear propulsion in some upper stages, for which initial design studies are now underway.

Saturn is expected to be the major heavy vehicle for U.S. space exploration for a number of years. It is the first large rocket developed specifically for scientific space programs and manned spaceflight. Earlier space achievements have been accomplished mainly with basically military rockets.

Following are descriptions of the Saturn stages.

S-I: The Saturn first stage or booster, called, S-I, is powered by a cluster of eight Rocketdyne H-1 engines, each of which will ultimately produce 188,000 pounds of thrust to give a total of 1,500,000 pounds of 32,000,000 horsepower.

The H-1 engine, an advanced and compact offspring of the Jupiter and Thor engine, was selected because of its relative simplicity, early availability, and proven reliability. It burns RP-1 (kerosene) fuel and liquid oxygen. Major changes incorporated in the H-1 include a simplified start sequence using a solid propellant gas generator, and location of the turbopump on the thrust chamber, below the gimbal block, so that the flexible propellant feed lines to the engine need only carry low pressure propellant.

The eight H-1 engines are attached to an eight-legged thrust frame on the aft end of the vehicle and arranged in two square patterns. The four inner, or inboard, engines are rigidly attached and canted at a three degree angle to the long axis of the booster. The outer, or outboard, engines are canted at an angle of 6 degrees and mounted on gimbals which permit them to be turned through angles of about 10 degrees to provide control of the vehicle during first stage powered flight.

Nine separate tanks feed the eight H-1 engines.

Clustered in a circle about a large center tank of 105 inches in diameter are eight small tanks, each 70 inches in diameter. The center tank and four outer ones contain liquid oxygen, while the remaining four outer tanks carry the kerosene fuel. The fuel containers are pressurized by gaseous nitrogen carried in 48 fiberglass spheres atop the tanks, and the liquid oxygen containers are pressurized by gaseous oxygen obtained by passing liquid oxygen through heat exchangers that are part of each engine package.

The fuel as well as the liquid oxygen tanks are interconnected at the base to allow the maintenance of equal levels in all tanks during burning. In case one engine malfunctions and is cut off during flight, this arrangement permits the remaining seven engines to consume the fuel and oxygen intended for the dead engine. In this manner, the burning time of the seven remaining engines is increased and there is essentially no loss in overall booster performance.

The nine propellant tanks are attached at the top by an eight-legged spider beam.

The S-I, under development at the George C. Marshall Space Flight Center, will be constructed at Michoud. It has been successfully static fired some 20 times, including full duration runs of more than 120 seconds.

S-II: The S-II will be the second stage of the Saturn C-2 rocket. NASA is now in the process of selecting a prime contractor for the stage. It will be the largest rocket to be built totally within the U.S. industry.

The S-II will be powered by four J-2 liquid hydrogen-liquid oxygen engines, each developing 200,000 pounds of thrust. The J-2 is under development for NASA by the Rocketdyne Division of North American Aviation.

The powerful new S-II will increase Saturn's earth orbital capability to about 45,000 pounds, as compared with 20,000 for the C-1.

S-IV: The S-IV, which is the second stage of the C-1 vehicle, and the third stage in the C-2 vehicle, will be powered by six 15,000 pound thrust Pratt and Whitney liquid hydrogen-liquid oxygen engines, known as the RL-10.

The S-IV is 18 feet in diameter and about 40 feet in length. It is now under contract for design and manufacture by the Douglas Aircraft Company in Santa Monica, Calif.

Development of the S-IV includes the interstage structure which provides space for the six engines and transmits the load from the upper part of the rocket to the support points on the stage beneath. This structure will remain with the lower stage upon separation in flight.

The mid-portion of the S-IV is primarily an aluminum cylindrical container composed of the aft liquid-oxygen tank and the larger forward liquid-hydrogen tank separated by a single insulated bulkhead.

Attached to the cylindrical section are small rockets to

be used in separation of the S-IV from the stage beneath. At the forward end of the cylindrical container is the structural assembly or forward adapter which will provide support for a spacecraft or S-V stage. Retrorockets for separation of the S-IV and S-V are mounted on this adapter.

S-V: The S-V, which will be the third stage for certain later C-1 flights and the fourth stage for some C-2 flights, will be a Centaur modified for use on Saturn. This stage uses two RL-10 engines of the type employed in the S-IV.

The basic pressurized stainless steel structure of Centaur will be used as well as most of the basic components developed by General Dynamics—Astronautics Division at San Diego for the Atlas-Centaur. One exception is the fact that skin thickness must be increased to accommodate the heavier payloads of the Saturn vehicle. The S-V is 10 feet in diameter and 29 feet tall.

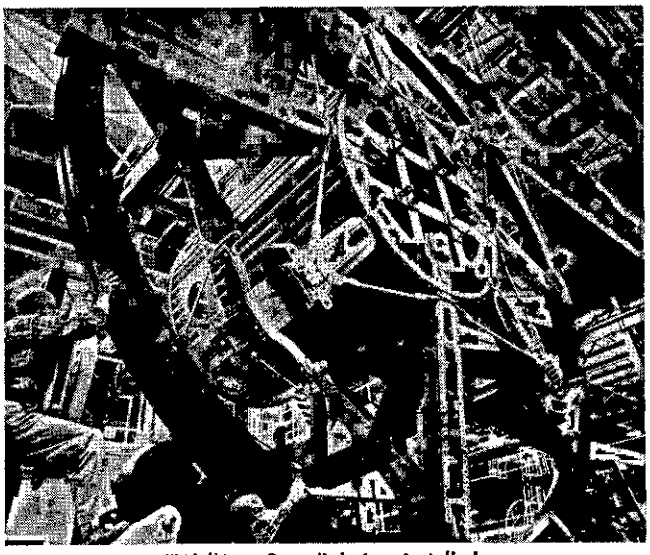
S-V modification design studies are presently being conducted by General Dynamics.

The initial Saturn guidance and control system will be primarily an adaptation of Jupiter system components to meet Saturn requirements. One significant departure will be the addition of rate gyros as sensing elements. Structural bending of the large and relatively flexible Saturn requires the consideration of rate gyros for stabilization.

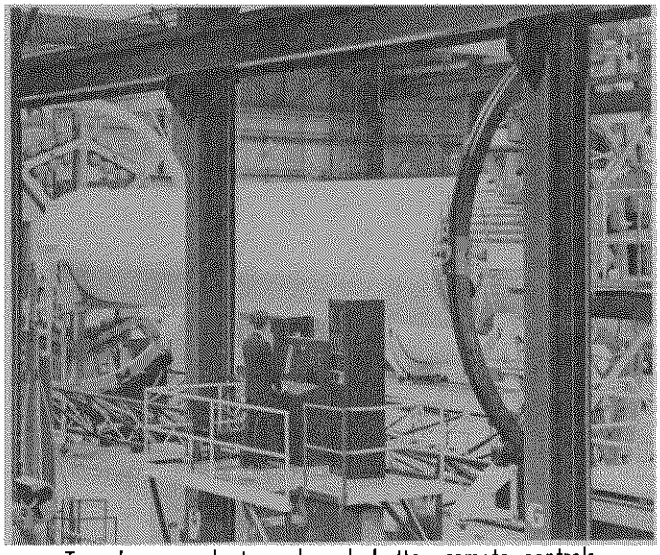
Saturn will use all-inertial guidance. More advanced hardware will be introduced into the system as the guidance missions become more demanding. Object of the guidance scheme is to provide a universal system that is capable of performing a variety of mission requirements placed on the vehicle to meet payload objectives. This universal guidance concept will allow a variety of requirements with a minimum of changes.

Heart of the final guidance scheme is a high-speed digital computer incorporating advanced techniques of design and packaging and capable of meeting Saturn's high reliability standards and difficult missions in terms of programming.

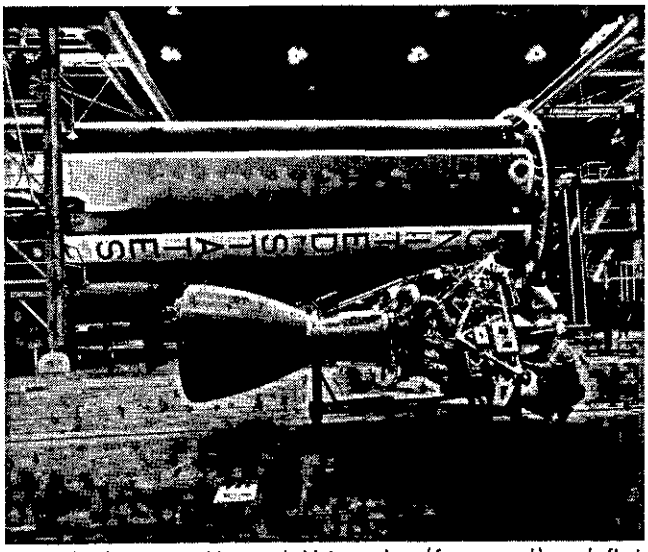
In particular reference to S-1, the guidance system will automatically give corrective signals necessary to compensate for deviations resulting from loss of thrust should one of the eight H-1 engines fail to perform properly.



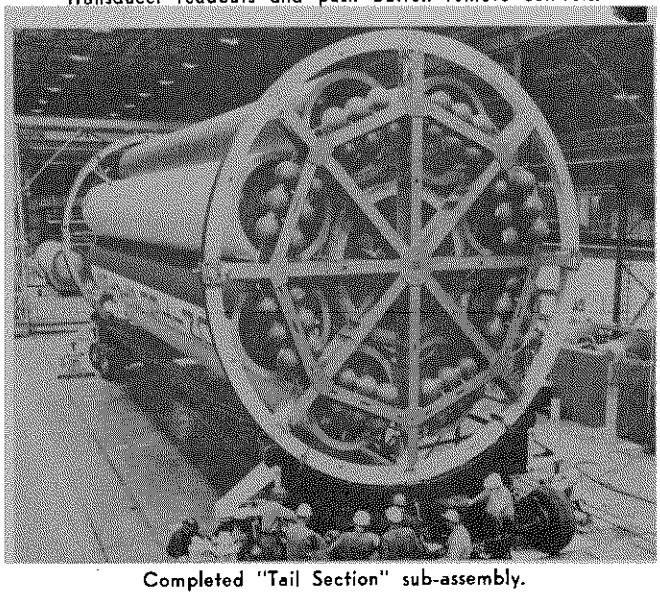
"Walking Gears" being installed.



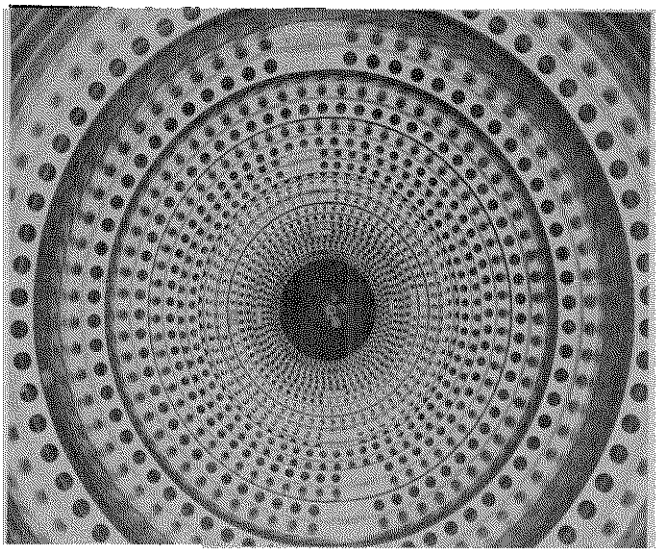
Transducer readouts and push button remote controls.



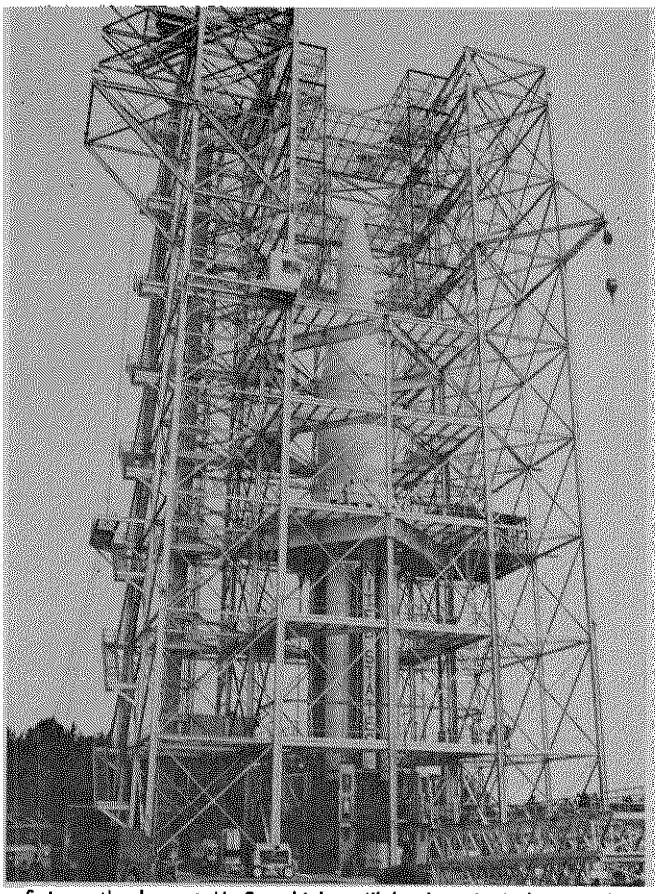
A Rocketdyne 188,000-pound H-1 engine (foreground) and first-stage booster of the Saturn launch vehicle.



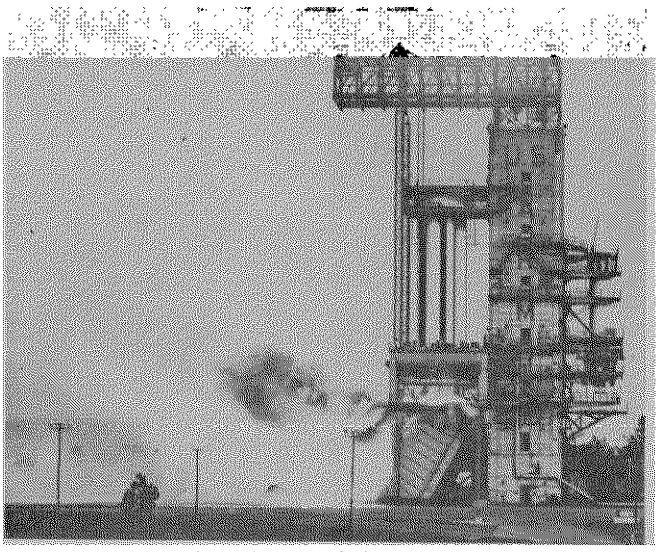
Completed "Tail Section" sub-assembly.



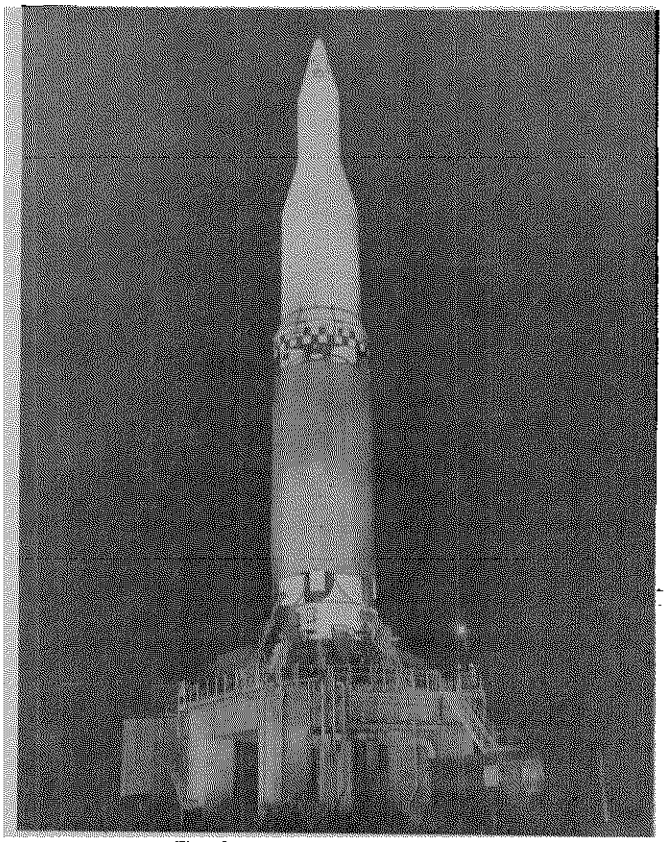
Inside view of one of outer Lox tanks shows tank partly assembled.



Saturn, the largest U. S. vehicle, will be launched this month.



A static test of the Saturn.



The Saturn on its launching pad.

Dr. George N. Constan, Director, Saturn Missile Plant, Michoud, La.

Dr. Wernher von Braun, Director, George C. Marshall Space Flight Center.

Meetings— Field Notes
By Allen Johnson

Tom Ruffin, LES Shreveport section president, sends in this account from the Shreveport Times:

"A man walked into the meeting of the American Society of Mechanical Engineers Tuesday night in the Petroleum Club, paid his registration fee, and met several of the members. He chatted for a while, then sat down to dinner. After the meal, when the engineers' program was well under way, he raised his hand and was recognized by the chairman. "Mr. Chairman," he said with a red face, "I think I've made a mistake. I was supposed to be at a meeting of the Touchdown Club."

"It seems the footballers were meeting across the hall in the same building. All this might not have been so bad, but after he left for his original meeting, it was learned that he won the door prize at the ASME gathering!"

Tom may recall another football problem arising in connection with the Alexandria State Planning Conference at the Hotel Bentley over a year ago. LES members finished their day's meetings, then tossed and turned in the wee hours as members of the state high school football coaches association bumptiously ran through plays in the corridors.

How Lousiana's engineers are cooperating with National Aeronautics & Space Administration officials in Huntsville, Ala. and at the Saturn rocket booster plant was told by James S. Janssen, first vice-president of the Louisiana Engineering Society at a meeting of the state group's Board of Direction meeting at the Engineers Club at 6:30 p.m. October 9.

Ben T. Bogard, Ruston, society president and dean of engineering at Louisiana Tech, presided.

J. Bres Eustis, New Orleans, chairman of the society's publication committee, said the October proceedings of the society, issued jointly with the State Board of Registration of Professional Engineers and Land Surveyors, will contain technical data on new Michoud facility.

Technical speakers at the monthly meeting, starting at 8 p.m., were Messrs. John E. Pottharst, Jr., New Orleans, president, Mechanical Equipment Co., Inc., and Henry G. Lankenau, Atlanta, manager, Southern and Southwestern Sales Regions, Chicago Bridge and Iron Co.'s Process Division.

Mr. Pottharst, who holds a Mechanical Engineering degree from Tulane University, has been Chief Engineer for Peoples Utilities, Inc. for about 15 years. He served in World War II as a Navy engineer attached to the Bureau of Ships. His topic was "Self-Contained Sea Water Distilling Machines."

Lankenau spoke on "The Freeport Salt Water Conversion Plant." A Chemical Engineering graduate from the University of Alabama, he served with the Army engineer water supply units in North Africa during World War II. He has been associated with CB&I (formerly Conkey) Process Division since 1945.

Annual Outing A Success

NASA officials, fresh from a bid conference for the $50 million Saturn rocket booster plant at Michoud, joined the LES Annual Outing held at the Colonial Country Club, September 28.

George Nusloch, Olin Mathieson Chemical Corp. official, acted as emcee and regaled the group at the Annual Banquet with accounts about skunks, Kamikaze pilots and various and sundry Cajuns.

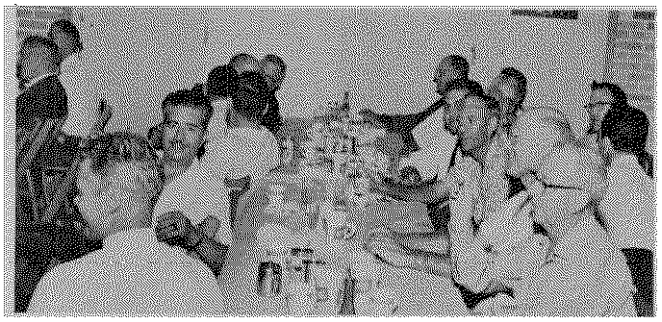
August H. Douglas, Jr., chairman, said there was a large turnout of 169 despite the inclement weather. He expressed his thanks to the members of his committee for the success of the Outing.

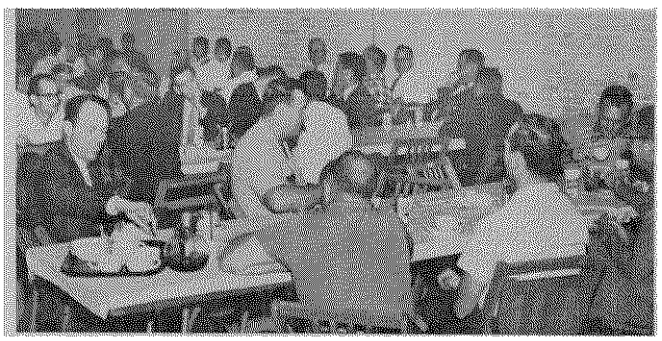
Committee chairmen for the Annual Outing were Russell Hall, vice chairman; Henry St. Paul, golf; Lawrence Bodet, horseshoes; Robert H. Boh, putting; C. Palmer Jones, putting; W. P. Musgrave and Frank Foster, prizes; Pierre J. Stouse, refreshments and banquet; J. Rogers Cox, tickets and publicity. Board sponsor for the Annual Outing was Mr. Edward A. McLellan.

Names of recipients in the order of prizes awarded are:

Frank Macdonald, silver tray donated by Dean Ben T. Bogard; Joe Riorta, Soney TR-620 transistor radio donated by Bedell & Nelson; W. A. Massimini, Salton H-120 Hotray donated by W. T. Hess; R. J. Prueding, golf cart donated by Woodward Wight; George Nuslock, golf bag donated by Pittsburgh Testing; Mo. Galvin, Argus Super 75 camera donated by Allan J. Harris Co.; Frank Macdonald, Soney TR-620 transistor radio donated by Williams-McWilliams; Owen McDonald, electric fry pan donated by New Orleans Public Service; Joe Montgomery, electric toaster donated by Gulf Engineering; J. E. Rebold, knife and scissors sharpener donated by Design Engineers; Grover Bayles, one dozen golf balls donated by Boh Bros. Construction Co.; Allen Betz, ice chest donated by Betz Engineering; Harvey Kellerman, one dozen golf balls donated by Orleans Materials; C. A. Bragg, portable mixer donated by Interstate Electric; A. J. Bartlett, whipper donated by Lighting Fixture; E. J. Carlson, blender donated by Louisiana Metal Culvert Co.; Vincent Massinini, golf cart donated by Dixie Machine; E. O. Cambon, one dozen golf balls donated by Crescent Blueprint; W. B. Reed, electric blanket donated by G. E. Apparatus Sales; Harold Morris, 19th hole putter donated by Fred Simonson, Inc.; George Davis, Ted Williams rod donated by Eustis Engineering Co.; R. E. Gautreaux, automatic coffee maker donated by Ayers Materials; Hoyt Brown, knife and scissors sharpener donated by Jahncke Service; Mike Ruck, gun case donated by Fromherz Engineers; Ray Maddux, Ansco camera donated by Flintkote Co.; Dr. Taylor, electric toaster donated by Haag & Trammell; C. M. Foreman, "My Buddy" tackle box donated by New Orleans Cement Products; A. I. Orey, Salton H-105 server donated by Standard Supply; Ray Maddux, Penn 109 reel donated by Eustis Engineering; Jim Gore, Penn 109 reel donated by R. P. Farnsworth; H. Martin, ice chest donated by Arthur C. Hays; Russ Hall, ice chest donated by Fisher Engineering; R. E. Gosa, Argus super 75 camera donated by McLellan Equipment; Jack Bartlett,

thermos jug donated by J. Ray McDermott; E. T. Carlson, golf club covers donated by Fred Simonson; Grover Bayles, one dozen golf balls donated by Arthur C. Hays; John Bailey, ice chest donated by E. G. Boh Forest Products; A. E. Haak, six golf balls donated by King & Co.; Paul Oswald, electric toaster donated by Lone Star Cement Co.; Ben Louriere, Salton H-105 server donated by Verlander Equipment Co.; P. T. Yesso, knife and scissors sharpener donated by J. Ray McDermott; C. D. Dittmer, Soney TR-814 transistor radio donated by J. Ray McDermott; George Becker, electric clock donated by C. W. Nussbaum Electric; Douglas Latimer, Spiffy thermos jug donated by Fromherz Engineers; Frank Johnson, Salton H-130 Hotray donated by A. M. Lockett Co.; Harold Deloney, Flowtroll bait bucket donated by Standard Supply; Joe Skinner, Keystone K-25 movie camera donated by New Orleans Blueprint Co.; Earl Dobbs, Spiffy thermos jug donated by J. Ray McDermott; Owen LeBlanc, ice chest donated by Orleans Materials; M. J. Galven, Salton H-105 server donated by Fisher Engineering; E. W. Olsen, Mitchell 306 reel donated by Freeport Sulphur Co.; J. L. Holloway, rod donated by Allis Chalmers; John Coles, large ice chest donated by R. E. Gosa; Norman Ford, Spiffy thermos jug donated by Prestressed Concrete Products; A. I. Orey, electric eraser donated by Chas. Bruning Co.; J. L. Rogers, rod and reel donated by Creole Engineering; Russ Hall, Salton H-120 Hotray donated by Southern States Equipment; A. W. Durning, knife and scissors sharpener donated by Shilstone Testing Lab.; C. Kelley, Jr., Spiffy thermos jug donated by American Creosote Works; Mike Ruck, automatic coffee maker donated by Edgar Murray Supply; Doug Smith, landing net donated by W. S. Dickey Clay Manufacturing Co.; W. H. Arbold, Universal battery shaver donated by Louisiana Gas Service Co.; R. J. Drueding, bathroom scales donated by J. Ray McDermott; J. M. Jalanak, fishing knife donated by Pittsburgh Testing Lab; John P. Fernandez, large ice box donated by Gandolfo, Kuhn, Walker; M. W. Lowell, Spiffy thermos jug donated by American Creosote Works; J. C. Pittman, transistor pocket radio donated by Prestressed Concrete Products; Sid Lewis, fishing knife donated by J. Ray McDermott; M. Deloney, landing net donated by Fromherz Engineers; Curtis Lunstrom, Norelco electric shaver donated by American Creosote Works; Harry LeBlanc, tackle box donated by New Orleans Cement Products; C. M. Foreman, Universal battery shaver donated by W. S. Dickey Clay Manufacturing Co.; H. J. Martin, aluminum glasses donated by Equitable Equipment Co.; C. G. Melville, fishing knife donated by Prestressed Concrete Products; F. K. Harrison, blender donated by J. Ray McDermott; F. E. Proux, Flowtroll bait bucket donated by New Orleans Cement Products; John Vogt, silver platter donated by Gabler Insulations; A. H. Douglas, barbeque tools donated by R. J. Tricon; and Charles Bragg, Universal battery shaver donated by Armco Drainage & Metal.





OUTING COMMITTEE includes (from left), Pierre Stouse, Russ Hall, August Douglas, Whit Musgrave, Frank Foster. Douglas holds President's Trophy, won by Dr. F. W. Macdonald.

George Nusloch, emcee, tells all about skunks, kamikaze pilots and various and sundry Cajuns.

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 will be made to answer quesitons 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. And any other questions our readers might wish to submit, pertaining to the Engineering Profession, will be welcomed by the Editorial Staff.

QUESTION—May an applicant for Louisiana registration as a Professional Engineer have access to books, tables and other aids during his examination?

ANSWER—Yes. The Louisiana Act states that any books, tables, calculating machines or other aids to which a practicing engineer would have access may be used by the applicant in the examination.

QUESTION—May the Louisiana Registration Board refuse to register an applicant who meets all qualifications having to do with education and experience?

ANSWER—Yes. The Louisiana Act states that an applicant must be of good character and reputation.

QUESTION—Is graduation in a college curriculum other than engineering allowed as credit toward registration as a Professional Engineer in Louisiana?

ANSWER—Yes. The Louisiana registration act states that graduation in a curriculum other than engineering from a college or university of recognized standing may be considered as equivalent to two years of experience.

QUESTION—Does the Louisiana Professional Engineering Registration Act allow credit for engineering teaching?

ANSWER—Yes. The Louisiana Act states that, in considering the qualifications of applicants, engineering teaching may be considered as engineering experience. Similar credits are allowed in the qualification of Registration Board Members.

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Ethics And Professional Conduct

BY JOHN RANDOLPH WHIPPLE
Member, LES Ethics and Professional Conduct Committee

The term ethics means many things to many people. Ethics has jokingly been described as applying in any situation not involving more than $15.00 in cash, American money. Others visualize ethics as a set of rules or informal laws of "do this" and "don't do that", with the corollary idea that anything not specifically covered may be done in the manner which seems best at the moment. Still a third group thinks of ethics as a way of life and an attitude in work calculated to ultimately earn the respect if not the friendship of acquaintances and the general public having knowledge of his work.

In the present-day practice of professional engineering in the United States, there is probably a proper place and a requirement for more than one degree or shade of attitude toward ethics and professional behavior.

We are all familiar with the rules illustrating proper professional behavior entitled "Canons of Ethics for Professional Engineers", which are published periodically in the state rosters of registered professional engineers and in the engineering society magazines. To the casual or careful reader these appear to be logical rules of proper behavior, precisely expressed, and readily applicable to any situation which might occur. This actually works out very well in practice as a guide for individuals who desire to do the right thing and who are not subject to an overwhelming pressure to deviate.

Difficulty can arise when one party undertakes a certain course of action which appears to comply with the letter of one or more of the rules included in the "Canons of Ethics" and seems to give advantage at the expense of one of his brother engineers. The other engineer, as an injured party, by diligent study, can usually make a fairly good case of violation of one or more different rules in the "Canons of Ethics", or he may be able to establish that the first party has violated a locally established "ground-rule" which was working well, and which is not specifically covered under the "Canons of Ethics". In most cases each party feels that he has complied with the letter and spirit of the rules under which he was working.

In an actual case similar to the example given above, an investigating committee may find that the person complained against has broken one or more of the rules of ethics and is therefore in error in his behavior pattern. The board of the state society may decided to advise him of this fact and request that he change his ways, or to reprimand; or to take other action. The party in error will probably correct this particular fault and may learn something in general about accepted professional behavior patterns. A succession of cases like this, with some reported in the professional magazines will help to clarify which practices are and which practices are not ethical and acceptable professional conduct. The public will become involved to some extent and will gradually realize the difference between ethical and non-ethical behavior in this particular profession. Thus, one standard or excellence in professional conduct will be acceptable in the year 1962 and a number of years later an entirely different level will apply.

Part of our concern with ethics, conduct, the term "Professional Engineer", etc. stems from a desire for "status". We hope that professional engineers as a group continues to earn the increasing respect of the public through good character and good performance; to better regulate the practices of the group; and to gain increased personal money compensation compatible with the training and responsibility required. A good and increasing level of ethical, moral, and honest conduct will help in all of these aims.

Many of our present difficulties with ethics arise from a lack of understanding about professional engineering, ethics, etc. on the part of our clinics (the general public) and ourselves. A brief study of dictionary definitions may convince an engineer or other reader that ethics is the science of moral duty or moral principles; that morals means ethics or the doctrine of right conduct; that the "Canons of Ethics" is a set of rules of right conduct; that engineering is a skilled profession whereas medicine, law and theology are *learned* professions; that an engineer in the public mind is a locomotive operator; that an operator of a stationary engine is an engineer; and that engineering now usually means the art of science of utilizing the mechanical properties of matter in structures and machines.

Some confusion exists about violations of the rules of ethical conduct, violations of law, and enforcement. The Louisiana Licensing Law (Act 73 of 1905) and the Board of Registration are primarily interested in control of persons practicing without license, gross incompetency, fraud, deceit, etc. These practices are against the public interest or may be dangerous to life.

The rules of ethics pertain in general to respectability and orderly practices in the profession. These matters are niceties which supplement the law. The Louisiana Engineering Society does much of the work of investigation and discipline among its members. The disciplinary action is less direct than under the law, but is a fairly strong deterrent for wrong-doers at present and will become more so.

We can conclude that the rules of ethics form a good guide for acceptable professional conduct; but they do not specifically cover all situations. The "Canons of Ethics for Engineers" demand that we be good citizens at work as well as in private life. This implies moral behavior in cluding honesty, fairness to client, other engineers, and the general public; and a continuous effort to reflect credit on the profession. The rewards will be gradually improved status and respect for all members of the profession.

LES Plans Utilization Meet

Tentative plans have been made for the Louisiana Utilization Conference to be held November 20-21, 1961 at Tulane University, according to James S. Janssen, chairman of the Conference Committee.

Theme of the Conference, jointly sponsored by LES and the State's four engineering schools, is "More Effective Utilization of Engineers and Scientists: The Challenge of the 60's".

Speakers for the Monday morning session, November 20, will be Dr. W. G. Torpey, Consultant, Executive Officer of the President, Office of Emergency Planning, Washington, D. C. "Manpower Programs and Events of 1961 Involving Specialized Personnel"; a speaker from the U. S. Department of Labor, Washington, D. C. "Manpower Trends in the Decade of 1960-1970 with Particular Emphasis on Specialized Personnel"; a speaker from Louisiana, "Implications of Programs and Trends for Users of Specialized Personnel in Louisiana".

The luncheon on Monday will feature a speaker from the National Society of Professional Engineers whose subject will be " Engineering Professionalism in Industry".

Monday afternoon and Tuesday morning will feature con-current panels on electronic computers in industry and professional practice—does their use increase or decrease the number of required engineers and scientists?; selection and training of engineers and scientists for junior executive positions; recruitment and retention of engineers in industry, government and private practice; and needs for technical institute graduates to work with engineers and scientists.

A banquet will be held Monday evening at the Fontainebleau Motore Hotel featuring a speaker on a topic of special interest to all Louisiana employers of technical personnel.

A summary of the highlights of the conference by Dr. Torpey will highlight the Tuesday luncheon, according to Dean Lee H. Johnson, chairman of the program committee.

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ASSE Marks Its Golden Anniversary

The American Society of Safety Engineers celebrated its 50th anniversary October 8, 1961. It is the oldest national safety organization in the United States.

New Orleans officers include George L. Gorbell, manager of safety and fire protection, Monsanto Chemical Company, president; John V. Grimaldi, consultant for safety and plant protection, General Electric Co., first vice president; Michael F. Blancardi, manager of safety services, Allis-Chalmers Manufacturing Co., second vice-president; Frank E. Laderer, director of safety, Nationwide Insurance Co., treasurer; and A. C. Blackman, Safety Managing Director, secretary.

The New Orleans Chapter of the American Society of Safety Engineers received its Charter November 30, 1949.

Mr. Arthur J. Naquin, Safety Counselor for the New Orleans Public Service Inc., was honored by being elected the organization's first chairman.

Since its inception, the membership of the organization has grown to 80, and the present chairman is Edward J. Baird, Area Safety Supervisor, Gulf Area, Bureau of Labor Standards, U. S. Department of Labor.

—o—

Safety Engineers Meet

Sixteen safety organizations and agencies from throughout Louisiana have announced plans for a joint statewide conference.

This is the first time the groups have joined to sponsor what they described as a "grass roots move towards accident prevention."

The Louisiana Safety Conference will be held Dec. 10-12 in the Roosevelt Hotel, New Orleans, a joint committee announced.

Conference meetings will be divided into eight sections covering a variety of safety fields—traffic, home, school and college, farm, industrial, off-shore, marine, and recreation safety.

Sponsors are, from New Orleans:

Metropolitan New Orleans Safety Council, New Orleans Chapter of American Society of Safety Engineers, Delta Safety Society, and the Marine Section of Delta.

From Baton Rouge, Greater Baton Rouge Safety Council, Greater Baton Rouge Chapter A.S.S.E., and Humble Safety Association.

From Shreveport, Caddo Bossier Safety Council and Ark-La-Tex Chapter of A.S.S.E.

From Lake Charles, Calcasieu Area Safety Council and Southwest Louisiana Safety Engineering Society.

From Lafayette, Lafayette Area Safety Council.

Others are the Louisiana Department of Public Safety, the Louisiana Motor Transport Association, the Louisiana Safety Assocation, and the Offshore Petroleum Safety Council.

"By joining forces," said O. P. Villarrubia of New Orleans, general chairman, "we hope to show the united feeling behind some of the boldly practical safety proposals that will come out of this conference."

The planning group includes E. G. Miller, vice chairman and program coordinator; I. E. Hanson, secretary, and Carroll Hebert, treasurer, all Baton Rouge; Dudley Andry, conference coordinator, and J. R. O'Donnell, chairman of exhibits, both of New Orleans, and Norman Ledgin, Lake Charles, publicity chairman.

Inquiries may be addressed to Louisiana Safety Conference headquarters at 823 Perdido Street, New Orleans 12.

Registration Law Report

A four-year experience requirement and a new Engineer-in-Training classification have been suggested as possible amendments to Act. 73 of 1950, the state's engineering statute.

The suggestions were offered to the L.E.S. Registration Law Committee, headed by Waldemar S. Nelson, by the Louisiana State Board of Registration for Professional Engineers & Land Surveyors. The committee was to review these suggestions and welcome others at a Baton Rouge Meeting October 16th.

In commenting on these suggestions, Nelson stated, "Forty-five states now have the four year experience requirement and the Engineer-in-Training classification. Our young engineers graduating from Louisiana schools and seeking employment in other states are at a disadvantage because they do not have Engineering-in-Training qualification and most other states do not recognize the engineering registration without the four year experience requirement. Our graduates are then faced with the necessity of taking the Engineering-in-Training examination in another state, or of working without proper classification for a four year period.

"To alleviate this hardship our Board has given the E.I.T. examinations for the past several years (see related discussion elsewhere in this issue) to enable our young graduate engineers to qualify for work elsewhere. A high percentage of our graduate engineers now take these examinations voluntarily. The hardship on our young Louisiana graduates could be eliminated entirely by providing the Engineering-in-Training classification and four-year experience requirement so that an engineering registration certificate from Louisiana would be recognized on a par with that of most other states."

Louisiana is the only one of the 50 States that does not have any requirement of experience prior to engineering registration.

Nelson said, "We would like to have all our graduates work at home, but sometimes the best jobs for them are in other states, and it does give them an apportunity to broaden their experience. Unless we can obtain these changes, Louisiana's young graduate engineers will be at a disadvantage at the start of their professional careers."

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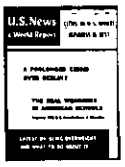

Engineering Groups Meet

The Eighth Electrical Conference of the Petroleum Industry, sponsored by the Petroleum Industry Committee of American Institute of Electrical Engineers and the New Orleans Section of AIEE, was held in New Orleans September 17 through September 20. The conference was well attended by LES members.

Speaking on the Considerations in the Selection of D. C. Control Signals, D. T. Cusack, Hahan Chemicals and Controls, Inc., told the conference that "In analyzing the requirement for an electronic control system, the selection of either the DC current or voltage transmission signal has been guided principally by the control needs of the industries normally serviced by the instrument companies rather than by any clear cut advantages of current or voltage transmission."

P. H. Drinker, The Foxboro Company, said that new horizons opened by electronics in process control present a number of different challenges and opportunities to instrument designers than existed with pneumatics.

"One aspect, however, remains the same today; a human being is still in the control loop," Drinker said.

A paper covering process instrumentation from an application's engineer's and user's viewpoint was presented by Ward O'Connor of the Lummus Company. He reviewed faults occurring in both the application and use of electronic devices and discussed techniques used to reduce probability of such faults.

A. A. Johnson of the Dow Chemical Co. described the application of solid state control devices to a particular chemical plant control problem. The control system is basically a saturable core reactor system similar to systems used in many furnace temperature control applications to achieve close temperature tolerances, Johnson said.

"One of its outstanding features has been stability. Practically no adjustments to equipment are required for continuous operation," Johnson told the conference.

Speaking on Computer Applications in the Petroleum Industry, J. F. Moore and F. R. Currie of Bonner & Moore Engineering Associates described aspects of accounting, economic planning and process control applications and told how these functions could be integrated into a unified plantwide information and control system.

W. M. Gaines and W. N. Patterson of General Electric discussed the instrumentation problems of integrating a digital control computer with an industrial process and reviewed the relative merits of various methods of computer output of control signals or set point adjustment of analog controllers.

The joint study and the solution which was implemented in computer control of a large process unit were described by E. N. Ply of the American Oil Co. and A. D. Pendleton of IBM.

Speaking on the Electrical Features of an 'On-Line' Computer Control System for a Petrochemical Process, C. H. Thurman of the Monsanto Chemical Co. described the modifications required to incorporate a computer control system into an existing operation process unit.

The New Orleans Section, American Institute of Chemical Engineers, held a meeting at the Engineer's Club on Wednesday, September 13, at 8:30 p. m. Preceded by a social and dinner hour, the meeting featured Dr. R. E. Weaver of Tulane University whose subject was "Chemical Engineering in Europe."

Dr. Weaver spoke about the aspects of European chemical products and markets and of the engineering education supporting them.

The New Orleans Section is also sponsoring a New Orleans A. I. Ch. E. Special Lecture Series, the first of which was held September 27. Dr. R. V. Bailey, Head of Department of Chemical Engineering, Tulane University, was the speaker.

Subject of the series is Operational Mathematics — Methods and Utilization. Starting from very elementary considerations, the participants will be guided through the formulation and solution of both ordinary and partial differential equations with time variable boundary conditions.

The first lecture covered the formulation of differential equations, LaPlace transforms, inversion of LaPlace transforms, utilization of LaPlace transforms for the analysis of linear systems and method of small perturbations to linearize non-linear systems.

The second lecture, held October 4, included impulse functions, system transfer functions, convolution, translation properties and matrix formulation of LaPlace transform of system networks.

The third in the series on October 11 presented an elementary discussion of matrices and partial differential equations with simple boundary conditions.

The fourth and last lecture on October 18 will be concerned with superposition of solutions and the solution of more complex systems with time variable boundary conditions.

Meeting with electrical engineers at the Eighth Electric Conference of the Petroleum Industry in the Jung Hotel recently are, from left, W. H. Dickinson, Madison, New Jersey; Kenneth H. Shaffer, president, The California Co., New Orleans; W. H. Chase, Cleveland, Ohio; and W. D. Stroud, New Orleans.

Why The State Board Gives EIT Exams

By F. W. zur Burg
Dean, College of Engineering
University of Southwestern Louisiana
Member of The Louisiana State Board for the
Registration of Professional Engineers and
Land Surveyors

Under Act 73 of the 1950 Louisiana Legislature, no provision has been made whereby the board for the registration for Professional Engineers may qualify a recent graduate as an Engineer in Training (E.I.T.) In the majority for the registration acts of the various states, provision is made for the registration of young engineers in this category. While this factor acts advantageously for a young graduate of an accredited school seeking registration in the State of Louisiana it, at the same time, proves to be a disadvantage when the young engineer seeks registration by reciprocity in another state.

In many states the obtainment of a license as a Professional Engineer is a two-step process. Usually, the recent graduate is required to take an examination on fundamental subjects and, having passed this examination, is qualified as an Engineer in Training. At some future date, usually four years later, he is required to take a professional examination which, upon passing, qualified him for registration as a Professional Engineer. Of course, these requirements vary from state to state. The variations may be a length of the time lapsed between graduation and the professional examination, or they may be in the nature of the examination; that is, the examination may be a single one divided into two parts. When, in a given state, a two part examination is given, the first part, almost invariably, consists of fundamentals and is in most respects similar in content to the usual E. I. T. examination.

Subjects covered in the E. I. T. examination are usually Mathematics, Physics, Chemistry, Economics, Elementary Electricity, Statics, Dynamics, Strength of Materials, Fluid Dynamics and Thermodynamics. It will be recognized that these are the subjects common to most four-year curricula and are covered in the first two and one-half years of college.

As much as we dislike admitting the fact, it is entirely possible to "forget" some subjects we have covered in our college careers. This is particularly true if the subject is one which does not have recurrent use in professional practice. Thus, a Civil Engineer, after a few years of professional practice, is liable to forget the fundamentals of electricity or chemistry. At the same time, an electrical engineer or chemical engineer might "forget" material covered in the courses in engineering mechanics. The ideal time to take an E. I. T. examination, regardless of which branch of engineering the young graduate plans to enter, would be at some time approximating the date of graduation from college.

With the above factors in mind, The Louisiana State Board for the Registration of Professional Engineers and Land Surveyors offers, each year, an E. I. T. examination to the prospective graduates of the senior classes of the engineering schools of the state. This examination is usually given the first Saturday in May.

The National Council of State Boards of Engineering Examiners is an organization made up of the membership of the members of the state boards of all of the states and territories of the United States. The National Council has divided the country into four zones and the State of Louisiana is in the Southern Zone. For many years the National Council has concerned itself with the problem of producing a uniform E. I. T. examination. It is obvious that when a number of states co-operate in producing an examination such an examination will have wider acceptance than an examination given by a single state. The Louisiana Board has therefore always given a zone examination.

The Louisiana Board makes a charge of five dollars for this examination. This cost barely covers the cost to the board for the examination. Should the examinee desire to take registration in the State of Louisiana, this small fee is absorbed by the Louisiana Board as a part of the applicant's registration fee.

It must be quite obvious that the only person that can profit from taking the E. I. T. examination is the young graduate, that is, the examinee himself; for, the E. I. T. examination is, at the present time, not required under Louisiana Law. Whether the examination is of immediate value to him or not is not the major concern but emphasis or value should be placed at some future date. This date might be four or even ten years later. The Louisiana Board keeps a record of all examinations taken and passed and can at some future date certify to another state board the fact that an E. I. T. examination of a given date was taken and passed by an applicant for license in a state requiring E. I. T. examination.

When announcement is made next spring of the E. I. T. examination, it would be to the advantage of all prospective graduates in engineering colleges in the state to make application to take the E. I. T. examination. Application to take the examination may be made directly to the board's Executive Secretary whose adress is Civil Engineering Building, Tulane University, New Orleans, Louisiana. Should the graduating senior have any question regarding the E. I. T. examination or any problem connected with registration, the members of the board are ever willing to discuss the problem with the applicant.

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The Way To Keep Highway Costs Down

By BERNARD E. GRAY*

Competition is the life of trade — an old saying, but as true today as ever. And in no phase of modern living does this apply more completely than in the building of highways.

The present-day system of improved roads and streets in the United States is a phenomenon which has occurred almost entirely during the past 50 years. Coincidentally, it was during this same period that competition between road-building materials and competition between various types of constrution equipment came into sharpest focus. To deny there was any relationship between this upsurge of competitive enterprise and the corresponding era of highway progress would be imposing an unwonted strain on common logic. Just as free and open competition abets quality and stimulates production anywhere, so have competing techniques, competing equipment and competing materials added more and better miles to the nation's road system.

Only a few generations ago the only hard-surfaced thoroughfares were found in major cities. There the main streets were mostly cobblestone, stone block or brick. Later came water-bound macadam, which proved much smoother but was very dusty. Then in the 1870's came the development of sheet-asphalt paving. Quickly this became the deluxe surfacing material of the time, much in demand for what might be termed the "Fifth Avenues" of America.

However, as late as 1910 the rural roads of this country could claim at best only a few miles of untreated macadam or gravel. The rest were earth, at times totally impassible to anything except horse-drawn vehicles.

But the automobile had come upon the scene, and as the industry progressed the development of more all-weather roads became a paramount necessity.

In the free play of competition traditional to America, any time a consumer demand is created someone will find ways and means of filling it. So it was in the evolution of our highway network. The automobile created new demands in road-building, and government and business united to fill them. New modes of financing, new construction methods, new product development — all came toe-to-heel behind fresh and changing demands on the nation's transportation system. With funds always limited, the story of highway progress over the past half a century has been one of continuous effort to build more miles — and better — for the same money.

Basic economics — demand balanced against what the user is willing and able to pay — have made competition a flavorful and constant ingredient in road building. This in turn has brought about virtually every important innovation in the field. Certainly this holds true in pavement development.

Brick and blocks lost out as road surfacing materials because they had to be hand-placed, a process too slow and costly to keep pace wth demands for more and more paved mileage. Concrete, on the other hand, made its greatest progress during the 1920's and early '30's because the use of side-forms and mechanical spreading made for more rapid and smoother operation. Good machines for placing concrete were developed earlier than those for asphalt and cement profited immensely from the lag.

The competitive spirit did not lag, however. With the expiration of patent restrictions on high-type hot mixtures and spurred by the ever-increasing demand for road pavement, the asphalt industry was not long in coming up with new and improved spreading equipment. As a result the ascending curve for miles of heavy-duty asphalt built per year crossed the descending curve for concrete in 1938, and the total miles crossed in 1950. Today old concrete roads are being covered over faster than new ones are being built.

There again, cold economics and hot competition are the major factors.

Continued improvements in paving equipment have allowed asphalt to be placed faster than ever and at less cost. Even more important, it is possible to place layers of hot-mix asphalt to any desired thickness which means an asphalt pavement can be built to the thickness required for present traffic; if traffic increases, layers can be added as necessary. In contrast, no technique has yet been devised to bond together thin layers of concrete, so every mile of pavement must be built to full thickness for traffic anticipated throughout its life. Of course, if the concrete proves inadequate for increased traffic, it can be resurfaced with asphalt. But this makes for a rougher surface and higher composite cost than using asphalt in the first place. In general, therefore, the first cost of an asphalt pavement is enough lower than concrete to more than pay for its future maintenance. This was borne out in a recent nationwide study by the independent Stanford Research Institute.

*Consulting engineer and former president of The Asphalt Institute.

La. Tech Conference

The Tenth Annual Instrumentation Conference of the School of Engineering, Louisiana Polytechnic Institute will be held on the campus November 2-3, 1961. The tentative program includes the following papers: "The Operation and Application of Industrial Type Analog Computers" by Mr. R. M. Green, The Foxboro Company, Foxboro, Massachusetts; "Measurement and Control in Waste Disposal" by Mr. Ernest R. Roth and Mr. W. D. Sitman, Roy F. Weston, Inc., Newton Square, Pennsylvania; "Management's Role in Instrumentation" by Mr. G. J. Henrich, Olin Mathieson Chemical Corp., Lake Charles, Louisiana; "What Instrumentation Can Do For Management" by Mr. Kermit Fischer, President, Fischer and Porter Company, Hatboro, Pennsylvania; a combination of papers on mass flow measurement of solids and fluids by Mr. F. P. Singeltary, General Electric Company, Houston, Texas and Mr. O. J. Bejeck, Wallace and Tiernan, Inc., Dallas, Texas; and a paper on basic link-and-lever instrument calibration by Mr. R. M. Wright, American Oil Company, El Dorado, Arkansas.

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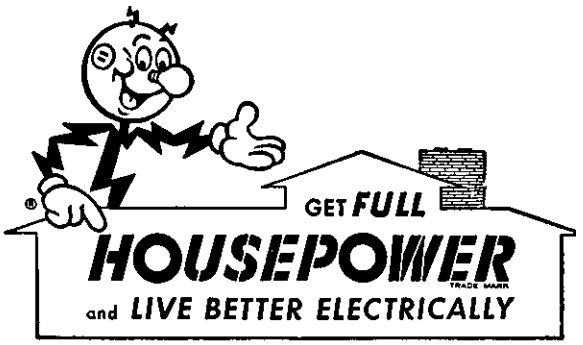

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Toastmasters International, in cooperation with the seventeen clubs in the New Orleans area, will invite interested persons to participate in a Public Speaking Course, according to A. C. Tricou, Chairman, Publicity Committee. A series of lessons which commenced Monday, October 9th, was to meet Monday evening thereafter for seven weeks

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For further information, please contact Mr. Norman Ford, Chairman - Student Enrollment, Telephone CH 2-3914 or Mr. Paul Gill, Secretary, VE 5-1231.

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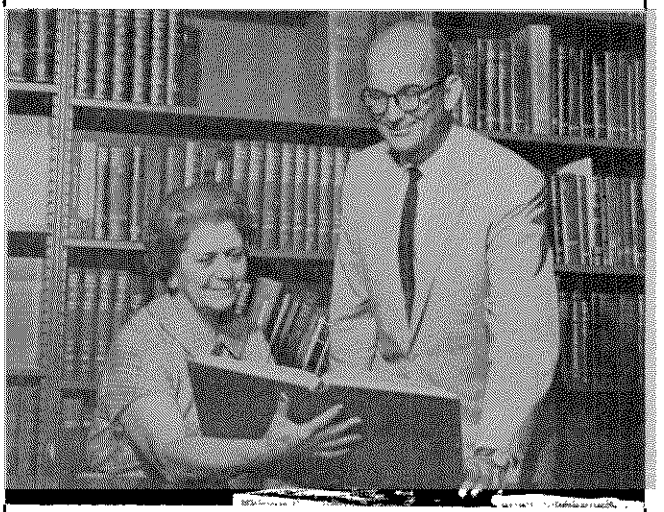

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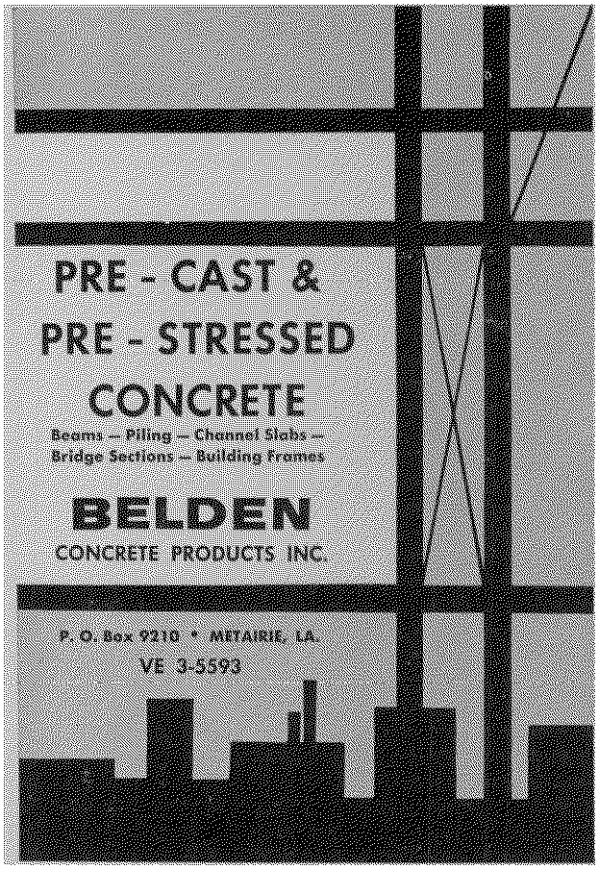

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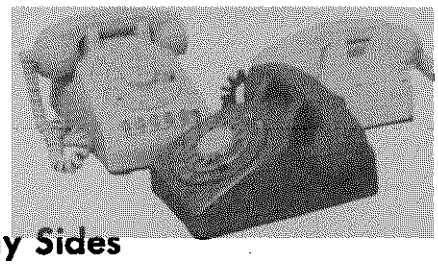

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Products News:

The Equitable Equipment Company Inc. (Builders-Engineers-Contractors) of New Orleans, Louisiana have been selected by the Global Marine Exploration Company of Los Angeles, California (tagged the explorers of "Inner Space" as the result of the Mohole project) to build Global Marine's newest ocean going Drilling Barge: "CUSS II", according to Captain Marlin C. Ludwig, Vice-President, Equitable Equipment Company, Inc., of New Orleans.

The Equitable Equipment Company (Aramco's Overseas latest Drilling Tender No. 1 operating in the Arabian Gulf is a product of Equitable's manufacture) were pioneers in the construction and development of the first drilling tenders for Gulf of Mexico operations.

The predecessor of "CUSS II", the "CUSS I" (named after the initials of the Continental, Union, Shell and Superior Oil Companies at present operating off the West Coast) has reportedly carried out drilling operations in water depths ranging up to 12,000 feet.

The "CUSS System" has been widely publicized as a highly successful revolutionary technique in oil field operations—it having been the "CUSS I" who drilled the famed Mohole of the Coast of Baja California at the unprecedented depth of 11,700 feet of water.

(Project Mohole derives its name from a discontinuity (Moho) between the earth's crust and mantle discovered by Mohorovicic, a Yugoslavian Seismologist).

In principle, the "CUSS System" calls for the drilling barge to be held in position by anchors. In the Mohole operations the vessel was controlled by radar and sonar sensings of fixed buoys.

———o———

Eugene Dietzgen Co. has introduced a table model 35 millimeter Microfilm Card Reader designed especially for brilliantly lighted drafting rooms. The new model 4305 Filmcard Reader, according to the manufacturer, projects a sharp, brilliant image of uniform intensity of a 10½" x 12" glare-free screen of newly developed plastic crystals. The unit has a 14X magnifying power.

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In a continuing program of expanded passenger and air freight service to the state of Louisiana, Trans Air Lines announces the extension of three daily flights to Opelousas Municipal Airport.

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———o———

Bedell & Nelson Engineers Inc., has recently established a Computer Center in its New Orleans Office. This is the first such installation in this area for consulting engineering work. The computer is a relatively new tool for the engineer and enables him to extend his capacity and ability to perform engineering work.

Bedell & Nelson Engineers has realized the advantages of computers for sometime and, in fact, has been using computers in some of its engineering work during the last several years including design work on the old River Locks, Freeport Nickel Company installation in Cuba, wave force analysis for off shore structures. This engineering firm has been developing personnel for analyzing and programing engineering problems on computers and presently has personnel engaged in expanding its library of programs which will be available for solving engineering problems.

The Computer Center utilizers an IBM 1620 transistorized computer with punched card input and output. Normal peripheral equipment is also utilized and the memory capacity of the computer can easily be expanded for the more complex programs. This computer is particularly suited for solving many of the problems encountered in engineering, mathematics, management and physical sciences.

Bedell & Nelson Engineers is scheduling programs for civil engineering, petroleum industry, public utility, transportation industry, mathematics, statistics and other engineering work. In addition to using the computer for their own work, Bedell & Nelson is making the computer available to other firms that may need a computer on a short time basis. This will be done on a straight machine time rental basis or the firm's personnel will be available to assist in programing and operating. Bedell & Nelson Engineers believe that availability of a computer to other engineering firms will prove invaluable to the progress of engineering in this area.

Shown at the new IBM 1620 Electronic Computer are standing, Earl Dobbs and sitting, Emile Alito.

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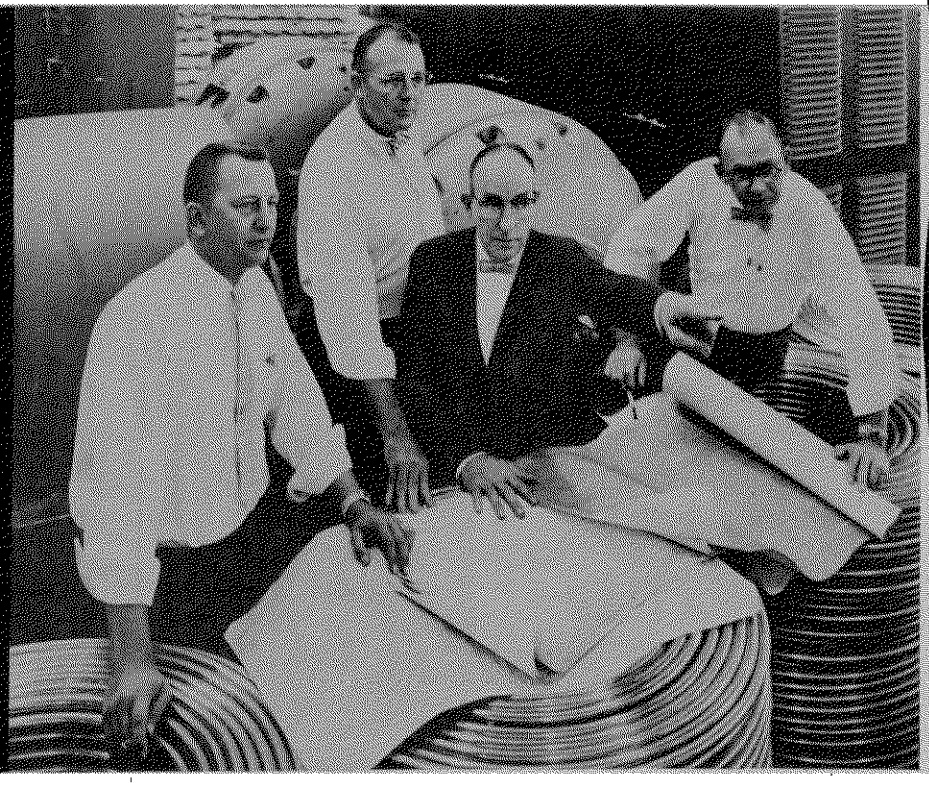

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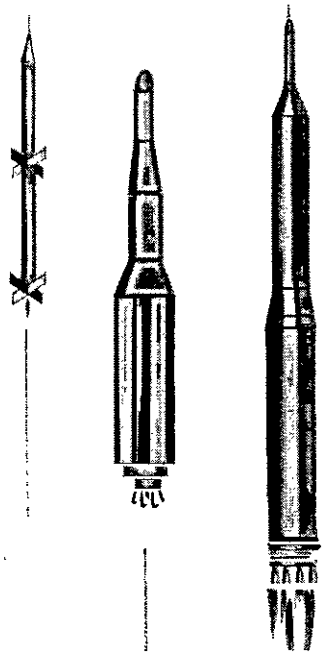

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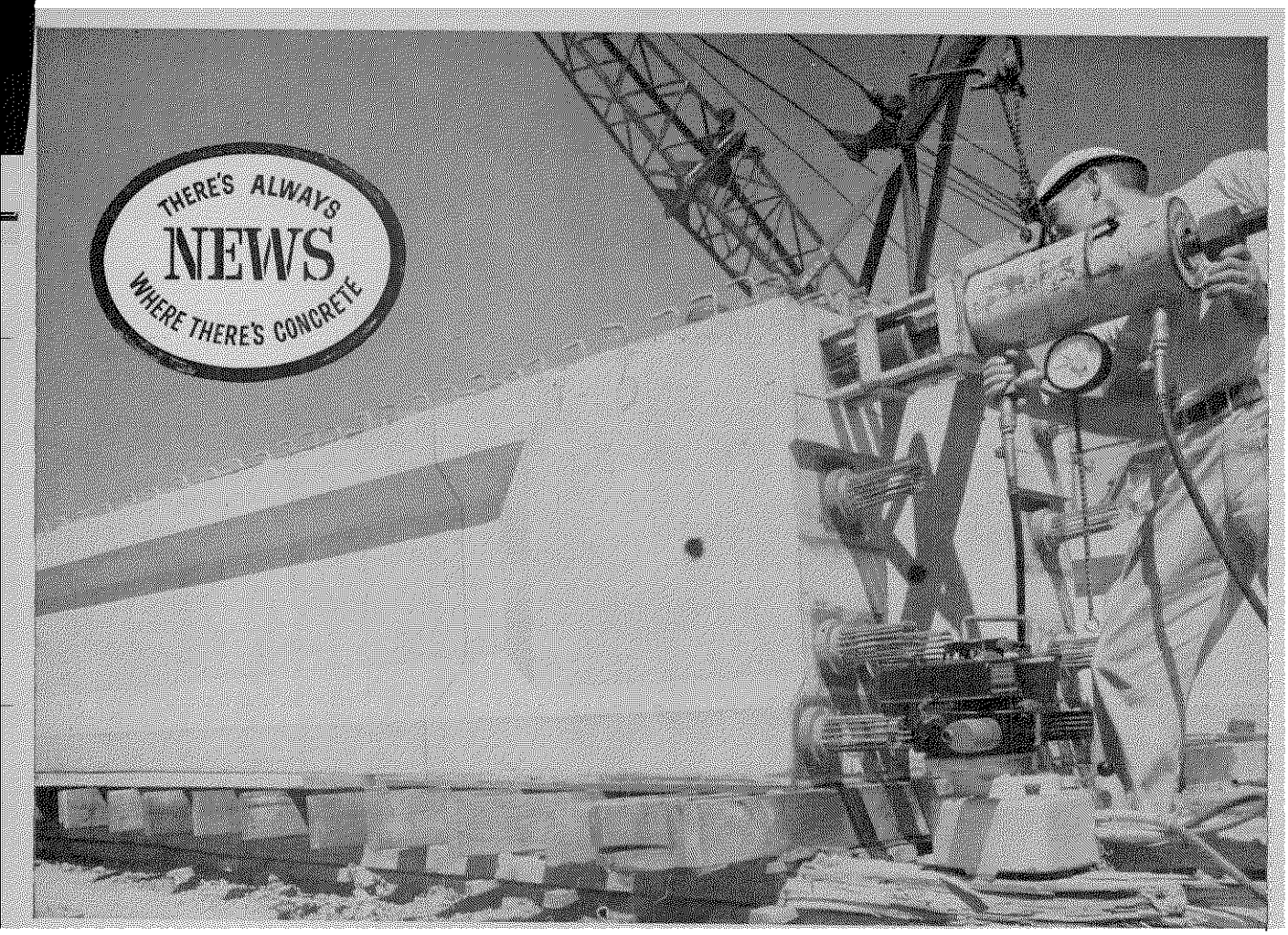

Why prestressing increases efficiency of modern concrete – and brings new economy

Prestressed concrete is the Horatio Alger of construction materials. Ten years ago it was practically unknown in the U.S. Today, the production of prestressed beams and slabs is a $500 million industry.

A basically simple idea, prestressing is achieved with high-tensile steel wires placed lengthwise in a concrete beam. These are stretched with hydraulic jacks and either anchored at both ends of the beam or bonded to the concrete. The wires, trying to pull back to their original length, give the beam a "Paul Bunyan" squeeze that dramatically increases its strength. Two general methods of prestressing are in use: pretensioning and posttensioning. In the first, wires are stretched *before* the concrete is cast . . . in the other, *after* the concrete has hardened, as pictured above.

Prestressing has already been proved in the building of thousands of bridges and commercial and industrial structures. Dams, circular tanks and pressure pipe have also benefited from the economy it brings.

This year's use of prestressed concrete is expected to jump 60% over 1958. And its versatility suggests there is practically no limit to its potential uses.

Prestressing is one more area in which the Portland Cement Association is today making valuable contributions. It is carrying on continuing research projects—testing, evaluating, and making new technical information broadly available. In this way, the 74 progressive (and competing) cement manufacturers who comprise the Association work together to serve more effectively the construction needs of the nation.

On the Illinois Tollways – $4,000,000 saved

Of the 265 bridges on the new Illinois Tollways, 217 use prestressed concrete. They include 6,900 girders in all, totaling 453,500 linear feet. The money saved made every fifth bridge free. Central casting yards permitted mass production and close quality control. Maintenance is expected to be the lowest of any major bridge system.

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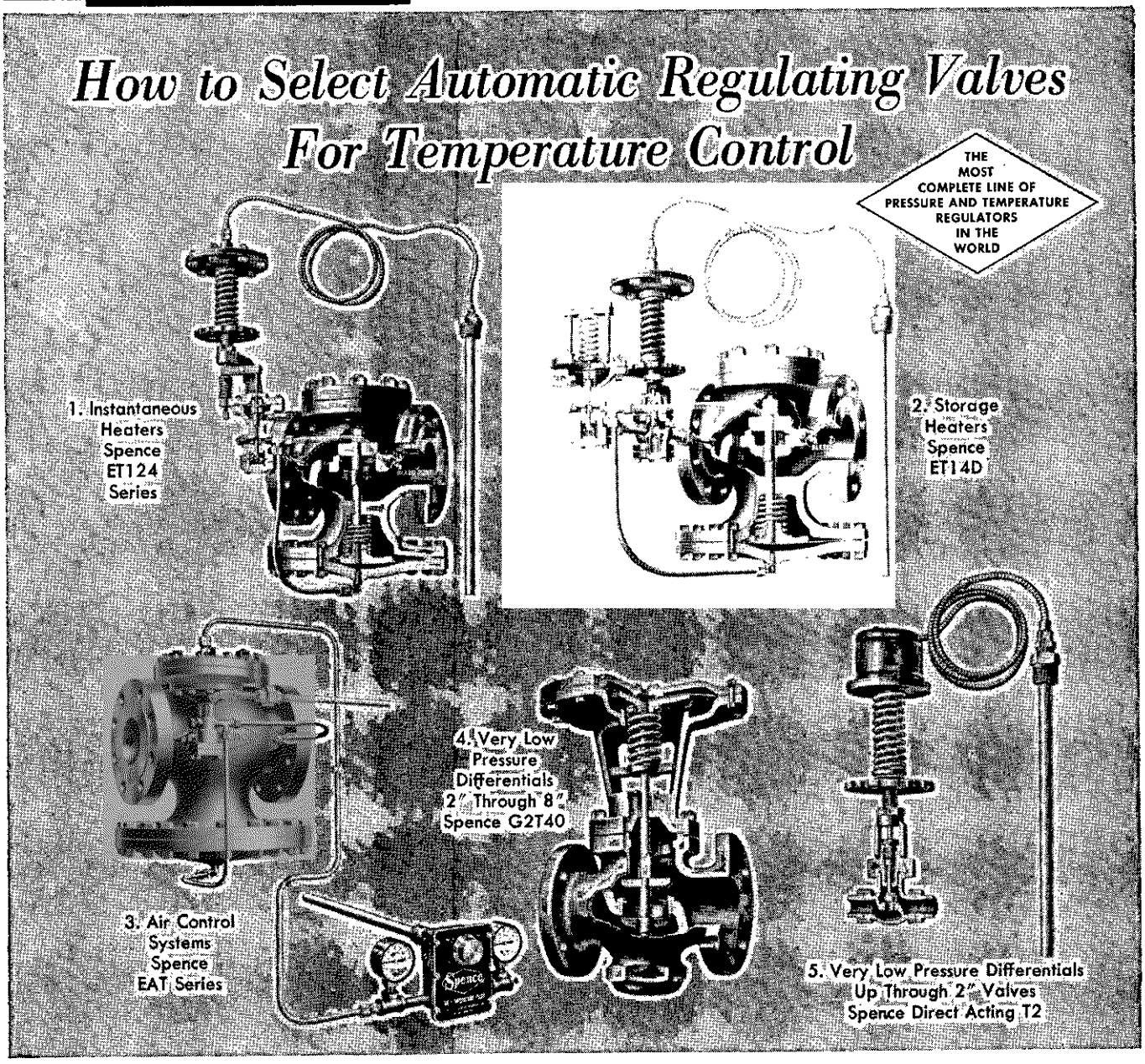
the LOUISIANA ENGINEER

Vol. 47 No. 6
December, 1961

VALVE TIPS:

How to Select Automatic Regulating Valves For Temperature Control

THE MOST COMPLETE LINE OF PRESSURE AND TEMPERATURE REGULATORS IN THE WORLD



During the past year, our field representatives have reported many cases of improperly, and uneconomically, applied temperature regulators. To help you avoid some of these costly mistakes, here are a few tips on selecting the most effective and economical temperature regulating valves for your applications.

1. Instantaneous heaters require a special action for close temperature control and freedom from hunting. In the Spence ET124 series, steam pressure is modulated according to temperature (demand) and is automatically regulated at any pressure established by the demand.
2. Storage heaters, on the other hand, are more economically controlled by the Spence ET14D, which includes a simple temperature-actuated pilot that opens and closes the main valve to maintain a constant temperature.
3. Air control systems can now have a ±5°F control accuracy under wide and instantaneous load swings with the Spence EAT regulator. Engineers report savings of up to 50% in installed costs with this recently developed Spence cascade system when it has been used in place of conventional instrumentation.
4. For the combination of very low pressure differentials and air or water control, Spence recommends Type G2T40. This single seated valve provides fast, positive response in 2" through 8" valves. Double seat Type G22 is also available in 10" through 12".
5. When very low pressure differential is encountered with valves of 2" or less, the Spence direct operated T2 is recommended. The sensitive vapor tension thermostat responds quickly to small changes in bulb temperature for continuous, accurate control.

In this brief description of industrial process and heating temperature control, we have given a few important tips in proper regulator selection. If you would like more detailed information on these control applications, write for the new Spence Temperature Control Bulletin IV 1014. SE-150

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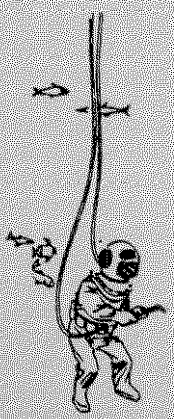

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Announce Annual Meeting Plans

The Louisiana Engineering Society will hold its Annual Meeting on January 11, 12 and 13, 1962, in New Orleans at the Sheraton Charles Hotel, according to Herbert A Schaeffer, Jr., General Chairman.

All meetings are in the Sheraton-Charles Hotel. The banquet and dance are at the Jung Hotel.

9:00 A.M. Registration.

10:30 A.M. Conference of Engineering Students.
Presiding: James V. Benedict, President, Tulane Student Chapter of the L.E.S.

10:30 A.M. NSPE-LES Functional Section Committee
Presiding: Alvin M. Fromherz, Chairman.

1:30 P.M. General Meeting
Presiding: Ben T. Bogard, President.
Invocation: Mr. Bernard H. Grehan, Notre Dame Seminary, New Orleans.
Introduction: Officers of State Sections, Louisiana Engineering Society.
Keynote Address: MOOREHEAD WRIGHT, Manager of Relations Services, General Electric Company, New York, N. Y.
Title: "The Management of Technical Work in These Times."
Annual Report: John P. Fernandez, Secretary-Treasurer.
Annual Report: Ben T. Bogard, President
Presentation of Certificates of Merit to Student Conference Speakers.
Presentation of Life Membership in Society: JEROME C. BAEHR, JOHN P. EGAN, KARL P. KAMMER, ROBERT P. LOCKETT, SIDNEY E TROUARD, JR., W. O. TURNER.
Presentation of Certificate of Appreciation: (COL.) JOHN T. KNIGHT, JR.
Teller's Report: Edw. A. McLellan, Chairman of Nominating Committee.
Installation of Newly Elected Officers.
Presentation of Token of Appreciation to Retiring President, BEN T. BOGARD.

8:00 P.M. General Interest Program.
Place: Engineers Club of New Orleans, 404 Baronne Street.
Presiding: President-Elect of the Louisiana Engineering Society.
Speaker: RAY W. BURGESS, Director, Louisiana Department of Highways.
Title: "Report to the People" (A Year of Progress in Louisiana Highway Development).

FRIDAY MORNING, JANUARY 12th

9:30 A.M. TECHNICAL SESSION.
Presiding: Cecil M. Shilstone, Shilstone Testing Laboratory.
Speaker: JAMES L. STAMY, Assistant for Project Management, Marshall Michoud Operations, Huntsville, Alabama.
Title: "LAUNCH VEHICLE ENGINEERING FOR SPACE EXPLORATION."

10:30 A.M. TECHNICAL SESSION
Presiding: Earl S. Dobbs, Waldemar S. Nelson & Co., Inc.
Speaker: JOHN A. LOTZ, District System Engineering Manager, I. B. M., New Orleans, La.
Title: "THE ROLE OF A COMPUTER IN EVERYDAY ENGINEERING PROBLEMS."

12:00 Noon—A.S.M.E. LUNCHEON.
Presiding: Edgar H. Pavia, Chairman, New Orleans Section, American Society of Mechanical Engineers.
Speaker: J. L. ERICHSON, Fred M. Erichson Co., Inc., New Orleans, La.

2:00 P.M. TECHNICAL SESSION.
Presiding: Captain T. J. DuMont, U.S.N., District Public Works Officer, 8th Naval Dist.
Speaker: LT. F. H. LEWIS, JR.—C.E.C.—U.S.N., New Orleans, La.
Title: "THE PROBLEMS INVOLVED IN THE DESIGN AND CONSTRUCTION OF FALLOUT SHELTERS."

3:15 TECHNICAL SESSION.
Place: Claiborne Room, Mezzanine Floor.
Presiding: Seymour Cambias, New Orleans Public Service, Inc.
Speaker: R. EMMETT KERRIGAN, Deutsch, Kerrigan, and Stiles, Counsellors at Law, New Orleans, La.
Title: "SOME LEGAL MATTERS AFFECTING ENGINEERS."

SATURDAY MORNING, JANUARY 13th

10:00 A.M. Section Officers Conference.
Presiding: President-Elect of Louisiana Engineering Society.
Title: "A MORE INFLUENTIAL L.E.S."
Speakers: WALDEMAR S. NELSON: Work and Plans of Registration Law Committee. JOHN P. FERNANDEZ: Coordination Between Sections and Headquarters.
ALLEN JOHNSON: Public Relations.

SATURDAY EVENING, JANUARY 13th

7:00 P.M.-8 P.M. Cocktail Hour.
Place: Green Room, Mezzanine Floor, JUNG

8:00 P.M., Banquet.
Place: Tulane Room, Mezzanine Floor, JUNG

9:00 P.M. Dancing.

LADIES' ACTIVITIES

THURSDAY, JANUARY 11th

9:00 A.M. Registration, Sheraton-Charles Hotel.

7:30 P.M. General Interest Program and Coffee Party, Engineer's Club.

FRIDAY, JANUARY 12th

11:00 A.M. Progress Reports of Chapters.
West Salon, Royal Orleans Hotel.

12:30 P.M. Luncheon.
West Salon, Royal Orleans Hotel.

1:30 P.M. Walking Tour of French Quarter.

SATURDAY, JANUARY 13th

7:00 P.M. Cocktail Hour, Jung Hotel.

8:00 P.M. Banquet, Jung Hotel.

9:30 P.M. Dancing, Jung Hotel.

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The LOUISIANA ENGINEER is the official publication of the Louisiana Engineering Society and of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors and is published in February, April, June, August, October and December. Subscription $2.00 per annum; single copy 50 cents.

Second class mailing privileges authorized at New Orleans, Louisiana. Acceptance for mailing at special rate of postage provided for in Section 1105, Act of October 3, 1917, authorized August 1, 1918.

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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.

The service we refer to has to do with the individuals and companies who advertise in this publication.

So that you, a busy engineer, may be relieved of the necessity of performing your own investigations, the Louisiana Engineering Society is assuming part of this responsibility for you by accepting advertising only from proven reliable companies. By this, we do not intend to infer that these are the only reliable ones, but we do point out the fact that, from our knowledge of past performances, you may, in our best judgment do business with our advertisers with complete confidence.

OUR COVER:

Louisiana Engineering Society and Louisiana Polytechnic Institute combined talents to state this exhibit at the State Fair in Shreveport, October 21-29. In the background are, l. to r., L. E. S. Shreveport Section, Tom Ruffin, Tech Dean of Engineering and State L. E. S. President Ben T. Bogard, student Harold Gibson, and Tech Associate Professor J. S. Tarbutton. In the foreground, l. to r., are L. E. S. Exhibit Chairman Bill M. Ferguson and student Carl Townsend. Prepared under the direction of Tech Professor Grover Trammell (not shown), the exhibit was manned by both Tech students and members of the Louisiana Engineering Society.

"George Spelvin, P. E.", a 22½-minute film on professionalism and engineering, is now available from the National Society of Professional Engineers for showings to engineering school students and recent graduates.

The film was made under the supervision of the National Society's Public Relations Committee as part of an over-all program to help develop professional concepts on the part of engineering students and graduates.

Prints of the film in 16mm color, may be borrowed from the National Society headquarters, 2029 K Street, Northwest, Washington 6, D. C.

Produced by Norwood Studios, Inc., Washington, D. C., the film is centered around a young engineer who is designing a fuel handling memory and control system for a nuclear power plant.

According to the National Science Foundation (NSF 60-62, "Scientific and Technical Personnel in American Industry—Report on a 1959 Survey"), American industry employed 800,000 engineers and scientists as of January 1959. Now the number is nearer 870,000.

The survey on which this estimate was based missed only the very small organizations and self-employed professionals. The actual count was 764,000 distributed as follows: engineers, 615,000; chemists, 72,00; biologists, 18,000; earth scientists, 15,000; physicists, 15,000. The remaining 29,000 were either in smaller groups or unclassified.

The authors of the report point out that the annual rate of engineering and scientific manpower increase has declined—from 13% in 1954 to 5% in 1958.

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Minutes Of The Board, LES

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, Monday, October 9, 1961

The meeting was called to order by President Bogard with Messrs. Domingue, Janssen, Latimer, McLellan, McNamara, Rountree and Fernandez present. Messrs. Allen Johnson, Public Relations Counsel, and Frank Macdonald, NSPE Director, also were in attendance. Minutes of the September meeting were accepted as read.

President Bogard reported that he had attended a meeting of the Alexandria Section on September 21, at which Section President Rountree presented a complete report on the proceedings of th last meeting of the Board of Direction. He commended Mr. Rountree and expressed the hope that the presidents of other state sections would likewise keep their local members informed of the board's activities.

The president also announced that he had received from Dean Johnson of Tulane University a tentative program of the Manpower Conference scheduled for November 20-21, which promised to be most interesting. He also advised that he had met at the recent ECPD Conference in Louisville Mr. W. G. Torpey, Consultant of the Office of Civil Defense Mobilization, Washington, who was very much enthused about the coming manpower conference in New Orleans.

President Bogard advised that the proposed date of October 6 for a meeting between Director McDougall of the State Civil Service Commission and the State Board of Registratio nhad been postponed until a later date.

A letter from the State Board of Registration announcing expiration of the term of Dr. Jesse Coates on November 16 was read. It was decided that each board member would be requested to recommend no more than 8 nor less than 5 persons for the appointment, and that the New Orleans board members would tabulate and select from these recommendations the final nominations to be submitted to the Governor.

Mr. McLellan reported the receipt of a telegram requesting the society to participate in a dinner honoring Congressman F. Edward Hebert. Mr. Domingue moved that the invitation be investigated as to purpose and cost and, if desirable, one or two New Orleans board members be authorized to attend as representatives of the society. Motion seconded by Mr. Rountree and carried, whereupon President Bogard appointed Mr. McLellan to handle the matter.

Mr. Janssen reported on the forthcoming Manpower Conference and also on the civic committee appointed to assist NASA in activating the Michoud Plant. He advised that Mr. Allen Johnson had compiled a list of consulting engineers which was included in the data furnished to firms bidding for the prime contract of the missile plant. Mr. Johnson was commended highly by the board for his work in this connection. Mr. Janssen also stated that two major items are to be considered in connection with the assistance to be furnished NASA: (1) the development of a central employment agency, and (2) the obtaining of a research center in this locality. Both of these points were considered at length.

The special committee on Functional Sections reported that the society's compilation entitled "Operating Policy of Functional Section for Engineers in private Consulting Practice" adequately covers the objectives and management of the functional section and that no further delineation should be necessary at this time inasmuch as a group in Lake Charles is now preparing an expansion of this policy. It was the general opinion among those present that copies of the above-mentioned Operating Policy should be circulated among Functional Section committee members in the interim.

Upon the recommendation of Mr. Alvin M. Fromherz, Chairman, President Bogard appointed Messrs. D. X. Ellett of Monroe and Ernest Levingston of Lake Charles to the Functional Section Committee.

The secretary reported that the disagreement between the Functional Section Committee and Colonel C. T. Tench had been resolved through the efforts of Mr. Frank H. Walk, the committee's secretary. Upon motion by Mr. McLellan, duly seconded and carried, the secretary was commended for his part in settling the controversy.

The secretary announced that 534 membership ballots had been received with only one negative vote recorded, therefore all applicants named in the September ballot (copy attached hereto) were elected to their respective grades.

A letter from Mrs. Martha G. Robinson was read in which she thanked the society for endorsing her as recipient of the Times-Picayune Loving Cup and invited members to attend the presentation ceremony. Mr. McLellan was appointed to represent the society at this function, to be held on October 26.

Extensive discussion followed on a communication received from Mr. Garvin H. Dyer, Chairman of NSPE's Inter-Society Relations Committee, copies of which were circulated among board members prior to this meeting. The letter concerned NSPE's proposed plan to extend national society membership to qualified but non-registered engineers. Mr. Janssen then moved that the action taken on this matter at the board's last meeting be rescinded and that the Board of Direction of LES go on record as favoring the admission to NSPE membership of qualified, non-registered engineers as proposed to the national Board of Directors, requesting, however, that the new grade be identified by a title other than "Member." The motion was seconded by Mr. McLellan and carried.

The secretary read wording of the proposed by-law revision concerning the Ethics & Professional Conduct Committee. Mr. Rountree moved that the proposed by-law be approved as read, seconded by Mr. McLellan and carried.

Mr. McNamara moved that Edward T. Heard, Jr. (Monroe) be reinstated to the grade of Member, seconded by Mr. Rountree and carried.

Mr. McNamara moved that Colonel J. T. Knight, Jr. receive the society's Certificate of Appreciation in recognition of his fine work in the interest of Professional Ethics. The motion was seconded by Mr. Domingue and carried.

There being no further business the meeting adjourned.

J. P. FERNANDEZ
Secretary-Treasurer

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, November 13, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Domingue, Janssen, Larue, Latimer, McNamara, Rountree, Watts and Fernandez present. Messrs. Alvin Fromherz, Allen Johnson, M. J. Marchese, W. S. Nelson, and Edgar H. Pavia also were present by invitation. Mr. Larue moved that the minutes of the preceding meeting be accepted as forwarded to board members by mail. Motion seconded by Mr. McNamara and carried.

President Bogard reported that he had met with a group of consulting engineers in Shreveport October 19 to discuss rumors concerning proposed legislation that would adversely affect engineers in private practice. He stated that the consultants favor the creation of a fund to be used for the purpose of opposing such legislation.

The secretary read Dr. F. W. Macdonald's report on the NSPE Directors' Meeting held October 21, 1961 in Roanoke, Virginia.

The secretary reported the results of the board's selection of nominees for the State Board of Registration vacancy and announced that the following names had been submitted to Governor Davis on October 19:

Dr. Jesse Coates, Baton Rouge
Mr. Tom C. David, Alexandria
Mr. E. M. Freeman, Shreveport
Mr. Waldemar S. Nelson, New Orleans
Mr. H. Nash Ogden, Baton Rouge
Mr. James M. Todd, New Orleans
Mr. Mario G. Zervigon, New Orleans

Mr. Waldemar Nelson, Chairman of the Registration Law Committee, read a report of his committee in which the following modifications to the Louisiana Engineering Registration Law were recommended:

1. Provision of a requirement of four years of experience prior to registration as a Professional Engineer.
2. Provision to permit the Board of Registration for Professional Engineers and Land Surveyors to register in other branches of the profession in addition to those presently listed in the law.

Mr. Larue moved that the Registration Law Committee draft the necessary legislative amendments, within the framework of their recommendations, submit them for Board approval and take the proper steps to secure a sponsor to introduce them at the next legislative session. Motion seconded by Mr. Domingue and carried.

Mr. Alvin Fromherz, Chairman of the Functional Section for Engineers in Private Practive, reported on the activities of his committee and submitted drafts of two letters for Board approval. Mr. Janssen moved that the draft of the letter addressed to the Chairman of the Louisiana Board of Highways be revised to exclude reference to previous correspondence, explaining that the chairman has been acting in behalf of and with the approval of the entire committee, and requesting an interview for the purpose of explaining to the Highway Department the advantages of employing Louisiana consultants. Motion seconded by Mr. Latimer and carried. Mr. Watts stated he could arrange for a meeting between the Director of the Department of Public Works and members of the committee.

President Bogard announced that Mr. Howard B. L'Heureux of Alexandria had been appointed to the Functional Section Committee for Engineers in Private Practice.

The secretary read a financial report on the Annual Outing prepared by Mr. August H. Douglas, Jr., Chairman of the Outing Committee. President Bogard advised that he had commended Mr. Douglas and his committee for their exceptionally fine work on the outing, and the Board heartily endorsed his commendation.

The possibility of forthcoming adverse legislation was discussed and Mr. Nelson volunteered to prepare a letter for the joint signatures of President Bogard, the Legislative Committee Chairman and the Registration Law Committee Chairman. This letter would be addressed to consulting engineer firms, soliciting funds with which to oppose adverse legislation.

A letter from the Associated General Contractors of America, Inc., Louisiana Highway & Heavy Construction Branch, was read

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in which LES was requested to set up a liaison with their local chapter. President Bogard appointed Messrs. Ralph Junius and George Stevenson to represent LES on the proposed committee.

A letter from Dr. J. E. Gordon of Tulane University was read in which he advised that the society's 1961-62 scholarship donation had been awarded to Konrad W. Scheel. A letter of thanks from Mr. Scheel also was read.

Mr. Janssen moved that the resignation of Ronald J. St. Pierre be accepted with regret, seconded by Mr. McNamara and carried.

On motion by Mr. McNamara, seconded by Mr. Janssen, the following were dropped from the rolls:

Noel J. Everard (Baton Rouge
Guy F. LeMieux (New Orleans)
Randall Meyer (Baton Rouge)
Ben E. Ritchey (Lafayette)

The secretary announced that Mr. Louis Duclos, a former President of the Baton Rouge Section and member of the LES Board of Direction, had received the first Engineering Professional Development Award presented by the Baton Rouge Council of Engineering and Scientific Societies. This was in recognition of his efforts over a period of years to advance the standing of engineering as a profession in Louisiana.

The meeting adjourned.

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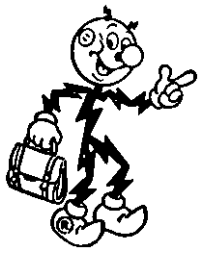

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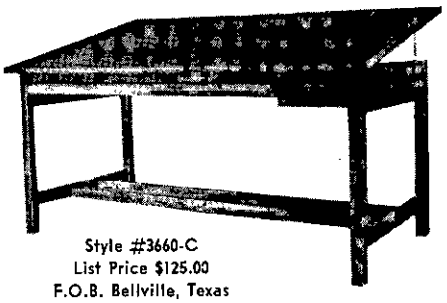

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LES Hosts Utilization Conference

Arthur E. Sanderson, director of personnel with the NASA Huntsville, Ala. center told the Louisiana conference on More Effective Utilization of Engineers that "a Saturn rocket with a 64 million horse power engine cluster capable of lifting three million pounds is planned for construction at the Michoud assembly plant.

If a lift capacity of three million pounds is staggering to the imagination, perhaps it will help to learn that this is the lifting power it would require to hike 500 large African bush elephants into the air, each weighing six tons.

Sanderson told engineers attending a New Orleans banquet at the Fountainebleau Motor Hotel, that the present Saturn "generates thrust power of 1.5 million pounds—or equivalent to 32 million horsepower.

Sanderson added that boosters were envisioned within coming years with as many as eight of these engines.

The second type of Saturn to be constructed at Michoud,, Sanderson said, will have two or more of these 1.5 million pound thrust engines.

Sanderson said a rocket dubbed by Huntsville scientists will have eight of the standard Saturn-type engines and will be capable of lifting 12 million pounds, or taking three men to the moon and back again.

He said the Nova could also propel three men around Mars and back on earth.

"NASA aims to put an Apollo spacecraft on the moon before 1970," Sanderson said.

"The Michoud operation at New Orleans is being established to fabricate, assemble, check-out and test two Saturn boosters, the present one and an advanced vehicle which is to follow."

"There will be two prime 'hardware' contractors and one prime support contractor, all of whom will have numerous subcontractors," he said.

"The George C. Marshall space flight center will have a resident government staff at the Michoud plant. This staff will be headed by a resident manager and he will report to the office of director of the Marshall flight center."

He said the resident manager will be the only government official at the site authorized to issue instructions to contractors.

Sanderson said a study revealed that "there was a great danger that the overwhelming mass of administrative detail could gradually push research work into a back seat.

As a result, Sanderson said operations at Michoud have been clearly divided down the middle. One personnel group will attend only to technical matters concerning research, development and the actual process of producing the rocket, he said.

Another group will fall roughly into the administrative category, scheduling, security, or any other non-technical matter, he added.

Earlier Nov. 20 Paul H. Robbins, executive director of the National Society of Professional Engineers, addressed the group at Tulane's University Center.

Robbins said a near-crisis in the industrial world is traceable to a step-like decline in the number of students deciding to enter engineering.

He said the average young person cannot make the semantic distinction necessary to realize fully what makes an engineer, adding that many young people think of railroad engineers.

Robbins said the press of America is largely responsible for blurring the image of an engineer by constant reference to engineers as synonymous with scientists.

Another reason for the drop in engineering enrollment is the lack of high school affiliation with the profession, he said, adding that it is impossible to teach engineering in high school.

"The problem is being combatted to an extent by the establishment of high school engineering clubs," Robbins said.

Robbins added that the anonymity of the profession and lack of glamour caused a certain lack of popularity.

"A survey by Ohio State university proved that not one person in 10 can name an engineer he knows," Robbins said. "In another survey it was learned that 50 per cent of all engineering students asked why they chose the profession said it was because a parent or relative asked them, or because of family attitude."

Robbins said a "great void" needs filling by technicians in engineer-related fields. He said post high school courses are partly solving the problem, along with dropouts from engineering schools.

He said the average salary of an engineer is nearly $10,000 a year, with specialists earning up to $50,000 per year.

He said that all of the astronauts are engineers.

The rebirth of the Michoud plant in the Space Age is going to point up the critical need for employers to fully utilize their engineers and scientists in this area, a top US manpower consultant said.

Dr. W. G. Torpey, consultant with the office of emergency planning in the executive office of the President, said that unless these employes are being fully utilized, they may choose to join the huge operation that is going to require many engineers and scientists.

Examples of critical fields involved are electronics, nuclear physics and chemical engineering, he added.

Dr. Torpey told engineers that demands for technological personnel are increasing tremendously and that school enrollments in these fields are dropping.

He said the increased demand is evident in several developments since 1961 began—The Foreign Assistance Act which will provide engineering knowhow to foreign countries, the current military buildup which is draining engineers and scientists from the economy, the Michoud plant, and the stepped-up activity of the Peace Corps which is recruiting engineers.

Dr. Torpey added that there is an increasing use of

engineers on the state level. He noted that Louisiana's state payroll includes 605 engineers and scientists.

Another speaker, Bernard Michael, chief of scientific and specialized personnel for the Bureau of Labor Statistics in Washington, said studies show there will be 72 per cent more engineers and scientists in 1970 if current challenges are met.

He stressed that the demand for engineers and scientists will be met in numbers, but likely will not be met in several critical fields.

Michael said that the solution can be approached from two ways—increase the supply or use the present technological employes better.

He said he thought a great deal could be done to cut down the attrition at science schools insuring that capable potential engineers are properly counseled.

Concurrent Panel Discussions included:

Panel 1: Electronic Computers in Industry and Professional Practice—Does Their Use Increase or Decrease the Number of Required Engineers and Scientists? Moderator: Dr. James W. Sweeney, Director, Computer Center, Tulane University.

Moderator: Prof. Wayne T. Wallace, USL, Lafayette.

Panelists: E. F. Fletcher, Vice-President in Charge of Engineering, Avondale Shipyards, Inc., Avondale, Louisiana; Gayden Derickson, Chief Engineer, Shell Oil Refinery, Norco, Louisiana; Waldemar S. Nelson, President Waldemar S. Nelson and Company, Inc., New Orleans, Louisiana; J. M. Hornsby, Programming Specialist, Computer and Data Processing, California Company, New Orleans, Louisiana.

Panel 2: Selection and Training of Engineers and Scientists for Junior Executive Positions.

Moderator: W. H. Senyard, Vice-President and Director of Personnel, Louisiana Power and Light Company, New Orleans, Louisiana.

Panelists: De Witt L. Morris, Manager, Industrial and Personnel Relations, Freeport Sulphur Company, New Orleans, Louisiana; E. W. McNeil, Manager, Employee Relations, Humble Oil and Refining Company, Baton Rouge, Louisiana; E. L. Patton, Chief Chemical Engineer, Southern Utilization Research and Development Division, U. S. Department of Agriculture, New Orleans, Louisiana.

Panel 3: Recruitment and Retention of Engineers in Industry, Government, and Private Practice.

Moderator: B. M. Dornblatt, Consulting Engineer, New Orleans, Louisiana.

Panelists: Robert C. Thompson, Placement and Development Division, Olin Mathieson Chemical Corporation, New York, New York; R. T. Grier, General Personnel Manager, Southern Bell Telephone & Telegraph Co., New Orleans, Louisiana; C. Carter Brown, President, Gulf Institute of Consulting Engineers, Consulting Engineer, Baton Rouge, Louisiana; Charles W. Burns, Manager, Personnel and Office Services, Louisiana Department of Highways, Baton Rouge, Louisiana.

Panel 4: Needs for Technical Institute Graduates to to Work With Engineers and Scienists—Supply and Demand in Louisiana.

Moderator: Dr. William W. Shaw, Director of Personnel, City of New Orleans, New Orleans, Louisiana.

Panelists: Marvin E. Thames, President, Delgado Trades and Technical Institute, New Orleans, Louisiana; Lucien T. Vivien, Consulting Engineer, New Orleans, Louisiana; Rudolf Hertzberg, Head Levee Design Section, U. S. Army Engineering District, New Orleans, Louisiana; G. Elmer May, Manager, Personnel Department, New Orleans Public Service Inc., New Orleans, Louisiana.

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Advises Early Mailing Before Christmas

Would you like a nice, relaxed Christmas this year, without the usual last minute rush? If so, Postmaster A. Frank Fairley has some good tips on how to achieve this happy holiday feeling.

You can dispose of your Christmas mailing in plenty time, Postmaster Fairley suggests, if you will observe these recommendations:

1. Do your shopping for Christmas now.
2. Check and revise your mailing lists. Be sure each address is complete with full name, street and number, city, zone and state.
3. Mail Christmas parcels promptly. Don't worry about being too early—just mail them marked "DO NOT OPEN UNTIL CHRISTMAS."
4. Buy Christmas cards soon and mail them early—for distance states in advance of December 10, and for local delivery not later than December 15. Remember, there will be no deliveries of Christmas cards and letter mail on Sunday, December 24 and Monday, December 25.
5. Buy plenty of stamps now while the post office windows are uncrowded.
6. Use 4-cent stamps to get first-class mail treatment—meaning your cards may contain personal messages, may be sealed, and may be forwarded or returned.
7. To speed Christmas card processing use the free post office labels to tie your cards into "local" and "out-of-town" bundles with addresses all facing one way.

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Describes Increasing Need For Engineers

Notes for a talk on "Specialized Manpower Trends in the 1960's," given at the Louisiant Utilization Conference, Tulane University, New Orleans, Lousiana, by Bernard Michael, Chief Stction of Scientific and Specialized Personnel Divisiion of Manpower and Eployment Statistics Department of Labor

I would like to talk today about some of the manpower trends in the decade of the 1960's. In these opening years of the space age, rapid technological advances and consequent changes in occupational requirements are to be anticipated. Furthermore, the number of young people entering the labor market will soon swell to a tide far exceeding all previous high watermarks.

In estimating future manpower needs, as well as how many people are likely to be available for employment, a basic consideration is the continuing dramatic growth anticipated in the Nation's population. Birth rates are expected to remain high. It is estimated that more than 40 million babies will be born in the United States in the decade ahead. Furthermore, with new advances in medicine, death rates should continue to decline. Thus, the total population is expected to rise from 180 to 208 million, or by 15 percent, in the decade of the 1960's.

Young people 18 years of age—the typical age of entering the labor market or going on to college—will increase at an even faster rate than the population as a whole. Their number will rise from 2.6 million in 1960 to 3.8 million by 1965—up nearly 50 percent in only 5 years. This large growth in the number of young people reflects the sharp rise in birth rates during the early years of World War II and the immediate post-war period. Thus, the one million increase in 18 year-olds anticipated between 1964 and 1965 reflects the particularly sharp rise in the birth rate in 1947, shortly after our armies were demobilized.

Not only 18 year-olds, but all youth groups will increase considerably during the 1960's. By 1970, there will be 16 million young people age 14 to 17 (the high school group) compared with 11 million in 1960. Similarly, the 18 to 21 age group—from which college students are primarily drawn—will go from less than 10 million in 1960 to nearly 15 million by the end of the decade.

As anyone connected with education knows, the rising tide of boys and girls has already engulfed the elementary schools and is now moving into the secondary schools. It will have a great impact on the country's high schools and colleges during the coming decade. Enrollments in grades 9 thru 12 are expected to increase by nearly 50 percent during the 1960's—from 9.2 to 13.7 million—on top of a 40 percent increase during the 1950's. College enrollments will go from 3.8 to 6.4 million—up 70 per cent—after a rise of 40 percent during the decade just ended.

These figures are all estimates by the U. S. Office of Edcation and allow for a moderate continued rise in the proportions of young people attending high school and college. They also assume that the necessary teachers and physical facilities will be available. This is a large proviso. Unless strenuous efforts are made immediately to train the needed teachers and to plan and finance the required expansion in facilities and operations, our country may not be able to provide higher education for all the qualified young people seeking it—with great consequent loss to the national strength and welfare as well as to individuals concerned.

We have seen the large increase we can expect in our population. The next question is—how many of these people are going to be workers. That is, how many persons will be knocking on doors and saying—"I want a job." Here again, the overall number is very impressive. In absolute terms, the labor force will go up from 73½ to 87 million—up 13½ million workers during the 1960's. That is the biggest jump in the American labor force in our history. As you can see, the relative increase at 80 percent is significantly higher than the percentage increase in the population.

The labor force growth will be made up primarily by 2 groups—young people and women. Nearly half of the overall increase in the labor force will be accounted for by young workers under 25. There will also be an increase of about 5½ million, or 40 percent over age 45. In the intermediate age group, the increase will be very small. In fact, in the case of men age 35 to 44 there will be an actual decline in the number of workers, reflecting the drop in the birth rate during the depression years of the 1930's.

And, of course, no description of the manpower situation—past, present or future—can be made without reference to the women. As we look at the history of the United States, we find that today the proportion of the population which works in this country is just about the same as it was at the turn of the century. Roughly, the same proportion of the population is in the labor force now as it was 60 years ago. But, the big story really is that this is a compound of a number of important changes. The drastic decline in labor market participation amoung young people and the equally dramatic decline in labor market participation among the older people were counterbalanced by women, whose labor market participation rates have increased to such an extent that they have kept the total percent in the labor force the same. Well, here's the story for the women. You will note that aside from the very young and the very old among the women, at least two out of every five women in each of the other age groups is going to be the labor force. By 1970, we will have about 30 million women in the labor force, 25 percent more than in 1960.

In the 14-19-year age group, most girls are still in school and thus we have a relatively small proportion who work. When you get to the next group, the 20-24-year age category, the proportion who are in the labor force is higher—as girls leave school more enter the labor market. The labor force participation rate then falls in the 25-34-year age group, as girls get married, have children, and leave the labor force. The participation rate then goes up again in the 35-44-year age group, when the children get old enough to go to school and women return to the labor market. As you can see, if present trends continue, more than one out of every two

women will enter this age group and work in 1970.

Now, let's get back to the young people. By the late 1960's, 3 million new young workers will start their work careers each year, as compared with a present annual rate of about two million. Altogether, 26 million young people will enter the labor force during the present decade, almost 40 per cent more than during the 1950's. This will be a far greater number than the economy has ever had to absorb in a single decade—far more than we have ever had to provide with training, vocational guidance, placement services, safety education, and all the other aids needed to assist young people in the transition from school to work.

How well will the country's young workers be equipped educationally to meet the growing demand for highly trained and educated personnel? The Labor Department's studies indicate that new young workers entering the labor market during the 1960's will have more education than those who started working during the previous decade. About 70 per cent of them will be high school graduates, or better, and 26 per cent will have some college education. In contrast, among the young people who entered the work force in the 1950's the proportion that were high school graduates, or better, was 60 per cent and the proportion with some college education, only 22 per cent.

Despite the fact that our new young workers will be better educated, there will still be millions of young workers without a high school education. Current trends suggest that about 7.5 million of the young people entering the labor force during the 1960's will not have completed high school, and that 2.5 million will not have completed even the 8th grade. The school dropouts will especially need counseling, guidance, and placement services. Currently, it is difficult for them to find jobs and their situation is likely to get worse as the number of high school graduates grows and job opporunities for the partly-educated shrink.

Now let us look at the kind of jobs that will be available for all the new people entering the labor force. During the 1950's—about 1956—we had a significant occurrence. In that year we literally had as many people in the so-called white-collar occupations (professional, office, and sales) as we had in all the manual occupations (skilled, semiskilled, and unskilled). This represented a rapid and fundamental change in employment patterns. In 1910 there were more than twice as many blue-collar as white-collar workers in the country. There is nothing in the offing we can see that will change this trend, and the growth areas during the 1960's will continue to be in the white-collar occupational groups.

Let's take a closer look at what we may expect in the sixties in terms of the various occupational groups. Changes in the level of employment of a particular occupation group depend on a number of factors. Among those factors are changes in the occupational distribution of individual industries resulting from technological and other changes; the more rapid growth of some industries than others; the shortages or expected shortages of occupational supply; and decisions of government such as expenditures for research and development or the initiation of large-scale space programs. Let's look at one factor, the change in the occupational distribution of individual industries, that is, the proportion that each occupation makes up of total employment in an industry. Occupational patterns change as a result of technological advance—changes in the way we make things or run businesses. A simple illustration is the changing ratio of production workers to nonproduction workers in manufacturing. The average employment in manufacturing was just about the same in 1955 as in 1960. Nonproduction workers, who are primarily white-collar workers, increased as a proportion of total employment from 21 to 25 per cent. In this 5-year period, the number of nonproduction workers in manufacturing rose from 3½ to 4.1 million—a gain of 600,000. On the other hand, production (blue-collar) workers declined by more than that figure.

Changes in the relative size of individual occupations or occupational groups also depend to a large extent on the varying rates of growth of individual industries. Our analysis indicates that the primary reason clerical employment has grown faster than the labor force as a whole in recent years is that industries which employ large numbers of clerical workers have been growing the fastest. Industries such as finance and insurance, government, and business and professional services, in which clerical employees make up a large percentage of total employment, have grown much more rapidly in recent years than industries such as manufacturing and mining, where clerical workers constitute but a small percentage of total employment.

A third factor which affects the growth of individual occupations or groups of occupations is the availability and education and experience of the labor supply. For example, the shortage, or expected shortage, of engineers and scientists undoubtedly was an important factor in the rapid increase of employment of technicians. The supply of Physicians has also been less than the demand for their services.

A fourth factor in the relative growth of occupations is the decision of the government in recent years to provide large sums of money for civilian activities. The expenditures for research and development, for example, is one of the reasons for the very large growth in technical occupations. A recent National Science Foundation release reported an approximate doubling in funds expended on research and development between 1954 and 1958 (much of the funds coming directly or indirectly from the Federal Government). This increase in R&D expenditures resulted in the number of scientists and engineers employed in the performance of R&D in the natural sciences to rise by 50 per cent—from 220,000 in 1954 to 330,000 in 1958.

Although blue-collar occupations as a whole are expeected to decline as a proportion of the labor force, there will be divergent trends within the occupational groups of this category. Employment of skilled workers —that is, craftsmen, foremen, and kindred workers— has increased at about the same rate as the labor force in the 1950's, after showing a very rapid growth in the 1940's. With the anticipated large increase in construction worker employment and the growing need for skilled maintenance and repairmen who can install, maintain, and repair increasingly complex machinery and equipment, skilled workers are expected to increase in number at a somewhat faster pace than the labor force

in the next decade. Particularly rapid growth can be expected among such construction craftsmen as electricians and power-equipment operators, and appliance repairmen and tool and die makers.

The largest occupational group in the American labor force has been the operatives—the Census designation for those generally called semi-skilled workers. Included among operatives are single-machine operators or tenders, assembly workers in industry, truck drivers, etc. In 1910 they comprised about 14 per cent of the work force; by 1950 their proportion had risen to 21 per cent. In the Post-WW II period technical developments had considerable impact on this group of workers and has slowed down their growth. Indications are that this occupational group will grow at a slower rate than the nation's labor force in the sixties, but will continue to be the largest occupational group in our economy.

Reflecting the impact of technological change, the employment of laborers actually has declined from about 4 million in 1910 to about 3½ million in 1950, and as a proportion of the labor force has declined from about 12 to 6 per cent. In recent years the number of laborers employed has remained relatively stable and we expect little change in their employment in the decade ahead, although as a proportion of the labor force, this occupational group will continue to decline.

Employment of clerical and sales workers, who form the largest of the white-collar groups, is expected to rise by about a quarter between 1960 and 1970. Clerical employment will continue to rise because of the steadily growing volume of record keeping and communications involved in the operations of industry, business offices, and government agencies. The increase in the number of clerical positions will probably not be as rapid as in the past, however, because of the introduction of electronic computers and other types of labor-saving office equipment. These technological developments will not only limit the growth in clerical employment, but will also mean rising educational and training requirements for many types of clerical work. In general, the jobs eliminated by the computers and other forms of office automation are of a routine nature, whereas new positions created by these machines—that of programmer for example—will require considerable training and skill.

We expect that sales jobs will continue to increase somewhat faster than the labor force as a whole, as a result of the increasing population and the rising level of personal incomes. However, certain trends, such as the growth in self-service retail stores, prepackaging of goods, the widespread use of vending machines, etc., are expected to hold back the growth in retail sales personnel. On the other hand, the opening of stores in suburban areas and the extension of hours when stores are open have created a demand for part-time jobs, especially for women who work either a few hours a day or one or two days a week. The increase in part-time sales workers is one of the factors in projecting a more-than-average growth for this occupational group.

Of the major white-collar groups, proprietors and managers are the ones expected to grow most slowly. Nevertheless, this group is expected to rise faster than the labor force as a whole. It should be noted that the managerial group includes both proprietors of small business enterprises and salaried officials. Growth in the number of self-employed proprietors will be relatively slow in the years ahead because of a trend toward the formation of larger business. On the other hand, the number of managers and salaried officials in business organizations and government agencies is mounting rapidly, and with it the demand for college graduates as executive trainees and other managerial positions. College graduates are now being given preference over people with comparable experience less education for many administrative positions which either did not exist a few decades ago or which would have been filled by employees selected primarily on the basis of their experience and personal characteristics.

Since you people are especially interested in professional and technical occupations, let us examine the occupations in this group more closely. Nearly all professional occupations are expected to grow although not at the same rate. In teaching, the largest of all professional fields, we expect to have about two million elementary and secondary school teachers, a 25 per cent increase over the 1.6 million in 1960. College teaching is expected to rise much more rapidly—increasing by about 75 per cent to about 310,000 in 1970. A number of other fields are expected to increase fairly rapidly. Accountants and auditors, for example, may number 500,000 by 1970, nearly 100,000 more than are employed today. Some of the professional fields will show very little growth. For example, growth in the health occupations will be limited by the availability of training facilities. We do not expect very rapid growth among physicians, dentists, or nurses.

On the other hand scientific and technical occupations are expected to grow at an extremely rapid rate. Although growth in these occupations may also be hindered by insufficient supply.

Our projections of scientific and engineering employment indicate an increase of about 72% over the 1960 decade, from almost 1.2 million in 1960 to about two million by 1970. For engineers employed in the civilian economy, the increase projected is 75 per cent—from about 850,000 in early 1960 to almost 1.5 million in 1970. For all scientists as a group (including mathematicians) the projections indicate a growth in employment of about 65 per cent over the 10-year period, from about 335,000 in 1960 to almost 550,000 in 1970. Among the scientists we think that mathematicians and physicists will show the most rapid rate of growth.

The methods used in projecting scientific and engineering employment are discussed in great detail in a study prepared by the Bureau of Labor Statistics with the support of the National Science Foundation. The results of this study, "The Long-Range Demand for Scientific and Technical Personnel," now at the printers, will be published by the NSF in December.

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 will be made to answer quesitons 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. And any other questions our readers might wish to submit, pertaining to the Engineering Profession, will be welcomed by the Editorial Staff.

QUESTION—Does the Louisiana Professional Engineering Registration Act allow credit for engineering education without graduation?

ANSWER—Yes. The Louisiana Act specifically states that the satisfactory completion of each year of an approved curriculum in engineering in a school or college approved by the Board as of satisfactory standing, without graduation, shall be considered as equivalent to a year of experience. However, no applicant can receive credit for more than four years of experience because of undergraduate educational qualifications.

QUESTION—Is graduation in a college curriculum other than engineering allowed as credit toward registration as a Professional Engineer in Louisiana?

ANSWER—Yes. The Louisiana registration act states that graduation in a curriculum other than engineering from a college or university of recognized standing may be considered as equivalent to two years of experience.

QUESTION—May an applicant for Louisiana registration as a Professional Engineer have access to books, tables and other aids during his examination?

ANSWER—Yes. The Louisiana Act states that any books, tables, calculating machines or other aids to which a practicing engineer would have access may be used by the applicant in the examination.

QUESTION—May the Louisiana Registration Board refuse to register an applicant who meets all qualifications having to do with education and experience?

ANSWER—Yes. The Louisiana Act states that an applicant must be of good character and reputation.

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Research and Development Planning

REAR ADMIRAL J. P. MONROE, USN
Assistant Chief of Naval Operations (Development)

I am happy to be here and have the opportunity of speaking to the members of the Baton Rouge Council of Engineering and Scientific Societies.

Vice Admiral Hayward whom I am replacing will be in the hospital for at least a week with the flu. He sends his warmest greetings to his many friends together with his regrets at not being with you tonight.

This is my first visit to Baton Rouge, and I am impressed with your beautiful and thriving city with its friendly and hospitable people.

I would like to make a bargain with you. As I understand it, my job is to speak to you for some thirty minutes, and your job is to listen. If you finish your job before I finish mine, please hold up your hand.

My subject tonight is "Military Research and Development Planning"—which sounds like a dry subject but is really most challenging—presenting difficulties to planning experts not found in other fields. The number of unknowns, the lack of historical and statistical data and uncertainty factors far exceed those encountered in the more familiar planning activities.

I am not concerned here with so-called attempts in "scheduling inventions." Actually, our scientists tell us that they can predict, with fair accuracy, the scientific advancements that will be made in the next five to ten years. This may be true. There are so many people today making prediction that statistically someone is sure to hit the mark.

The military research and development planner is faced with the planning problem of how to turn scientific advances into weapon or weapon system. Then he has such minor problems of estimating the total development cost (which is no mean figure to estimate), and the future capital and operating costs if a decision is made to procure it. The problem doesn't end here—it (the weapon or system) must be compared with alternate ways of achieving the same objective—the timeliness of introduction into the operating forces—to fight in what environment—in what future national strategy —in support of what national objective.

I hope I haven't provoked the thought that the problem is insurmountable because research and development planning not only must be done but is being done. What I want to demonstrate is that it is not an exact science and we are continually trying to improve the process in Navy research and development. The objective is to systematize a procedure which appears to be determined to resist such an effort. We can't make decisions until we have all pertinent information available in an understandable form.

What are the steps in military research and development planning? They start with national policy from which is derived our national objectives. These, of course, are determined by the president and the National Security Council. From here, the Department of Defense must translate these into military objectives. Moving to the Navy specifically, these military objectives are analyzed to determine what it is the Navy must be able to do to support the objectives. Of course, all of the foregoing is not research and development planning, but it is a vital input to our planning.

In order to come up with realistic concepts for carrying out our Navy functions and tasks, the resources of the scientific community must be fed in very early to aid in the development of new weapons which must operate in the warfare environment of 5, 10, and 15 years from now. Because, if we are going to be able to provide the capabilities in our fleets to meet the threats of the future, we must be able to state the requirements today and commence the research, exploratory development, and systems development now or the hardware will not be in the hands of the operating forces in time.

This first hurdle in our planning process is a critical one. The next step is two-fold: One, to translate the Navy objectives into research and development planning objectives for guidance of the Navy research and development community. This is the statement in meaningful research and development terms of how we should orient, and where emphasis should be placed in research and exploratory development. Second, is to have the operations people state requirement for future weapon systems. In this day and age, this is another very difficult element to accomplish properly.

The fleet, the traditional staters of requirements and the ultimate users of the systems, can no longer keep up with technological advances. Hence they are not in a position to call out advanced weapons systems. On the other hand, we cannot rely solely on scientific people to establish our requirements because they are frequently not competent in the operations area. Again we must have a cross-feed such that the deputy chiefs for operations and air can be apprised of what technology can do for them, meld this with their operating experience and so become competent to state requirements geared to advancing technology. Thus the research and development planner is the link between the R&D community and the operations people.

Once the operational requirements are available, we are in a position in research and development to generate proposed technical approaches toward satisfying, in whole or in part, the stated requirements. There may be several specific solutions to any of the problems posed by a requirement.

There is now a need for studies from which a decision can be made to pursue one (or more) or not to pursue any of the proposed solutions. The alternate and competing solutions are examined in detail as well as the following factors:

Technical feasibility.

Required research advances.

Financial requirements as a function of program time (cost budgeting).

Adm. Monroe was the main speaker at the Fifth Annual Banquet of the Baton Rouge Council of Engineering Societies, at which LES past board member Louis Duclos was awarded a plaque for his work in behalf of an improved Engineering Registration Law.

Physical requirements as a function of program time (tools, plants, bases, ships, aircraft, etc.)

Personnel requirements to make effective use of this equipment (training).

Support items and services involved (evaluation and fleet application).

Measure of worth as a function of time of the problem solution, where:

$$\text{WORTH} = \frac{\text{(EFFECTIVENESS) (VALUE)}}{\text{(\$ COST \& TIME)}}$$

When these studies have been accomplished, we are in a position to provide top management with completed staff action for logical, reasoned decision on factual bases of cost and effectiveness and timeliness.

Now we must chart our program. In this step we lay out our time development and funding schedules with identifiable milestones for each project to check our progress. This leads us quickly into the budget planning process where the trade-offs must be made in the light of fiscal limitations—the balance of funds between research and development and procurement of ships, aircraft, and missiles. Adjustments are made to the program package to delay starting certain systems until a later date, cancelling or not funding certain systems, and at all times keeping the balance of warfare capabilities, in all functional areas, in proper perspective.

A well-managed program will insure the equipment installed in ships receives the highest priority and works —the new systems far along are budded for early completion. This may very well starve some new areas—but money dictates—we cannot do everything we want.

We continually have three budget cycles under active consideration and the cutting and fitting process is going on continuously.

At this point I would like to refer again to the important relation the planning for development of advanced systems bears to our economy. The military services have a tremendous responsibility to perform the most astute planning in this regard. Irresponsible development of the many highly attractive systems that technology can produce for us can lead to commitments for production and procurement that can price us right out of existence. Because of the inexperience factor in estimating costs of advanced developments, there has been a tendency to underestimate and be over-optimistic on these costs. The projects have a tendency to "grow like topsey" and suddenly you find that so many of our industrial resources are tied up in this thing that you can't turn it off—even if you decide later that you don't need it. The economic repercussions would be such that you might start a chain reaction leading to serious difficulties. So, I say again, research and development planning—no matter how impossible it may appear—must be done, and it must be done very well. We have available to us many fine management tools and techniques to assist us here. Exemples are: operations research and war-gaming.

I have talked to you about research and development planning. How is our planning working out? Is it effective? Let's judge by the results.

I am a naval officer and have spent my entire adult life in the Navy. I am sure you will not be surprised if my first example is a Navy one.

Our Naval planning has resulted in the United States having the most powerful, effective and ready Navy in the world.

I am sure you recognize that the Navy and Marines is our most effective means of projecting our national power to the far corners of the earth and being able to conduct sustained operations when we arrive.

What does seapower mean? It means control of the seas. Why is this important? It means that in time of peace all ships are free to roam the seas of the world.

In time of war, we deny our enemies the use of the seas and strangle him to death. For no nation is self-sufficient—all nations must import a variety of vital minerals and materials which they lack.

As missiles demonstrated they can do a better job, they are taking over some of the functions of manned aircraft.

How are we doing in missiles? The United States has in every category effective operational missiles. Here are some of the missiles we have available at this moment ready for use.

In the air-to-air category, we have the Sparrow, Sidewinder, and Falcon, and the simple reliable Bullpup in the air-to-surface. We are taking the guns off our ships and replacing them with Terrier, Tartar, and Talos. We are ringing our cities with Nike-Hercules—equipping our ground battalions with Hawk. In the surface-to-surface category, we have a whole family of missiles—small hand-held anti-tank—12-mile Honest John—75-mile Corporal—200-Mile Redstone (the missile which boosted both Sheppard and Grissom on their recent rides down the Atlantic missile range—500-mile Regulus—600-mile Mace—1500-mile Polaris, Thor, and Jupiter—6000-mile Atlas.

There is another area of increasing interest to everyone—space. A few years ago space was a subject for science fiction writers. Today it is our new and challenging horizon which man must inevitably conquer—and America must be the first to do so.

How are we doing in space? The U. S. has accomplished more space than all the rest of the world put together.

If you want it in the form of a football score, we are ahead 54-16.

If I had talked to you a year ago, the score would have been 30-10. In October, 1957—1-0 against us.

What do I mean by this? I mean that up until present, U. S. has launched total 54 major successful space or sat shots. Sats like Tiros, Transit, Echo, Courier, Explorer XI—Total 54. Of our 54, 3 in orbit—9 transmitting.

What of the 16—1 sat earth—2 sat sun—all dead.

The significant thing is no other country has had more than two—more often one—majority of time since beginning of space age—none.

From our payloads, we have extracted from space many, many times more info that all the rest of world put together.

This info is the building blocks with which we will construct our space projects in the future.

The invaluable info without which no nation will ever conquer space. You can't successfully penetrate space until you know the conditions existing in space. In this area U. S. is far ahead of the rest of the world.

U. S. I believe our combination of military, economic and moral strength is an unbeatable combination. And, by the way, do not be misled by those who seek to tell you that an increase in military strength increases the danger of war. I am sure you realize, as I do, that military strength in hands of a stable and responsible government such as the U. S. is a guarantee of peace not war.

For I can assure you that America is the greatest country in the world and each of us are privileged to be citizens of the United States. No nation will ever surpass us unless we sit on our hands and let them do so. Other countries have mounted massive propaganda campaigns designed to mislead us and the rest of the world into believing we are in danger of being surpassed. Our greatest danger lies in accepting any of this propaganda and thereby losing confidence in ourselves and our own free enterprise system. It is one of the mysteries of this decade how citizens of the greatest country in the world can possibly lose confidence in themselves.

It seems to me that some Americans are badly in need of a revival of faith in their own country—in its strength and its greatness. I would like to hear more people publicly declare, as I do, that they are proud to be an American—proud to pledge allegiance to their country—proud to recite a loyalty oath. How can any citizen of this great country hesitate for an instant to declare their loyalty to the United States? Yet we have citizens who do for reasons so petty and so vague that I cannot understand them.

We have deficiencies—we make mistakes—everyone does. Let's stop apologizing for them. Let's stop rewailing them. Let's stop over-emphasizing accomplishments of other countries. There is no one or no country in this world we need to be afraid of. We are citizens of the greatest country in the world. I think it's high time the citizens of this country started acting like it.

Thank you.

Products: New Coating

A unique protective coating especially suited for users in this area is now being distributed by Universal Coatings, Inc., National Bank of Commerce Bldg., Ja 50659. This coating is GACOTE NA-62 and is manufactured by the Gates Engineering Co. of Wilmington, Delaware.

Na-62's unique blend of Neoprene and Bituminous materials make it extremely effective for general maintenance purposes and water immersion services. The coating is especially suited for this climate because it can be applied to a damp surface, certainly an important property for a coating to have for use in this area. Its resistance to both fresh and salt water corrosion is excellent, making it ideal for marine or offshore uses.

Na-62 is easily applied, as it requires a minimum of surface preparation. In most cases no sandblasting is required. The coating can be brushed, rolled or sprayed on to the surface, usually without a primer.

This versatile and effective coating is available at the low cost of 10c per sq. foot at the recommended mil thickness for most applications. Local references as to the effectiveness of this and other GACOTE products, all handled by Universal Coatings, Inc., are available upon request. A complete line of GACOTE coatings is distributed by Universal Coatings, Inc. Inquiries are welcomed and should be addressed to Mr. Terrence Holley.

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UNITED GAS advertising in national magazines has gained favorable attention for the Gulf South from thousands of industrialists and millions of prospective vacationers. The first advertisement in this long series appeared during July, 1939 — more than 22 years ago — and the campaign has run continuously since that date. This is another of the many ways in which United Gas is "serving the Gulf South."

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"Self-Contained Sea Water Distilling Machines"

By J. E. POTTHARST, JR.

Self-contained sea water distilling machines are complete plants ready to operate, mounted on a steel skid, used for the purpose of making fresh water from sea water. The distilling units that I am most familiar with are those that make distilled water of high purity from sea water; the machines made by the company I am connected with produce distilled water with usually less than 1 ppm of Cl.

There are many processors being experimented with to produce fresh water from sea water but distilling is the only proven available method.

There are three principal types of distillation processes in use. The efficiencies of the first two processes vary considerably with the number of stages; the following figures represent approximately the best that can be done with each process:

Multi stage flash: 26 stages gives 6# distilled water per 1,000 BTU's

Multiple effect: 12 effects gives 10# of distilled water per 1,000 BTU's

Vapor compression: old type, 11# of distilled water per 1,000 BTU's; the new non-scaling equipment discussed herein in the small size gives 15# of distilled water per 1,000 BTU's and in the large size, 18# of distilled water per 1,000 BTU's.

It is quite obvious that vapor compression is by far the most efficient process. The principal reason for its superior efficiency is the fact that it circulates and retains the latent heat within the system, and therefore requires no condensing water. It uses less fuel than any other system.

A standard distilling unit of vapor compression type that we have been producing for about 10 years is powered by a diesel engine and is completely self-contained. This unit operates at approximately atmospheric temperature (215 F.). This type equipment scales up in about three weeks' operation; acid cleaning then returns it to the beginning of the cycle condition. The scale results in more fuel being consumed, chemical cleaning cost, and the greater corrosion associated with 215° F. and frequent chemical cleaning. Scale is responsible for 40% of the overall cost of distilled water produced by this type machine, which had an efficiency of distilled water per 1,000 BTU's.

Several years ago we started a research program in an effort to develop a process for operation without scale that would require no chemicals and be simple. This process was developed and operates at high vacuum (about 28" Hg) with forced circulation; it uses a centrifugal blower to compress the steam. It is a basically simple system which is easy to operate and maintain, is completely self-contained, and requires only fuel to operate. The process and many mechanical features of it are the subject of patent applications. This non-scaling process has an efficiency of between 15 and 18# of distilled water per 1,000 BTU's and results in reducing the overall cost of distilled water about 40%.

With reference to the engineering and development of the machine to use this process, probably the single item that gave us the most trouble was the compressor seal. We found that we could not tolerate any leakage whatsoever and though we searched the market with the seal manufacturers we could not find a suitable seal that had long life, low horsepower requirement and zero leakage. The seal design finally adopted and perfected is fully automatic and capable of many years' life with zero leakage.

The sea water circulates in the evaporator in such a manner that the least number of turns are made by the circulating water; the circulator impeller itself provides one of the 90° turns that the water must make in its closed circuit. This hydraulic circuit results in minimum head for the corculator to work against and therefore minimum horsepower consumed by the circulator.

The low temperature provides two other dividends:

A very low corrosion rate

It allows the use of plastics instead of bronze

I might mention that we are still experimenting with fiberglass construction. With regard to metals, we have never found anything but bronze or bronze alloys suitable for use with sea water.

The engine provides all the heat and power needed. This machine produces over 15# of distilled water per 1,000 BTU's input.

The fuel is by far the highest operating cost of the overall cost of distilled water produced by a 10,000 gallon per day distilling plant, despite the high effeciency of this unit; the only other significant cost is that of depreciation. This size plant is almost invariably an accessory to facilities which already require an operator and since the customer does not have to all to his payroll to operate the machine, we do not include labor in the operating cost.

Mr. Pottharst, president of Mechanical Equipment Co., Inc., of New Orleans, addressed this topic to the L.E.S. October meeting.

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"Freeport, Texas Seawater Conversion Plant"

By H. G. LANKENAU[1] and L. T. TAYLOR[2]

It has been estimated that the population of the United States is headed towards doubling by the year 2000. When we consider that the present annual demand for fresh water is approximately 325 billion gallons per day and that the total dependable supply of fresh water is estimated at 515 billion gallons per day, we find that extrapolation of the consumption curve reveals a balance of supply and demand at about the year 1977. Furthermore, the problem will prove to be far greater in some areas than it is in others, because the nation's available water resources are not evenly distributed. As a result, some areas will have more water than they will need in the foreseeable future while others such as the arid southwest and thickly populated Mid-Atlantic states face increasingly severe shortages.

Without going into all of the various evaporator types that were considered, the final design as utilized at Freeport was selected after consideration of all known evaporator types.

The FF unit was selected because liquors are processed at an efficient rate in view of the high velocity thin film action, also liquor to be preheated prior to boiling passes quickly through the tubes with resultant low pressure drops across the bundle. Pilot plant data had indicated that higher heat transfer co-efficients were obtained in the falling film unit. Further with a view to utilizing 12 effects, the FF evaporator represents a more stable machine when operated on low temperature differentials or driving force. Suspended solids can be tolerated due to the down flow "washing" action within the tubes, thus solids are washed over the heating surface terminating in the lower portion of the vapor body with the suspension then being transferred to the next effect or in the system.

The effect into which live steam is introduced is designated as the first effect and as a result will always operate at the highest pressure and temperature. Vapors produced in the last effect will be condensed in a condenser or possibly in future years to be used in a subsequent process. In normal plant processes, condensate from the first effect will usually be returned to the boiler make up; however, in the case of Saline plants, this condensate (distilled water) is usually added to the product or fresh water system. Furthermore, that portion of the liquid or water which is vaporized in the first effect is carried to the heating element of the second effect where it gives up its latent heat of vaporization, is condensed as distilled water and added to the product or fresh water system. This step is carried on from the second effect to the third effect, etc., depending upon the total number of effects in the system. In the case of Saline plants, the concentrated liquid or blow-down is disposed of by returning to the source from which it came, i.e. the ocean or sea.

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[1]Regional Manager Process Division Chicago Bridge & Iron Co.

[2]Process Division Chicago Bridge & Iron Co.

Theoretically in a triple effect system such as that shown there would result three pounds of water evaporated for each pound of steam used. However, numerous conditions served to nibble away at this figure so that the actual economy is somewhat less than three pounds.

The installation at Freeport is unique in that, while there are many multiple effect evaporators in operation throughout the world, no other contains 12 effects. In general, the greater the number of effects the greater the economy, that is pounds of evaporation per pound of steam utilized.

Essentially the process flow sheet consists of three major flows streams: 1. Vapor or steam. 2. Liquor—raw seawater or blow-down. 2. Condensate or distillate (fresh water).

Steam at 35 psia enters the first effect. As we have noted previously in the simplified triple effect, vapors generated in the first effect become the heating media for the second effect and so on down the line. The last effect vapors are finally condensed by the feed seawater in the condenser. In addition, vapors are withdrawn from intermediate stages to supply the raw seawater heaters with the energy required to perform the preheating functions for each unit. A small amount of vapors are also used in the deaerator for stripping gases from the raw seawater.

The second system consisting of the seawater or blowdown shows the seawater passing through four preheaters prior to entering the deaerator. In the lower portion of the deaerator a slurry of Magnesium Hydroxide is mixed with the deaerated seawater forming a 1% mixture. This liquor is pumped from the deaerator through 21 preheaters before entering the top liquor box of the first effect. You will note that one of the basic principles of ecenomy is adhered to whereby energy is taken at the lowest possible level to perform the preheating.

The seawater is heated to boiling in the first effect and the water and vapor body as noted previously. As a result, the concentration of dissolved solids in the seawater increases in proportion to the amount of water removed. We now refer to the seawater leaving the first effect as the blow down from the first effect. You will note that the blow-down flows in parallel to the vapor. Upon leaving the last effect concentration of solids in the blow-down has increased to four times the amount entering in the first effect. This also means that the suspended slurry is not 4% instead of 1%.

Blow-down from the east effect is now pumped to the clarifier thickener where Magnesium Hydroxide crystals are recovered. The underflow of the thickener returns to the mixing section of the deaerator. The overflow from the clarifier is discharged to the sea.

Major Flow Stream No. 3 Condensate or Distillate—As noted previously, vapors from each stage are condensed in the subsequent stage with the result that product distillate is formed. By means of heat exchangers, heat energy is transferred from the distillate to the countercurrent seawater being preheated. All of this is done for purposes of ecenomy, since 50% of the distil-

late must be ultimately cooled to 88° F. prior to use by the City of Freeport.

MATERIALS OF CONSTRUCTION—As has been noted previously carbon steel can be used as a material of construction with the exception of those portions of the equipment that are in contact with raw seawater. Cupro-Nickel alloys have been used in exchangers and condensers handling raw seawater prior to deaeration. Tube materials in the evaporator bodies and in other heat exchangers were varied in order to obtain corrosion data for both ferrous and nonferrous alloys. For example, tubes of aluminum bronze, Corten, 90-10 Cupro-Nickel, and Admiralty materials were utilized. The OSW plans to pull some of these tubes periodically and to make observations on corrosion rates, in order to evaluate the relative merits of the different tubular materials. One objective of the OSW seawater conversion plants has been experimentation and development of knowledge, all with a view to reduction in cost of producing fresh water from the sea. As a result, a number o fchanges may be made in the operation in the future as soon as necessary information and data have been accumulated for the present flow scheme. For example, long range objectives include revisions to the present flow to provide for a backward flow operation which would be a prerequisite to recovery of salts by crystallization. The equipment also provides for addition of vapor recompression if this is considered desirable.

The advantages expected from the Freeport installation are based on following factors:

1. Development of low unit cost of water resulting from high thermal economy, absence of chemical costs and relatively scale free operations.
2. Inexpensive carbon steel materials utilized for major construction.
3. High heat transfer rates requiring less surface than conventional evaporator types.
4. Possible fourth long range plan. The blow-down concentrate may provide source for salt recovery processes.

One purpose in presenting this paper is to acquaint the listener with a Saline water conversion plant in contrast to conventional raw water treatment plants. In the final analysis, the need for control of hardness, pH, color, odor and turbidity are considerations in any plant whether the raw water supply be seawater or inland well or surface water. However the equipment and methods utilized to accomplish these ends in a distillation plant can hardly be compared to conventional plants and procedure.

The Freeport plant was designed to produce potable water for about $1.00 per thousand gallons using the OSW standardized procedure for estimating Saline water conversion costs. This procedure recognizes cost of land, capital investiment, operating expenses, maintenance, insurance, taxes over a 20-year period. These are production costs only, without any consideration for distribution. This procedure is helpful when comparing the cost of one process vs. another. However they should not be used as a comparison with other types of water supply unless the alternatives are also computed on equivalent basis.

It is expected that the wide scope of the OSW demonstration plant program and research projects, complimented by competitive spirit of private industry will without a doubt lower production costs. It is further expected that the problem of industrial, potable and irrigation water exceeding the supply should result in conversion plants becoming competitive and common place along our coast lines and in certain inland population centers by the year 1980.

The writers would like to acknowledge various sources which have been used in the preparation of this paper particularly:

1. "Saline Water Conversion and the Demonstration Plant Program"—Allan Cywin, Assistant Director of Demonstration Plants, OSW, June 1960.
2. Booklet "The Facts About Salt Water Conversion" published by Research and Education Committee for a Free World, April, 1960.
3. Seawater Conversion Plant—Freeport, Texas—Paper presented at ASCE Convention, Phoenix, Arizona, April 13, 1961 by A. N. Chirico and J. P. Dunn, Chicago Bridge & Iron Company.
4. "Fresh Water from the Sea" Corrosion Reporter-International Nickel Company, Volume 8 No. 1 August 1961, as well as many other miscellaneous sources.

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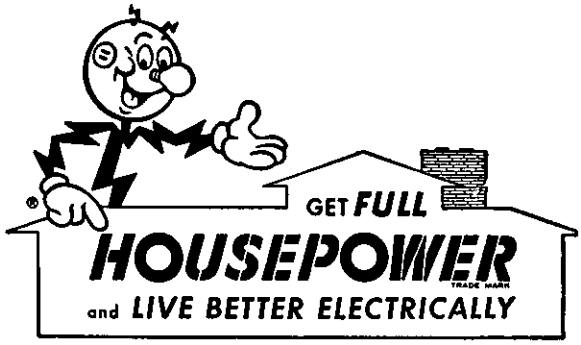

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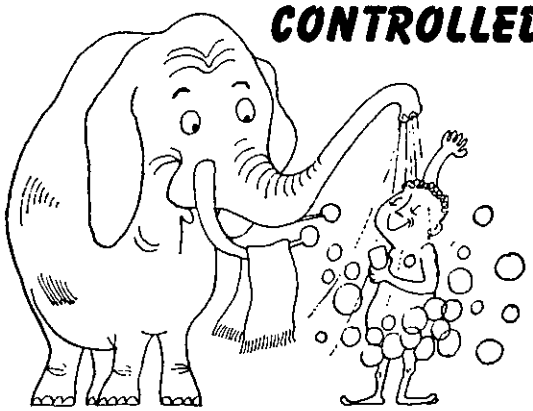

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La. Tech. Holds Aerospace Meeting

Several leading astronautical scientists of the nation spoke at an Aerospace Education symposium held at Louisiana Tech in Ruston on November 30 and December 1. A number of L.E.S. members participated.

The program was co-sponsored by the Aerospace Education Foundation and the college to enrich the knowledge of science and engineering teachers and school administrators of the Louisiana, Arkansas and Texas areas.

Dr. Walter F. Dornberger, vice president and chief scientist of Bell Aerosystems Corp., Buffalo, New York, was the keynote speaker at a banquet, Thursday evening, Nov. 30, at 6 p.m. Dornberger was commander of the Peenemunde Rocket and Missile Research Center in Germany during World War II.

Astronautical exhibits were on view before symposium got under way at 10:45 a.m. with a welcome by Dr. R. L. Ropp, president of Tech. Dr. H. J. Sachs, head of the department of English and foreign languages at Tech, presented the "Scope and Purposes" of the program.

The first day's luncheon speaker was Dr. Spiradon Suciu, director of Applied Research Operation of the Flight Propulsion Laboratories, General Electric Corp., Cincinnati. Dr. Suciu is the developer of the "Ion" engine and a leading researcher in the scientific field of Plasma Propulsion.

A "Survey of Astronautics" was presented by the Air Force Air University Astronautics Briefing Team from Maxwell AFB, Alabama.

High school and college teachers of the tri-state area, in science and engineering, attended the symposium.

Scientific speakers and panel discussions featured the second day of the symposium Dec. 1. Highlighting the second day's activities were subjects presented by Major Gen. John S. Hardy, commander of the Air Force's School of Electronics at Keesler AFB, Biloxi, Miss., and by Dr. Paul Campbell, colonel, USAF, chief of Advanced Studies, Aerospace Medical Center, San Antonio, Texas. The famous physiologist, Dr. Charles F. Gell, Director of Life Sciences, Astronautics Division, Chance-Vought Corp., Dallas, was also featured Friday.

Although the aerospace symposium is aimed chiefly for high school and college educators and administrators, N. W. de Berardinis of the Shreveport Times, who is a member of the Foundation's Board of Trustees, stated that "medical men, engineers, priests and preachers found a wealth of technical and philosophical guidance by attending the symposium."

The symposium had many astronautical exhibits on display through Sunday, Dec. 3. A model of Pioneer V and its satellite payload, shipped to the symposium by Space Technology Laboratories of Los Angeles, is an example of the kind of exhibits displayed.

Another important speaker was Paul E. Purser of Hampton, Va., whose daughter, Mary Purser, is a sophomore majoring in journalism at Louisiana Tech. Purser is special assistant to the director of the NASA Space Task Group. He formerly was special assistant to the associate director of NASA's Langley Research Center and head of the high temperature branch of the Center's Pilotless Aircraft Research Division.

A former AFA president and publisher of "Flying" magazine, Gill Robb Wilson, of La Verne, California, was toastmaster at the banquet and presented Dr. Dornberger and other distinguished guests and Air Force dignitaries from the state and the Pentagon. Also represented at the banquet were the members of the Ark-La-Tex Air Power Council, a group of top civic leaders from El Dorado, Hope, Camden, Magnolia and Texarkana, Arkansas; Monroe, Alexandria, Shreveport; and Marshall, Tex.

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Memorials

BOYKIN W. PEGUES

Boykin Witherspoon Pegues, Professor Emeritus of Civil Engineering at Louisiana State University died on August 27, 1961.

Professor Pegues was born in Stonewall, Louisiana on October 1, 1874. He attended public schools in Louisiana and was graduated with the degree of B.S. in Civil Engineering at Louisiana State University in 1895. He attended the University of Wisconsin and was awarded the M.S. in Civil Engineering by that institution in 1928.

From 1895 to 1899 Professor Pegues served with the U.S. Engineers as Recorder, Transitman and Chief of Party. In 1899 he returned to his Alma Mater as Assistant Professor of Civil Engineering and served as Professor of Civil Engineering from 1901 to 1926. From 1926 to 1931 he was Acting Dean of the College of Engineering. In 1931 he was appointed Head of the Department of Civil Engineering and served in this capacity until his retirement as Professor Emeritus in June of 1944.

Professor Pegues was a life fellow of the American Society of Civil Engineers, as honorary member of the Louisiana Engineering Society and for many years a member of the Louisiana State Board of Engineering Examiners. He was a member of Sigma Tau Sigma, Tau Beta Pi and Phi Kappa Phi.

After retirement he served as a consultant to the Louisiana State Civil Service Commission.

Professor Pegues was a member of the First Methodist Church and held membership in the Men's Garden Club of Baton Rouge and the Baton Rouge Camellia Club.

During his long and distinguished career, Professor Pegues exerted a strong and widespread influence in the Civil Engineering Profession in Louisiana and throughout the nation. Large numbers of his former students are in positions of great professional responsibility. Many of these owe much to him for his example of gentlemanly conduct, his sympathetic interest, his leadership, his high standards and his counsel.

In his death, society and the Engineering Profession have lost a sincere friends and true gentleman.

Be it resolved that this obituary be read at a meeting of the Louisiana Engineering Society, entered into the minutes, published in the Louisiana Engineer, and that a copy be sent to Mrs. Boykin W. Pegues.

F. J. Germano

—o—

SIDNEY N. TANNER

With sincere regret the Louisiana Engineering Society records the passing of one of its vigorous young members who was called to his Eternal Reward at the height of his professional career.

Details of the tragic plane accident that took the life of Sidney N. Tanner and those of three other persons on August 14, 1961 are still unknown. The group was engaged in a classified assignment, calibrating electronic equipment on a course over the water between Block Island and New London, Connecticut, when their light plane was lost. Sidney's body and one other have since been recovered, but no wreckage was found.

Sidney was a native of Cheneyville, Louisiana, and an alumnus of the University of Southwestern Louisiana, where he received his degree in Electrical Engineering in 1951. His career included service with Central Louisiana Electric Company, Western Geophysical Company, and Seismograph Service Company of Tulsa, Oklahoma, where he was employed at the time of his death. He is survived by his wife, Mrs. Edna Tanner, his mother, Mrs. S. O. Tanner and a brother, Thomas Tanner, of Cheneyville.

In remembrance of the departed member, the Louisiana Engineering Society places this memorial in its permanent record and hereby extends heartfelt sympathy to his bereaved family.

—o—

Woman's Auxiliary News

By Mrs. Waldemar S. Nelson, President

The Woman's Auxiliary to the Louisiana Engineering Society is happy to accept the invitation of the **LOUISIANA ENGINEER** to furnish news entitled "Woman's Auxiliary News."

Announcement is made that Engineering students at Tulane University have benefited this year because of philanthropies sponsored by the Woman's Auxiliary in New Orleans. The Selena Bres Gregory Scholarship, increased to $500.00 in September of 1961, was awarded to William Boyle, a senior in Chemical Engineering. Also, a Student Loan of $800.00 was granted to another senior in Chemical Engineering. News of what the Woman's Auxiliary Chapters have accomplished along this line will be reported in the future.

With the 1962 L. E. S. Convention scheduled in New Orleans, the parent organization of the Woman's Auxiliary has been busy with plans for the ladies. The program is listed elsewhere in this magazine, but special mention is made here, hoping the Engineers will see it twice and plan to bring their wives. Convention Chairman is Herbert Schaeffer and his wife is serving in this capacity for the ladies. All members will receive announcements by mail.

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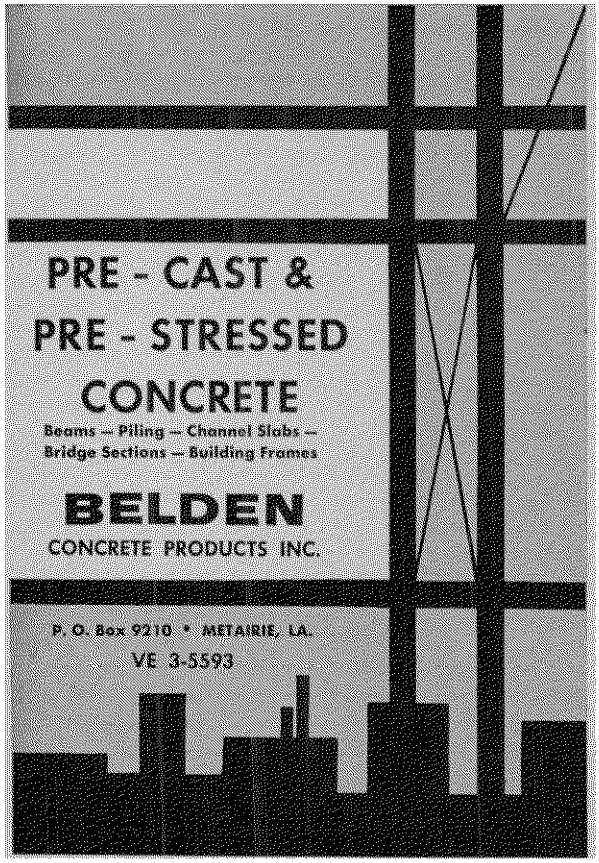

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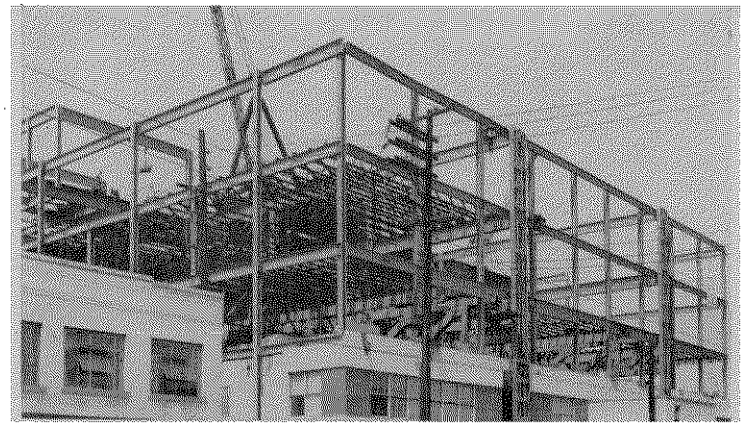

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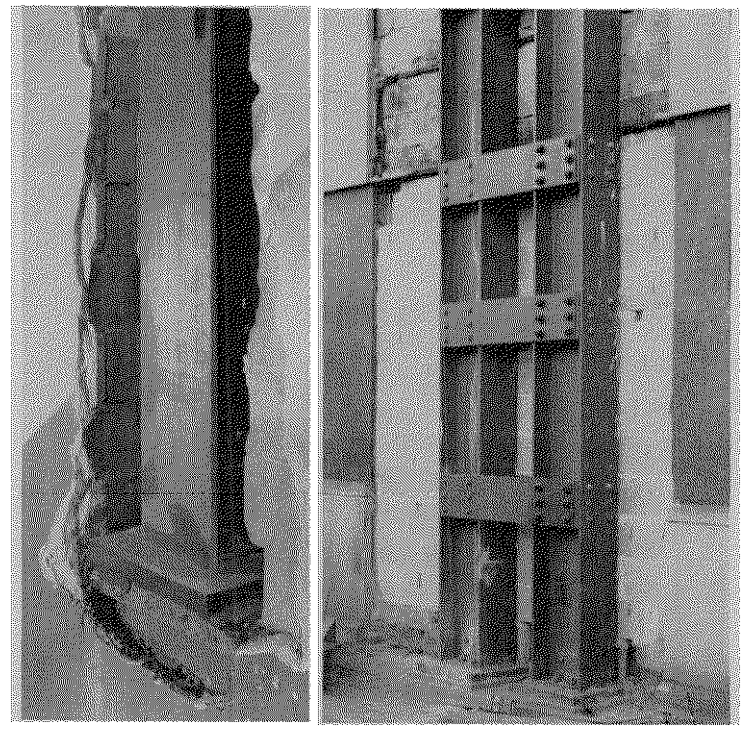

An odd construction problem developed when three floors were added to the two-story Social Security Building in Birmingham, Alabama. The building's old foundation wasn't strong enough to support three new floors, so they switched foundations! Concrete columns were ripped out of the basement and replaced with 41 steel H-beams to give the building additional strength. And the crew worked at night so that office business could continue during the day.

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Huntsville—Field Notes

By Allen Johnson

Arthur E. Sanderson, personnel chief of the National Aeronautics and Space Administration's George C. Marshall Space Flight Center at Huntsville, Ala., had a revealing anecdote to tell concerning the importance of engineers in the space program in the discussion that followed his banquet talk at the Louisiana Utilization Conference November 20-21.

"There was some sort of problem involving a physicist at Huntsville," said Sanderson. "And after the matter was straightened out and he had left, Wernher von Braun (director of the NASA Huntsville center) said, 'Whew, I'm glad I'm not a scientist."

Sanderson said that 85 per cent of the 1700 professional personnel in NASA's 5,000 men operation at Huntsville are engineers. He agreed that recognition of engineers, as opposed to 'technologists,' was an important factor. The point on recognition was raised by Paul Robbins, Washington, D. C., executive director, National Society of Professional Engineers.

The Louisiana Engineering Society has re-established its engineering employment committee, in anticipation of demands for engineers by the NASA Michoud plant. Its goal, said William Baker, newly-appointed chairman, is to maintain a listing of engineers who are interested in changing jobs and who might be interested in working in the Michoud plant.

The committee, said Baker, will: Invite all interested engineers to submit an application to the committee. These applications and any other inquiries will be kept strictly confidential.

No judging of professional qualifications will be attempted by the committee. All applicants will be classified only with regard to their field of engineering.

No fees will be charged the applicant or employer.

No guarantees will be made to the engineer or to the employer.

The committee will contact all prospective employers for the Michoud plant and let them know of this employment committee and the pool of professional engineering talent which we have available.

The committee will bring the applicant and the prospective employer together at the proper time, either by furnishing a list to the employer and letting him contact the applicants direct, or, at the request of the employer, have the applicant contact the proper party and make arrangements for an appointment for an interview.

The Louisiana Engineer asked W. J. Verlander for his impressions of the new United Engineering Center during his last visit in New York. Here are his impressions:

"I was pleased that I had the time and opportunity to visit this new building, which, as you know, is located right across from the United Nations group. After leaving the elevator at the ASME floor I went through the all glass entrance door to the soft carpeted reception room, where it was arranged that I see Mr. O. B. Schier, Secretary ASME.

" 'O. B.' and his assistant gave me a quickie but complete tour of the offices and floors which are occupied by ASME. The office areas are generally subdivided with head glass panels which conveys an impression of spaciousness—not a maze of cubby holes.

"Mr. Schier's office overlooks the United Nations Plaza and the East River. On the wall is a framed detail engineering drawing of a steamboat by Robert Fulton.

"Mr. Cliff Shumaker's office was ready and waiting for him to occupy it on assuming the presidency of ASME.

"With a membership of approximately 50,000 all addressing, and mailings are in the process of being more fully mechanized.

"The engineering library on another floor is one of the most complete of its kind in the world.

"An interesting comment was that the building's cafeteria furnishes the opportunity for the people of the various engineering societies located here to discuss mutual problems. In other words, unity in the engineering profession is already a reality in the cafeteria—which, incidentally, has the cheapest prices I saw anywhere in New York.

"The large exhibit area on the main floor is unoccupied and awaiting policy decision as to who and what will be permitted to exhibit.

"The modern air conditioning and heating control room is glass enclosed as a show piece for visitors.

"Additional floor space is available on the top floor —as yet unfinished and unoccupied—and provision has been made for a new wing for possible future expansion.

"A visit to this new facility is well worthwhile for any engineer associated with the professional societies and I hope this brief sketch will be of interest to you."

———o———

Ladies events for the Annual Meeting of LES in New Orleans next month are being planned by (from left, seated), Mrs. Herbert A. Schaeffer, general chairman, and Mrs. G. J. Groh, coffee party chairman; (from left, standing), Mrs. Daniel H. Vliet, luncheon chairman, and Mrs. Waldemar S. Nelson, president of the Woman's Auxiliary of LES.

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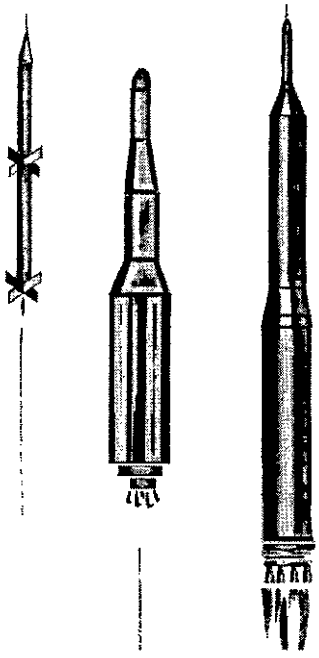

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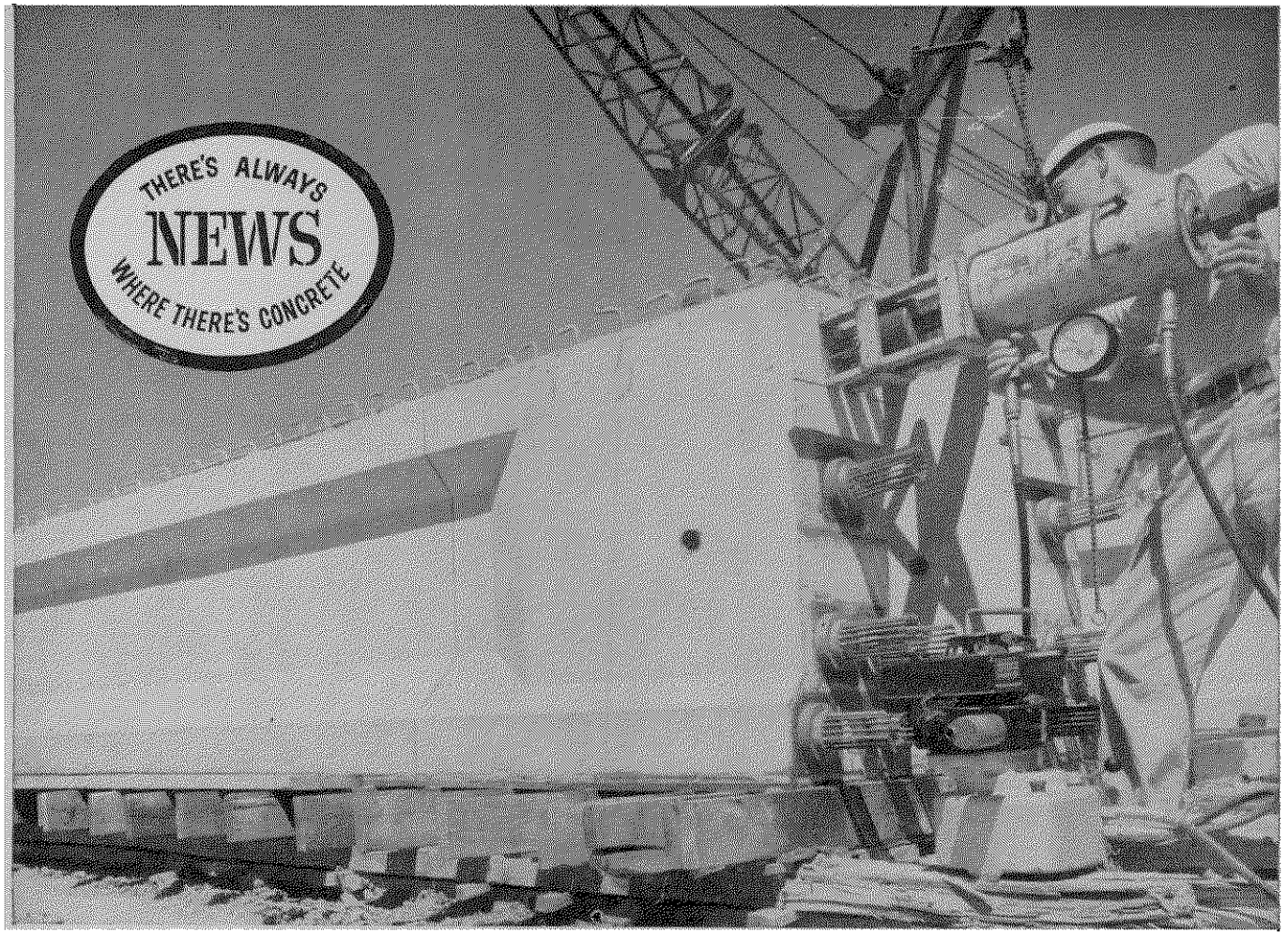

Why prestressing increases efficiency of modern concrete—and brings new economy

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A basically simple idea, prestressing is achieved with high-tensile steel wires placed lengthwise in a concrete beam. These are stretched with hydraulic jacks and either anchored at both ends of the beam or bonded to the concrete. The wires, trying to pull back to their original length, give the beam a "Paul Bunyan" squeeze that dramatically increases its strength. Two general methods of prestressing are in use: pretensioning and posttensioning. In the first, wires are stretched *before* the concrete is cast . . . in the other, *after* the concrete has hardened, as pictured above.

Prestressing has already been proved in the building of thousands of bridges and commercial and industrial structures. Dams, circular tanks and pressure pipe have also benefited from the economy it brings.

This year's use of prestressed concrete is expected to jump 60% over 1958. And its versatility suggests there is practically no limit to its potential uses.

Prestressing is one more area in which the Portland Cement Association is today making valuable contributions. It is carrying on continuing research projects—testing, evaluating, and making new technical information broadly available. In this way, the 74 progressive (and competing) cement manufacturers who comprise the Association work together to serve more effectively the construction needs of the nation.

On the Illinois Tollways—$4,000,000 saved

Of the 265 bridges on the new Illinois Tollways, 217 use prestressed concrete. They include 6,900 girders in all, totaling 453,500 linear feet. The money saved made every fifth bridge free. Central casting yards permitted mass production and close quality control. Maintenance is expected to be the lowest of any major bridge system.

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