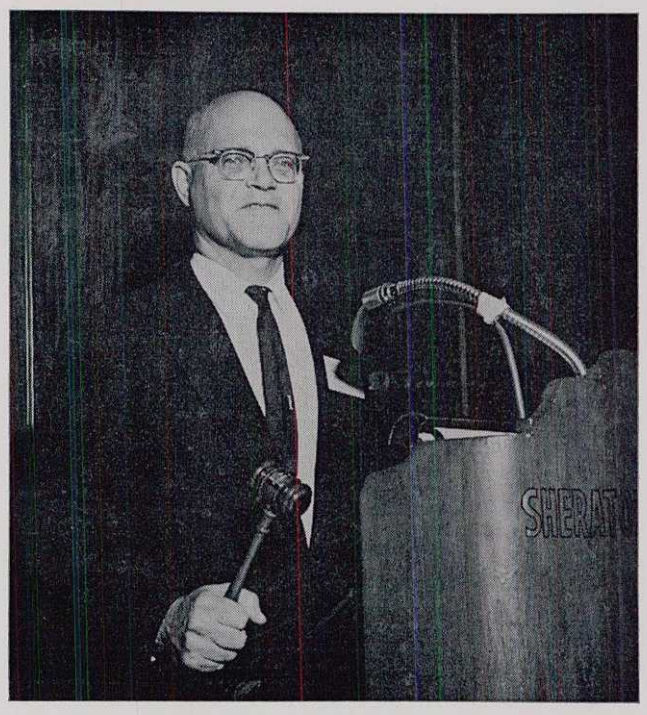
the LOUISIANA ENGINEER



LOUISIANA ENGINEERING SOCIETY 1898

LOUISIANA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

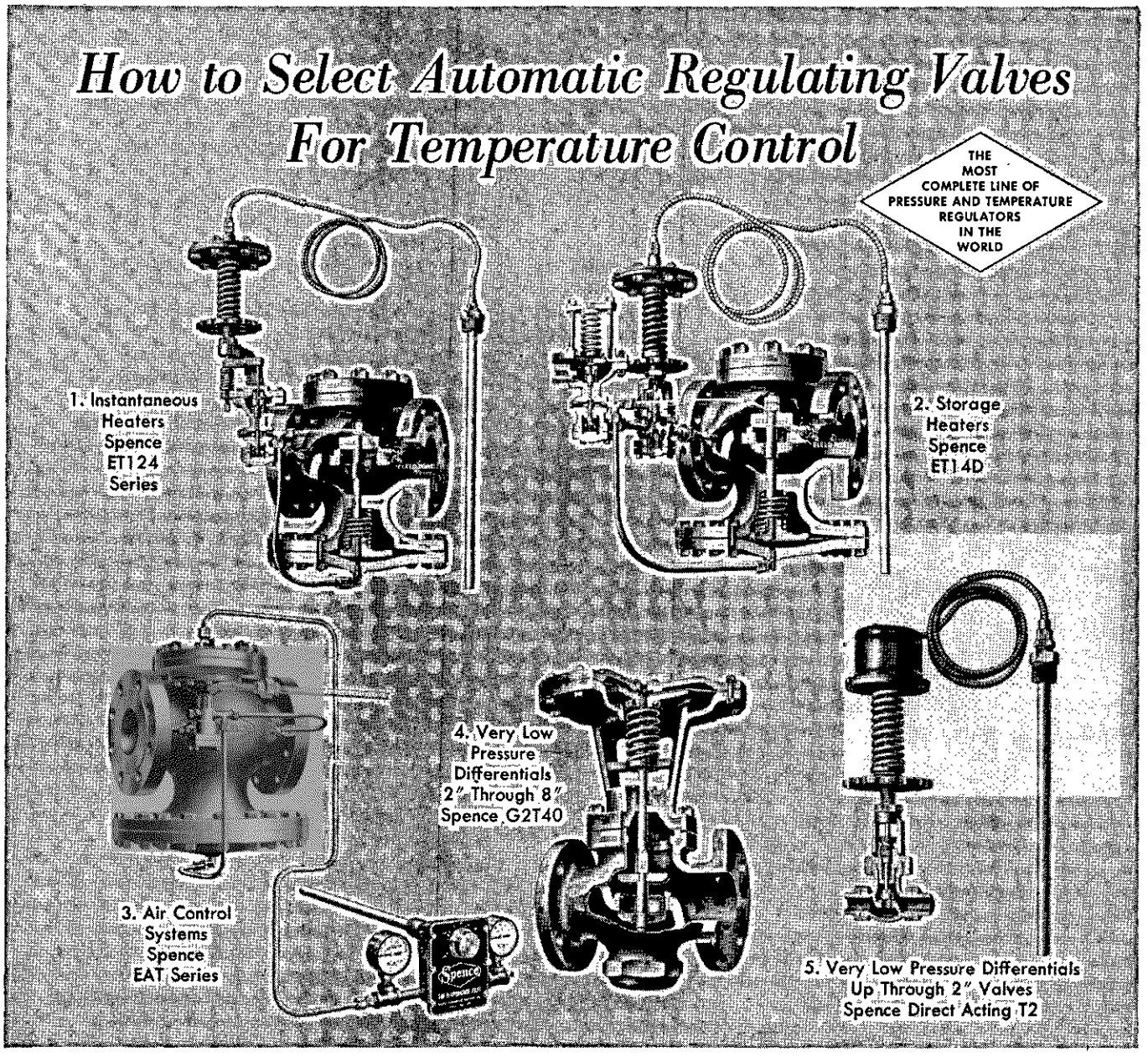
ENGINEERS JOINT COUNCIL EJC

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

Vol. 48 No. 1
February, 1962

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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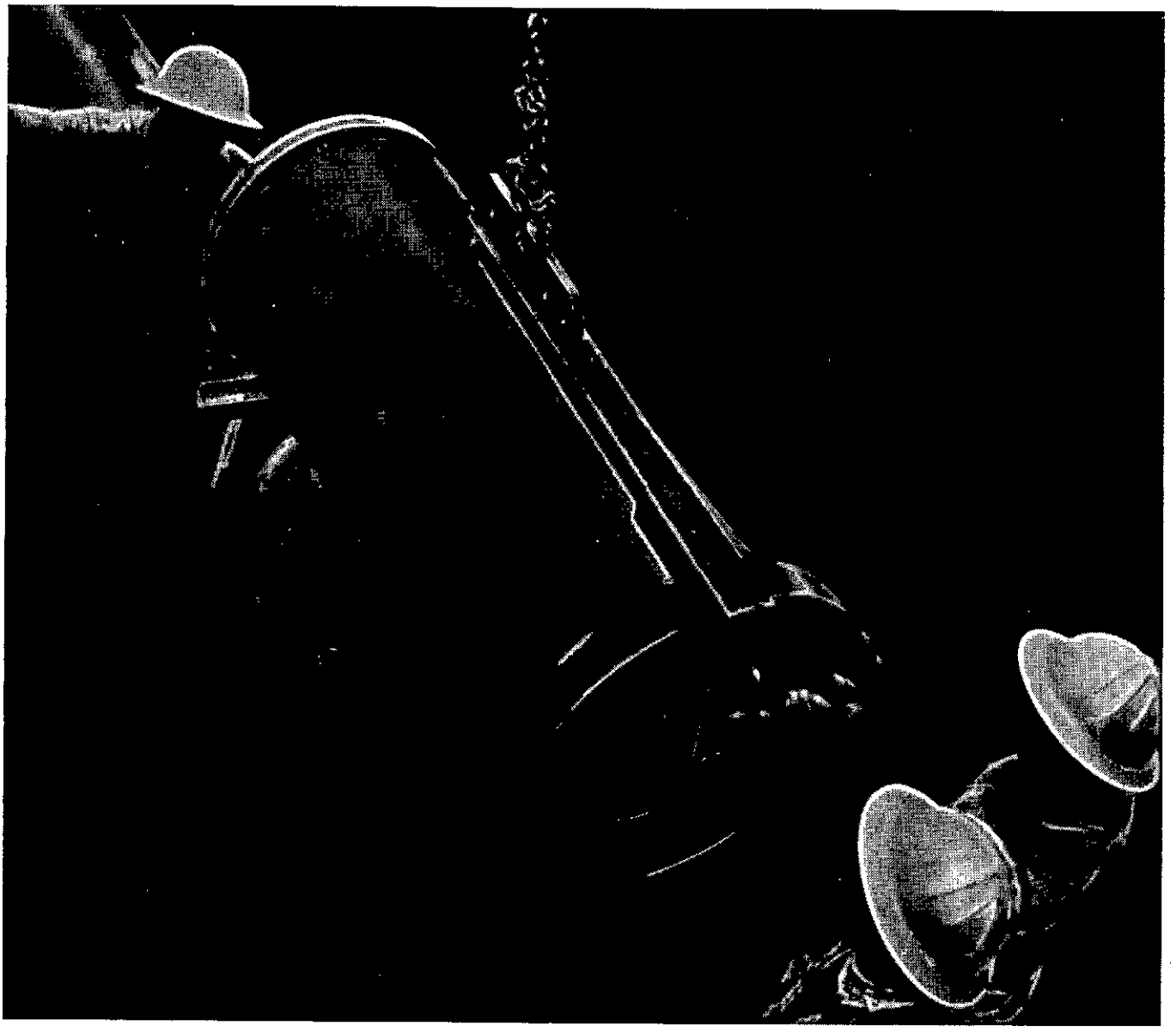

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THE LOUISIANA ENGINEER

Vol. 48 February, 1962 No. 1

OUR COVER

James S. Janssen, New President of LES accepts gavel at Annual Meeting held January 11, 12 and 13, 1962, at the Sheraton Charles Hotel in New Orleans. Mr. Janssen is Manager of the Gas Maintenance Division, New Orleans Public Service.

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Warren K. Bankston ..... ***Editor***
J. P. Fernandez ..... ***Business Manager***

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

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LOUISIANA ENGINEERING SOCIETY
FINANCIAL STATEMENT
For the Year 1961

INCOME:

Advertising	$13,859.83	
Annual Meeting	2,004.90	
Annual Outing	1,625.90	
Dues	20,294.00	
Miscellaneous	760.46*	
State Board Contribution	6,742.00	$45,287.09

EXPENDITURES:

Annual Meeting	$ 2,065.29	
Annual Outing	1,628.53	
Awards, Scholarships, etc.	509.60	
Dues and Rebates	8,580.40	
Engineers' Week	368.69	
Miscellaneous	677.19	
Monthly Meetings and Hwtrs. Rental	570.55	
Public Rations and Publication	18,578.45	
Salaries	5,820.00	
State Conferences	342.87	
Stationery, Printing and Office Supplies	3,871.05	43,012.62
Increase in Liquid Assets		$2,274.47**

*Includes increase in book value of $121.45.

**Apparent surplus reflects a change in method of handling advertising accounts. Before 1961 commissions were paid in full upon execution of advertising contracts, and consequently were paid for considerable periods in advance. Under new arrangement commissions are paid as accounts are collected. This surplus will help to offset deficits in our Public Relations-Publication program for 1959 ($2700) and 1960 ($3000).

Statement of Liquid Assets
December 31, 1961

Cash in Bank		$ 3,501.19
U. S. Savings Bonds:		
June 1950, Series F	$ 1,960.00	
March 1955, Series J	837.00	
April 1955, Series J	837.00	3,634.00
Homestead Stocks:		
Columbia	$ 2,000.00	
Commonwealth	2,000.00	
Greater New Orleans	745.69	
Security	1,500.00	
State	1,500.00	
Union	1,500.00	9,245.69
Lapel Emblems on Hand		186.59
Total Liquid Assets Dec. 31, 1961		$16,567.47
Total Liquid Assets Jan. 1, 1961		14,293.00
Increase		2,274.47

JOHN P. FERNANDEZ
Secretary-Treasurer

LOUISIANA ENGINEERING SOCIETY
404 Baronne St.
New Orleans 12, La.

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Emery Domingue, Box 485, U.S.L. Station, Lafayette.
John T. Knight, Jr., 410 Camp St., New Orleans 12.
Robt. P. Lockett, Jr., P. O. Box 561, New Orleans 7.
Charles W. Stokes, 1311 Eleventh St., Lake Charles.

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Minutes Of The Board, LES

Minutes of Meeting of the Board of Direction
Held on Monday, December 11, 1961

The meeting was called to order by President Bogard with Messrs. Carter, Domingue, Janssen, Latimer, McLellan, Rountree, Watts and Fernandez present. Messrs. L. H. Bossier, Allen Johnson, F. W. McDonald, and W. S. Nelson also were present by invitation. Mr. Rountree moved that the reading of minutes of the November meeting be dispensed with and approved as distributed to board members by mail. Motion seconded by Mr. Carter and carried.

President Bogard reported that the Manpower Utilization Conference held on November 20-21 and co-sponsored by the society and the four engineering schools of the state—L.S.U., L.P.I., U.S.L. and Tulane—had been highly successful from the standpoint of subject matter presented; however, the attendance had been poor and the sponsors would have to share the deficit.

Mr. Nelson, Chairman of the Registration Law Committee, reported that L.E.S. representatives (Messrs. Bogard, Janssen, Landry, Nelson and Fernandez) had met with representatives of the A.I.A., L.A.A. and G.I.C.E. to discuss problems affecting both professions and the manner in which these groups could assist each other during the 1962 State Legislative Session. President Bogard appointed a committee consisting of Messrs. Janssen, Landry and Nelson to coordinate the work and act as a liaison committee between the LES Board, the Architects and Consulting Engineers.

The secretary reported that approximately 150 letters soliciting monies for the LES Registration Law Fund had been mailed to consultant engineering firms.

The secretary announced that 497 ballots had been returned in the recent poll for constitutional amendments and that the proposed amendments had carried by the following vote:

	For	Against	Unmarked
Article X—Discipline of Members	479	15	3
Article VI—Dues	404	90	3
By-Law (6)—Committees	472	21	3

The secretary also reported that the letter prepared by the Functional Section Committee and submitted to board members for approval by mail had been approved and forwarded.

Mr. McLellan, Chairman of the Nominating Commitee, presented the following recommendations for the 1962 officers' slate:

For President ..... James S. Janssen
For First Vice-President and President-elect for 1963 ..... Calvin T. Watts
For Second Vice-President ..... Edward J. McNamara
For Secretary-Treasurer ..... John P. Fernandez
For National Director of NSPE for 2 Years ..... Frank W. Macdonald
For LES Director for 2 years ..... John T. Knight, Jr.
For LES Director for 2 years ..... Robert P. Lockett, Jr.
For LES Director for 1 year ..... Charles W. Stokes

Mr. Domingue moved that the committee's recommendations be accepted and submitted to the membership at the regular meeting. Motion seconded by Mr. Latimer and carried.

The secretary read a letter from the State Board of Registration advising that its contribution to the 1962 Public Relations Program would be $4,000.00. The State Board's contribution for 1961 had amounted to $6,742.00.

Mr. Latimer moved that the resignations of Messrs. E. S. Randolph of Baton Rouge and Strubbe McConnell, Jr. of Baton Rouge be accepted with regret, seconded by Mr. Watts and carried.

The secretary read a communication from Mr. George Stevenson advising that he could not accept appointment to the liaison committee proposed by the Municipal and Utilities Specifications Committee of the Associated General Contractors of America, whereupon Mr. Hu B. Myers was appointed to replace him.

The secretary presented a list of Junior Members who had reached the age of 32 and called attention to the constitutional requirement that they mst be transferred to a higher grade of membership or sever their association with the society. Upon motion by Mr .Carter,seconded by Mr. Rountree, the following were transferred from Junior to Member grade:

Edwin F. Hardy ..... Baton Rouge
Eugene H. Owen ..... Baton Rouge
Charles Sellers ..... New Iberia

Upon motion by Mr. Latimer, seconded by Mr. McLellan, the following were transferred to Affiliate grade:

Jerry Allen ..... Houston, Texas
Lionel Babin, Jr. ..... Houma
Wm. A. Baker, Jr. ..... New Orleans
Ralph H. Brown ..... Shreveport
Chas. K. Capdepon ..... Gulfport, Miss.
Kenneth R. Chitty ..... Lake Charles
J. E. Clement, Jr. ..... Denham Springs
David G. Douglas ..... Torrance, Calif.
Geo. C. Gallagher, Jr. ..... Baton Rouge
James W. Lyon, Jr. ..... Baton Rouge
Antoine Ory, Jr. ..... New Orleans
Billy R. Rentrop ..... Lake Charles
Francis M. Roberts ..... Opelousas
H. W. Stinchcomb ..... New Orleans

Upon motion by Mr. Janssen, seconded by Mr. Watts, Mr. Sam Hill of New Orleans was transferred from Affiliate to Member.

Upon motion by Mr. Domingue, seconded by Mr. Latimer, Mr. Rene P. Briggs, Jr. of Opelousas was transferred from Student to Junior grade.

The secretary read a resolution adopted by the Shreveport Chamber of Commerce on December 4, 1961 relative to the employment of Louisiana engineers on Louisiana projects.

Discussion followed on THE LOUISIANA ENGINEER, the Public Relations Program, and means for cooperation with the objectives of the State Board of Registration. Mr. Rountree moved that copies of LES Board Meeting minutes be forwarded regularly to the State Board of Registration, seconded by Mr. McLellan and carried. Dr. Macdonald stated that copies of the State Board's minutes could be sent to the President, Secretary and Public Relations Counsel of LES for information purposes.

Secretary-Treasurer

Minutes of Meeting of the Board of Direction and State Section Officers Held New Orleans, January 13, 1962

The meeting was called to order by President Janssen following luncheon with Messrs. Bogard, Bossier, Bubenzer, Carter, Domingue, Knight, Latimer, Lockett, Macdonald, McLellan, McNamara, Rountree and Fernandez present. Mr. J. D. Strong, NSPE Representative, Mr. Allen Johnson, Public Relations Counsel, Mr. W. S. Nelson, Registration Law Committee Chairman, and other officers of the state sections were also in attendance.

Reading of minutes of the December meeting of the Board was dispensed with. Mr. Roundtree moved that minutes of the December meeting be approved as distributed to board members by mail, seconded by Mr. McNamara and carried.

President Janssen announced that the object of the January meeting is to further discuss the items brought out at the Section Officers Conference which preceded this meeting of the board. Since no discussion was forthcoming it was assumed the morning conference had successfully accomplished its objective.

President Janssen reported that 404 membership ballots had been received and that all except one candidate had been elected to the grades indicated on the ballot. A copy of the ballot is attached to these minutes.

President Janssen announced that several reports from Standing Committee Chairmen had been received and these would be discussed at future meetings. He instructed the Secretary to reproduce the report submitted by the Functional Section Committee for Engineers in Private Consulting Practice and include it with the announcement of the next Board meeting. He urged all board members to read this report carefully and be prepared to discuss it at the next meeting.

It was decided that board meetings would be called for 6:00 p. m. on regular society meeting nights instead of 6:30, thereby allowing more time for the conduct of business.

President Janssen stated that he was considering personnel for the various standing committees and, since appointments are made by the President with the advice and concurrence of the Board, he would mail his proposed committee list to all board members so that their comments and/or recommendations may be submitted at or prior to the next meeting of the board.

It was decided that the board would meet on Monday, January 29 at the Engineers Club in New Orleans.

Mr. Domingue moved that Messrs. Calvin Watts, Chairman, John Fernandez and Ben Bogard be appointed to the Finance Committee for 1962. Motion seconded by Mr. Lockett and carried. The President then instructed the Finance Committee to prepare a budget for 1962 and submit it to the board on January 29.

Mr. Knight moved that the President and the Secretary-Treasurer be authorized to sign checks for the society during 1962. Motion seconded by Mr. McNamara and carried.

President Janssen announced that the NSPE's Winter Professional Meeting would be held in Jackson, Mississippi on January 25-26, and that the LES State Planning Conference would take place in Alexandria on March 9-10, and urged all those present to make plans to attend both functions.

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

Paul L. Andry, Jr. (Mbr.), New Orleans.
Benton P. Babin (Mbr.-NSPE), New Orleans.
Aubra A. Braddock (Aff.), Monroe.
Henry W. Busch (Mbr.), Lafayette.
Peter A. Feringa (Mbr., New Orleans.
R. B. Giezentanner (Mbr.), Texas.
M. M. Gilkeson (Mbr.), California.
Kenneth J. Hammond (Mbr.-NSPE), Baton Rouge.
Louis S. Harris (Aff.), New Orleans.
Frank S. Houghton (Mbr.), Baton Rouge.
Marvin R. Kimbrell, Jr. (Mbr.), Florida.
Charles J. Landry (Jr.), Jeanerette.
Kenneth E. Lutz (Mbr.), Baton Rouge.
Mansel M. Mayeux (Mbr.), Baton Rouge.

W. A. Patrick (Mbr.-NSPE), Monroe.
R. A. Mornhinveg (Mbr.), Baton Rouge.
C. P. Perrault (Mbr.-NSPE), Baton Rouge.
A. J. Perrault (Mbr.-NSPE), Baton Rouge.
Lee J. Pitre, Jr. (Jr.), Lafayette.
E. F. Pollard (Mbr.), New Orleans.
Francis M. Roberts (Jr.), Pineville.
Mrs. Willene S. Sandel (Aff.), Maplewood.
Richard G. Wilson (Mbr., NSPE), Bogalusa.
Joseph P. Variana (Jr.), Baton Rouge.

President Janssen requested incoming officers to participate in the Engineers' Week programs of their respective sections and in civic affairs of their communities.

Mr. Knight moved that Mr. Herbert Schaeffer, General Chairman of the 1962 Annual Meeting, and his entire committee be thanked for their splendid work, seconded by Mr. McNamara and carried.

The meeting then adjourned.

J. P. FERNANDEZ
Secretary-Treasurer

FOR MEMBER

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La. Engineers Hold Annual Meeting

The Annual Meeting of the Louisiana Engineering Society was held Jan. 11, 12 and 13 at the Sheraton-Charles Hotel, with Herbert A. Schaeffer, Jr., of New Orleans as general chairman.

Keynote speaker at the general meeting opening Jan. 11 was Moorehead Wright, New York N. Y., Manager of Relations Service, General Electric Co. His topic was "The Management of Technical Work in these Times". He was introduced by Ben T. Bogard, Ruston, La., society president and dean of engineering, Louisiana Polytechnic Institute.

General interest speaker was Ray W. Burgess, Baton Rouge, Director Louisiana Department of Highways, whose topic was: "Report to the People" (A year of progress in Louisiana highway development).

Other Speakers

Speakers at a technical session Jan. 12 included:

James L. Stamy, Huntsville, Ala., assistant for project management, Marshall Michoud Operations, speaking on "Launch Vehicle Engineering for Space Exploration";

John A. Lotz, New Orleans, District System Engineering Manager, I.B.M., "The Role of a Computer in Everyday Engineering Problems";

Lt. F. H. Lewis, Jr., C.E.C., USN, New Orleans, "The Problems involved in the Design and Construction of Fallout Shelters";

R. Emmett Kerrigan, New Orleans, Deutsch, Kerrigan & Stiles, Counsellors at Law, "Some Legal Matters Affecting Engineers".

Registration for the three-day meeting was followed by a conference of engineering students. James V. Benedict, president of the Tulane Student Chapter, L.E.S. presided. A meeting of the NSPE-LES Functional Section Committee followed with Alvin M. Fromherz as chairman.

The general meeting followed with Bernard H. Grehan, Notre Dame Seminary, giving the invocation. Officers of State Sections, LES, preceded the keynote address.

Life membership in the Society were presented to Jerome C. Baehr, John P. Egan, Karl P. Kammer, Robert P. Lockett, Sidney E. Trouard, Jr., and W. O. Turner.

A certificate of appreciation was awarded to Col. John T. Knight, Jr. at the general meeting.

The Engineers Club of New Orleans was the gathering place for the general interest program, with the president presiding.

Registration of Ladies attending the conclave was at 9 a.m. Jan. 11. They attended the general interest program and coffee party that evening.

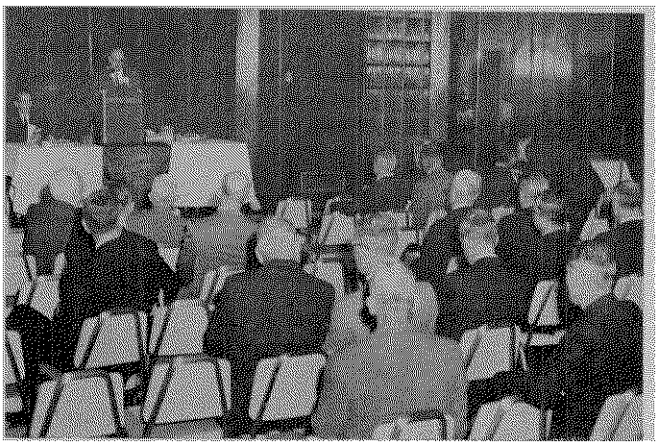
Chairmen and vice-chairmen for session on Jan. 12 were:

Engineers Job in Missile Development: Chairman—Cecil M. Shilstone, partner, Shilstone Testing Laboratory; vice chairman—J. Bres Eustis, Eustis Engineering Co.

Computers in Louisiana: Chairman — Earl Dobbs, W. S. Nelson & Co.; vice chairman—A. J. Brodtmann, New Orleans Public Service Inc.

Fallout Shetlers—Engineering Problems in Design & Construction: Chairman—Captain T. J. DuMont, U.S.N., District Public Works Officer, 8th Naval District; vice chairman—J. R. Mooney, Mooney Equipment Co.

Legal Responsibilities of Engineers: Chairman — S. Cambias, New Orleans Public Service Inc.; vice chairman —E. Pavia, Geo. A. Heft & Co.



Outgoing President Ben T. Bogard addresses LES members at the opening session of the LES Annual Meeting. Seated at the table is John P. Fernandez, Secretary-Treasurer.

STUDENT CONFERENCE COMMITTEE
1962 ANNUAL MEETING

L. L. Denson, Chairman
Jack W. Allen, Vice-Chairman
Edmond M. Brignac, Jr.
A. W. Durning

Introduction was made by L. L. Denson, Chairman Student Conference Committee.

Presiding was James V. Benedict, President Tulane Student Chapter of the Louisiana Engineering Society.

Speakers were J. M. Winford, Senior in Civil Engineering, Louisiana State University "Land Reclamation Using Hydraulic Fill"; Jimmy Allen, Senior in Civil Engineering, Louisiana Polytechnic Institute, "Electronic Surveying—The Tellurometer"; and Thomas A. Wells, Senior in Mechanical Engineering, Tulane University, "A Ground Effect Machine Project."

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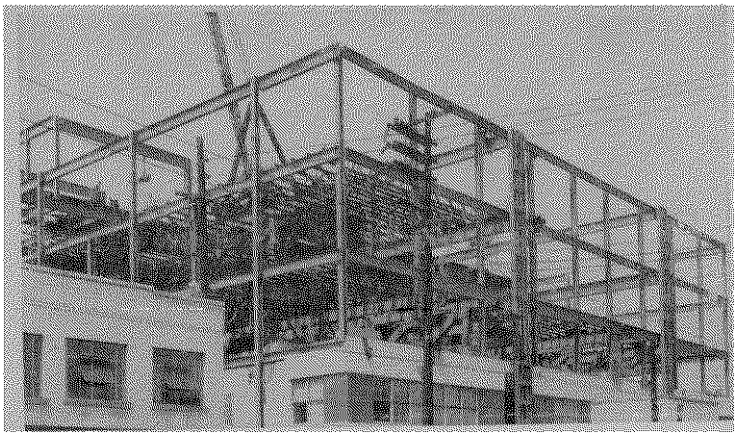

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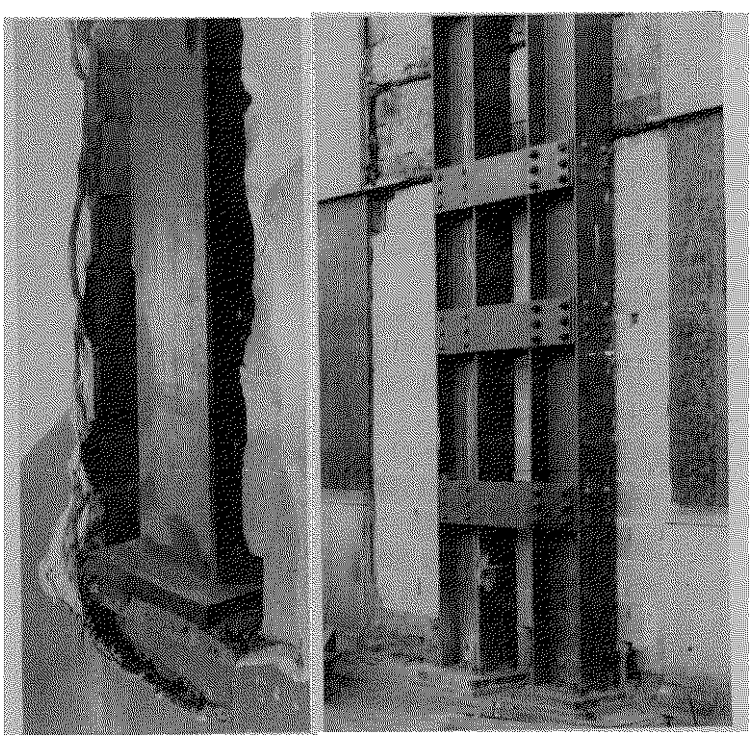

An odd construction problem developed when three floors were added to the two-story Social Security Building in Birmingham, Alabama. The building's old foundation wasn't strong enough to support three new floors, so they switched foundations! Concrete columns were ripped out of the basement and replaced 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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Wright Urges Reciprocal Relationship

Moorehead Wright, Manager of Relations Services, General Electric Company of New York, N. Y., told the general meeting of the Louisiana Engineering Society at the opening session that "the manager-managed relationship should be a reciprocal developmental relationship."

Changing times and greater education of the workers have brought about a situation where the manager should convince the man under him that he is "helping him to grow." In return the worker should reciprocate by giving in to demands for a high excellence of work.

Going further into manager-managed relationships Wright declared:

"I have found that the human relation courses are worse than nothing. This comes from not only the manager view but from the view of a teacher of such courses. They promote a bad technique in the field.

40-Hour Week Won't Save World

With all of us working from 20 to 50 per cent below our potential, and we all are, the world won't be saved in a 40-hour week."

He added, however: "We can help our enterprise by having managers who think in terms of helping people reach self-fulfilment. The growth of an individual depends on how he is managed."

Going further into his personal feelings the speaker told the assemblage the manager should "establish a working relationship so the individual will want to give maximum effort." The primary function of a manager is to create a climate and relationship so workers will exercise creativity.

Two important principles that will lead to enjoy freedom of action and yet at the same time get the job done are:

The law of situation whereby men perform from orders taken from the situation rather than the man. Under this theory, Wright said, any man would produce better. The manager should have the man with the ability to see what is right to do and take the right step.

Freedom No Mandate

The second principle is that "Freedom is nothing more than the obligation to discipline our self." Freedom, he said, is not a mandate to do as we wish.

Both principles need people at the lowest level who will take the initiative and people at the top to release the controls. "A social revolution is called for," Wright declared. "We need innovation and organization now. The people at the lowest levels are educated and now more than half of the people in manufacturing are white collar people, having surpassed the blue collar worker.

The kinds of today are self-determining. They will not do the jobs their parents did. They are not content to stand and turn a screw all day. This attitude is forcing automation on the manufactureres. They can no longer hire automatons or robots to do these jobs. The young people must recognize this principle which calls for a change on managers part.

Our Greatest Danger

Going further into the field the New Yorker said the social and technological areas are changing at a great pace and our greatest danger is the tendency to not realize what we are up against and to do as we are doing. Technological knowledge is at least 30 years ahead of the social information.

Wright pointed this up by telling his audience:

"We are not moving at anywhere near the rate needed to meet human needs." Technological knowledge is doubling at least every ten years.

"We will have more knowledge of nature given us in the 60's than ever before. We have a power of high magnitude and yet man has developed very little over the centuries from the time of Moses. I don't feel we will be open minded enough to handle this responsibility that has been thrust upon us.

One affect of what is happening in the increase in specialization, he added:

"We are becoming more ignorant and this is having its affect on the manager. He can no longer know as much as the people working for him, especially the young man. Chances are a 29-year old engineer knows more—at least in one section as I do.

Today's manager is losing strength because it is no longer true that he can do every job in the shop as once was possible.

Wright concluded his talk by quoting Emerson's "What you are thunders so loud I can't hear what you say."

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President's Report For 1961

By BEN T. BOGARD

The year 1961 is marked as one of progress for the Louisiana Engineering Society by the work of the society in effecting greater cooperation among the agencies, organizations and individuals of the state whose affairs are concerned with engineering services and betterment of the profession. I consider the LES as an organization which serves or should serve in Louisiana as coordinator of the engineering profession in an area of common endeavor. Just before the turn of the century in 1898, sixty-four years ago, the Louisiana Engineering Society, which incidentally is one of the oldest in the nation, was organized by a group of engineers here in New Orleans. They desired an organization for those with like occupational interests and I'm sure their aims included fostering growth and prestige for the profession and a better position in society for the individual engineer to render his services. As engineers and as members of LES today, I believe we must make this our primary goal. The society will always be judged by the extent to which it serves the individual engineer, the profession, and the state. We must create an awareness among our members and especially among the many qualified engineers who are not members of the society of the need for their services within the boundaries of the society. It is my firm belief that all of Louisiana's professional engineers should serve the Louisiana Engineering Society for in this way they can best serve themselves and in turn be placed in a better position to become a servant of all within the State of Louisiana.

I am happy to report to you that in recent months LES has grown in several ways. This is evidenced in increased membership, larger financial operations, and a greater program of activities during 1961. 188 new members were added to the society in the categories of member, affiliate member, junior member and student member. Also, there were transfers from lower to higher grades of membership by 79 people. Unfortunately, through death, resignation, or being dropped for non-payment of dues, we lost 94 members but this left us a net gain of 94 members for society for the year. We now show a membership total in all categories of 2,030. You will be interested in knowing that 69 student members came in through the Tulane Student Chapter which joined the society this year and for other than student member additions, much credit for increased membership must go to Mr. and Mrs. John Fernandez and Mr. and Mrs. Marchese for the outstanding efforts they made in contacting every registered professional engineer in the state during the past year. I leave the matter of membership by pointing out to you that we still have much to do for there are over 4500 registered engineers in Louisiana who are not members of LES and each one of us should devote some time during future months and years to encouraging these people to join the society.

As a state engineering society of the South, we are operating on a financial scale which I'm sure is larger than many of you realize. During the past year, the overall operating income of the society from all sources including contributions, dues, publications, advertising, etc. amounted to approximately $50,000. Unfortunately, expenditures were approximately the same and we find ourselves with no significant surplus in the treasury of the society.

Of all LES activities during the past year those that seem to hold greatest promise for future good pertani to expanded efforts at cooperation with other engineering organizations and with non-engineering but related organizations. Dr. Frank Macdonald of Tulane, a past president of the society, has served as the Louisiana national director from LES to the National Society of Professional Engineers. He will continue in this post during 1962. He has been active and conscientious in this work having attended several NSPE national meetings and then given excellent reports to the LES board of direction on the matters pursued at the NSPE meetings. During the year, the Board of Direction appointed a committee from the society to work with the Louisiana chapter of the Association of General Contractors of America to promote understanding of engineering problems related to the construction industry that are of mutual interest to engineers and contractors. Special representatives of LES have actively cooperated with city officials of New Orleans to assure better engineering of municipal projects and to assure good engineering practice being followed in the regulatory agencies of the city. Your incoming president, Jimmy Janssen, is chairman of a committee appointed by the mayor of New Orleans to coordinaet the efforts of various groups and agencies interested in establishment and operation of the Saturn missile booster plant at the Michoud Ordnance Works. In 1961, several standing committees of LES worked diligently toward improvement of the engineering profession in the state. Waldemar S. Nelson, chairman, and other members of the registration law committee worked with various groups studying possible needed improvements in the state registration law. This work was done with the view of preparing recommendations to come from LES to the next regular session of the Louisiana legislature. To my knowledge, Mr. Nelson and others of his committee have met with representatives of the industrial engineers, safety engineers, the highway department engineering employees, architects' groups, the Gulf Institute of Consulting Engineers, and other groups to obtain a complete cross section of opinion relative to engineering registration and possible needed changes in our current registration law. Members of this committee also have met with the Louisiana State Board of Registration for Professional Engineers and Land Surveyors to hear the board's views on amendment of the law. Currently the committee's recommendations to the Board of Direction of the society are that the registration law should be modified to (1) include a requirement of four years' experience prior to registration and, (2) to allow the Board of Registration to register engineers in branches of the profession other

Baton Rouge Engineers Plan Activities

Officers of the Baton Rouge Section of LES for 1962 plan their program for the year. Seated left to right are Dr. Louis Capozzoli, Jr., Sec.-Treas.; Dr. W. H. Carter, past pres.; Truman Pounds, Pres.; David Carville, 1st Vice-Pres.; missing from picture is Jerry Affolter, 2nd Vice-Pres.

than those presently listed in the law. I hasten to add that this matter is not yet finalized and that many additional hours of consideration will be given to the subject prior to the opening of Louisiana's legislative session this spring. I do not wish to leave this point without saying that severe problems can arise which affect engineering registration and which are of great concern to the Louisiana Engineering Society in that there are certain special interest groups such as the Louisiana Land Surveyors Association, the Louisiana Residential Designers, and employees of certain state agencies who do not see eye-to-eye with professional engineering groups within the state, who feel that they have been discriminated against, and who possibly will attempt to get action in the legislature. That many of us could not endorse. During recent years a particularly disturbing problem that confronted professional engineers in Louisiana has been the introduction and passage of concurrent resolutions in the House and Senate of the state wherein special interest groups composed of unqualified people have sought to have themselves declared eligible for registration as professional engineers. In an attempt to solve this problem during the past two years, the Louisiana Engineering Society has concerned itself with efforts to work out with certain state agencies a program whereby sub-professional engineer classifications of higher level could be used for state employees. It is believed this would reduce or eliminate the desire for introduction of engineering oriented concurrent resolutions into the legislature. To date very little success has been met in this effort but I foresee it as a problem that must have much consideration in the future.

Another committee of the society which accomplished a great deal during the year is that of ethics and profesional affairs now titled "Ethics and Professional onduct," and which has been headed by ol. John T. Knight. Col. Knight and other members of his committee with the very able assistance of Mr. Wood Brown, attorney for the State Engineering Registration Board, devoted much time to re-drafting article X of the constitution of the Louisiana Engineering Society. The article was originally titled "Expulsion of Members," and the redraft which goes into much greater detail and which was approved by ballot of the society membership in December is titled "Discipline of Members." The necessary revision of by-laws was made and the society now has a much clearer and more detailed procedure for handling members who are reported as guilty of violations of ethics or professional conduct. I must also point out that the board of direction considers the work of vital importance for, unfortunately, we have had and it appears we will have in the future greatly increased activity in the reporting of engineers for unethical practices. Col. Knight's committee has considered several cases during 1961 and reports from the committee were accepted and approved as submitted to the board of direction of the society during the year.

One of the more important committees of the society is that of the functional sections for engineers in private practice. Alvin M. Fromherz has served as chairman of this committee for the year and although at times policies and decisions have not gone exactly at the chairman and members of the committee may have desired, it is nevertheless apparent that much interest has been developed among the committee members and others of the society in promoting the welfare of Louisiana's consulting engineers. Mr. Fromherz and his fellow committeemen are to be commended for stimulating this interest. I feel certain that this committee will become more important and more influential as a segment of the society in the months and years ahead and that it can do much to improve the welfare of Louisiana's con-

sulting engineers and their relationships with industry, municipalities and state agencies within Louisiana.

One of the hardest working men associated with the society during the past year has been Allen Johnson of Allen Johnson and Associates, public relations counselors in New Orleans. Mr. Johnson has been under contract to handle public relations for the society and to edit and supervise publication of the **Louisiana Engineer**. He is to be commended for having done an outstanding job of improving the society's magazine and in obtaining advertising matter for the publication. He has been extremely active in public relations matters for the society and for all professional engineers in Louisiana and has achieved good results with newspapers, Radio and TV.

The public relations and publications program is of great magnitude in the society in that the income from advertising and the contribution from the State Engineering Registration Board for this program totaled more than twenty thousand dollars this past year. Of course, in conducting this work the expenditures for publication and public relations amounted to nearly all that was received as income from the two sources.

Another action taken by your society during the year was that of raising dues. This is never a popular subject but I will relate it to you with some reasons for the raises. First, any increase in revenue from dues is a help to the society in its operations since like most other organizations of this sort it is hard pressed for funds. Fore some time the local, or New Orleans members of the society have paid two dollars more per year than those in the State outside of New Orleans. This figure was raised for state members to the same as that of local members. oth categories now pay $25 per year—$12 to LES and $13 to NSPE. For local and state affiliate members, the dues have been $12 and $10, respectively, and those figures have been raised to $14 for both categories. One of the problems of membership has been that people fully qualified to become members expressed a desire to be affiliate members of the society and we hope this dues increase will encourge them to seed full membership grade. The final raise in dues was that of junior members from $5 to $8 to be more in line with the scale of dues for higher level members.

In concluding my report to you, I feel there are several other matters that I must mention briefly. I take this opportunity to thank the Alexandria section of LES for the exceptionally fine work they have done for a number of years in sponsoring the State Planning Conference of the society during February or March of each year. My particular thanks go to Bill Runtree, C. S. Edward, and others of Alexandria for the exceptionally fine job they did of planning and conducting this conference last March. I'm told that the conference for this year will be held on March 9th and 10th, and I take this opportunity to urge as many of you as possible to be present for it. It is truly one of the finest meetings o fthe Louisiana Engineering Society.

On November 20 and 21, of last year, a manpower utilization conference co-sponsored by LES and the four engineering schools of the state, was held at Tulane University. Support and participation of personnel from the executive office of the President of the United States and from the national Society of Professional Engineers helped make this a successful utilization conference. Dean Lee Johnson of Tulane and Mr. Janssen and Mr. Fernandez and others of LES are to be commended for having planned, organized and conducted the conference.

You will note on your programs for this meeting that on Saturday morning at ten a.m. a section officers' conference wil be held. This is the first time that LES has conducted such a conference for the officers of the various state sections of the society.

As an outgoing president of the society, I take this opportunity to express a strong hope and desire that LES will in the months and years ahead take a much greater, active interest in engineering education as it is offered in Louisiana. There is certainly a need for support of our engineering training our engineering training programs within the state and I believe the society can be an effective force in bettering these programs and in helping to meet the needs of the technical education divisions of our institutions of higher learning. I have long felt that a great need exists for Louisiana's practicing engineers to be more concerned about the problems of engineering education in our colleges and universities. I hope to do more in creating this interest among LES members in the future.

Finally, I thank Herbert Shaeffer and his committee for the fine work they have done in planning this annual meeting and my heartfelt thanks to John Fernandez, secretary of LES for the help he has given me and the outstanding work that he has done with the society during the past year. If ever anyone had the right to the title, "Mr. LES," it is John Fernandez! And without him and his wife, Aureline, the administration of the best possible president of LES would go thundering through time with the same force and effectiveness as about two quarts of water falling over Niagara Falls. I am grateful to all of you for having given me the privilege of serving you as president. It has been a pleasure and a valuable experience. Thank you.

—o—

LOUISIANA ENGINEERING SOCIETY MEMBERSHIP REPORT—1961

GAINS:				
Elected:	Members	43		
	Affiliates	30		
	Juniors	46		
	Students	69		188
LOSSES:				
Deceased:	Honorary Member	1		
	Life Members	2		
	Members	12		
	Affiliate	1	16	
Resigned:	Members	14		
	Affiliates	2		
	Juniors	2	18	
Dropped:	Members	33		
	Affiliates	8		
	Juniors	19	60	94
NET GAIN				94

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.

QUESTION—May an individual register as a professional engineer in Louisiana on the basis of an outstanding record?

ANSWER—Yes. Louisiana, and thirty-one other states, permit an individual to register on the basis of an outstanding record.

However, in Louisiana, the requirements for such registration are justifiably stringent in that the applicant must present the written recommendation of five or more Professional Engineers (holding Louisiana registration) along with proof that he has had at least 20 years of successful practice and that not less than 12 of those years shall have been in responsible charge of engineering work.

Question — How often is a roster of Professional Engineers, registered in Louisiana, published?

Answer — A roster, showing the names and places of business of all registered Professional Engineers, the branch of engineering in which Professional Engineers are registered and all Land Surveyors, is published by the Secretary of the Board during April of each year.

Question — How are the members of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors appointed?

Answer — Whenever a vacancy occurs on the Board of Registration, the President of the Louisiana Engineering Society, duly authorized and acting on behalf of the Society, is required to submit the names of at least five Professional Engineers, all residents in and registered in Louisiana, in nomination to the Governor. The Governor then selects the Board Member from this list.

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What Is The L. E. S.?

The Louisiana Engineering Society is a state-wide organization devoted to the common interests of ALL ENGINEERS.

The aim of L. E. S. is to foster registration, professional pride and honor, and the practice of the established code of ethics for engineers.

The L. E. S. is an organization for Engineers in ALL branches of the profession, ALL fields of endeavor (private practice, government, industry, education, etc.), ALL ranks, ALL ages, in ALL sections of Louisiana. The society's Public Relations Program is directed toward the advancement of all branches of the profession in public recognition and esteem.

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Space Vehicle Launch Engineering

An address prepared for presentation to the Louisiana Engineering Society on January 12, 1962.

By JAMES L. STAMY

Assistant for Project Management
Michoud Operations
George C. Marshall Space Flight Center
National Aeronautics and Space Administration

The driving urge to investigate, to explore and to seek always for still more knowledge of the Universe in which he lives, is one of the unique characteristics of man. It is this insatiable curiosity coupled with a desire to find the "ultimate truth" which lead to invention and those artifacts affording a constantly improving standard of living. Without these driving forces originating within himself, man would have remained on a level with the lower creatures of the world, and would today be living the life of the earliest prehistoric cave dweller. Fortunately, this insatiable desire for knowledge and self betterment does exist as one of the strongest forces of human motivation. Just so long as there are unanswered questions concerning the universe which we inhabit, man will continue the search for suitable answers, explorers will explore and inventors will invent. From the beginning, man has turned his eyes skyward in awe and wonder mingled with a longing to gain the access to the mysteries of the heavens which has been denied to him by his inadequate comprehension of the physical laws and the supporting technology required to allow the conquest of space. Each succeeding generation, by making advances in the understanding of scientific principles and the development and expansion of the technologies based on this science, has enabled deeper and deeper penetration into the incomparable mysteries of space. For centuries our moon, the planets, our own sun, and the countless thousands of other suns or stars, have tempted the imagination of both children and wise men everywhere. Telescopes and optical instruments of greater precision, using more and more sophisticated principles have been developed and used over the past 200 years. Within the past few years, we have used other electromagnetic frequencies to secure additional information from space through the reception and analysis of radio noise from celestial sources, and by generating powerful radar signals on earth for reflection from the moon and the planet Venus. Telescopes of high power have been placed upon mountain tops, scientific instruments have been flown still higher in airplanes and balloons, and in our most modern rockets. Although satisfactory for their respective tasks, these have been but poor substitutes for man's desire to go personally and to find the answers first hand and on the spot. Inquiring minds will not rest until space is conquered and its mysteries are fully revealed.

October 4, 1957 will be recorded in history as the birth of the space age, as demonstrated by the USSR's successful launch of an artificial satellite of the earth. This was the first time that an object molded by the hand of man experienced sustained flight in the space environment and communicated to us findings on its physical properties. You are all familiar, I am sure, with the rapid pace of activities which followed thereafter, which included more advanced scientific satellite payloads, launch into orbit and recovery of living animals, lunar "fly-by's" and impact, and a flight toward a near miss with the planet Venus.

The year 1961 will ever be remembered as witnessing one of the greatest of human achievements; that of man breaking his bounds with his earth environment and venturing briefly into the inhospitable emptiness of space. Again, we must acknowledge the feats of our Soviet rivals, and history records the names of Yuri Gagarin and Gherman Titov as the pioneers in manned space flight. Let us also acknowledge that three important events also occurred in the year 1961, which we, as Americans, can view with pride, and which declare that the United States is more firmly than ever involved in manned space flight. These were:

The successful manned ballistic flights of Alan Shepard and Virgil Grissom as part of the Mercury program.

The successful flight of the Saturn booster, the nations hope for future manned space programs.

And the most far-reaching event of all; the declaration by President Kennedy that a goal of this nation is to place a man on the moon in this decade, and incidentally, to return him safely.

This stated national goal, and its achievement, requires the solution of problems orders of magnitude more diffi-

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cult than any we have found before; not only engineering problems, but problems in all asociated fields. Knowledge and techniques from diverse fields of endeavor have to be mastered, and the solutions of problems integrated into a system of extreme complexity.

I think that the best introduction to the program for manned space exploration would be to review briefly with you the current space vehicles which have been used or are available for our space flight program.

First we have the Juno II. This vehicle is the one which placed the first free world space probe around the sun, and placed the satellites Explorer 7, 8 and 11 into earth orbit, furnishing badly needed information on the space environment.

Second is the Scout, a solid propellant rocket used for small satellite launchings, and for high altitude sounding probes.

Next is the Thor-Able which has a long history of successful satellite launchings, including solar, weather and communication satellites.

The Thor-Delta is another vehicle which has been used for satellite launching. Probably the most familiar feat was that of launching the Echo I balloon satellite, which is still very visible from time to time.

The Thor-Agena B is an earth orbiting carrier vehicle of increased performance, which has had a very successful use in the Air Force Discoverer program, and which is slated for use in NASA programs in the near future. NASA has plans to use this vehicle for future missions, which include the Nimbus meterological satellite, and the S-27 Ionosphere Sounder which is a joint venture with the Canadian government, and some orbiting geophysical observatories.

The Atlas rocket will boost the first American Astronaut into orbit before long, as part of the Mercury man in space program. It has already orbited a capsule with a chimpanzee in it, as well as sending aloft instrumented space capsules.

The Atlas Able was designed as a deep-space and lunar orbiting carrier vehicle, however, it was a trouble-plagued program. Out of four attempts to orbit the moon, one vehicle exploded during static test, and three malfunctioned in flight. As someone connected with the program put it: "That completed the Project."

The next vehicle in line is the Atlas-Agena B vehicle which is destined to become a work horse for space missions in the near future. It is to be used for the earliest attempts for United States to land an instrumented probe on the surface of the moon as part of the Ranger program, and which we will discuss in more detail later.

Then we have next the Atlas Centaur, which is scheduled to play a role in lunar and interplenetary exploration as well as being used as a carrier vehicle for advanced communication satellite. It is interesting to note that the Centaur stage represents the first attempt to use a high energy fuel, liquid hydrogen. The test work performed with this vehicle will have important effects on the design of the upper stages of the Saturn, in line next, which is our most advanced and mightiest launch vehicle, and which we will discuss in more detail later.

Now the question comes up as to why such a variety of launch vehicles, and how do they contribute to the program of space exploration. The Explorer series satellites gave us our first measured values of environmental parameters of space, and without these measurements, the designers of manned space capsules would have been forced to rely upon deductions and assumptions concerning conditions to be met. The existence and magnitude of the Van Allen Radiation belt, the density and frequency of micrometeorite impacts. The extent and type of radiation and particles received from solar and cosmic sources, air or gas density at various altitudes, and many other significant items of design information needed by the vehicle and spacecraft engineer are mapped and measured by the satellite launchings which are almost routine in this Year 5 of the space age. The selection for use of one of the illustrated vehicles for a mission is a question of some complexity, and is partly based on the historical evolution of the ballistic missile program of this country. With the exception of the Saturn, each of the vehicles listed owes its existence to some facet of our defense program; however many of the upper stages on these boosters were designed with some specific type of space mission in mind. So the designer has to select a vehicle which can meet his mission requirements, usually stated as parameters defining the space craft weight, height or orbit required, the inclination of the orbit to the earth's equator, the type, such as circular, elliptical or escape, and requirements for the accuracy of attainment of the final spacecraft injection conditions. Since each of the vehicles shown have well defined capabilities for meeting the specified parameters, he can then select the one which most nearly matches his requirements. One of the hardships of life as far as the vehicle designer and developer is concerned, is the fact that the mission requirements get more stringent as the spacecraft get more sophisticated, and continually call for better accuracies, higher vehicle performance and bigger payload capabilities; however, he has worries other than vehicle capabilities to contend with to meet mission requirements. These concern launch facility availability, launch crew requirements, existence of tracking and telemetry stations, range support, and of course range safety requirements. These problems must all be solved on a timely basis for support of any space mission.

Now when we consider our announced National goal of landing a man on the lunar surface, and returning him to earth, it can readily be recognized that we cannot get for the vehicle engineer, nearly enough basic design information by means of the satellite and space probes which we have been discussing for him to be able to solve the problem of a safe landing, stay and launch from the surface of the moon. Our data on lunar conditions to date has been accumulated by optical observations and by radar signals, and the observations made have, unfortunately, yielded ambigious evidence, subject to different interpretations, and many key facts are totally missing. What is the lunar surface really like? How deep is the dust layer, only inches or is it tens of feet? How stable is the surface, how smooth, and do moon quakes occur and how often? These and many other questions should be answered before we will feel that we can land and return a man from

the moon in a manner that will have a reasonable probability of success.

To obtain the answers we require before risking the man calls for a program of landing instrumented spacecraft on the surface of the moon, and telemetering of the acquired data back to earth, and such programs are in the process of planning and execution. The next slide shows the first of a series of Ranger space craft designed and launched to obtain information on the cislunar conditions, and as an experimental prototype of a vehicle which will land a capsule on the lunar surface. Now the configuration of this spacecraft usually is quite a surprise to people accustomed to forming their ideas of what a spaceship should look like from the Flash Gordon comic strip or Analog Science Fiction magazines. The shape and construction shown are distorted by the necessity to allow folding and compaction of the necessary components into the envelop of the shroud or nose cone of the launch vehicle, and the requirements for positioning and operational use. In spite of the rather fragile appearance of this spacecraft, it has proven to be a rugged and satisfactory design as demonstrated by the qualifying ground tests of its structure, vibration resistance, ability to withstant vacuum conditions, thermal radiation, and other simulated environmental tests. This slide also identifies some of the components and experiments which make up the spacecraft, and illustrates how the Ranger is carried on the Atlas-Agena B. vehicle. On the spacecraft you will note the following features:

1. A high gain antenna which is pointed by either ground command or an onboard programmer, which has the purpose of receiving commands for the spacecraft originating from ground command, and an amini-directional antenna to transmit information to ground stations.

2. Solar panels to convert sunlight into electrical power required for onboard use.

3. A sun sensor and earth sensor to allow the spacecraft to establish known directions in space, which is then used for actuation of control jets to control the altitude of the vehicle with respect to the earth, sun and moon.

4. Various particle and energy detectors for measuring and charting the kinds and strengths of radiation, magnetism, high energy particles, and electrostatic fields encountered.

The vehicle illustrated has been launched twice, in August and in November of 1961. In spite of the fact that the planned orbit was not obtained due to the lack of a second start and burn of the Agena engine, the spacecraft operated successfully, proving its design, and providing some scientific data, although short of that desired. The Jet Propulsion Laboratory of California Institute of Technology was the designer and manager of the spacecraft operation for NASA. Later spacecraft of the Ranger series will incorporate equipment to obtain close up T.V. photographs of the lunar surface, and to "hard land" a capsule containing a seismograph and temperature measuring equipment, which will transmit its findings back to earth.

Let us look, for a moment, at the launch vehicle which will be used for this program, the Atlas Agena B.

The first stage is essentially the Atlas D used as an ICBM, less the warhead compartment. This section is replaced by an adaptor to allow fitting on the Agena upper stage. This booster as manufactured by General Dynamics—Astronautics utilizes two booster engines and a sustainer engine, and two small vernier engines for control, and has a take-off thrust of in excess of 350,000 lbs., using liquid oxygen and RP-1, a high grade kerosene as propellants. A General Electric Company radio command guidance system using a ground based digital computer is used to solve the guidance equations and to generate steering commands.

The Agena second stage, manufactured by Lockheed Missile and Space Company, is powered by a 15,000 pound thrust engine which uses unsymmetrical dimethyl hydrazine as fuel and inhibited red fuming nitric acid as the oxidizer. A guidance system consisting of an inertial reference package and a velocity meter is mounted in the forward end of the vehicle. Supplemental guidance information is obtained by means of infra-red horizon scanners located so as to provide information on roll and pitch altitude, while steering is provided by gimballing the engine by hydraulic actuators. The spacecraft sits on the forward end, and is protected by a shroud from aerodynamic forces and thermal damage during ascent through the atmosphere.

Since the Ranger Agena flights typify, in many respects, lunar or planetary flight, it is informative to examine some of the problems and operational requirements which such types of missions incur. This slide show the Atlas Agena just after liftoff. The Atlas is launched on a fixed azimuth, and shortly after liftoff the guidance system causes the vehicle to roll to the proper heading required by the mission. The vehicle ascends vertically for a few thousand feet after which it is gradually pitched over from the vertical. After about one minute of burning, and when a set acceleration is reached, the guidance system generates a signal which causes the two booster engines to jettison.

After the booster engines are dropped, the vehicle continues on under the power of the sustainer engine. The guidance system computes the path to take and the velocity desired to meet specified requirements concerning the apogee of the coast ellipse which the vehicle will follow, and when these conditions have been met it shuts off the flow of propellants to the engine. After a short coast period, latches release the Agena, and solid propellant retro-rockets on the Atlas causes it to slow down slightly allowing the Agena to separate. After a pitch up manuver, the aerodynamic shroud is ejected by means of preloaded springs, the vehicle is pitched down again, and the engine start sequence is initiated. The engine burns until sufficient speed and altitude is attained to achieve circular orbit velocity at 100 nautical miles. The vehicle is now in what is defined as a parking orbit. Now why is a parking orbit required? If we can only launch from one point on earth, such as Cape Canaveral, a study of lunar trajectories will show that there will be only a few moments each day, and a few days each month when a direct ascent to the moon can be made which would not demand energy requirements and vehicle capabilities far above those available. As you know, we are aiming at a body which is rotating about the earth, while at the same time, our earth aiming platform is also rotating. This means, among other things, that the optimum point on earth from which to launch a vehicle to impact the moon, is a function of the time of day, the day of the month, and since

the moon's declination changes from month to month, it is also affected as a function of the time of year. So, if we can place a vehicle in a parking orbit, and allow it to coast for varying lengths of time, we can initiate a second start of the propulsion system and launch from orbit. The resultant effect is shown on this next slide and shows that there is a considerable area from which launches from orbit can occur, and has the beneficial effect that the Atlas Agena could be launched over the period from 1133 until 1253 G.M.T. for the illustrated day. The example shown is for the calendar period corresponding to the maximum declination of the moon; a lesser declination has the effect of moving the southern boundary line of injection points nearer to the equator. You can also note that for each time of launch there is a corresponding azimuth of launch. The extremes of the permissible launch azimuths are set by range safety requirements and by our desire to continually have the vehicle under surveillance by tracking stations and telemetry receiver stations. Since there are only a limited number of land masses in the area shown, we find it necessary to supplement tracking and telemetry coverage for certain critical portions of the flight by stations mounted on board ships.

Now that we have discussed the necessity of the parking orbit, let us return to our flight sequence.

We previously covered items 1 through 6 as shown on the slide, and after coasting for the proper interval in the parking orbit, the Agena engine is again ignited, to boost it to hyperbolic velocity, and going in such a direction that the asymptote of this hyperbolic trajectory will pass through the point in space that will be occupied by the center of the moon upon spacecraft arrival, some 66 hours later. After Agena engine shutdown, a short cost period then takes place, following which the spacecraft is separated from the Agena vehicle. Now, since the spacecraft was very carefully sterilized before launch in order to prevent biological contamination of the lunar surface, and the Agena is not, we wish to insure that the burned out vehicle does not strike the moon. So shortly after separation, solid propellant retro-rockets located in the forward end of the Agena are fired, which changes the velocity and direction of vehicle sufficiently to negate the possibility of impact.

Shortly after the spacecraft has separated, the onboard programmer causes the solar panels to unfold, the high gain Antenna to be pointed toward the earth, and activates the sun and earth sensors. When these elements encounter the sun and earth, the altitude control system causes the vehicle to maintain the cruise altitude, and the experiments on board to operate. At this time the spacecraft looks as shown on the next slide.

Now comes the important question: How do we know the spacecraft is on a path which will impact the moon, and what do we do if it isn't? We know that a few hundredths of a degree error in aiming the vehicle at launch will result in a wide miss at lunar distance, and great precision of initial aiming coupled with our launch on time problem could cost us years of development and millions of dollars, which would still not get us to the lunar target because of inflight errors in the guidance system, and our lack of knowledge about physical constants and parameters, such as the exact value of the astronomical unit, anomalies in the gravitational field, and the exact amount of the earth's equatorial bulge. A simple scheme, relatively speaking, gives us a ready solution to our problem; this is called midcourse guidance.

Essentially, what happens is that during the period following injection on a lunar approach trajectory, the spacecraft is tracked by means of ground stations located at Johannesberg, South Africa, Woomera, Australia and Goldstone, California. This tracking continues for about 10 to 15 hours, and the data acquired is fed to a large digital computer, which computes an ephemeris for the spacecraft.

This ephemeris is essentially a very accurate prediction of the flight path of the vehicle, and it can be examined by the computer which can calculate the miss distance components, which can then be translated to velocity corrections required to change the flight path to a correct trajectory which will intersect the moon. By commands transmitted from the ground, the spacecraft can be reoriented to the proper direction; a monopropellant motor on board fired for a selected interval until the required velocity change for course correction is obtained, and the vehicle reoriented back to the cruise mode. After tracking the new trajectory, the maneuver can be repeated again if necessary for a final course correction.

As the moon's surface is approached, the spacecraft is oriented so as to allow the TV cameras to operate, taking photographs of the lunar surface which are transmitted back to earth. After this step, the capsule is separated from the structure; a retro-rocket is used to break its fall, and it rough lands on the surface transmitting seismographic and temperature information to earth for the life of the batteries.

Now the Ranger program will give us some ideas and some measurements concerning the lunar environment and surface, but there are many more things we would like to know before sending the man, and another vehicle developed under NASA-MSFC technical direction and supervision, the Centaur shown in this next slide, has a higher payload capability. This capability can be exploited, after the vehicle has had sufficient development testing, to carry out more comprehensive and sophisticated experiments under a program now in an advanced state of planning called Surveyor, illustrated in this next slide. Now this vehicle is designed to be "soft landed" on the lunar surface, and has a large braking rocket, shown at the bottom of the vericle. The experiments on board are chosen and designed to give us detailed information concerning the conditions and composition of the moon's surface, typical examples of which are the drill for material sampling and the spectrometer for carrying out material analysis.

Now the vehicle which is to launch the Surveyor sometime in 1964 as the Atlas Centaur combination is explained.

We have described the Atlas before; the Centaur second stage features the use of liquid hydrogen as a fuel for use in two engines of 15,000 lbs. thrust each; an all inertial guidance system coupled with an airborne digital computer gives a system capable of carrying out a wide variety of space missions.

The next slide shows the vehicle ready for launch. When we employ it on a lunar mission, we encounter many of the problems previously described under the Ranger program, such as launch on time, a launch azi-

muth that varies with time, and again uses such techniques described as the parking orbit and the midcourse guidance scheme. All this for the dual purpose of seeking knowledge of the lunar environment for the sake of the knowledge itself, and to provide us basic information to allow the man to follow the instruments.

To return to our discussion on manned launch vehicles for space exploration, we should, for completeness, discuss for a moment our Mercury program, which is our U. S. effort to put the man where the instruments have been. Our completed efforts, to date, have been the ballistic flights of Commander Shepard and Captain Grissom on the Mercury Redstone.

Now I am sure you have all heard details of these flights, the experiences and feelings of the Astronauts, and of the accomplishments in life support and protection of these men from the harsh environment of space, and the detail and extent of testing of the vehicle and capsule before manned flight. There is another aspect of this program which has received much less public notice, but which is vital to the launch vehicle engineer. This is the problem that if, given a ballistic missile, such as the "Old Reliable Redstone" what do you need to do to "man rate" it. This goes beyond the question of merely doing everything conceivable to increase the reliability and quality of the vehicle itself.

It seemed to launch vehicle engineers that something could be done to detect malfunctioning components or subsystems before the difficulties have progressed to the point where the trouble would be catastrophic for the Astronaut. For example, research on rocket engines had established that rough combustion of a degree sufficient to cause destruction of a thrust chamber is preceded by a series of pressure fluctuations. Now if these pressure changes could be detected, and used to trigger abort or escape procedures for the capsule, one additional hazard to the Astronaut's life could be considerably reduced. Other potential catastrophic events were analyzed in a like manner, and the evidences which preceded the event were identified. The net result of this effort was the design, development, testing, and incorporation of an abort sensing system into the vehicle, which significantly increased the pobability of survival of the man in the event of vehicle failure.

One of the more difficult aspects of this design was to insure that in the case of a component failure in the abort sensing system itself, a triggering signal would not result, jeopardizing an otherwise satisfactory flight. This was solved by redundancy of critical sensors, and by electronic comparison of two or more intelligence signals from different points in the vehicle.

This next vehicle is again our old friend the Atlas, this time with the Mercury capsule on top. With this vehicle we hope that we will soon send one of our astronauts into orbit around the earth. Since the plans for this flight have been so well presented to the public in our news media, I think we can presume knowledge on the part of the audience.

The logical question is what next; the answer for the man in space program is the Apollo project.

The lunar exploration will be conducted with the Apollo capsule carrying a crew of three in a nearly shirtsleeve environment. Apollo will require space techniques far in advance of those needed for Mercury. Apollo must be built to withstand the much greater launch thrust of the **Saturn. It must also be capable of being guided toward** the moon, carrying out approach and terminal guidance and maneuvers and landing gently on its surface. Then it must fulfill the requirements of carrying out a lunar takeoff, and guidance back for a safe return through the earth's atmosphere at re-entry speeds approaching 2 5,000 miles per hour.

Like other achievements in space, the Apollo flights must be a step by step process.

In this slide we see an artists' concept of the Apollo capsule mounted on a Saturn C-1 launch vehicle, which is composed of the S-1 stage, the one which will be built in New Orleans at the Michoud Plant at NASA and the SIV stage, built for NASA by Douglas Aircraft Corporation. With this vehicle, the space craft will first be flown into orbit around the earth so that the components and subsystems of the vehicle can be tested and evaluated.

These earth-orbiting flights will also be used for training the space crews and for development of operational techniques. Each will also include important scientific experiments.

As the competence of the Apollo vehicle and crew increases, the flights will go farther and farther from earth, and will be of longer duration and complexity. A major step will be a manned flight around the moon, in which the crew will perform many of the guidance and control tasks that will be required later on in the lunar landing mission.

We have already accomplished a major step in the first phase of the program to get our manned lunar program underway.

On October 27, 1961, NASA launched from Cape Canaveral, the first prototye Saturn booster, shown in this slide, the most powerful rocket stage known to exist in the world. Its eight engines generated 1,300,000 pounds of thrust, which will be increased to 1,500,000 pounds in later flights. The vehicle, weighing 460 tons consisted of the fully fueled first stage and two water filled upper stage dummies. It stood 162 feet tall—10 feet taller than the Statue of Liberty. In less than two minutes, the engines consumed 300 tons of kerosene and liquid oxygen. The Saturn reached an altitude of 85 miles and a maximum speed of 3590 miles per hour, and came down in the Atlantic Ocean as planned 215 miles from Cape Canaveral.

The Saturn booster shown here on its ground transport is currently fabricated in our shops at the George C. Marshall Space Flight Center in Huntsville, Alabama, and transported by barge to Cape Caneveral for test firing. We have recently acquired the Michoud plant here in New Orleans for the manufacture of this and other large stages on contract.

On November 17, the Chrsyler Corporation was selected to be the first contractor to produce rocket boosters in the Michoud plant, under NASA direction. We are in process of renovating and equipping this plant to carry out this job.

NASA has also chosen an area across the border in Mississippi for the static testing of the large launch vehicle stages that will be produced at the Michoud plant. The 13,500 acre area to be acquired will be surrounded by an

area of about 128,000 acres, for which we are acquiring rights as a buffer zone. Both the Michoud facility and the Mississippi test site will be operated by industry contractors under the supervision of NASA Marshall Space Flight Center.

In late December, an announcement was made that the Boeing Aircraft Company had been selected to design and build an advanced model of the Saturn booster, shown on this slide.

This is the vehicle which will power the Apollo flights around the moon, by using a cluster of five Rocketdyne F-1 engines, each of which develops 1,500,000 pounds of thrust. The second and third stages of the advanced Saturn will use liquid hydrogen for fuel and will be fabricated by North American Aviation and Douglas Aircraft respectively. This launch vehicle will place more than 200,000 pounds in a near-earth orbit and more than 80,000 pounds around the moon in circumlunar flight.

If we use the direct accent approach for the manned lunar landing, we shall have to build a launch vehicle nearly twice again as large as this advanced version of the Saturn. No detailed specifications have been established, but we are planning a vehicle, which has been named Nova, in the neighborhood of 350 feet tall, or about as tall as the Hibernia National Bank here in New Orleans.

The launching and the test facilities for the Nova will be even larger, and the construction will take a long time, and require immense amounts of money. Even the Michoud plant, as large as it is, will require an extensive and high bay area for fabrication of the stages of Nova.

Memorial

CLARENCE A. JACKSON

It is with sorrow and regret that we record the passing of Clarence A. Jackson on November 27, 1961.

"Jack," as he was known by all his associates, was very popular in the engineering profession and construction industry in Southwest Louisiana. He was a member of long-standing in the Lake Charles Section of the Louisiana Engineering Society. He had served on various committees and made numerous other contributions to the Society.

"Jack" came to the Lake Charles area with the M. W. Kellogg Company. He was connected for a time with the Lummus Company. But he was best-known during his long association with the Graver Construction Company. His latest venture in the construction industry was as owner of the Clarence Jackson Company.

Mr. Jackson was born in Cany, Kansas, on January 17, 1906. He is survived by his wife, Mrs. Inez Gabriel Jackson of Maplewood, Louisiana, a brother, Walter A. Jackson, and his mother, Mrs. Lucy R. Jackson, both of Ponca City, Oklahoma.

CHARLES W. STOKES
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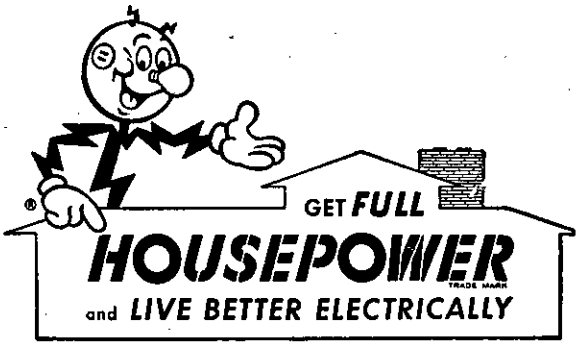

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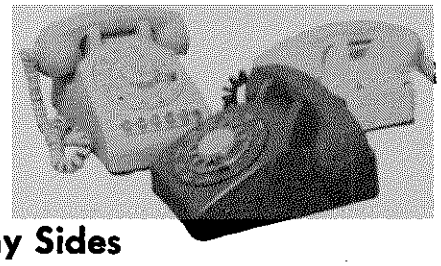

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Planning—— Field Notes

By Allen Johnson

The Sixth Annual LES State Planning Conference will be held March 9 and 10 in Alexandria, according to conference Chairman C. C. Edwards, Jr. General chairman will be Leonard Bossier. Purpose of the conference is to enable LES officers, board members and committee chairmen and their wives to plan activities for the year. James S. Janssen, LES president will preside. Work shops will be conducted on every phase of LES activity, at the Hotel Bentley.

Gratitude of the Society was expressed to Mr. W. H. Rhodes, who has resigned as editor of The Louisiana Engineer, "for a job well done." Said President Janssen: "Under your editorship, a great deal of progress was made in the quality and financial status of our magazine. Speaking for the officers and members of the Society, I wish to thank you very much for a job well done."

Assuming the role of Editor is Warren K. Bankston, who has served for the past two years as Business Manager.

Engineers Week, the period during which the professional engineers of the state and nation take time out to report to the public on their activities, plans and progress, is scheduled for the week starting February 18. The event is sponsored by NSPE and LES; state chairman for the week is William A. Baker, Jr., New Orleans. His committee includes Grover J. Trammell, vice-chairman; L. R. Daniel, Jr., G. R. Dyson, D. V. Cresap, M. M. Thornton and Q. W. Hargrove.

Engineers Week activities in New Orleans will be led by Warrington B. Speer, chairman, assisted by John F. Vogt, Jr., Hoyt W. Brown, John Martinez, Hero Edwards and Rodger Battle.

Henry G. Allen, president of the Baton Rouge Council of Engineering and Scientific Societies, writes: "I and the entire Council appreciate the unusually good support given our annual meeting in The Louisiana Engineer. Your October issue will become a part of our permanent record."

Fred C. Culpepper, Jr., has been named a vice-president of Ford, Bacon & Davis Construction Corp., Monroe, La.

George O. Phillips, executive vice-president of the firm, said Mr. Culpepper will be in charge of new business. The company is a subsidiary of Ford, Bacon & Davis, Inc., New York engineering consultants.

Mr. Culpepper has been with Ford, Bacon & Davis for 20 years. He has directed the construction of a number of major pipe lines, including the nation's first long distance coal slurry line, between Cadiz, Ohio, and Cleveland.

A graduate of Virginia Military Institute, Mr. Culpepper is a licensed engineer in 13 states, and a member of the National Society of Professional Engineers, the American Society of Civil Engineers, the American Ordnance Assn., and the Louisiana Engineering Society.

He is a native of Monroe. During World War II, he served in the 101st Airborne Division, parachuting behind enemy lines in Normandy and Holland.

Woman's Auxiliary News

By Mrs. Waldemar S. Nelson, President

Baton Rouge	February 22 9:30 A.M.	Benefit Card Party Woman's Club House
Alexandria	March 9 and 10	L.E.S. State Planning Conference
New Orleans	March 13 10:30 A.M.	Lecture and Tour Delgado Museum of Art City Park
Shreveport	March 13 11:30-2:00 P.M.	Luncheon Aquacade Room
Lake Charles	March 17	Dinner Meeting Chateau Charles

As the above schedule indicates, the Woman's Auxiliary has a wide variety of activities planned for the early Spring. Of particular interest to all Chapters will be the State Planning Conference set for March 9 and 10 in Alexandria. This will be the sixth such Conference each held in Alexandria, and each year it has grown in attendance and popularity with the ladies.

The Conference was organized primarily for L. E. S. officers, board members, and committee chairman to meet and plan for the future. The wives of these gentlemen were invited and, since most of them were Auxiliary members, last year, they were invited by the Alexandria Chapter to hold a Work Shop for the Auxiliary. The invitation has been issued again for 1962 and will be held on Saturday morning preceding a luncheon.

Official host to the Conference will be Mr. Leonard H. Bossier, newly-elected President of the Alexandria Section of L. E. S. The presiding officer will be James S. Janssen, LES president. In charge of program and hospitality for the visiting ladies will be Mrs. J. C. Jagers, President of the Alexandria Chapter of the Woman's Auxiliary. Assisting her with arrangements will be Mrs. Louis J. Daigre, Jr., Entertainment Chairman, and Mrs. William D. Roland, Special Affairs Chairman.

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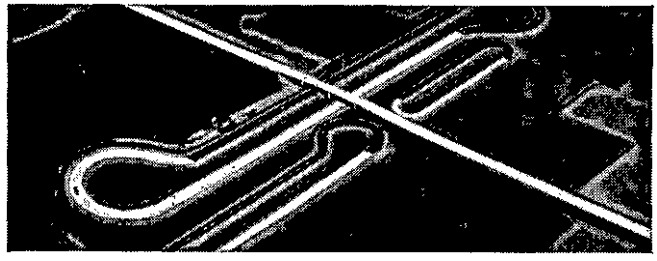

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the LOUISIANA ENGINEER

An Outline Of Ethics

(See Page 20)

Vol. 48 No. 2
April, 1962

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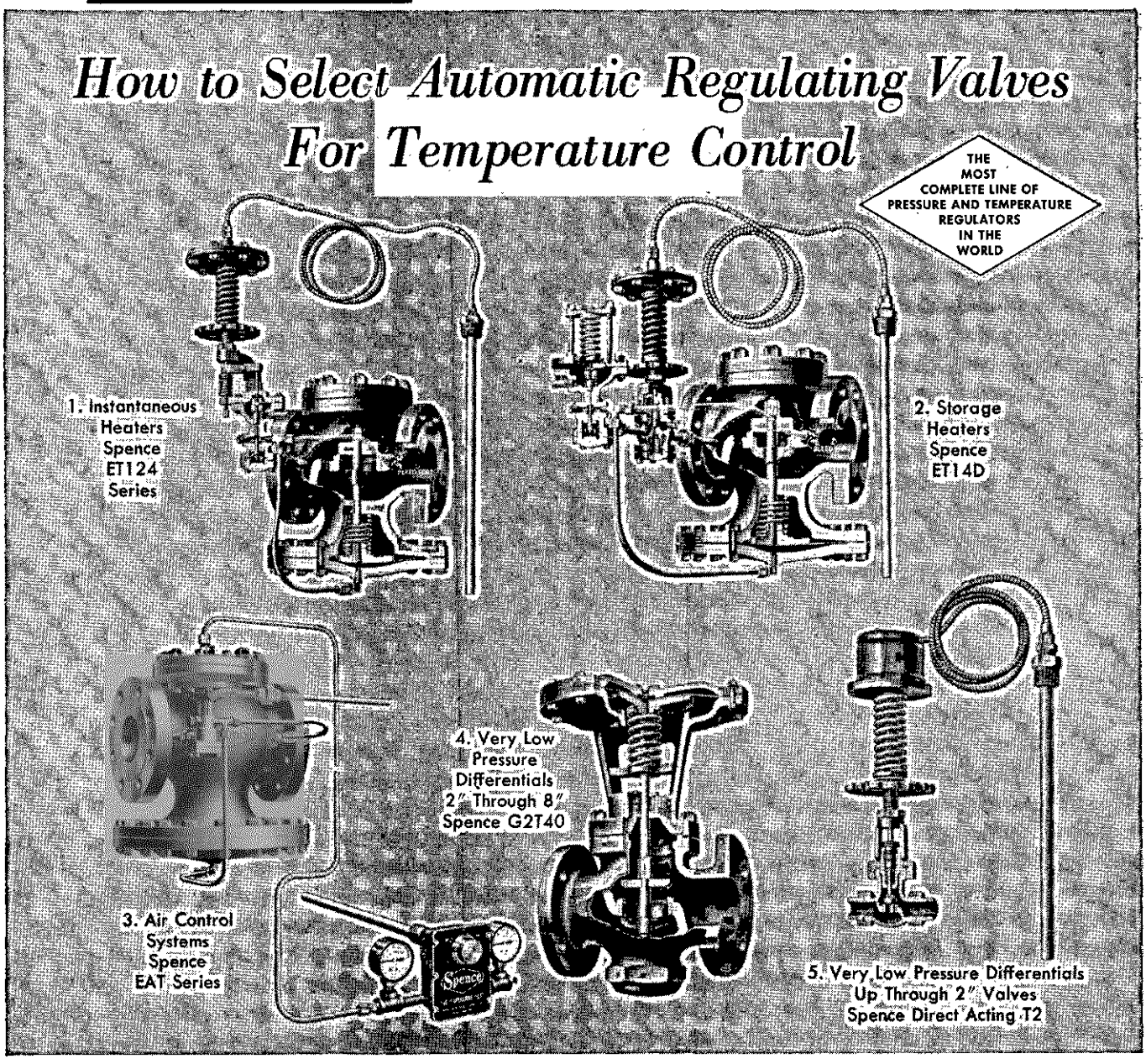

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THE LOUISIANA ENGINEER

Vol. 48 April, 1962 No. 2

OUR COVER: Ethics and professional conduct are subject of discussion at this committee meeting, one of many at Sixth Annual State Planning Conference in Alexandria March 9-10. Participants include (left to right), James R. McCoy, Monroe; Marion C. Bubenzer, Shreveport; J. H. Barnwell, Ruston; Marion D. Garrison, Lake Charles; Col. J. T. Knight, Jr., New Orleans, chairman.

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(Board Sponsor: Emery Domingue)

Membership:
M. J. Cade, Chairman
Frank W. Irland, Vice-Chairman
Francis B. Sessums
Frank C. Fromherz
A. B. Stevens
Marvin Firmin
J. J. Thigpen
A. M. Kober
Olivier Broussard III
(Board Sponsor: J. S. Janssen)

State Planning Conference:
A. M. Moore, Chairman
(Board Sponsor: J. P. Fernandez)

Vocational Guidance:
De Witt Morris, Chairman
H. S. Branch, Vice-Chairman
Everette E. Toney
R. E. Jenkins
Albert S. Mc Kee
(Board Sponsor: Robt. P. Lockett)

Public Relations:
Roy T. Sessums, Chairman
Warren K. Bankston, Editor

New Orleans Committees

Annual Outing:
Russell A. Hall, Chairman
Henry St. Paul, Vice-Chairman
Gay Seghers, Jr.
James R. Gore
Wm. F. Becker, Jr.
Frank S. Foster
Ronald P. Cressy
Donald P. Boudreaux
(Board Sponsor—Robt. P. Lockett, Jr.)

Engineers' Week (N. O.):
Hoyt Brown, Chairman
(Board Sponsor: J. S. Janssen)

Technical Papers:
Fred R. Adams, Chairman
L. L. Denson, Vice-Chairman
R. P. Maddux
Stanley Dinkel
W. B. Speer
Jos. J. Ranna
W. H. French
H. R. Daries
(Board Sponsor: J. T. Knight)

Vocational Guidance (N. O.):
Robert H. Boh, Chairman
John Martinez, Vice-Chairman
Roger Battle
(Board Sponsor: Robt. P. Lockett)

Tulane Student Chapter Advisors:
Roy Johnson
J. Bres Eustis
John Martinez

N. O. Area Chamber of Commerce Representative:
Frank H. Walk

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

Minutes Of The Board, LES

LOUISIANA ENGINEER SOCIETY
Minutes of Meeting of the Board of Director
held at 317 Baronne Street, New Orleans
January 29, 1962

The meeting was called to order by President Janssen with Messrs. Domingue, Knight, Lockett, McNamara, Pounds, Vincent, Stokes, Watts and Fernandez present. Messrs. Allen Johnson, Public Relations Counsel, Waldemar S. Nelson, Registration Law Committee Chairman, August Perez III and M. M. Maxwell of the American Institute of Architects and the Louisiana Architects Association were present by invitation.

The order of business was dispensed with to allow Mr. Perez, head of the Engineer-Architect liaison group to be heard. Mr. Perez requested that the amendments proposed by the LAA be held as confidential, since their experience has been that publicity usually results in greater opposition to the Association's proposals. He then read the existing architects' law and the proposed amendments and commented on the proposals.

Mr. McNamara moved that the Chairman of the Registration Law Committee be authorized to contact representatives of the Executive Committees of the Louisiana Section of the American Society of Civil Engineers and the Gulf Institute of Consulting Engineers to obtain their views, and to submit a recommendation concerning these proposed amendments. Motion seconded by Mr. Stokes and carried.

Mr. Watts moved that the minutes of the December Board meeting be acepted as distributed to board members by mail, seconded by Mr. Lockett and carried. The secretary then read minutes of a meeting of the State Board of Registration held on January 10, 1962 and those of a special meeting of the LES Board of Direction held on January 12. Mr. McNamara moved that the minutes of the special meeting be accepted as read, seconded by Mr. Stokes and carried.

President Janssen reported on the NSPE meeting held in Jackson, Mississippi January 25-26. He announced that the national society had accepted LES's invitation to hold its January, 1965 Professional Meeting in New Orleans. It was agreed that the president would appoint three members who have served as Annual Meeting General Chairmen to form a committee to handle this meeting with NSPE.

The President announced he would request Mr. James R. McCoy to attend the Louisiana Surveyors' Association Annual Meeting to be held in Baton Rouge on February 2 and 3.

President Janssen read the annual report of the Functional Section for Engineers in Private Practice. Mr. Knight moved that the report be received and forwarded, along with the Policy Statement and a copy of Florida's Functional Section Constitution and By-Laws, to the new committee chairman. Motion seconded by Mr. Stokes and carried.

Mr. Knight read his report on a meeting of the Construction Industries Association held on November 28, 1961.

A letter from Mr. Roy Cappel, President of the Louisiana Section, ASCE, concerning the efforts of Dr. J. I. Brierre to form an Association of Professionals was read, after which the Secretary was instructed to advise Mr. Brierre that LES would like to be informed further about the prospective association.

President Janssen announced that he would speak at a meeting of the Shreveport Section on May 1.

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

Francis E. David (Mbr.-NSPE), Alexandria.
C. J. Mayeux (Mbr.), Oregon.
Edgar D. Mott (Aff.), Lake Charles
Kenneth A. Rees, (Mbr.), Norway.

Mr. Stokes moved that the proposed amendments to the Monroe Section constitution and By-Laws be approved, seconded by Mr. Watts and carried.

A note of thanks from the K. P. Kammer family for the society's floral offering was read, and President Janssen announced that Mr. M. C. Abrahm had been appointed to head a committee of his own choice to prepare a memorial resolution in honor of Past President Karl P. Kammer.

Mr. Watts, Chairman of the Finance Committee, presented a budget for 1962, copy of which is attached to these minutes. Mr. Domingue moved that the budget be accepted, seconded by Mr. Watts and carried.

A letter from Mr. Bubenzer, President of the Shreveport Section, requesting financial support for the Engineers' Booth at the Louisiana State Fair was read. Mr. Watts moved that Mr. Bubenzer be advised that the parent society will contribute $150.00 and that the Board of Direction does not object to the solicitation of funds from other LES sections in the name of the Shreveport Section. Motion seconded by Mr. Stokes and carried.

Wth the concurrence of the Board, President Janssen appointed the following standing committee personnel to serve for 1962; after which the meeting adjourned.

STATEWIDE COMMITTEES

Annual Meeting 1963
John F. Vogt, Jr., Chrm.
C. M. Baccich, Jr., Vice-Chrm.
Spencer G. Smith
Francis J. Favaloro
Claude Kelly, Jr.
Pierre J. Stouse, Jr.
C. Glennon Melville
R. F. Muller, Jr.
Bernard Louviere
Walter S. Verlander
(Bd. Spon.: E. J. McNamara)

Ethics & Professional Conduct
John T. Knight, Jr., Chrm.
M. C. Bubenzer, Vice-Chrm.
Tom F. Ruffin
James R. McCoy
Marion D. Garrison
James H. Barnwell
Wm. A. Wintz, Jr.
R. M. Hetherwick
(Bd. Spon.: J. T. Knight, Jr.)

Honors & Awards
Edward A. McLellan, Chrm.
Ben T. Bogard, Vice-Chrm.
Wm. J. Roundtree
W. H. Carter
F. L. Larue
Bailey C. Vincent
T. R. Henry, Jr.
Tom F. Ruffin
(Bd. Spon.: Ben T. Bogard)

Registration Law
Waldemar S. Nelson, Chrm.
Louis Duclos, Vice-Chrm.
F. Hugh Coughlin
Lionel J. Cucullu
Emery Domingue
O. T. Ice, Jr.
Francis B. Sessums
C. W. Stokes
A. C. Thigpen
(Bd. Spon.: Emery Domingue)

Membership
Michael J. Cade, Chrm.
Frank W. Irland, Vice-Chrm.
Marvin L. Firmin
Frank C. Fromherz
Andrew M. Kober
Francis B. Sessums
A. B. Stevens
J. J. Thigpen
(Bd. Spon.: James S. Janssen)

Engineers' Week 1963
Grover J. Trammell, Chrm.
L. R. Daniel, Jr., Vice-Chrm.
Geo. B. Walther, Jr.
Fred C. Brownlee
T. R. Henry, Jr.
Wm. J. Rountree
O. T. Ice, Jr.
Karam J. Thomas
(Bd. Spon.: Calvin T. Watts)

Employment
Wm. A. Baker, Jr., Chrm.
Bd. Spon.: James S. Janssen)

Functional Section for Engrs. in Private Practice
Jos. T. Montgomery III, Chrm.
Chris Demopulos
Leo M. Odom
Edgar H. Pavia
Frank H. Walk
Clifton A. Frey
Ernest Levingston
James R. McCoy
D. X. Ellett
John I. McCain
Ralph Caffery
(Bd. Spon.: Emery Domingue)

Legislative
Henry L. Landry, Chrm.
Chas. P. Barnard, Vice-Chrm.
Harry H. Shutts
George Hero, Jr.
O. T. Ice
J. E. Jarman
D. W. Jessen
L. J. Melancon
R. A. Smith
A. P. Andrews
Billy M. Ferguson
(Bd. Spon.: E. J. McNamara)

State Planning Conference 1963
Andrew M. Moore, Chrm.
(Bd. Spon.: J. P. Fernandez)

Vocational Guidance
DeWitt L. Morris, Chrm.
Henry S. Branch, Vice-Chrm.
Everette E. Toney
R. E. Jenkins
Albert A. McKee
Bd. Spon.: R. P. Lockett, Jr.)

Public Relations
Roy T. Sessums, Chrm.
Warren K. Bankston, Editor

NEW ORLEANS COMMITTEE

Annual Outing
Russell A. Hall, Chrm.
Henry St. Paul, Vice-Chrm.
Guy J. Seghers, Jr.
James R. Gore
Wm. F. Becker, Jr.
Frank S. Foster
Ronald P. Cressy
Donald P. Boudreaux
(Bd. Spon.: R. P. Lockett, Jr.)

Engineers' Week 1963
Hoyt W. Brown, Chrm.
(Bd. Spon.: James S. Janssen)

Tulane Student Chapter Advisors
Roy E. Johnson
J. Bres Eustis
John L. Martinez

N. O. Chamber of Commerce Representative
Frank H. Walk

Technical Papers
Frd R. Adams, Chrm.
L. L. Denson, Vice-Chrm.
R. P. Maddux
Stanley G. Dinkel
Warrington B. Speer
Joseph J. Ranna
Wm. H. French
Henry R. Davies, Jr.
(Bd. Spon.: J. T. Knight, Jr.)

Vocational Guidance
Robert H. Boh, Chrm.
John L. Martinez, Vice-Chrm.
Roger K. Battle
(Bd. Spon.: R. P. Lockett, Jr.)

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

LES BUDGET FOR 1962

Income:		
Advertising		$ 14,000.00
Dues		23,000.00
Miscellaneous		600.00
State Board of Registration		4,000.00 $41,600.00
Expenditures:		
Annual Meeting		$ 800.00
Annual Outing		250.00
Awards & Scholarships		600.00
Dues & Rebates		9,500.00
Engineers' Week		650.00
Miscellaneous:		
Auditor's Fee	$ 200.00	
Floral Offerings	100.00	
Taxes	250.00	
Annual Board Luncheon	100.00	
Other	250.00	
		900.00
Monthly Meetings & Headquarter Rental		630.00
Publication & Public Relations		18,000.00
Salaries:		
Secretary-Treasurer	$ 2,700.00	
Asst. Secretary-Treasurer	2,400.00	
Stenographic Assistant	1,320.00	
		6,420.00
State Conferences		350.00
Stationery, Printing, Postage, Office Supplies		2,200.00
Travel Expense		500.00
Unbudgeted		300.00
		41,100.00
Return to Capital Account		$ 500.00

REPORT ON WINTER MEETING, NSPE
held at Jackson, Mississippi, January 25-26, 1962

The Winter Meeting of the National Society of Professional Engineers was held at the King Edward Hotel, Jackson, Mississippi. Mr. James C. Janssen, President, Louisiana Engineering Society, accompanied the writer to the meeting.

At the last Fall Meeting held in Roanoke, Virginia, it was decided that only two meetings would be held each year. Accordingly, the schedule for future meetings has been revised as follows:

June, 1962	French Lick, Indiana
January, 1963	San Antonio, Texas
June, 1963	Cleveland, Ohio
*December, 1963	Phoenix, Arizona
June, 1964	Asheville, North Carolina

*Same as Winter Meeting, 1964

Invitations were considered for the meetings to be held in 1965. A very spirited campaign resulted in Albuquerque, New Mexico being selected for the annual meeting in June, 1965.

President Janssen extended an invitation to hold the January 1965 meeting in New Orleans. His presentation was so thorough and efficient that the society voted unanimously to accept the invitation. It is my understanding that the tentative plan is to conduct this meeting as a part of the Annual Meeting of the Louisiana Engineering Society

Ballots will be mailed to members in the near future for voting on the proposed constitutional change for new grade of membership. The directors of our society should be urged to encourage our members to vote for this change. The Board of Directors should also determine whether any changes in the L.E.S. constitution will be necessary in the event this amendment is carried.

Consideration was given to the possibility of permitting registered Land Surveyors to become members of NSPE. A special committee was appointed to study this matter. If the LES Board of Direction has any comment on the subject it should communicate with this committee.

The NSPE is concerned over the low enrollment of students in the engineering schools for the United States. Consideration is being given to the possibility of having a questionnaire prepared on interviews with 3000 students (freshmen and seniors) in an attempt to determine the lack of interest of students in science and engineering. These would be filled out by visits to the boys at their homes. In the event the plan is developed, LES will be asked to participate.

As a member of the Registration Committee I served as Acting Chairman in submitting a brief report to the NSPE. This dealt with a resolution recommending that the NSPE lend its support and encouragement to the National Council of State Boards of Engineering Examiners in the development of uniform examinations for professional engineers.

Respectfully submitted
FRANK W. MACDONALD
National Director

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LOUISIANA ENGINEERING SOCIETY
Minutes of Meeting of the Board of Direction held at the the Engineers' Club, New Orleans, February 19, 1962

The meeting was called to order by President Janssen with Messrs. Bossier, Knight, Macdonald, McNamara and Fernandez present. Messrs. Cucullu, Duclos and Nelson of the Registration Law Committee and Allen Johnson, Public Relations Counsel, also were present by invitation.

The order of business was dispensed with so that a report of the Registration Law Committee could be received. Mr. Nelson, Chairman of this committee, read a proposed amendment to the by-laws of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors prepared by that board at its meeting of February 14.

Following the report, Mr. Duclos moved that the committee recommend that no attempt be made to amend the Engineering Registration Law (Act No. 73 of 1950) at the 1962 Legislative Session, since the action taken by the State Board of Registration at its January 10th meeting, together with the proposed amendment to its by-laws, satisfies the objectives that L.E.S. hoped to achieve by amending the present law. Motion seconded by Mr. Cucullu and carried. Mr. Nelson advised that he had spoken to Messrs. Coughlin, Domingue, Ice and Sessums by long distance telephone and obtained their proxy votes in favor of this motion.

Mr. Knight moved that the LES Board of Direction accept the Registration Law Committee's recommendation and instruct the committee to be governed accordingly. Motion seconded by Mr. McNamara and carried unanimously.

Mr. Nelson read a letter from Mr. Roy Cappel, President of the Louisiana Section, ASCE, dated February 16, 1962, concerning proposed amendments to the Louisiana Architects' Registration Law. Mr. Nelson stated that this was presented as an interim report showing progress made by his committee and that a final report would be submitted following a meeting of his committee with the Gulf Institute of Consulting Engineers and the Louisiana Section, ASCE.

President Janssen requested that, if there were no objections, the minutes of the Board meeting held on January 29 be accepted as distributed to board members by mail. No objections were forthcoming.

The president read a letter from Mr. J. D. Strong, Field Representative of NSPE, in which he offered suggestions based on his recent visit to New Orleans during the Annual Meeting.

Mr. Knight moved that the material presented at the Louisiana Manpower Utilization Conference held in November not be published, since the conference had been given adequate coverage in the LOUISIANA ENGINEER and in the daily newspapers; the benefits to be derived from such publication would not justify the cost of printing. Motion seconded by Mr. Bossier and carried.

The secretary read a letter from the Louisiana State Board of Registration in which it forwarded a contribution of $4,000.00 towards the society's Public Relations Program for the promotion of professional engineering during 1962. The secretary was instructed to thank the State Board for its generous assistance.

President Janssen read a letter addressed by the Shreveport Section to other local sections, requesting financial support for the Engineers' booth at the Louisiana State Fair to be held in Shreveport.

The secretary was instructed to forward material received on the JESSI (Junior Engineers' & Scientists' Summer Institute) Program to the Public Relations Counsel for appropriate action, and to forward to National Society headquarters the application of Jerry Wayne McLaren as Louisiana's entry in the ARMCO Scholarship competition.

President Janssen announced the appointment of Mr. Olivier Broussard III to the Membership Committee.

Mr. McNamara moved that Mr. Wade R. Baggette be elected to Junior membership, seconded by Mr. Bossier and carried.

Upon motion by Mr. McNamara, seconded by Mr. Macdonald, Mr. S. E. Huey, Jr. was reinstated to the grade of Member.

Mr. Macdonald moved that the resignation of Mr. Edward A. A. Nelson be accepted with regret, seconded by Mr. Bossier and carried.

The agenda for the State Planning Conference was reviewed and approved. President Janssen announced that the Annual Meeting Committee had made reservations for January 10-11-12, 1963 at the Jung Hotel for the Annual Meeting, and that reservations also were made for the NSPE meeting scheduled for January 19-23, 1965.

The meeting adjourned.

JOHN P. FERNANDEZ
Secretary-Treasurer

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JESSI Activities Invite La. Students

The second annual Junior Engineers' and Scientists' Summer Institute, (JESSI) endorsed by the National Society of Professional Engineers, is scheduled for June.

Stanley H. Shirk, JESSI executive director, said the Institute for Boys will be held June 3-16 at Mississippi State University, State College, Miss. and the Institute for Girls June 1-23 at Tennessee Polytechnic Institute at Cookeville, Tenn.

Shirk invited LES members to discuss the program with promising high school students, and their teachers, to encourage interest and participation in the program.

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Sperry Strike Termed 'Disservice'

The strike at Sperry Gyroscope in Great Neck, N. Y., by some engineers has been termed "a disservice to the nation and the engineering profession" by the executive director of the National Society of Professional Engineers.

Paul H. Robbins said the general viewpoint of the 56,000-member engineering group was that "the professional engineer is obligated by the Canons of Ethics to place the national and community welfare above self-interest, and a strike at a defense plant is therefore indefensible."

In a statement issued from the Washington, D. C. headquarters of the National Society, Mr. Robbins pointed out that "reports indicate that the strike is not being supported by a majority of the engineers and it appears obvious that the union does not represent or speak for a majority of the engineers at Sperry."

Mr. Robbins charged that "the conduct of the union in this case again proves the National Society's position that professionalism and unionism are incompatible."

He added that "it is to be hoped that it will be possible for the NRLB to arrange a new election among the engineers at Sperry without delay so that the majority may decide whether they wish to be represented by the union which is responsible for trying to impose unprofessional conditions upon them."

Outgoing president Bailey T. Vincent of the Lake Charles Section of LES (left), poses with (left to right), Gus Quinn, new president; George B. Walther, vice president, and Ernest Levingston, secretary-treasurer.

Meetings— Field Notes
By Allen Johnson

The annual meeting of the Louisiana Engineering Society in 1963 will be held on Jan. 10, 11 and 12. Early announcement was made by LES president James S. Janssen in hopes that New Orleans sections of all engineering societies and the state's four engineering schools can try to keep those dates open . . . Calvin T. Watts, LES first vice-president, will attend the 1962 State presidents' conference (NSPE) at Purdue Universty April 12-13 . . . President Janssen will moderate a panel on utilities information, (relating to an exchange of information among utilities bearing on keeping their underground structures clear for one another), at the American Gas Assn. Distribution Conference at San Francisco April 1-5 . . . He addresses the LES Shreveport Section May 1 on "Unity For Engineers."

A feature of the Fifth Annual ASME Maintenance and Plant Engineering Conference May 7-9, at the Royal Orleans Hotel in New Orleans, will be a paper by Chester A. Peyronnin, Jr., U.S. Army Engineer District New Orleans (and a former editor of the Louisiana Engineer) on "Hurricane Design of Coastal Plants" . . . Narrow Road, with Mitchell Shirota up, won the National Engineers Week handicap at the Fair Grounds. "Court Adjourned" ran out of the money, if any attorneys happen to be reading this. Hoyt Brown conjured up the novel publicity approach to Engineers Week.

Leonard Bossier (right), Alexandria Section President, receives Engineers Week proclamation from Mayors George Bowden (center) of Alexandria and Pineville Mayor George Huffman.

Woman's Auxiliary News

By Mrs. Waldemar S. Nelson, President

1962 will mark the Thirtieth Anniversary of the Woman's Auxiliary to the Louisiana Engineering Society. The chart below provides the Anniversary picture, and is proof of steady growth since its beginning in New Orleans with forty-four members, organized and led by Mrs. William B. Gregory, beloved founder.

Auxiliary	Date Founded	1962 Anniversary
New Orleans	April, 1932	30 years
Baton Rouge	November, 1946	16 years
Alexandria	September, 1952	10 years
Shreveport	March, 1955	7 years
Lake Charles	May, 1958	4 years

The parent organization in New Orleans will celebrate the Auxiliary birthday on April 17th with a Program and Tea at Holmes Lakeside Auditorium, preceded by a Dutch Treat Lunch at Holloway House for Charter Members, Past Presidents and the present Executive Board.

At the meeting, the honorees will be Charter Members and Past Presidents and a highlight will be the awarding of newly designed Certificates to twenty-one members who have served the Auxiliary for twenty-five consecutive years. Mr. James S. Janssen, L.E.S. President, has been invited to make the presentations and will be assisted by Mrs. A. W. Thompson, Chairman of the Awards Committee. Another highlight will be a reading by Mrs. George A. Heft, Past President and author of a short Auxiliary history in rhyme which she calls "The Epic of the Auxiliary." Mrs. Heft was president during the Auxiliary's Twentieth Anniversary year and presented the original "Epic" on Founders' Day at that time. She has been asked and has kindly consented to bring her rhyme up to date.

As president, the biggest news I can report is that the combined Scholarships awarded by the Woman's Auxiliary each year has now reached **$1,250.00.** This announcement will be made at the Founders' Day celebration, with other figures on the philanthropic work of the ladies, and will be furnished this column for its June issue.

Mrs. Warrington B. Speer, wife of the general chairman of Engineers Week in New Orleans, poses with LES President James S. Janssen.

Pictorial Highlights Of State Planning

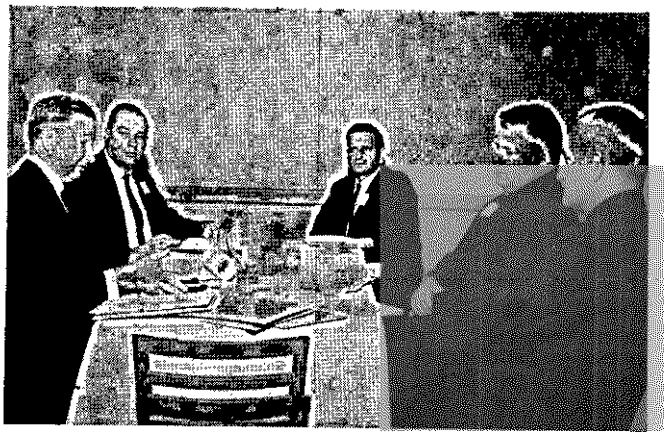
(See Reports, Pages 19-21)

MEMBERSHIP PLANS are discussed by (from left), Marvin Firmin, New Orleans; Frank Fromherz, New Orleans; Ashby Stevens, Alexandria; M. J. Cade, New Orleans, chairman; F. W. Irland, Shreveport; Olivier Broussard, Lake Charles.

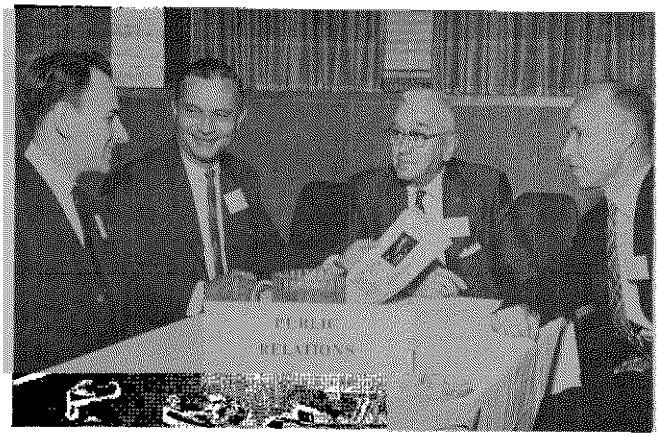
John P. Fernandez outlines role of section secretary-treasurer to Eugene M. Sellers, Lafayette

REGISTRATION LAW was reviewed by committee headed by W. S. Nelson, New Orleans, chairman (center); Louis Duclos, Baton Rouge, vice-chairman; Emery Dominque, Lafayette, board sponsor.

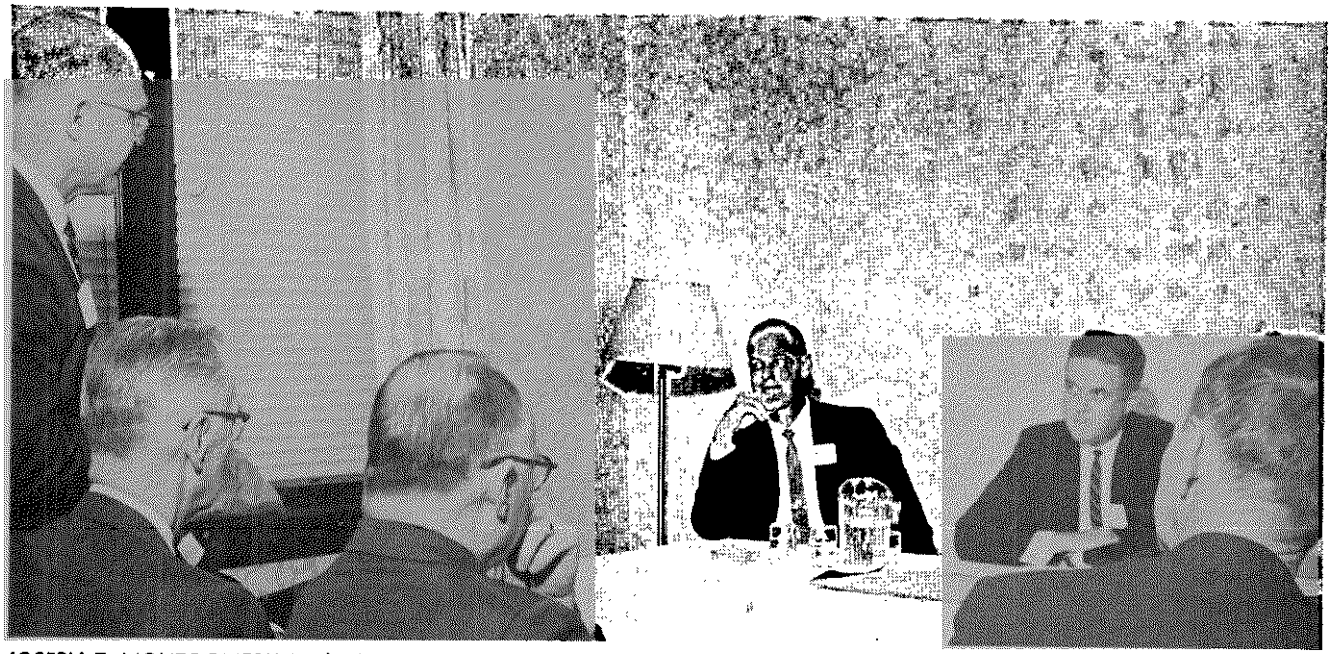
ENJOYING A TOUCH of levity at Engineers Week session are (from left), Calvin T. Watts, Baton Rouge. LES first vice-president and board sponsor; P. J. Plaisance, Jr., Alexandria; Daniel Cresap. Alexandria; Grover J. Trammell, Ruston, chairman; L. R. Daniel, Baton Rouge; M. M. Thornton, Lake Charles.



VOCATIONAL GUIDANCE was theme of this meeting, attended by (from left), De Witt Morris, New Orleans, chairman; A. G. McKee, Ruston; W. C. Vincent, Lafayette; Mark Howard, Alexandria; H. L. Henry, Ruston.



TAKING A LOOK at The Louisiana Engineer are (from left), Donald P. Boudreaux, New Orleans; W. K. Bankston, editor; Eugene Levy, Alexandria, and Allen Johnson, public relations counsel.



JOSEPH T. MONTGOMERY III (right, seated), calls on LES President James S. Janssen to make a point at Professional Engineers in Private Practice (PEPP) session. Committee was formerly termed Functional Section.

PLANS FOR THE Woman's Auxiliary for 1962 are discussed by (from left), Mrs. W. S. Nelson, New Orleans, president; Mrs. M. D. Garrison, Lake Charles; Mrs. J. C. Jagers, Pineville; Mrs. Calvin T. Watts, Baton Rouge, and Mrs. F. W. Irland, Shreveport.

LOOKING AHEAD to 30th anniversary of Woman's Auxiliary this year and reviewing group's accomplishments in scrapbook are (from left), Mrs. Kenneth Preston, Alexandria; Mrs. John T. McKnight, Jr., New Orleans; Mrs. Ernest Levingston, Lake Charles; Mrs. Joseph T. Montgomery III, New Orleans, Mrs. O. T. Ice, Shreveport.

Reports on Engineers Week in Louisiana

By William A. Baker, Jr.
State Chairman, Engineers Week

Thanks to the hard work of the local chairmen, Engineers' Week was again very successful in Louisiana.

Dr. Wernher Von Braun, director of the NASA George C. Marshall Space Flight Center at Huntsville, Ala., was the principal speaker at New Orleans' Chamber of Commerce Members Council luncheon, which each year is dedicated to the observance of Engineers' Week. An overflow crowd of approximately 500 members, engineers, and guests, attended this meeting.

An appearance by Dr. Von Braun would have been impressive at any time, but his speech was particularly timely coming as it did two days after John Glenn had successfully orbited the earth.

Dr. Von Braun's speech was concerned primarily with the past accomplishments of the United States in space exploration and some of the problems connected with the next planned project, manned lunar exploration.

Dr. Von Braun stated that present plans for manned lunar exploration would incorporate the rendezvous in outer space of a large fully fueled rocket stage with a manned space craft. After the two segments have been joined in outer space, the large rocket would launch it in a flight path toward the moon.

In keeping with this year's theme of Engineers' Week, "Economic Growth Through Professional Engineering," Dr. Von Braun said that while the manned lunar exploration program may cost about $20,000,000,000 by 1970, it is estimated that at least double the contributions will be returned to the public by the expanding economy made vibrantly alive by the various projects it is undertaking to support.

The technological developments brought about by the space program will also have a tremendous impact on our economic growth. New techniques, materials, alloys, plastics, fabrics, and other compounds which have been created for the space age, were unknown to our economy a few years ago, and new uses for these products are being developed for the public almost daily.

Dr. Von Braun stated that derivatives of hydrazene, a fuel developed for space vehicles, are proving to be very effective in the fight against tuberculosis, and a ceramic, developed for radomes, is currently being used in the manufacture of pots and pans. Certainly, one very important non-military project is already in the planning stages as a result of the successes of our satellite program. This is in the field of communications satellites, which will greatly expand telephones, telegraph and television transmission throughout the world.

* * *

LOUISIANA Polytechnic Institute at Ruston, Louisiana, began its Engineers' Week with a joint meeting of the students and faculty. Mr. Mercer H. Parks, Humble Oil and Refining Company of Houston, Texas, was the principal speaker at this meeting. Later on during the week a dinner was held and all members and officers of professional societies in the area were invited.

* * *

THE SHREVEPORT section was particularly honored to have Mayor Fant of Shreveport attend their Engineers' Week meeting. Six State Legislators and the Presidents of other engineering societies attended this meeting as guests. Mr. Claude Kirkpatrick, Director of Public Works, State of Louisiana, was the principal speaker. Mr. Kirkpatrick was later interviewed on TV station KSLA.

* * *

THE ALEXANDRIA section was able to work very closely with their local radio station, and a regular announcement of local activities during Engineers' Week was made every hour during the day. The Engineering Week was also an outstanding success, and the honored guests included the Mayors of Alexandria and Pineville, President of the Rapides Police Jury, the President of the Red River, Atchafalaya, Bayou Boeuf Levee Board, and several State Legislators. Mr. Claude Kirkpatrick was also the principal speaker at the Alexandria banquet. One of the other high points on the banquet program was the presentation of the Armco Scholarship Award to the outstanding student in the area.

* * *

THE BATON ROUGE section was very successful in having Local Professional Engineers appear as guest speakers at the meetings of local civic and service clubs to bring home the significance of the theme, "Economic Growth Through Professional Engineering." Engineers' Week in Baton Rouge was officially "kicked-off" at a large meeting of the Baton Rouge section on Monday, February 19th.

* * *

The high point of the celebration in Lafayette was the Ladies Night Dinner-Meeting. This meeting attracted a large crowd, and a prominent guest speaker made the attendance very enjoyable for all who were present.

* * *

It is generally felt that all activities during Engineers' Week should be newsworthy themselves or should be designed to reach the public directly. All sections were successful in getting the cooperation of their local newspapers, radio stations, and television stations.

Many sections were able to get their local television to give them a 15 minute or 30 minute program during the week, which was usually dedicated to a forum session concerning the theme of Engineers' Week.

Business and industry has cooperated beautifully with the celebration of Engineers' Week in providing space for poster displays, and, in some cases, providing window space for any sort of display that the local section wants to design.

Engineers' Week in Louisiana is becoming more successful each year. The public is being made more fully aware of the contributions to society made by the engineer. Thus, it may be concluded that the celebration of National Engineers' Week is fulfilling its mission.

Glenn's Flight Will Affect La. Economy

By James S. Janssen, President
Louisiana Engineering Society

Dr. Wernher Von Braun's talk in New Orleans was particularly timely, coming in as it did immediately after John Glenn's successful trip around the world. As you know, this is National Engineers Week which is sponsored locally by the Louisiana Engineering Society and nationally by the National Society of Professional Engineers.

Our theme this year is "Economic Growth Through Professional Engineering."

The economic impact of Glenn's trip may not be immediately obvious but rest assured that it will become more and more apparent in the very near future.

Remember that in the early days of our engineering developments, such as the use of steam, the airplane, radio, etc., there was no known use for such things but, of course, they have become important parts of our present economic structure and so will space travel.

We feel that this is an outstanding example of our economic growth through professional engineering.

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Astronaut John Glenn was named Honorary Chairman of National Engineers' Week by Warren G. Stadden, Roselle, N.J., general chairman of the 1962 observance.

In a congratulatory telegram to the Astronaut after his historic orbital flight, Stadden said that "engineers throughout the Nation are discussing the flight as one of the great achievements in American technology." He added that the engineering profession 'feels that it is most fitting that the vast Project Mercury flight program should culminate during National Engineers' Week, observed each year during the week of George Washington's birthday."

Stadden said that he had requests from engineers in many states to appoint Astronaut Glenn Honorary Chairman of the 1962 Engineers' Week, February 18-24.

The Week was sponsored by the National Society of Professional Engineers, and had thirteen leading engineering figures as indiivdual sponsors, including Wernher von Braun.

ENGINEERS JOINT COUNCIL

EJC NEWS

The 1962 Nuclear Congress will provide an up to date review of practical engineering problems based on experience with operating nuclear reactors to provide a practical guide to the future of nuclear energy in the power field, said Engineers Joint Council, sponsor for the 1962 Nuclear Congress. LES is a co-sponsor.

The event which will be held at New York's Statler Hilton Hotel, June 7, will include an address by Dr. Glenn T. Seaborg, Chairman of the U. S. Atomic Energy Commission. Another highlight will be a panel discussion moderated by Dr. James R. Killian, Jr., MIT chairman, and a talk by the Hon. Chet Holifield, chairman of the Joint Congressional Committee on Atomic Energy.

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Report On Highway Progress

By RAY W. BURGESS
Director, La. Dept. of Highways

No other people in the world place as much reliance on roads and streets as we do in America and here in Louisiana.

Our whole economy—our way of life—is heavily dependent upon the free-flowing movement of people and goods made possible by highways and automobiles.

In this day and age of travel, our automobiles are no longer luxuries, but are necessities, like food, clothing and shelter.

Three out of five of us go to work by automobile, and many more by bus.

Farm crops—agricultural produce of all kinds—move over our highways in greater quantity than ever before. Raw products are taken from our farms to processing and packing plants, and then are moved again—by truck—to distributors and to retailers. Finally, the housewife does her shopping, and fills her car from the grocers' shelves.

Industrial Supplies, Too

Industrial supplies and products, too, move over our highways. From raw materials in one area, producers in another fabricate, combine, process and manufacture finished products that will again be packaged and transshipped to consumers.

More than one-third of our school children go to school by bus. Many more of the younger children are taken to school by private car, and many of our scholars in high school and college drive their own automobiles.

Most of us take our vacations, and week-end trips by car. In Louisiana, tourism is a $300-million-a-year business, adding to our economy in every phase of our commercial life.

In 1946 Louisiana people owned 424,000 motor vehicles.

Today, we own 1,200,000, almost three times as many as 15 years ago.

2 Million by 1975

But in 1975, there will be 2 million. That is 800,000 more than we have now. In the short span of only 30 years, we will have increased our vehicle ownership by five times! How did all of this start? Let us look a little into the history of our road system.

Our earliest roads in Louisiana were laid out haphazardly, as they were everywhere else. They were built to take care of the immediate needs of the day, without planning, and without our modern equipment, materials and know-how.

They were little more than ribbons of mud, leading from one settlement, or one plantation, to another. There was no thought, then, of an integrated highway system. The needs of our people were simple; they wanted to travel short distances by land.

MR. BURGESS was the general interest speaker at the 1962 Annual Meeting of LES in New Orleans January 11-13.

Expanding Economy

As our state developed, the need for land communications grew. The rivers and bayous no longer were adequate for an expanding economy. The time had come to rebuild our highways to meet the growing demands of expanding business and industry.

We started to build—primarily to make all—weather travel possible. Still, there was not much thought of the future—only of catching up with the past. But, by the time the old roads were rebuilt, today had become yesterday, and the improvements were already obsolete.

As far back as 1939, a new federal road system was recommended. It was postponed, because of the urgent needs of national defense. It was recommended again in 1944, and was finally approved by Congress in 1947. But it was only five years ago, 1956, when positive action began.

For Years to Come

We started then to build an all-new highway system to match our needs—not only for today, but for years to come.

This was the national system of interstate and defense highways—41,000 miles of interconnected super-highways joining almost all of America's major cities.

At the same time, we launched an accelerated program to bring our other highways—the primary, secondary and farm-to-market roads—up to modern standards.

There were many problems to solve, not only in our major cities, but in smaller communities as well. The Interstate system will solve some of these problems, but not all of them.

All of you here today are familiar with the burdensome traffic congestion in our downtown areas—not only in large cities, but in almost all of the cities, towns and villages.

Few communities today in Louisiana or elsewhere are financially able to take care of their own needs for streets.

The Modern Answer

The modern answer for large cities is the controlled-access expressway. Widening of existing street networks is not enough, even if these improvements could be financed locally. You know, one modern expressway will carry as much traffic as five 60-foot conventional streets, and do it better, quicker, safer and more economically.

In those cities touched by the interstate, we are building these giant new super highways, 90 per cent paid for with federal funds, and 10 per cent with state funds. The cities themselves pay nothing, and get the advantage also of saving the money that would have been spent in widening and other local improvements.

In cities missed by the Interstate, we are carrying forward an expanded program on the other federal-aid systems, and on the state and local systems.

Our interest is broad enough to encompass every community in Louisiana, large or small, when vehicular traffic needs to be served.

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.

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 frequencp 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.

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What Is The L. E. S.?

The Louisiana Engineering Society is a state-wide organization devoted to the common interests of ALL ENGINEERS.

The aim of L. E. S. is to foster registration, professional pride and honor, and the practice of the established code of ethics for engineers.

The L. E. S. is an organization for Engineers in ALL branches of the profession, ALL fields of endeavor (private practice, government, industry, education, etc.), ALL ranks, ALL ages, in ALL sections of Louisiana. The society's Public Relations Program is directed toward the advancement of all branches of the profession in public recognition and esteem.

The L. E. S. is devoted to the professional, social and economic welfare of the individual engineer and in his behalf promulgates the profession's policy in legislative, civic and labor-industry matters pertaining to engineering.

Through its affiliation with the NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS and ENGINEERS' JOINT COUNCIL, the L. E. S. cooperates with professional organizations in all of the other states in striving for these goals at a national level.

The Louisiana Engineering Society is working for YOUR profession. Won't you help by joining?

For application details contact

J. P. Fernandez, Secretary-Treasurer

LOUISIANA ENGINEERING SOCIETY

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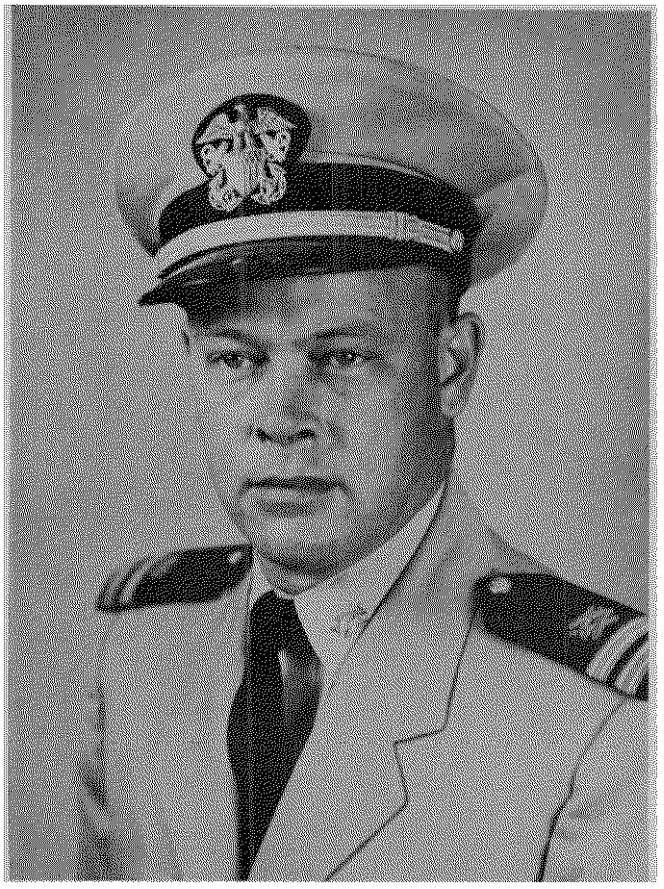
Problems In Fallout Shelter Design

By LT. F. H. LEWIS JR.
CEC, USN, New Orleans

We are all aware of the increased importance that has recently been placed on the provision of fallout shelters for the American public as the greatest means of survival against a nuclear attack on the United States. On July 20 of last year, President Kennedy by executive order assigned certain functions of the Office of Civil Defense to the Department of Defense.

Included in these functions was the responsibility for conducting a national fallout shelter survey and marking program by the Army Corps of Engineers and the Navy Bureau of Yards and Docks. Briefly, this program calls for the location of all buildings and structures in the United States that are suitable for use as protection against radiation fallout. This survey, of course, excludes single private residences.

The actual survey is now being conducted by Architect-Engineer firms under contract by the district offices of the Corps of Engineers and the Bureau of Yards and Docks. The administration of these A&E contracts was assigned to these district offices due to the fact that economical utilization of existing contract personnel was available. The results of the survey will be given to the local CD officials who will be responsible for preparing shelter use plans.



LT. F. H. LEWIS, JR.

What then constitutes a fallout shelter? What are some of the problems connected with making a structure into such a shelter? Why only protection against fallout? What about blast protection?

To understand and arrive at a solution to these problems, one must first gain a knoweldge of the various characteristics of a nuclear detonation.

In such a detonation, or explosion, energy in various forms is released in large quantities. Blast—50 per cent, Thermal Radiation—35 per cent, Nuclear Radiation—15 per cent.

Fifty per cent of the total energy released is in the form of blast. In considering the destructive effects of this blast energy, one of the most important considerations is that of the overpressure generated, or that pressure in excess of atmospheric. The variation of this overpressure with time that would be observed at a certain location in a few seconds is an important factor.

For a short interval after the detonation, there will be no increase in pressure since the shock front of the blast wave travels slightly faster than the speed of sound and it will take some time for it to travel to the point under consideration.

When the shock front arrives, the pressure will suddenly increase to a large value which varies with the size of the weapon and the type of burst, i.e. air or surface. As an example, for a 20 megaton surface burst (that equalling 20 million tons of TNT), the peak overpressure will be approximately 11 p.s.i. or 1584 psf at a distance of 5 miles from the point of detonation. This overpressure will decrease rapidly and will approach a value of 0 in about 7 seconds. The blast wave then passes into a negative phase where some destruction may take place; however, since the negative pressure phase is minor compared to the positive phase, the destruction is generally minor in nature.

The peak overpressure produces a lateral force tending at first to cause the structure to move in the same direction as the blast wave. After the shock front passes and the overpressure completely engulfs the structure, a crushing force is produced by the pressure differential between the inside and outside of the structure. Since the shock wave travels at a high speed as mentioned earlier, this diffraction loading lasts for only a fraction of a second as the shock front passes over the building.

THE ABOVE PAPER was presented by Lt. Lewis before the Annual Meeting of LES January 11-13, 1962 at the Sheraton-Charles Hotel in New Orleans.

Dynamic Pressure

Associated with the peak overpressure is a dynamic pressure which is caused by the strong transient winds behind the blast front. This loading persists for a linger period of time than that of diffraction and tends to act in a pushing or drag manner. It is a smaller force, for our 20 megaton reaction, the dynamic pressure approaches 2.8 p.s.i. at 5 miles distance as compared to 11 p.s.i. The duration of this loading is approximately the same as the period of the positive phase of the overpressure.

Large buildings having a relatively small door and window area and strong exterior walls respond primarily to diffraction loading. When the pressure of different areas of a structure are quickly equalized because of its small size or the character of the structure, response is then due to dynamic loading.

Thirty-five percent of the total energy of a nuclear explosion is released in the form of thermal radiation, i.e., light and heat. This energy has little effect on structures except that of charring. The destructive action of such radiation is usually the ignition of trash and house furnishings and of course, burns to individuals.

Held Unfeasible

With such structural loadings to compensate for, we can readily see why the provision of shelters to protect the total population of the United States against blast is economically unfeasible. In addition, we don't know where the points of detonation will be, if an attack should occur. Therefore, it is considered that the greatest protection should be provided for the population from the more lasting and far reaching effect of a nuclear explosion—that of fallout radiation.

Fifteen per cent of the total energy of a nuclear explosion is released in the form of nuclear radiation. This radiation consist of alpha and beta particles, Gamma rays and neutrons.

The detonation of a nuclear weapon near the ground causes large amounts of earth and debris to be drawn up into a fireball and radioactive cloud. This debris is induced with radiation and becomes a radiation emitter itself.

2 Types of Radiation

Radiation is of two types—initial and residual. Initial radiation occurs during the first minute after the detonation and consists of all four types of radiation emitters. The emitters are confined close to the blast area and since the destruction from blast will be paramount, we need not concern ourselves about this type.

Residual radiation, however, occurs after the first minute of the explosion and is our primary concern. Fallout is a component of residual radiation and is defined as the process or phenomenon of the fall back to the earth's surface of particles contaminated with radioactive material from the radioactive cloud.

After the earth and debris have been sucked up into the fireball and cloud and become contaminated, they become dispensed by the winds.

Depending on the velocity of these winds, the size of particles, the height of burst and weapon yield, the debris will eventually settle out on the surface of the earth. This phenomenon is similar to the settling out of solids from a flowing stream when the velocity of the water is reduced.

Three Categories

There are three kinds of radiation connected with fallout—Alpha, Beta and Gamma. Alpha particles cannot penetrate the skin and beta particles may be stopped by heavy clothing. These particles can be dangerous, however, if digested as they will harm the internal tissue and bone. Gamma radiation is a highly penetrating form of energy and is extremely harmful to human beings. Therefore, gamma radiation is our chief concern with respect to fallout protection.

The intensity of the fallout particles will be greater for early fallout or that occurring during the first 24 hours of an explosion due to the fact that the radioactivity of the particles decays with time.

The critical factor in shelter ventilation design is the amount of carbon dioxide concentration, which should not exceed 3 per cent by volume. Three crm per person of fresh make up aid will maintain acceptable concentrations of both oxygen and carbon dioxide. An effective temperature of 85°F should not be exceeded. The installation of mechanical cooling should be avoided and a heating system is usually not essential.

In high capacity shelters, large fresh air intake velocities may be high enough to draw in fallout particles, therefore a filter with ability to remove 90% of particles greater than 50 microns in size should be provided. The intake entrance should be hooded in such manner as to force incoming air paths to change direction at least 90 degrees before reaching the opening. Intake velocities should not exceed 2000 fpm in any case. A major problem in connection with intake systems is the providing of protection from the large concentration of contaminated particles on the filters and in plenum chambers.

A supply of potable water for shelter use is essential. About ½ gallon per person per day should be provided. The storage of such supplies is quite difficult, therefore, various source of supply should be investigated. If the public water supply originates from wells, there is less danger of contamination from radioactive particles. In large buildings, hot water tanks, fire reserve tanks, piping system may offer sufficient storage.

The greatest power demand in shelters will be for the ventilating systems. Additional load may result from water pumps, motors and sewerage ejection systems. Lighting is not a critical factor in determining power requirements as a minimum illumination of only about 5 foot candles will be sufficient for most shelters.

Other factors to be considered are those of the proximity of hazardous chemicals or gases, the adequacy of entrances, sanitation, fire protection, and emergency equipment and food storage.

As one can see, the design or modification of an existing building for use as a fallout shelter requires all of the engineering specialties—civil, mechanical, electrical, structural, sanitation, etc. Therefore, it behooves all of us to become versed in the requirements of fallout shelter design and to be able to provide the proper engineering solutions to the problems involved.

Engineers: This Way To The 'Space Age'

Professional engineers interested in working in the "Space Age" are invited to submit applications to the newly re-established engineering employment committee of the Louisiana Engineering Society.

William A. Baker, Jr., chairman, said the group's goal is to maintain a current listing of "engineers who are interested in changing jobs and who might be interested in working in the Michoud plant."

The committee was formed in anticipation of demands for engineers by the NASA-Michoud plant. "We are in a good position to be of service to our engineer members and to the NASA New Orleans Co-ordinating Committee in helping to fulfill their engineering requirements," said Baker.

Applications and any other inquiries will be kept strictly confidential, said Baker. The committee will not attempt to judge professional qualifications and applicants will be classified only with regard to their field of engineering.

Prospective employers for the Michoud plant are being contacted and advised of the committee's pool of available professional engineering talent.

No fees will be charged the applicant or the employer.

No guarantees will be made to the engineer or the employer.

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Proposes Activities For Ethics Group

By John T. Knight, Jr., Chairman

(Following are several reports presented at the 1962 Alexandria State Planning Conference. Others will follow in a subsequent issue—Ed. Note).

Ethics & Professional Conduct Committee

Present—Bubenzer, Shreveport; McCoy, Monroe, Garrison, Lake Charles; Barnwell, Ruston; Knight, New Orleans; Simmes, Alexandria.

Absent—Ruffin, Shreveport; Wintz, Baton Rouge; Hetherwick, Lafayette.

1—This Committee reviewed the Committee Report of 1961, and the following items are to be carried over and become a part of our 1962 agenda:

a. We shall ask for two members from each Section, the appointment to be for two (2) years, and the terms staggered. The appointees shall not be from the same branch of engineering. In this way the operation of this committee will have a degree of continuity.

b. This committee is to prepare an over-all directive, setting forth procedures, and methods of operating. This will be submitted to the Board of Direction for approval and subsequently published in the Louisiana Engineer

c. The Committee will prepare four (4) articles on this subject of professionalism, ethics, or general self-respecting conduct, for the Louisiana Engineer: May 15—by Bubenzer; July 15—by Knight; Sept. 15—by McCoy; Nov. 15—by Garrison.

2—It was agreed that the Ethics and Professional Conduct Committee is an arm or instrument of the Board of Direction, and it is not a policing group, nor is it empowered with any disciplinary authority. The committee will not take direction other than from the Board of Direction. The primary function of this committee will be to investigate, assemble the facts, and make recommendations to the Board of Direction. It is felt that these principles should be published so that all L. E. S. members will be aware of the relationship of this Committee to the Board of Direction.

3—The Baker, La. (swimming pool) case was discussed and it was agreed to terminate investigation, report to the Board.

4—Discussion of the case of Yellow Page listing of a firm in the Shreveport-Bossier City area. The report on this case was approved and it will be presented to the Board of Direction in the very near future.

5—This Committee is desirous of having one meeting, probably during May, in Ruston, La. During this meeting, we would like to be briefed by L. P. I. staff members on the degree of orientation that engineering students are given in Ethics and Professional Conduct. On the evening of that same day if possible, we would like to meet with the Monroe Section. Details of these meetings will be worked out by Barnwell.

6—Plans were discussed and steps determined that will speed up the operating functions, and communications between members of this committee. It was agreed that the Board would be requested to allocate $100.00 to defray expenses of this Committee for postage and urgent long distant phone calls.

7—A detailed discussion took place on the attitude or posture of this Committee toward violations of sound Ethics and Professional Conduct by non-members of L. E. S. and by municipal, parish and state officials. Our approach must be considered and carefully thought out. We cannot take a critical aggressive attitude, but must confine ourselves to creating a desire on the part of those who we think are in violation of good ethics and/or professional conduct, to cooperate with the L. E. S. desire to up-grade the professional engineer in the State of Louisiana.

8—Additional discussion took place on the question of other methods that should be taken by this Committee to constantly keep alive the responsibilities of Ethics and Professional Conduct. All felt that more than the four articles in the Louisiana Engineer was indicated. Each Section of the Society might be persuaded to dedicate one meeting during the year to the subject of Ethics and Professional Conduct. This could be in the nature of a panel discussion by engineers selected from education, sales, industry, public utilities, or government.

9—A detailed report was received, and discussed to some degree, but not to conclusion. This report involved the conduct of a professional engineer in the presence of high State officials, at a meeting called for the purpose of letting a contract for important machinery. This instance is serious and is cause for justifiable concern. This report will be investigated and a report, with recommendations made to the Board of Direction at the earliest possible date.

10—This Committee would like to try to develop a proper definition of a Professional Engineer and submit it to the Board of Direction for adoption.

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Public Relations Report

By WARREN K. BANKSTON, Chairman
Public Relations Committee

The Public Relations Committee met at Hotel Bentley, Alexandria, Louisiana Saturday, March 10, at 9:00 a. m., with the following members present:

E. Levy, D. P. Boudreaux, W. K. Bankston and Allen Johnson, Public Relations Counselor.

The Committee suggested that the following recommendations be presented to the general conference to further the cause of engineers and engineering.

Continued solicitations of advertising for the magazine by each L.E.S. member. This is a good medium for engineers to present their message to the public. It is also a source of good leads for engineering work and to gain members for the Society.

Some magazine format changes are in order, such as: The addition of a little humor and colored pages. A page advertising the Society, aimed at gaining new members, is planned for repeated issues.

The plan to obtain national advertising will be followed up by our Public Relations Counsel. This may prove to be a good source of revenue for our magazine as it has for college journals.

The Public Relations Committeemen working closely with the Engineers Week and Vocational Guidance Committee can get advance publicity in newspapers and on radio and T.V. They can be valuable to the magazine by providing articles and pictures of activities in their respective sections.

—o—

Invites New Members

By M. J. CADE, Chairman
Membership Committee

The Committee met on March 10, 1962 with the following in attendance:

M. J. Cade, New Orleans, Chairman
Olivier Broussard, Lake Charles
F. W. Irland, Shreveport, Vice-Chairman
M. L. Firmin, New Orleans
F. C. Fromherz, New Orleans
A. B. Stevens, Alexandria

Mr. W. J. Rountree of Alexandria was also present during the meeting and offered many valuable suggestions.

The Committee discussed at length all aspects of the general problem of obtaining new members for the Society. It was felt that basically the problem is that of obtaining members for the NSPE rather than the LES. The principal difficulty to be overcome is that of the relatively high combined dues of $25.00 per year. No immediate solution is available to this problem, but it is felt that encouragement should be given to management to pay the dues for a larger number of Society members as the basic objectives of the LES and NSPE benefit both employees and employers.

The program for increasing membership, as formulated by the preceding year's committee, was reviewed and was discussed at length. It was noted that 188 new members were added to the rolls in 1961 but that a loss of 94 members resulted in a net gain of only 94. The total membership of the Society as of the end of 1961 was 2,030 of which aproximately 1400 are full members. This is to be compared with the number of approximately 6,500 registered engineers in the State of Louisiana.

Current or routine action which is now being taken by the Secretary to encourage the enrollment of new members is as follows:

1. During 1961 and previously, as least one letter has been sent to every registered engineer in Louisiana who is not a member of the Society.
2. A letter over the signature of the State Membership Chairman is sent to each new engineering registrant in Louisiana.
3. Letters are sent to Deans of Engineering Colleges in Louisiana at the end of each semester requesting that they pass on application blanks and other promotional literature to all recent graduates of their colleges. Student members who are enrolled as a result of this letter are given a waiver of their dues for the balance of the year.
4. With the ballot list for new members is occasionally enclosed a form requesting existing members of the Society to submit names of prospective members.

After considering all of the above and giving further consideration to special schemes such as Section competitions and prizes to individual members bringing in new members, the Committee decided that the only new schemes which would be considered for 1962 would be the following:

1. The Introductory Membership Plan.
2. The Sponsor Plan.

The Introductory Membership Plan is one whereby new members are offered a waiver of their dues for the balance of the calendar year during which they are enrolled. At the end of this period they are then billed for their dues in the ordinary manner. This waiver is on behalf of both the State and the National Societies.

The Committee did not have sufficient information at the time as to whether the Plan has to be offered to all registrants in the State at a given year or whether it can be offered to a selected group. Information on this point has been requested from National headquarters and as soon as it is received, the Committee will consider this matter again and make a formal recommendation to the Board of Direction. The Committee feels that the Introductory Membership Plan has great possibilities and hopes that it will be able to recommend use of this Plan.

The Sponsor Plan, as normally employed, involves older members acting as sponsors for prospective members in the Society with the usual technique being to invite prospective members to attend meetings of the Section as a guest of the member. Our scheme proposed for the use of the Sponsor Plan during 1962 will be a slight variation whereby a listing will be compiled by each Section Membership Committee of all registered engineers in their area who are not members of the Society. Members of the Section will then be canvassed in an attempt to locate persons who know personally the prospective members. Letters of invitation to join the Society will then be prepared in the name of the old member to be sent to the prospective member. We expect that this technique will have to be followed up by telephone calls and personal contact to result in an invitation to the prospect to attend meetings.

Memorials

KARL P. KAMMER

On Monday morning, January 15, 1962, the Louisiana Engineering Society lost by death, an outstanding member and former President of the Society, Karl Pfister Kammer. Karl, or Dutch as he was familiarly known by his many friends, was a native of New Orleans, had graduated from Jesuit High School here, and from the University of Detroit in Detroit, Michigan. His entire professional career since returning to New Orleans in 1925 was with New Orleans Public Service Inc., principally in the Power plant field.

Dutch rose rapidly in his career, becoming Assistant Superintendent of Electric Power in 1940, and General Superintendent of the Electric Department in 1942. In 1943 he became President of the Louisiana Engineering Society. Beginning in 1943, a series of illnesses plagued Dutch but he always managed to regain his ability to work, which he did hard and faithfully to the last. For over two years prior to his death he had been Executive Assistant to the Executive Vice-President of Public Service.

He was a good friend to many people, and many people liked and respected Dutch. As one of his brothers, a Jesuit priest, who officiated at his funeral service said: "you could trust Dutch with a dollar or with a fortune, and with a secret."

Those of us who worked with Dutch knew his capabilities in engineering and enjoyed the privilege of being able to work with him. We have lost a good friend and close associate.

In addition to the Louisiana Engineering Society, Dutch was active in the American Society of Mechanical Engineers, having served as Chairman of the New Orleans Section from 1938 to 1940. He was also a member of the Engineers Club of New Orleans, the International House, the Rotary Club, and the Stratford Club.

To his widow, the former Paola Natalie Dupas, his two daughters and three sons, the officers and members of the Louisiana Engineering Society extend their deepest sympathy in their bereavement; and ask, by resolution spread upon the minutes of this meeting, that a copy of said resolution be sent to his widow and be published in the official organ of the Society.

M. C. Abrahm, John F. Vogt, Jr., R. M. Seago

—o—

Paving Technologists Hold N. O. Meeting

A symposium on "Flexible Pavement Behavior as Related to Deflection" highlighted a three-day meeting in New Orleans of the Association of Asphalt Paving Technologists.

Technical papers presented included such topics as seal coat performance, asphalt testing and specifications, pneumatic rolling and nuclear density tests of pavements, aggregate graduations and fillers, and testing of bituminous mixtures for stability, flexibility and tensile strength.

Frank M. Williams of the Ohio State Department of Highways was elected association president.

PROFESSIONAL ENGINEERS GRANTED REGISTRATION, FEBRUARY 13, 1962

Sidney J. Barras, Lake Charles; Courtenay C. Bateman, Deer Park, Texas; George T. Byer, Houston, Tex.; Arthur S. Chu, Baton Rouge; Albert L. David, Baton Rouge; Raymond O. Dietsche, Torrance, Calif.; Theodore W. Donaldson, Baton Rouge; Aaron Dubitzky, West Hartford, Conn.; Arlett C. England, Jr., Haynesville; Neal A. Evans, Metairie; Edwin H. Fletcher, New Orleans; Isaac G. Forbes, Flossmoor, Illinois; Francis M. Fuerst, New Hyde Park, N. Y.; George L. Hancock, Jr., Metairie; Robert A. Harrower, New Orleans; Donald W. Keller, Lafayette; John H. Kinnaird, New Orleans; Ronald J. Landry, Duson; Bruce N. Lewis, Bossier City; Frank Lipari, Jr., Opelousas; Samuel S. McCord, Jr., Covington; Joseph Melzer, New York, N. Y.; Lyman D. Mower, Milton, Mass.; Gerald J. Nordman, Glen Burnie, Md; Roy A. Nyquist, Toledo 14, Ohio; James E. Pecoraro, Baton Rouge; Paul E. Peters, Tallulah; John W. Puckett, Monroe; Larry F. Reynaud, Sharon, Penna; Kenneth W. Robbins, New Orleans; Billy R. Shaw, Bastrop; Arvis M. Smith, Sulphur; Monroe S. Trimble, Monroe; Camile J. Tuminello, Houston, Texas; John J. Walsh, Chicago 46, Ill.; Joseph A. Walsh, Jr., Norwalk, Conn.; all engineers.

—o—

PROFESSIONAL ENGINEERS GRANTED REGISTRATION MARCH 13, 1962, BY THE LOUISIANA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

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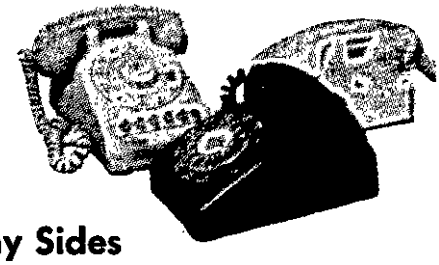

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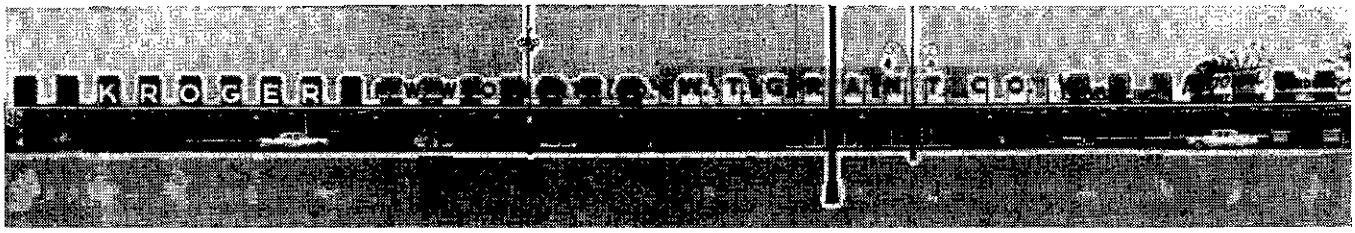

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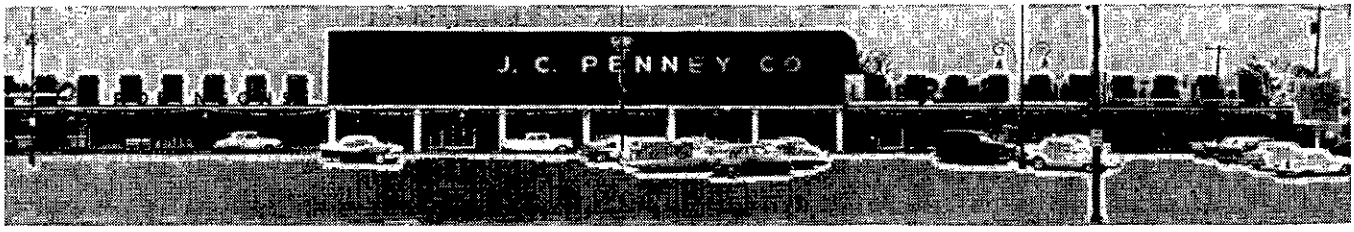

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Livingston Speaks On Furnace Blasts

Putting furnace explosions "on paper"—charting the conditions that cause the blasts—is proving an effective method of curtailing a 20 million annual cost to industry.

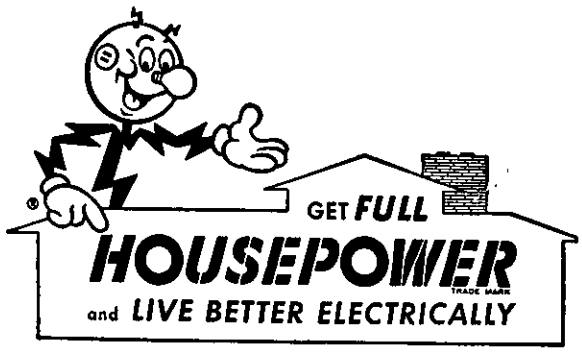
By simulating boiler operations, it is possible to correct both mechanical flaws and human error, said W. L. Livingston III, Windsor, Conn., a research engineer for the Kreisinger Development Laboratory of Combustion Engineering, Inc.

Livingston, speaking before a joint meeting of the Louisiana Engineering Society and the New Orleans Section, American Society of Mechanical Engineers, at the Engineers Club of New Orleans March 12, said:

"The furnace explosion problem provides a formidable barrier to safe automatic boiler operation as well as safe manual boiler operation. The solution requires a thorough understanding and evaluation of firing systems."

He said the explosion hazard has been most injurious in recent years in the paper mill industry, causing the loss of hundreds of thousands of dollars in damaged equipment and lost time due to plant shutdown.

The speaker was introduced by Hoyt Brown, ASME program chairman. L. L. Denson served as ASME chairman. Presiding was James S. Janssen, president of the Louisiana Engineering Society. J. P. Fernandez, secretary-treasurer, read the minutes of the society's board of direction. R. M. Seago read a memorial to Karl P. Kammer.



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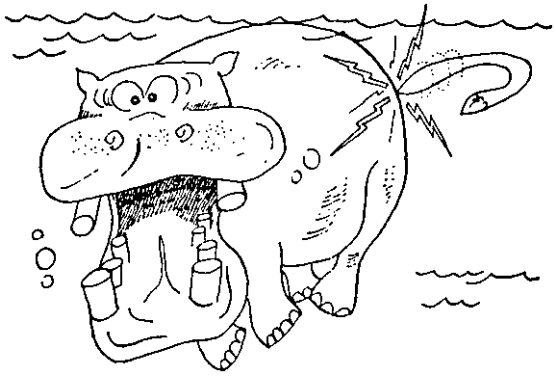

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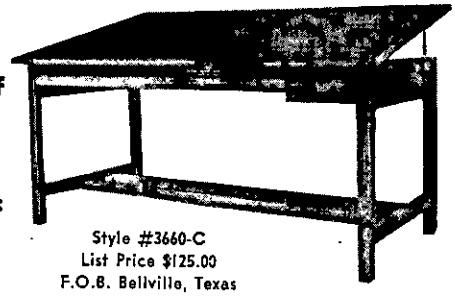

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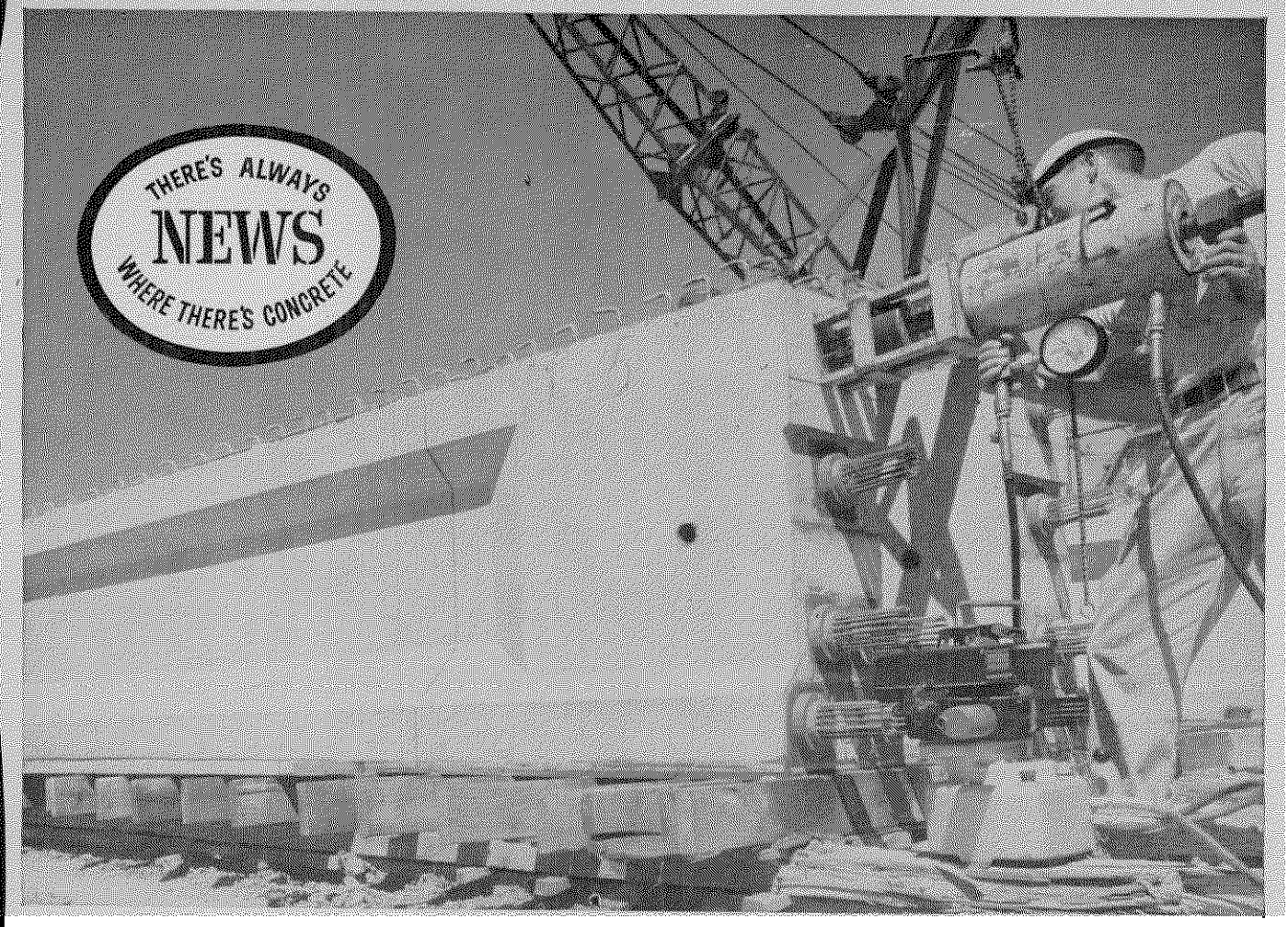

Why prestressing increases efficiency of modern concrete—and brings new economy

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.

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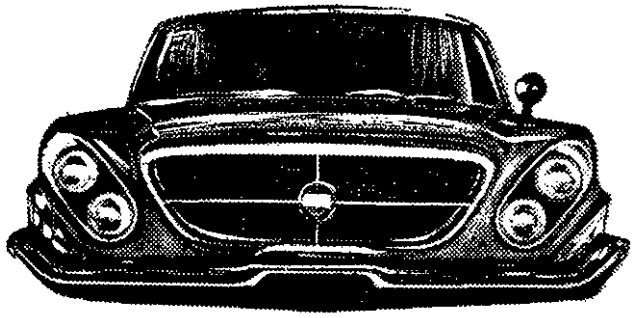

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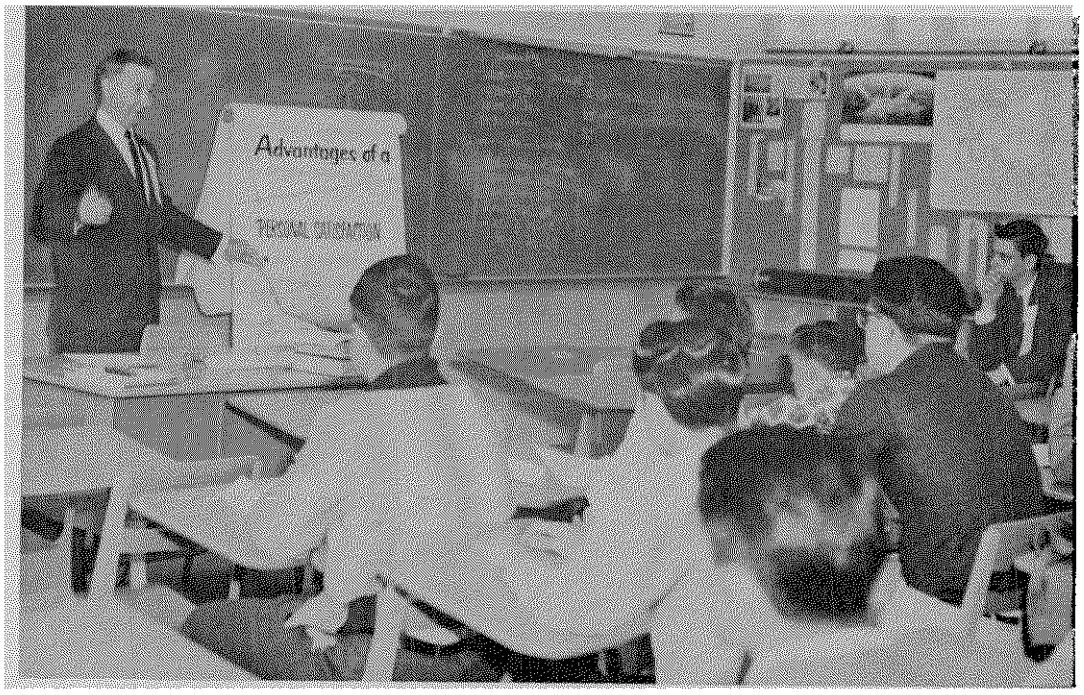
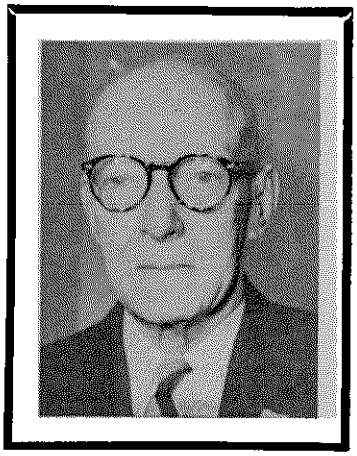
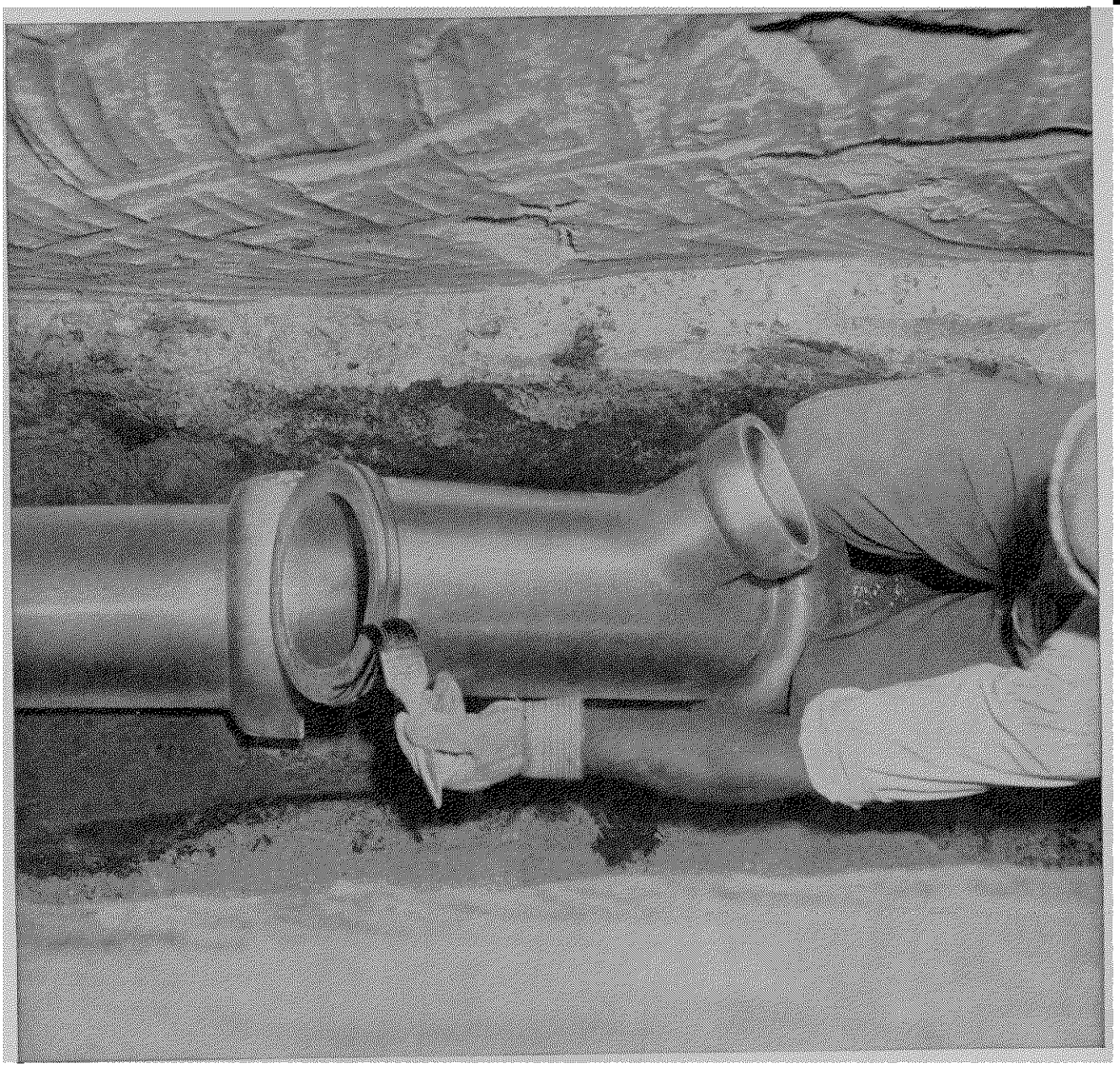




Vol. 48 No. 3
June, 1962



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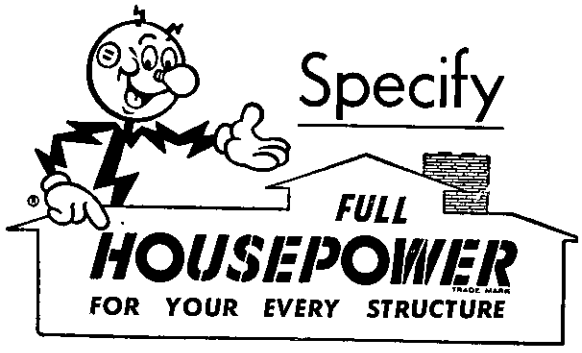

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THE LOUISIANA ENGINEER

Vol. 48 June, 1962 No. 3

OUR COVER: Increasing need for engineers nationally is reflected in LES program to acquaint high school students of advantages of entering the profession. DeWitt L. Morris, State Vocational Guidance Chairman outlines advantages to students.

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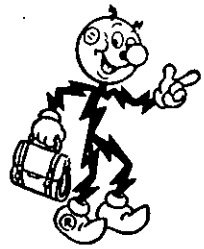
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Minutes Of The Board, LES

LOUISIANA ENGINEERING SOCIETY
Minutes of Meeting of the Board of Direction held in the Hotel Bentley, Alexandria, March 9-10, 1962

The meeting was called to order by President Janssen with Messrs. Bogard, Bossier, Bubenzer, Domingue, Henry, Knight, McNamara, Stokes, Vincent, Watts and Fernandez present. A number of committee chairmen and other members were present, including Messrs. W. S. Nelson, Chairman of the Registration Law Committee; DeWitt L. Morris, Chairman of Vocational Guidance, and Leo M. Odom, member of the State Board of Registration for Professional Engineers and Land Surveyors. Mr. Knight moved that minutes of the preceding meeting be accepted as corrected, seconded by Mr. Domingue and carried. (Note correction: Act number of the law for Registration of Professional Engineers and Land Surveyors is No. 73.)

President Janssen reported that NSPE had changed the titles of its functional sections as follows: Professional Engineers in Private Practice (PEPP); Professional Engineers in Government (PEG); and Professional Engineers in Industry (PEI).

President Janssen requested the Public Relations Counsel to endeavor to secure more publicity for the Employment Committee.

Mr. Nelson reported on a meeting held with representatives of ASCE, GICE. and the Architects' association, and presented a letter from the Gulf Institute of Consulting Engineers concerning the proposed amendments to the Architects' law. He stated that the Registration Law Committee would make a recommendation following its meeting on Saturday, March 10. It was agreed that the Board of Direction would recess and reconvene the following morning to receive the committee's recommendation.

Mr. DeWitt Morris reported on plans to be discussed by his committee relative to the Vocational Guidance and JET programs at its meeting on the following morning.

A letter from the Pefferson Parish Director of Sanitation concerning fees for consulting services was read and the secretary was instructed to refer the letter to the Committee for Professional Engineers in Private Practice for appropriate action.

The secretary read correspondence relative to the progress of Louisiana's entry in the Armco-NSPE scholarship competition.

Correspondence concerning the handling of national advertising in THE LOUISIANA ENGINEER by the firm of Littell-Murray-Barnhill, Inc. was read and the secretary was instructed to refer the matter to Messrs. Bankston and Johnson for a recommendation.

Mr. Watts moved that the resignations of Messrs. Thomas B. Becnel (New Orleans), H. S. Branch, Jr. (Baton Rouge), and Chas. H. Shipman (Lake Charles), be accepted with regret. Motion seconded by Mr. Bubenzer and carried. Mr. Bubenzer moved that Mr. A. W. dePerrodil be dropped in accordance with his request, seconded by Mr. Domingue and carried.

President Janssen read a resolution adopted by the Gulf Institute of Consulting Engineers in which it was requested that private detectives be engaged to secure evidence for the prosecution of registered enginers who stamp plans and drawings not designed or checked by them. After some discussion the secretary was instructed to refer the resolution to PEPP for a recommendation.

President Janssen appointed Messrs. Hoyt W. Brown of New Orleans and A. Max Kober of Lafayette to the 1963 Engineers' Week Committee. The meeting then recessed until 11:30 a. m. Saturday, March 10.

* * *

The board reconvened and Mr. Nelson reported on the meeting of the Registration Law Committee with reference to the proposed amendments to the Architects' registration law. The committee's report varied from the written requests of ASCE's and GICE's respective boards, and the representatives of these two organizations who were present could not approve the modifications. Mr. Nelson then was requested to meet with authorized representatives to obtain the approval of both ASCE and GICE and to resubmit his committee's recommendation to the secretary. Board members then will be polled and the results forwarded to the Architects before their meeting date!

Mr. Vincent presented an invitation from the Lafayette Section to hold the society's 1964 Annual Meeting in Lafayette. Mr. Domingue moved that the invitation be accepted, seconded by Mr. Henry and carried. Mr. Vincent advised that Mr. J. E. Jarman had consented to serve as General Chairman for the 1964 Annual Meeting, after which the meeting adjourned.

—o—

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, April 9, 1962

The meeting was called to order by First Vice-President Watts with Messrs. Bogard, Lockett, Macdonald, McNamara, Pounds and Fernandez in attendance. Also present were the following: Mr. W. S. Nelson, Chairman, Registration Law Committee; Mr. August Perez III, Chairman, AIA Liaison Committee; Messrs. H. G. Buse, Geo. V. LeGardeur, Jr., and W. G. Moses of GICE; Messrs. Roy G. Cappel, J. T. Montgomery, H. Wm. Herbst and Russell A. Hall of ASCE; and Allen Johnson, LES Public Relations Counsel. Mr. Lockett moved that minutes of the preceding meeting be approved as distributed to board members by mail, seconded by Mr. McNamara and carried.

Mr. Nelson gave a resume of activities of his committee, particularly the joint meetings with ASCE and GICE held on March 29 in New Orleans and on April 5 in Baton Rouge.

The secretary reported that, following the March 29 meeting above mentioned, LES Board members had been polled by telephone in accordance with instructions issued at the board's last meeting. All members had been reached with the exception of Messrs. Janssen and Pounds, who were unavailable, and though three members had voiced mild objection to parts of the resolution prepared by the Registration Law Committee, the resolution had been approved and forwarded to the Louisiana Architects Association on April 2. After considerable discussion Mr. Lockett moved that the following substitute motion be adopted, seconded by Mr. McNamara and carried unanimously:

"The Board of Direction of the Louisiana Engineering Society having conferred with interested engineering organizations of the State and having considered the amendments proposed by the Louisiana Architects Association to the Architects Registration Law R.S. 37:141-37:161 and considering that certain of said amendments are not in the best interest of either the profession of architecture or the profession of engineering, and are in the opinion of the Board contrary to the best interest of the public, the following resolution is unanimously adopted:

RESOLVED: That the definition of Architecture in the present law should remain unchanged, reading:

R. S. 37:141—Definitions

As used in the Chapter:

(3) "Architecture" means the designing and overseeing of the construction of buildings. As amended Acts 1958, No. 524, §1.

RESOLVED: That the present exemption of civil engineers should remain in effect, reading:

R. S. 37:160—Exemptions

The provisions of this Chapter shall not apply to:

(2) Civil engineers licensed in accordance with the terms of R.S. 37:681—37:704 (Act 73 of 1950, State of Louisiana) or acts amendatory thereto, if such engineers do not use the designation "Architect" or "Architecture."

RESOLVED: That a saving clause shall be added to the Architects Registration Act, reading:

"provided however that no section of this act shall in any manner affect, modify or repeal Act 73 of the Louisiana Legislature of 1950 (R.S. 37:681 thru 37:704 inclusive)."

The Secretary announced that 507 ballots had been returned in the March membership election and all applicants had been elected to the grades indicated on the ballot.

The Secretary read the NSPE Tellers' Report on the election of officers for 1962-63 and on the proposed constitutional amendment to admit unregistered persons who are members of the Founder Societies to NSPE, which failed to pass. The secretary also read a list of LES recommendations forwarded to NSPE President-Elect Pierce for 1962-63 committee appointments.

A letter from Dean Lee H. Johnson with enclosed material pertaining to an engineering employees' union at Boeing was read.

The secretary announced that Mr. Walter H. Scales had been appointed to the Ethics and Professional Conduct Committee.

—o—

NSPE Elects Harvey F. Pierce

Harvey F. Pierce, a partner in the firm of Connell, Pierce, Garland, and Friedman, Miami, Florida, has been elected president of the National Society of Professional Engineers.

The recipient of an Army outstanding service award for his part in the design of launch complexes at Cape Canaveral for the Thor, Vanguard, Polaris, Pershing, and Saturn programs, Mr. Pierce is a native of Florida and holds a BSEE from the University of Florida.

He began his professional career with the Florida Power & Light Company, and joined his present firm in 1937. He has served as National Society vice-president from the Southeastern Area, and as a national director. He has been president of the Florida Engineering Society, and has received awards from that group for distinguished service and for outstanding technical achievement.

Mr. Pierce is a member of a number of engineering organizations, including the American Institute of Electrical Engineers, the American Ordnance Association, the American Rocket Society, and the Society of American Military Engineers. He is a member of the State Chamber of Commerce Education Committee, and is a trustee of the Riddle Aeronautical Institute.

Six area vice presidents and a treasurer were also elected by the 58,000-member engineering group for the administrative year which begins in July.

Southeastern vice president is Harry C. Simrall, State College, Miss.

Mr. Hanes, elected vice president for the Central Area

for a second term, is first assistant engineer of construction of the Ohio State Highway Department, and has received the 25-year Meritorious Service Award of the American Association of State Highway Officials. He is a past president of the Ohio Society of Professional Engineers, and was the first president of the Maumee Valley Society of Professional Engineers. He has served as a National Society director for five years, and is currently serving as vice president in charge of the professional relations group of committees of the National Society.

Mr. Janssen is dean of the College of Engineering and director of the Engineering Experimental Station at the University of Idaho. He has been associated with the Idaho Department of Highways and with the Agricultural Adjustment Administration, and has been a member of the Idaho State Board of Engineering Examiners since 1946. He is a past president of the Idaho Society of Professional Engineers. He is a member of the American Society of Civil Engineers, the American Concrete Institute, the Highway Research Board, and the State Chamber of Commerce.

Mr. Linville is manager of the Research Operations Department of General Electric in Schenectady. He has been with that firm since 1926, and has served as test engineer, design engineer, consultant, and manager of developmental services. He holds membership in a number of engineering organizations, and is a former president of the Schenectady County Chapter of the New York State Society of Professional Engineers, and of the State Society. He is a member of the Developmental Council for Science of Renssalaer Polytechnic Institute.

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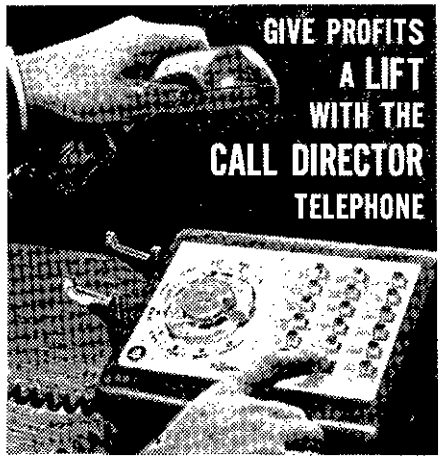

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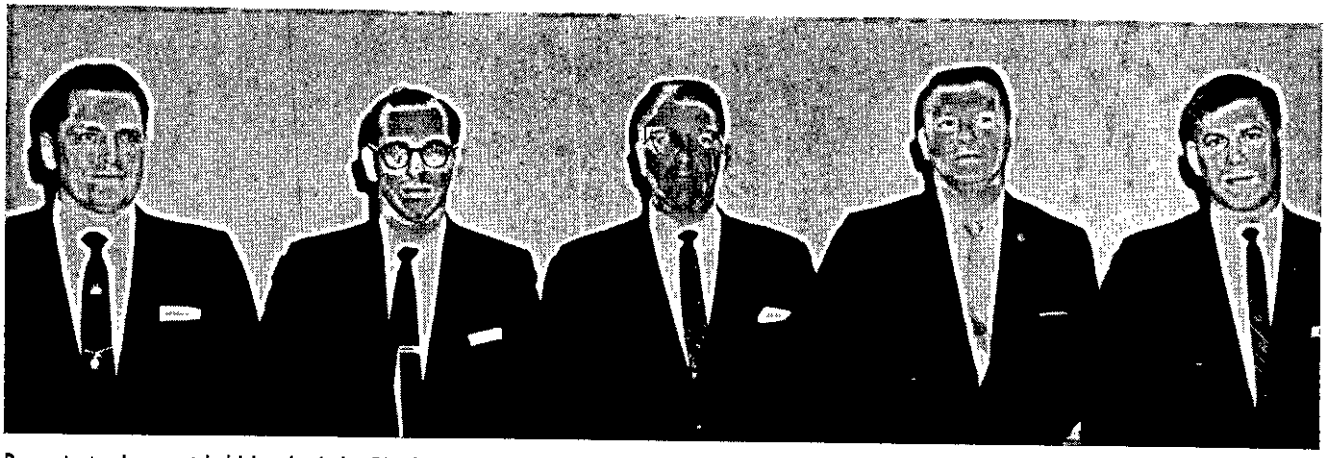
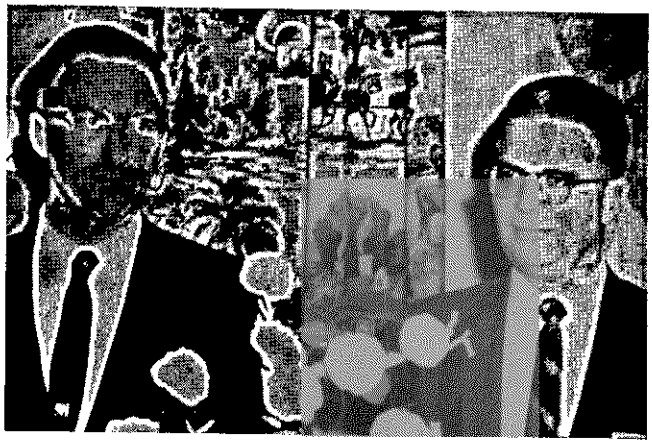


Present at a banquet held by the Lake Charles area engineers on February 22, 1962 as the climax of National Engineers' Week observance were, left to right, G. B. Walther, Vice-President, Lake Charles Section of LES; Pat Landry, Chairman, American Institute of Electrical Engineers; John Seeba, Chairman, American Institute of Chemical Engineers; R. M. Primeaux, President, Society of American Military Engineers; and Ben Walker, District Representative, American Society of Mechanical Engineers. The banquet was sponsored jointly by the local chapters of their groups.

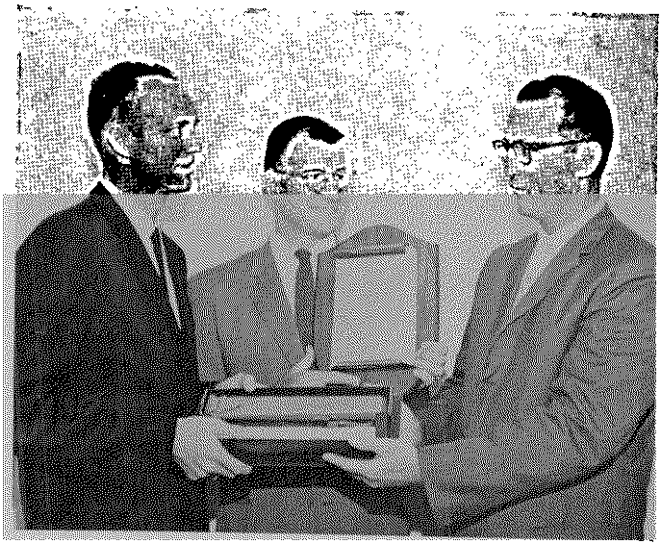
Winners of the high school essay contest on "Engineering as a Profession" are, left to right, Kerry Cooper of DeQuincy High School, first place; Francis McCall of Vinton High School, third place; and Kenneth Reeves of Lake Charles High School, second place. They were guests of the engineers at the Lake Charles banquet.



Guest speaker Dr. Frank M. Tiller, right, Dean of Engineering, University of Houston, Houston, Texas, had as his theme "The Engineer — Missing Cog in Latin American Diplomacy". He was introduced by G. J. Henrich, right, of Olin-Mathieson, master of ceremonies for the occasion.

Hudspeth Wins LES Award

Outstanding Engineering Student at McNeese State College Alvin R. Hudspeth (right) of Lake Charles receives an award of a slide rule from the Lake Charles chapter of the Louisiana Engineering Society during the group's meeting May 14 at the United Gas Company auditorium here. Making the presentation is Everette E. Toney (left), area process engineer of Cities Service Refining Corporation and chairman of the society's guidance and counseling committee. In the center is Lt.-Col. James F. Williams, Jr., (USA Ret.), assistant professor of engineering at McNeese, who holds a plaque on which the names of McNeese recipients of this honor are annually inscribed for display in a science building showcase.



La. Consulting Engineers Report

JOSEPH T. MONTGOMERY, Chairman
Functional Section Committee

The meeting of the Functional Section Committee for Professional Engineers in Private Practice at the 1962 State Planning Conference was well attended, eight members of a twelve man committee being present.

This year's committee consists of L.E.S. members in private practice from all parts of the State and each L.E.S. State Section is represented.

The Committee is beginning its second year of operation and due to the excellent efforts of last years' committee is well on its way to providing a definite procedure for placing in working operation a functional section for engineers in private practice.

In our meeting this morning, we began with a review of the L.E.S. Boards' original concept of the purpose of our committee, which was created to organize a Functional Section for Professional Engineers in Private Practice, the concept being "the formation of by-laws, the tabulation and maintenance of a list of consulting engineers in the State and the establishment of a fee schedule." The 1962 program for our committee will be to complete insofar as possible these three purposes.

Today, a draft of a set of by-laws by which such a functional section could operate was presented to the Committee for study and comment. Following a period of review by each committee member, we will meet to finalize the by-laws for presentation to the L.E.S. Board for review and adoption. We hope to have these by-laws adopted by the Board this year so that at the annual L.E.S. meeting this fall, the officers for the Functional Section can be elected and the Functional Section can begin operating. It may be necessary to have a director or secretary on an almost full-time basis to carry on the business of such a functional section. Funds for this expense will have to be raised through dues from the functional section membership.

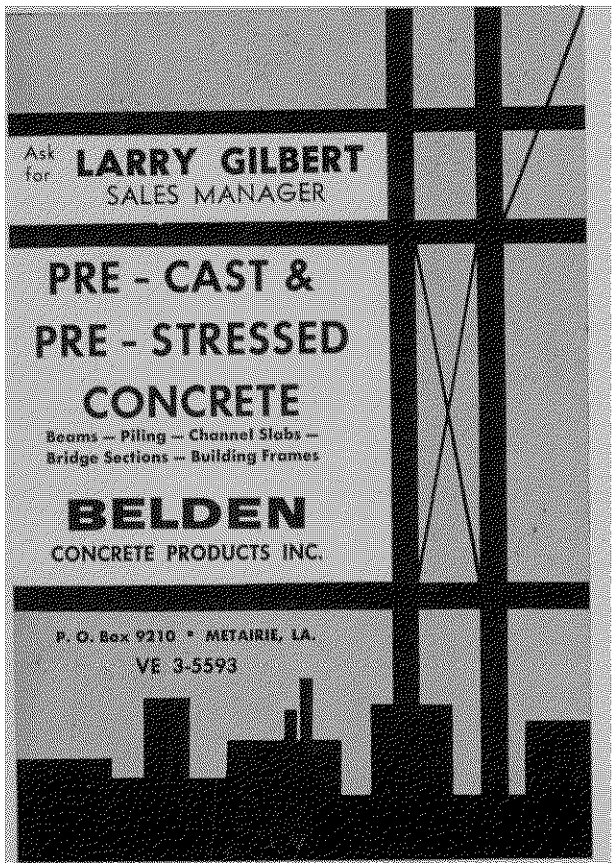
This draft of by-laws was presented by Committee member Ernest Levingston who with the aid of Messrs. Gus Quinn and J. B. Shipp, all of Lake Charles, prepared the draft and these gentlemen deserve much credit for a job well done. The operating policies of a similar functional section of the Florida Engineering Society were considered in detail and used as a guide in preparing our by-laws.

Another step toward getting the functional section in operation was taken today when drafts of manuals of practice for the practice of consulting engineering were presented to the Committee for review and study. The drafts contain rules of practice, recommended fee schedules, and other pertinent information and are in two forms, one suitable for use of engineers and their clients covering general private practice and the other covering interprofessional services between engineers and other engineers or architects. As you may know, in the past engineers in private practice in our state have used various recommended schedules published by A.S.C.E., Gulf Institute of Consulting Engineers, A.S.M.E., and others and it will be a great help to have one schedule recommended by L.E.S. and N.S.P.E. that all engineers in private practice can utilize.

The drafts of the manuals of practice cover not only recommended fee schedules but include scope and classification of professional services, recommended procedures, for selection of engineers, and other valuable information all of which will go far toward solidifying and improving the private practice of engineering.

The preparation of these drafts of manuals of practice was assigned to the Baton Rouge Section of the Functional Sections Committee headed by J. Lester White, President; John I. McCain, Vice-President; and J. R. Whipple, Secretary-Treasurer. The fee schedule work was executed mainly by two small groups headed by Mr. A. J. Mayers and Mr. A. B. Williamson. All of these gentlemen deserve much credit for their efforts on a difficult job.

These drafts of the manuals of practice will be reviewed and studied by our Committee and then we will proceed to finalize the manuals for adoption and practical use by the engineers in private practice. All existing manuals of practice and fee schedules now in current use will be given great consideration prior to our adoption of final documents.



Board Takes Action On Surveying Complaint

The Board received from a registered professional engineer a complaint concerning the land surveying activities of an individual residing in the Southwestern part of the State. Investigation of the individual revealed that he was not registered either as an engineer or a surveyor, had, in the years past, been doing some survey work in the area. The Board obtained copies of several plats. It developed that in a number of instances he had signed these plats by coupling his name with the name of a registered engineer or surveyor. For example: The plats would be signed as follows:

Doe and Smith—by John Smith.

Mr. Doe, a registered Civil Engineer, whose name was involved was thereupon contacted by representatives of the Board. He stated that he had known of the activity of Mr. Smith; that he had never given permission that his name be used but had not, in fact, protested against it. He explained that he had talked to Mr. Smith and that there would be no recurrence of this in the future; that he (the registered engineer) was employing Mr. Smith as an assistant and that all future surveys would be under his supervision and responsibility. The Board concluded that if the violation was, in fact, stopped, no further action would be taken and directed, that both the engineer and Mr. Smith be advised that Mr. Smith should, in no event, sign any plans in the future and that any future violation would be strictly dealt with.

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Lake Charles Firm Liquidation Ordered

Liquidation of the Morgan Engineering Company, Inc., of Lake Charles, has been ordered by the Attorney General of the State of Louisiana, whose opinion stated that the corporation failed to comply with Act 73 of 1950 of the Louisiana regulatory statue.

F. W. Macdonald, Executive Secretary of the State of Louisiana Board of Registration for Professional Engineers and Land Surveyors, said in summarizing the case:

"The attention of the Board was directed to a corporation which had been organized recently for the purpose of performing such structural, electrical, mechanical and other engineering as may be required in connection with the design and construction of a public building. The president of the firm was a registered architect and at time of the incorporation, no professional engineers were members of the firm or employed by the firm.

"The Louisiana regulatory statute (Act 73 of 1950) requires that all professional engineering work be done under the supervision of and under the responsibility of a licensed professional engineer. The Attorney General of the State of Louisiana, in an opinion dated August 6, 1952, stated that all professional engineering shall be under the direct control and supervision of duly licensed professional engineers, and that if a corporation contracts for engineering work, there shall be full time employees or officers who are licensed professional engineers for the work. The Attorney General's opinion for this provides that all publicity, such as letterheads, business cards, etc., shall indicate the name of the professional engineers employed by the corporation and who are responsible for such work, together with their designation as professional engineers.

"The Board also learned that the architect had organized this corporation to perform engineering on a substantial construction contract entered into for a public building in Louisiana. It also appeared that the architect had been named to perform the architectural design on this job.

"Through its attorney, the Board took the matter up with the architect involved, pointing out the apparent violation of the Louisiana statute. As a result, the architect withdrew the name of the corporation as engineer on the public construction job, sending the Board a copy of his letter of withdrawal. He has also, at the instance of the Board, begun the liquidation and dissolution of the corporation."

Earlier, the Board had been granted an injunction against Morgan Engineering Co., Inc., Emauel Z. Morgan, president and principal stockholder, by the 14th Judicial District Court of Lake Charles, Louisiana.

In its official opinion the Court declared: "The plaintiff introduced evidence which clearly reflects that Emanuel Z. Morgan is not a registered engineer in this state. A certified copy of the Articles of Incorporation of the defendant, Morgan Engineering Company, Inc., was introduced in evidence, the purpose clause of which is broad enough to cover the practice of engineering. The plaintiff further introduced several items of correspondence signed by the defendant, Emanuel Z. Morgan, or by his attorney, which items of evidence were objected to by the attorney for the defendants.

"This Court finds that the letters are admissible in evidence for the purpose of showing . . . that the defendants did practice or offer themselves for practice of engineering by sign, advertisement, letterhead, or in other ways as defined by R.S. 37:682.

"The defendant was not present for trial, but was represented by his attorney, who offered no evidence at the close of the plaintiff's case.

"Without going into the details of the evidence, it is closer to this Court that the defendants are in violation of the laws of this State and thus, the preliminary injunction and permanent injunction as prayed for by the plaintiff shall issue, with defendants to pay the costs of these proceedings."

* * *

• Larry Gilbert, cousin of ballplayer "Tookie" Gilbert, has returned to the land of the Pelican after many years in Houston, Tex. He was recently appointed sales manager for Belden Concrete Products, Inc., of Metairie, La., dealers in Pre-cast and Pre-stressed concrete.

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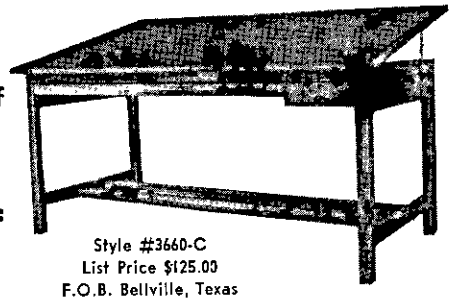

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Significant advances in technology are the result of teamwork by the engineer, the scientist, the technician and the craftsman.

Professional engineers have professional and technical societies to keep them up-to-date and registration boards to examine, register and license them.

Many engineers have been concerned for some time because there was no universally recognized, accepted procedure to provide recognition for the technician.

To achieve this recognition and to provide dignified incentives for individual betterment of performance as an important member of the "engineering team," the National Society of Professional Engineers has sponsored the establishment of an "Institute for the Certification of Engineering Technicians."

Through investigation and examinations the Institute, which has commenced operation, will determine the competency of applicants and issue certificates to those who qualify. The Institute's Board of Trustees consists of four registered Professional Engineers and four Senior Engineering Technicians.

An engineering technician is defined as one who can carry out proven engineering techniques under general professional engineering direction.

He will require sufficient background to understand the reasons and purposes of his operations.

Three grades of engineering technicians are recognized by the Institute.

These are Junior Engineering Technician (no examination required), Engineering Technician (examination normally required) and Senior Engineering Technician (examination may be required).

The work of the Institute will be supported by examination fees and annual fees. Engineering technicians who would like recognition by a national examining body may make application to the Institute for the Certification of Engineering Technicians, 2029 K Street, N. W., Washington 6, D. C.

Small comfort is drawn from a report that our already short supply of engineering technicians has little prospect of improving. According to a survey by Donald C. Metz, member of the Engineering Manpower Commission, and Director of Technical Institute, University of Dayton, the number of full-time students enrolled in technical institutes is about 40,000, or 9% fewer than enrolled in 1957. Total college enrollments rose 27% during the same period of time.

This means our already short supply of engineers will be further handicapped by an even shorter supply of capable engineering technicians to help carry forward the nation's technological commitments. The inevitable result will be some extremely undesirable utilization practices. Engineering technician shortages will force assignment of highly technical functions to those who are poorly qualified. Even less desirable, many highly qualified engineers will waste precious time with work which could better be done by competent engineering technician associates.

Cites Honesty, Justice, Courtesy

By MARION C. BUBENZER

Ethics and Professional Conduct Committee

Webster's Dictionary defines ethics as: Moral principles, quality or practice, broadly the science of ideal human character. The first sentence in the foreword of our Canons of Ethics states that "Honesty, justice and courtesy form a moral philosophy which, associated with mutual interest among men, constitutes the foundation of ethics."

Let us think on the three words, "honesty, justice and courtesy" for a few moments. Honesty is and should be one of the fundamental attributes of an engineer. One of the foundations of his profession is mathematics and that is the science of exactness; if you are exact, you must be honest. To be otherwise you may fool the public but not yourself.

Justice is and should be one of the fundamental attributes of an engineer. For as mathematics is the science of exactness, it is also the science of justice. In the addition of figures the end does not justify the means, but the figure or means leads away to the just and proper end.

Courtesy is the last but not the least important of the three words.

All of that part of the Canons of Ethics dealing with relations with the public implies and calls for courtesy.

Courtesy is one of the least expensive and one of the most effective tools that any business or profession possesses, and no business or profession will prosper and attain a mature stature unless all of the tools available to it are used and used effectively.

Perhaps there are those among us who think that the Canons of Ethics are merely a collection of words.

It is admitted that they are a collection of words; however, it is a collection of words of admonition and guidance.

If for selfish reasons alone you will evaluate the advantages of practicing the Canons of Ethics you will become one of their most ardent supporters.

Look around you in any business or profession; the most successful ones are the ones that practice the three words and if those words are really practiced, compliance with the Canons of Ethics will be full and complete.

In the stresses of daily work let us then remember the words of Shakespeare who said, "To thine ownself be true and it will follow as night follows the day that thou can be false to no man." You can substitute the word "just" or "courteous" in that same quotation and it will be equally true.

Kennedy In Louisiana

Tells Space Need For Engineers

The Louisiana Engineering Society is working to further "the role of engineers in the future of the space age," discussed in a New Orleans address by President John F. Kennedy, said James S. Janssen, President of the Society.

"On his recent visit to New Orleans," said Janssen, President Kennedy made the statement that the next decade would see a greatly increased demand for engineers.

"This is especially true in Louisiana.

"The Louisiana Engineering Society has had occasion to make similar statements in recent years.

"Industrial plants have been coming to this area in increasing numbers to be near our vast supplies of natural gas, water and raw materials such as salt, sulfur, and oil.

"These companies have had no difficulty in locating and hiring unskilled and semiskilled labor. But they have experienced difficulty in securing local recent engineering graduates.

"Now with the coming of the NASA Saturn Plant and all of its attendant satellite plants, we anticipate an industrial expansion such as Louisiana has never experienced. These plants prefer to employ residents of the locale but we know that the present supply of engineering graduates will prove inadequate.

"This situation has put the young men now in high school or in engineering college in an enviable position. By shaping their school careers so as to include the proper subjects and to receive engineering degrees, they will have their pick of excellent positions upon graduation. This has been true even during 1961 and 1962 when unemployment in general has been high. Unfortunately not all of the young men now in school are aware of the unique opportunity that now presents itself to them nor do their parents and high school vocational guidance counselors seem to appreciate the situation.

"The Louisiana Engineering Society is so concerned about the seriousness of this growing shortage of engineers that it has appointed a statewide Vocational Guidance Committee headed by De Witt Morris to focus the attention of the students, their parents and their counselors on the opportunity for engineering careers.

"Mr. Morris' state committee is supplemented by local Vocational Guidance Committees in each of the Louisiana cities where there are local sections of the state engineering society.

"The gentlemen on this committee, all practicing engineers, have given a number of illustrated talks to high school groups, pointing out the facts involved in preparing for, securing, and utilizing an engineering education.

"These include selection of high school subjects (all the available mathematics and sciences), branches of engineering, opportunities in engineering, salary, professional status and related matters.

"The state's four engineering schools—Tulane, L.S.U., U.S.L., and La. Tech now augmented by L.S.U. N.O.—are ready, willing and able to help.

"The Society's vocational guidance committees are anxious to reach as many high school students as possible and stand ready to make talks or to offer any other assistance possible to those who wish to consider making engineering their life's work.

"Communications should be addressed to Louisiana Engineering Society, Vocational Guidance Committee, 404 Baronne St., New Orleans, Louisiana."

A spokesman for the National Society of Professional Engineers has urged Congress to endorse President Kennedy's Reorganization Plan No. 2 to establish an Office of Science and Technology in the Executive Office.

Paul H. Robbins, Executive Director of the 58,000-member group, appeared before the House Subcommittee on Reorganization during hearings on House Resolution 595 calling for disapproval of the President's plan, which was submitted to Congress on March 29. The plan will become effective within 60 days following submission unless disapproved by either House. Under the President's reorganization powers, the proposal may not be amended by Congress.

The NSPE Executive Director, in urging Congress not to disapprove the President's plan to coordinate the Government's engineering and scientific efforts through an Office of Science and Technology, noted that the National Society had prepared a "White Paper," last year, which recommended a similar office be established by legislation.

Although the proposed office does not recognize "engineering" in its title, the NSPE spokesman stated he hoped that the head of the new office would "recognize the importance of engineering, not only in content and contribution (but) by the separate identification of engineering and its function in the Office, thereby avoiding the popular misconception that all technical activity is "science."

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LES Mourns Death Of Dr. Derickson

Members of the Louisiana Engineering Society and engineers throughout the country mourned the recent death of Dr. Donald Derickson, for many years a leader in the engineering field. Dr. Derickson, retired head of the School of Civil Engineering of Tulane University, and a past-president of the Louisiana Engineering Society, died at 8:30 p. m. May 5th, at Southern Baptist Hospital in New Orleans.

A native of Meadville, Pa., Dr. Derickson was chairman of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors at the time of his death. Having served on this Board, and its antecedent, Board of Engineering Examiners, for 45 years, he claimed the longest term of service on any of the 50 registration boards in the United States.

A graduate of Dartmouth College, Dr. Derickson taught at Pennsylvania State University and Cornell University before assuming leadership of the Tulane Civil Engineering School in 1912. He retired from Tulane in 1946, but was still active in engineering and building code activities for the City of New Orleans and as a practicing consulting engineer.

Dr. Derickson served as chairman of the Engineering Committee that assisted in the development of the building code of the City of New Orleans and was on the committee that developed the soil foundation survey of New Orleans. He was a member of the Technical Advisory Board and the Committee on Structural Research of the American Institute of Steel Construction, participated in the Alaskan boundary survey and acted as Consulting Engineer on many engineering constructions in the South.

At an annual meeting held on January 8, 1948, the Louisiana Engineering Society conferred upon Dr. Derickson one of its rare honorary memberships in recognition of his outstanding ability in Engineering Education, his proficiency as a Civil Engineer, and his long record of loyal service to the Society. He had been made a Life Member of the Louisiana Engineering Society in 1942.

Dr. Derickson was one of the relatively few engineers in the nation to be awarded honorary membership in the American Society of Civil Engineers. He was also an honorary member of the Gulf Institute of Consulting Engineers and a member of Tau Beta Pi and Sigma Chi.

As a testimonial dinner held in Dr. Derickson's honor in November of 1942, Dr. Rufus C. Harris, then President of Tulane University, said:

"The University is very appreciative of the splendid work of Professor Dericksen, both as an engineer and as a teacher . . . Measuring worth by devotion and service, as worth must ever be measured, his place is among those having given most . . . his contributions to engineering have brought him and the University wide recognition.

"Characterizing all of Professor Derickson's work has been a deep and unwavering devotion to the College of Engineering and to the engineering profession. He has been an unselfish and untiring worker. There have always been in the hearts of his colleagues a sincere devotion to him personally for his lovable characteristics and a fond pride in his great work and achievements.

"It is difficult for an institution to show a person what an individual can express more easily. The administrators and the faculty are happy to join the Civil Engineering students, graduates of Tulane, and members of the profession in New Orleans on this occasion to indicate to Professor Derickson the devotion, admiration and esteem we have for one who has been such a friend and who has meant so much to Tulane as well as to the Engineering World."

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JOHN DAVID MALONE, JR.

It is with a sense of deep regret that the Louisiana Engineering Society records the passing of one of our fellow engineers, John David Malone, Jr., on February 13, 1962.

Johnny was born in Bessemer, Alabama, September 8, 1901, and he was graduated from the University of Alabama in 1922 with a degree in electrical engineering. He was first employed by the Tennessee Coal, Iron and Railroad Company and later by Phoenix Utility Company in power plant construction work. In 1925 he joined New Orleans Public Service Inc. as an engineer, and continued his association with that company in electric distribution work, becoming assistant operating engineer in 1940 and operating engineer in 1948, the position he held at the time of his death.

In addition to his membership in the Louisiana Engineering Society, he was a member of the American Institute of Electrical Engineers and the American Wood Preservers Association. He was a member of the Perfect Union Lodge No. 1 as Master Mason, and was a 32nd degree Mason of the Scottish Rite Consistory. He was very active and devoted to the affairs of the Carrollton Ave. Presbyterian Church where he served as an elder.

Johnny was an enthusiastic hunter and also a collector of guns, having many types on display in his home. His collection of guns was equally matched by his collection of fine stories, and his ready wit was a source of keen enjoyment to his many friends not only locally, but spread across the country. Johnny was always willing to assist his associates with technical advice. His fine gentlemanly conduct served as a good example to all who knew him.

BE IT THEREFORE RESOLVED that the membership of the Louisiana Engineering Society feel a 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. Louise Malone, his widow, and to Mr. John D. Malone, III, his son.

F. E. JOHNSON, JR., Chairman
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Annual Outing Slated For September 19th

The Annual Outing of the Louisiana Engineering Society will be held Wed., Sept. 19 at the Lakewood Country Club, Russell Hall, Chairman of the Outing Committee, announced recently.

The Outing will feature the usual golf and horseshow tournaments, banquet and dance, Hall said.

Hall said that the Lakewood Country Club offers "excellent facilities" for this year's outing.

Further details on the outing will be announced later, Hall said.

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Application Engineers to Southern Industry

Michoud Role Explained

Webb Discusses Saturn Missile

It is a privilege to be here in New Orleans this evening. The United States space program is an activity of vital importance to the nation and the world. It has growing economic and cultural significance to New Orleans and the surrounding area.

I should like to give you a general view of this space program with special emphasis on the nature and purpose of the launch vehicles involved in it, and then to describe in some detail what you may expect from your new NASA neighbors—the Michoud plant for fabrication and assembly of large launch vehicles, and the nearby Facility in Mississippi, at which they will be tested.

Before discussing what we are doing today, and what we plan to achieve in the future, I believe it would be illuminating to consider how we got where we are. What changes in attitudes made a government-sponsored space program possible? What new considerations made it not only desirable and necessary but, in fact, essential to our nation?

Let us consider first the change in public attitude which has led our citizens to adopt new scientific ideas and concepts which most of us would have regarded with skepticism only a few years ago: Ideas which, in fact, had they been advanced in the era of 17th Century Salem might have caused their advocates to be burned at the stake.

Then let us consider how and why, in the context of this new public acceptance and support for accelerated scientific research, the federal government has come to occupy so major a role in scientific research and development—an area in which only a few years ago private efforts were primary.

We live in a period of extremely rapid scientific and technological advancement. We are part of a generation which is highly receptive to new thoughts, new methods and new ideas. To be visionary is no longer to be impractical. And it is increasingly true that innovations and inventions require the kind of highly educated mind that understands the total complexities of nature's forces; has far more than a peripheral or superficial foundation of knowledge.

It is not always thus. In 1800, farmers resisted using the cast iron plow because they feared that it would poison the ground. Edison almost buried the airplane, just after Kitty Hawk, with his comment that it could never have any practical value and would, at best, be "nothing more than the toy of wealthy sportsmen."

Even in a more recent field, rocketry, which concerns us here tonight, pioneers in the first half of our century encountered great skepticism and resistance. Dr. Robert H. Goddard, the father of this new science, found scant acceptance for his work that proved the rocket engine could deliver its power in a vacuum.

In those early days rockets became to many a symbol of impractical ideas and grandoise schemes. Goddard and other rocket advocates inherited the mantle of ridicule worn by the airplane pioneers.

Today, these attitudes have been altered by necessity, and by lessons learned in two military conflicts of the past half-century—by dramatic demonstrations of science as having political, social, and economic as well as military force. Hostility to change has diminished, and along with it some of the eternal conflict between the old and the new, the stand-patter and the innovator, the past and the future.

Science and technology have earned a new place in society and what was "good enough for grandfather" is no longer good enough for us.

Thus, while it took almost 50 years to move from the Wright Brothers' fragile airplane to one which could fly faster than sound, little more than a decade was required to move from 700 miles an hour to 4,000. Meanwhile, man-made objects were hurled beyond the atmosphere into orbit around the earth at 17,000 miles an hour, and by 1959, out into the solar system at 25,000 miles an hour.

Today, only four years after the first man-made satellite, we are able to launch spacecraft large enough to carry men in orbit around the earth, and the idea of reaching the moon has moved from fictional legend to scientific fact.

Along with this public willingness to accept change, and its recognition of science and technology as the keystones of a new era of human progress, has also come an awareness that the rate of progress which our circumstances demand can only be achieved by expanding and marshalling the resources of the nation in a co-ordinated, large-scale effort. The facilities, skills, resources, and funds required, are not within the capacity of any single, or even group of private institutions to provide. Only a coordinated effort of federal agencies, working with the nation's industries, educational institutions, and public purpose foundations, is adequate to meet the challenge.

This is not a situation which came overnight, but rather one which has evolved over more than 175 years of national experience. We have progressed from the nation's first tentative venture into scientific exploration —the Lewis and Clark Expedition, in which the Congress invested $2,500 in 1803—to a federal participation in scientific research and development estimated to exceed $12 billion in 1963.

Much of this growth in federal activity, and in the recognition of science and technology as vital forces in our national life, has been dictated by military necessity. It developed to a limited extent during the Civil War,

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Addess by James E. Webb, Administrator National Aeronautics and Space Administration at the Inaugural Dinner for Mayor Schiro, New Orleans, Louisiana, May 7, 1962.

which gave the nation's scientists a chance to establish an institution of which they had been dreaming for decades, the National Academy of Sciences.

Again, at the beginning of World War I, our military and civilian leaders were forced to a heightened appreciation of the importance of aeronautical science, which led to the creation of the National Advisory Committee for Aeronautics, in 1915.

But the great upsurge in scientific and technological development, and government participation in it, came with World War II, which produced a new awareness and concept of the changing role of science in national and world affairs. With the first awesome demonstration of the destructive force of the atom bomb—a result of the highly secret government scientific effort in the Manhattan project—science and technology could no longer be denied as a vital force of our century.

There followed quickly the creation of the Atomic Energy Commission, the National Science Foundation, and, with the ominous beeps of the first Soviet Sputnik sounding in our ears, the National Aeronautics and Space Administration.

All of these developments occurred in recognition of the fact that the major scientific advances necessary to our national safety and progress require group efforts, expensive equipment, and massive technological support, often over many years of sustained effort. Only government can marshall the resources to organize and finance such endeavors. Private enterprise stands ready to undertake contracts for much of this work, and to take up feasible and saleable applications as they can be identified, but many of the pioneering opportunities now opening up on the frontiers of science require such large investments that they must first be developed to meet governmental requirements if they are to be made available for the benefit of mankind.

With these circumstances requiring new and decisive uses for science and technology, with public attitudes which led to quick acceptance, and with requirements in terms of time and accomplishment which forced government to assume a larger role, let us look at what happened in our national space program.

With the enactment of the National Aeronautics and Space Act of 1958, a long-range plan for civilian space exploration and development was laid out by the Eisenhower Administration. The plan provided, over a 10-year period, for the development of scientific satellites, application satellites in such areas as weather and communications, lunar and planetary exploration and manned space flight.

Although the plan called for space development which, in ordinary circumstances, would have been regarded as rapid and ambitious, it could not have achieved manned lunar exploration before the mid-1970's, and there was, in fact, doubt that anything beyond the earth-orbital experiments of the Mercury program would ever be required.

This was the situation in early 1961, when the Soviet Union began a series of demonstrations that convinced all but the most confirmed skeptics of its rapid progress in space and its clear intention to use space accomplishment to establish a world-wide image of leadership in space science and technology.

Recognizing that a nation so great and powerful as ours must either use its capacity for leadership or lose it, President Kennedy responded promptly to the Soviet challenge, and urged that it was "time to act" to restore American leadership in this vital new field of endeavor. He called for an accelerated program which would place an American exploratory team on the moon "within this decade."

To overcome Soviet leadership in rocket power, the President requested that Congress accelerate our program for the development and production of large launch vehicles, large rocket engines, multi-manned spacecraft, and other projects designed to hasten the day when man would reach the moon.

The President made his recommendations in a completely non-partisan spirit, and Congress accepted them on the same basis. To both, the lessons of Russian successes in space and in their propaganda use throughout the world, were clear.

As a consequence of these actions, we today have a National Launch Vehicle Program which recognizes all of the requirements of our nation in space, and includes the vehicles to fulfill them.

We have gone through a difficult period when we tried many types and variations of rockets. Now, however, we are in a position to select those which show the greatest efficiency and reliability, and we can work to make them more and more reliable.

In the National Launch Vehicle Program, the two smallest rockets, and the four most powerful ones, have been, or are being, developed by NASA. The four of intermediate size are adaptations of Air Force missile carriers, Thor, Atlas, and Titan.

Briefly, let me list these 10 launch vehicles in order to ascending size. Many of these names are already familiar to most of you:

Scout is a four-stage rocket, using solid propellants in all stages, that can place a satellite of 150 pounds in earth orbit. Scout will also see much use as a sounding rocket in our space sciences program.

Delta has two liquid-fuel stages and a solid-fuel stage on top. It can boost 500 pounds into orbit around the earth, and has established a fine record for reliability. Delta launched our first Orbiting Solar Observatory in March, and the four TIROS weather satellites, and will orbit the experimental communications satellies Relay and Telstar. With a small stage added, Delta will be employed next year to orbit the first Syncom communications satellites, which will go into orbit at 22,300 miles and will seem to hover motionless in the sky because they will be moving at the same speed as the earth is turning.

Third in line is the **Thor-Agena B** whose liquid-fuel stages can boost a sixteen hundred pound satellite into an earth orbit. It has been used to launch the many Air Force Discoverer satellites, the ones which eject capsules that in many instances have been caught on the fly or recovered from the Pacific.

NASA will employ Thor-Agena B in coming months to launch the big balloon satellite, Echo II, which is 135 feet in diameter when inflated. This "satelloon" will be brighter in the evening sky and should hold its shape much longer than Echo I, which was 100 feet in diameter and which can still be seen with the unaided eye, although not as brightly as in 1960, when most of you probably watched it sparkle like a moving star.

Fourth in line is the familiar—and now very depend-

able—**Atlas**, a one-stag, liquid-fuel booster which fires the 2,700-pound Mercury spacecraft into orbit.

Fifth in line is our most powerful rocket in current use, the **Atlas-Agena B**, which can lift 5,000 pounds in earth orbit. We believe that this launch vehicle can send instrumented payloads of up to 750 pounds to the moon. Atlas-Agent B is being used currently for Ranger missions. It will also send the unmanned Mariner spacecraft toward Venus this summer, under a plan to pass within 25,000 miles or better of that planet, and will launch Nimbus, an advanced weather satellite, following our TIROS series. Nimbus will be a decided improvement over TIROS because it will keep its camera pointed at the earth continuously rather than part of the time.

The Atlas-Agena B will also be used to launch our Orbiting Astronomical Observatory, which will take a 36-inch telescope 500 miles above the obscuring turbulence of the atmosphere, and OGO, the Orbiting Geophysical Observatory, which will carry as many as 50 scientific experiments at a time. These versatile new scientific satellies will be ready for launch in 1963 or 1964.

The Agena B, which is used as the upper stage with Thor and Atlas, is worthy of special mention in its own right. It is our leading "space engine" at present because of its multiple start capability.

For example, when launching Ranger to the moon, the Agena B and attached spacecraft go into parking orbit around the earth. Then, at the proper time, the Agena B is re-started and as it gathers speed heads off on the calculated trajectory for the moon. As I previously mentioned, we were especially pleased with the Ranger shot that hit the moon because of the accurate and predictable performance of Agena B.

When we begin rendezvous experiments next year or early in 1964, the Agena B will be fired as the target for the Gemini spacecraft to overtake in space. After the two are coupled, the Agena B will become the spacecraft's engine for further maneuvers.

Vehicle No. 6 in our National Launch Vehicle Program is also a very promising one. It is the **Titan II**, which is just coming into use as a military booster. Titan II has a new type of liquid fuel which does not "boil" away, but can be kept stored in the rocket ready to go on short notice.

Titan II can lift more than 6,000 pounds into orbit, and will be used to launch Gemini, the two-man spacecraft.

Centaur, No. 7 on our list, is an important step forward in the space program because the upper stage burns liquid hydrogen instead of kerosene and will, therefore, deliver about twice the thrust of the Agena B upper stage. The familiar Atlas will still be used as the booster, or first stage.

We have had some delays with Centaur because of difficult problems connected with this pioneering use of liquid hydrogen. We need Centaur especially for Project Surveyor, which will softland instruments on the moon and orbit the moon, for flights past Mars and Venus with larger spacecraft in 1964 and 1966, and for Aeros, the most advanced weather satellite now under consideration, which is tentatively scheduled to be placed in synchronous orbit, 22,300 miles high, in 1965.

Our three largest vehicles are of particular interest to New Orleans, not merely because they exceed in thrust any others known to exist in the world, but because the Michoud and Mississippi test facilities will play a major role in their development.

No. 8—and a very lucky number for us so far—is **Saturn**, which has been under development since 1958. I have reported the two successful flights of the first stage.

Saturn has a cluster of eight engines burning kerosene and liquid oxygen in the first stage and a cluster of six new-type engines burning liquid oxygen and hydrogen in the powerful second stage, which will have more than five times the thrust of Agena B, for example. We hope to flight-test the second stage for the first time next year.

Saturn will be used to put the Apollo spacecraft into earth orbit.

This is our first vehicle which will surpass the lifting power the Russians have demonstrated. Whether they are also working on something as big or bigger than Saturn we do not know, but we can suppose that they are.

No. 9 on our list is still a larger launch vehicle. Although called the **Advanced Saturn**, it will be a completely new vehicle with much more powerful engines than the present Saturn concept. Advanced Saturn has five engines in the first stage, and each of these five will produce the same thrust as all eight of the engines in the first stage of Saturn.

Advanced Saturn, when ready for operation four or five years from now, will be able to put 100 tons into earth orbit, and send more than 40 tons to the moon.

This is enough power for a flight around the moon, but not enough to launch the Apollo spacecraft, fully loaded and equipped, for a lunar landing and return to the earth. Two Advanced Saturns may be used for this purpose. One would orbit the spacecraft and the other would orbit its own third stage as engine to launch the spacecraft from earth orbit to the moon. The two would have to be joined in rendezvous while in orbit around the earth.

The tenth on our list is the giant of our rocket program—the **Nova**. Nova is in the early development stages at the present time, but funds have been requested to begin all-out development during the next 12 months.

Nova will have sufficient thrust to launch 175 tons into an earth orbit, or 75 tons to the moon. It is designed to permit manned lunar landing by direct ascent if one of the various rendezvous techniques does not achieve this objective in a shorter period of time.

This, however, is neither the only, nor perhaps the most important, reason for building the Nova.

Beyond the first manned landing on the moon, there will most probably be a certain amount of traffic, the equivalent of freight, rather than passenger, traffic to be transported by the simplest and most economical means.

NASA analyses indicate that the use of Nova could well provide the most desirable means of transporting heavy payloads to the moon should this be required.

Beyond lunar exploration—and it must be remembered that getting to the moon is not the end objective of our space program—Nova appears to be of great value for unmanned and manned exploration of the near planets, Venus and Mars.

Finally, the most powerful vehicle toward which we can look confidently at the present time is one compris-

ing Nova first and second stages, and a nuclear-powered upper stage. Development of nuclear-powered rocket engines, in cooperation with the Atomic Energy Commission, is already underway.

Let us turn now to the facilities which are required in the conduct of our space program, and more particularly, to those which will become most familiar to you in years to come—the Michoud Plant and the Mississippi Test Facility.

In visualizing these facilities, it is well to have in mind the enormous size of the boosters which they will serve. The Advanced Saturn, for example, will be comprised of three stages totalling 270 feet in height, with a 33-foot diameter at the base. Its big brother, the Nova, will tower 280 feet into the air with a base diameter of 50 feet. In neither instance do these heights include that which will be added by attachment of spacecraft and lunar landing components. A Nova rocket, equipped for manned landing on the moon, could not lie full-length on the gridiron in the Sugar Bowl.

Essential elements of both vehicles will be fabricated by thousands of firms located throughout the 50 states. The Advanced Saturn, and possibly Nova, will be assembled at Michoud. Subsequently, the vehicles will receive their static testing at the Mississippi Test Facility, before being transported to Cape Canaveral for flight testing and ultimate lunar operations. These sites, together with that of the Manned Spacecraft Center at Houston, Texas, were all selected with the availability of water transportation in mind, since these very large vehicles cannot be satisfactorily transported by any other means.

The Michoud Plant, located 15 miles east of New Orleans adjoining the Gulf Intercoastal Waterway and the Michoud Canal, was selected after consideration of many other prospective locations. It met all criteria, including that of extensive high-bay manufacturing space already constructed.

Expenditures for modifications to the existing plant and new construction at Michoud of $18,400,000 have been proposed to the Congress for Fiscal Year 1963. Nearly 7,000 persons will be employed by the NASA contractors at this facility in that same fiscal year.

The Mississippi Test Facility, located about 35 miles northeast of New Orleans in Hancock and Pearl River counties will include an area of about 13,500 acres of NASA-owned lands, and a buffer zone of 128,000 additional acres upon which NASA will hold easements. We have proposed the expenditure of $92,500,000 for the construction of new facilities at this location during Fiscal Year 1963. When it becomes operative, the facility will employ beween 500 and 1,000 engineers and support personnel.

I might add that all of us at NASA look forward to the closer association with the citizens of New Orleans, Louisiana and Mississippi, which most certainly will result from the establishment of these facilities. The work which will be performed there is of major significance in our Apollo program, and essential to the achievement of the national goal set by President Kennedy—that of placing a United States exploratory team on the moon before 1970.

Now that we have crossed the threshold of space, the benefits that can be gained for all mankind, the assurances to our national security that can be obtained, and the stimulus to our well-being that can be produced, are looming large on the horizon.

The President has provided the leadrship necessary to expand our efforts to meet our needs and responsibilities in space. The Congress, on a bipartisan basis, is providing the suppoort that it requires. Scientists, engineers, technicians, and leaders in government, industry, education and other fields are cooperating wholeheartedly to attain our national goals. The American people themselves have responded with enthusiasm to the great adventure that lies before us.

In moving forward in this great undertaking, it is important to remember that while we have certain specific national objectives in mind, the overriding concept underlying this program is that of driving forward the advancing front of science and technology at the most rapid rate possible over the years ahead and making practical use of the results in space, and throughout our economy.

It is through these vast scientific undertakings that progress most rapidly comes. While striving toward the goals which we have already adopted, we shall almost certainly discover others of even more importance. The important thing now is to make sure we are not behind in any area vital to our national security or our natoinal leadership.

Conducts N. O. Pump Seminar

More than 300 consulting engineers, plant engineers and industrial maintenance specialists from all parts of Louisiana attended an all-day Pump Seminar Thursday, May 3, at the Hilton Inn in New Orleans, sponsored jointly by Worthington Corporation and A. M. Lockett & Co., Ltd., according to Joseph J. Ranna, New Orleans manager.

The technical meeting covered the theory, design and application of standard centrifugal and rotary pumps. Technical specialists from Worthington Corporation's Standard Pump Division in East Orange, New Jersey, conducted the technical meeting and provided chart cutaway models.

The New Orleans meeting was the seventh of the 1962 series of seminars which are conducted in key areas of the U. S. The first meetings were held in Buffalo, New York and Detroit, Michigan, during March, and Cincinnati, Milwaukee, Wausau, Wisconsin, and Mobile, Alabama in April. Seminars of this type have been held each year by Worthington since 1958 with more than 4,000 engineers in attendance since that date.

WHITE LINE OF GLASS

A town in California is making its highway white lines out of cast glass, American Machinist, McGraw-Hill publication, reveals. The glass is expected to have better visibility on rainy, foggy nights.

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 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.

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

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

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

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

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

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

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

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

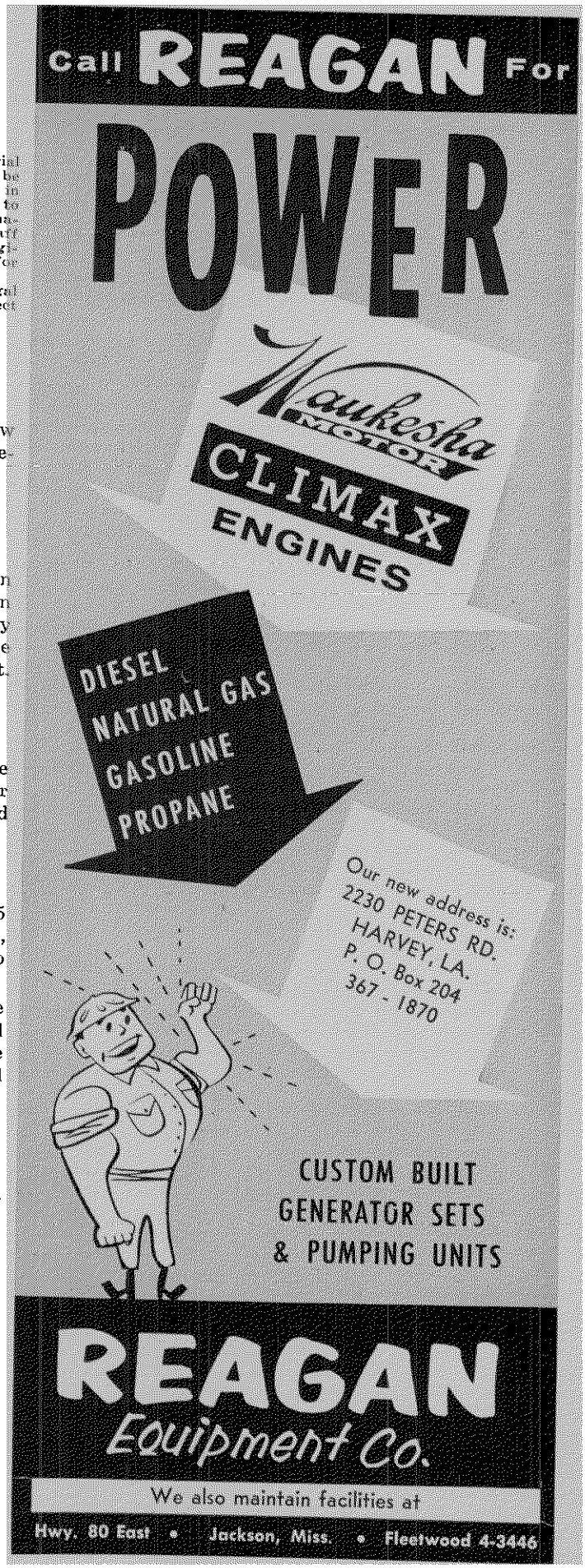
Thirty states have an annual renewal fee of $5. While the Louisiana law states that the annual renewal fee shall not exceed $10, the Louisiana state board has fixed the fee at $5 for renewal in one branch and $10 for renewal in two or more branches.

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

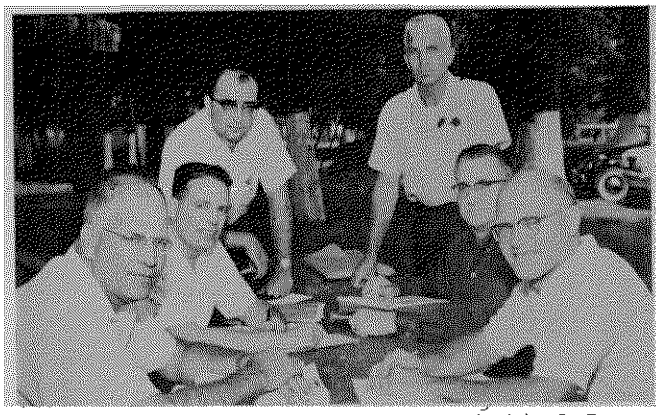
ANSWER—Eighteen states, including Louisiana, require that four meetings be held each year. Ten states require six meetings per year; two require 10 meetings per year; five require 12 meetings per year; two require 20 meetings per year and one requires 26 meetings per year.

QUESTION—May an applicant for Louisiana registration as a Professional Engineer have access to books, tables and other aids during his examination?

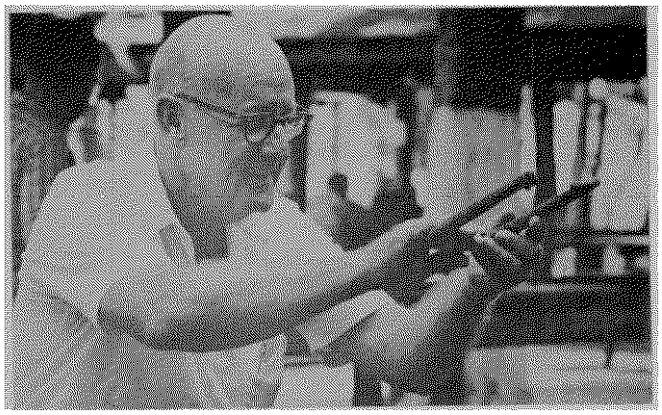
ANSWER—Yes. The Louisiana Act states that any books, tables, calculating machines or other aids to which a practicing engineer would have access may be used by the applicant in the examination.



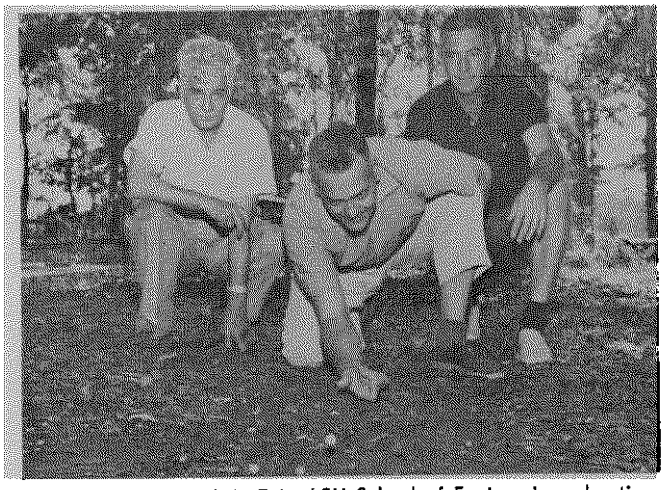
Baton Rouge Outing Attracts Engineers



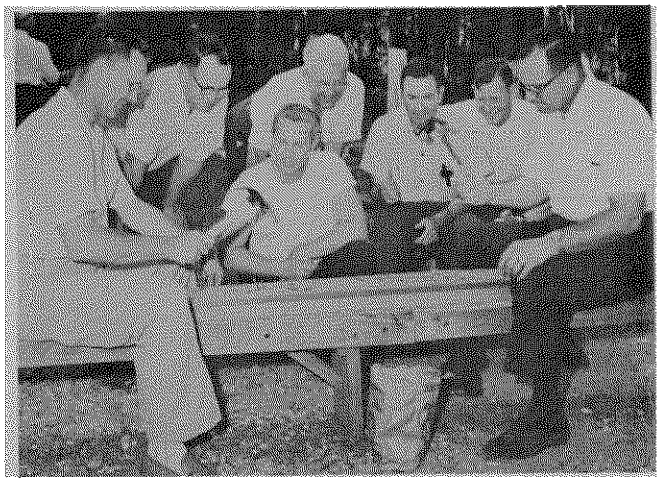
Left to right, Edward J. McNamara (2nd V. P.), John P. Fernandez (Sect. & Treas.), Emery Domingue, T. E. Pounds, President, Baton Rouge Section), Calvin T. Watts (1st V. P.), James S. Janssen (President) at board meeting.



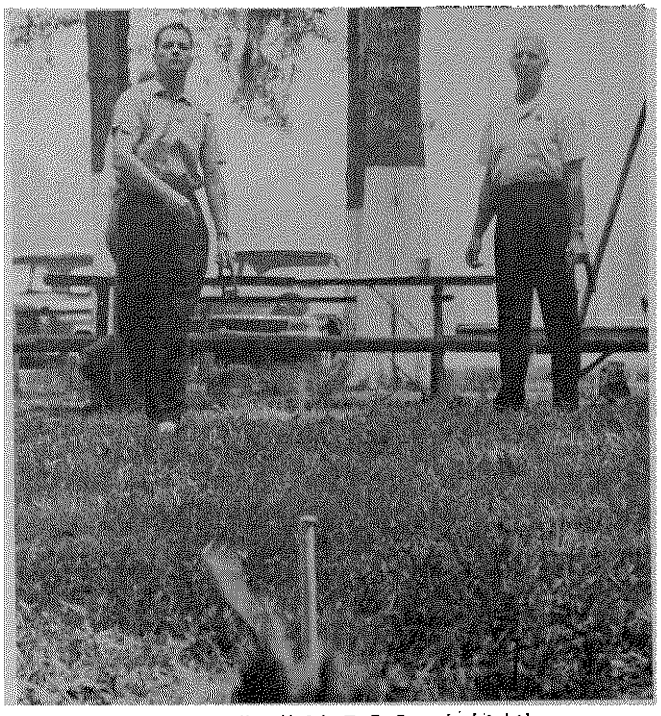
Jesse D. Roberts



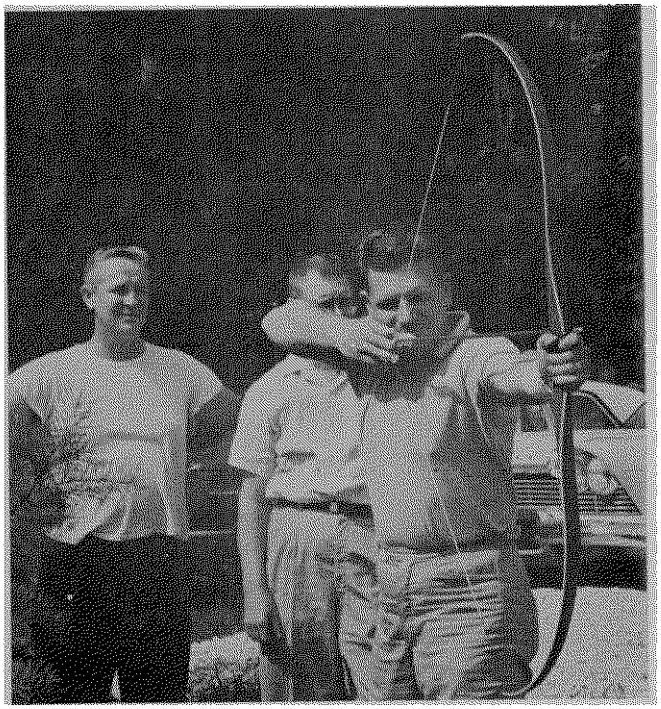
(L. to R.) Dean Fred A. Fein, LSU School of Engineering; shooting, Professor William A. Wintz, and kneeling, Professor E. J. Dantin, all of LSU.



G. S. Young (left, driving nail), Leonard Kirst, Wayne Randell (kneeling), Nick Carter, John McCain and J. C. Copes (winner, driving nail right, winner).



Benny Swindler (left), T. E. Pounds (right).



Wayne Randall (left), Delroy O. Spann (watching), Bill Snow (shooting).

PROFESSIONAL ENGINEERS GRANTED REGISTRATION, APRIL 10, 1962

Jimmy H. Allen, Baton Rouge; Charles J. Babington, New Orleans; William H. Beasley, Graham, N. C.; Jay R. Blanton, Lafayette; Eugene Borak, Detroit 36, Mich.; Kenneth F. Boudreaux, Houma; Clifton C. Boyd, Monroe; Calvin J. Browning, Baton Rouge; James F. Carraway, Beaumont, Texas; Edgar L. Cook, Shreveport; Terry C. Cox, Forth Worth 5, Texas; Kenneth W. Dobert, Brooklyn 10, N. Y.; Jason D. Dupuis, St. Martinville; Thomas A. Faulhaber, Cambridge 42, Mass.; Frank R. Groves, Jr., Baton Rouge; Paul W. Gubert, New Orleans; Francis J. Hefferon, Metairie; John F. Issac, Arabi; Charles Jones, Paducah, Ky.; Robert L. Kimmons, Cabimas, Zulia, Venezuela; James P. Lea, Shreveport; Darrel M. Ledoux, Opelousas; Loren C. Miller, Winnetka, Ill:; Barton L. Rumsey, Shreveport; Alvin H. Sinclair, Jr., Metairie; Gustave A. Von Bodungen, New Orleans; Gordon L. Wedemeyer, Lake Charles, all engineers.

—o—

NEW ROLE FOR LIMBURGER

Limburger cheese, long the butt of jokes, soon may have its day of glory, states Product Engineering, McGraw-Hill publication. A research program has found that limburger contains one of the best natural microbial agents and may be a source of new antibiotics. And, for this purpose, the older the cheese, the better.

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B.R. Outing—Field Notes

By Allen Johnson

Horseshoe pitching, marble shooting, and fly casting highlighted the Baton Rouge outing of the Louisiana Engineering Society May 26 at UCT Park on the New Hammond Highway.

Attending a board of direction meeting of the society were James S. Janssen, New Orleans president; Calvin T. Watts, Baton Rouge, first vice president; Ed McNamara, New Orleans, second vice president; John P. Fernandez, New Orleans, secretary treasurer; Emery Domingue, Lafayette, board member; Truman Pounds, president, Baton Rouge section and Henry Landry, Baton Rouge, legislative chairman.

Prize winners in various competitions were Buck Ewing, horseshoe singles; A. W. Haire and William Swindler, doubles; Janssen, archery; Dick Korn, washer tossing; W. A. Wintz, marbles; F. Neucere, softball; J. D. (Cub) Roberts, door prize.

In charge of arrangements, which included a chicken, duck and wild rice dinner was Wayne Randall.

Waldemar S. Nelson and Company, Inc., New Orleans consulting engineers and architects, are now engineering the Harrison Seaway, a project designed to bring industry to Harrison County, Mississippi. Channel will be 150 feet wide and 12 feet deep initially and at this stage will be able to handle large seagoing tows. The channel is so designed, however, that it can later be expanded to a width of 300 feet and a depth of 30 feet. At this size it will be able to accommodate virtually any vessel expected to use the Seaway.

Newly elected officers of the parent organization of the Woman's Auxiliary to the Louisiana Engineering Society for 1962-63 are, seated, left to right, Mrs. Edward B. Ludwig, Honorary Vice-President; Mrs. Waldemar S. Nelson, President; Mrs. Roy G. Cappel, President-Elect; and standing, left to right, Mrs. Otha E. Barron, Jr., Vice-President; Mrs. Edward J. Welsch, Jr., Treasurer; Mrs. Thomas A. Fromherz, Recording Secretary; and Mrs. Daniel H. Vliet, Corresponding Secretary. Missing from the picture is Mrs. John H. Haase III, Financial Secretary. The officers were installed at the annual meeting held May 15 at Gallier Hall in New Orleans.

Details Requirements For Registration

BE IT RESOLVED that in order to more adequately safeguard life, health and property, and to place the requirements for registration as a Professional Engineer in the State of Louisiana more nearly in accordance with the requirements of all the other states, the Louisiana State Board of Registration for Professional Engineers and Land Surveyors by virtue of the authority inherent in Act 73 of 1950 of the Louisiana Legislature does hereby authorize and direct that applicants for registration as Professional Engineers under Section 12 (1) a. **Graduation plus Experience,** shall comply with the following requirements:

1. That graduates of approved engineering curricula applying for registration without written examination must, subsequent to graduation, have a specific record of an additional six years or more of experience in engineering work of a grade and character satisfactory to the Board and which indicates that the applicant is competent to practice professional engineering.
2. That graduates of approved engineering curricula with less than six years of experience in engineering work of a grade and character satisfactory to the Board shall be required to pass a written examination on basic engineering subjects. The examination will be given by this Board, or must be approved by this board if given by the Board of Examiners of another state. The written examination shall be given preferably at a time approximating graduation, but in any event must be taken at a time designated by the Board and prior to registration. In addition to passing the written examination, the applicant shall have a specific record of four years of experience in engineering work of a character satisfactory to the Board. These provisions shall become effective September 1, 1962, with the following exceptions.

(a) For applications received between September 1, 1962 and September 1, 1963, one year of experience in engineering work of a character satisfactory to the Board will be required.

(b) For applications received between September 1, 1963 and September 1, 1964, two years of experience in engineering work of a character satisfactory to the Board will be required.

(c) For applications received between September 1, 1964 and September 1, 1965, three years of experience in engineering work of a character satisfactory to the Board will be required.

BE IT FURTHER RESOLVED that upon passing the written examination in basic engineering subjects, the applicant will be presented with a Certificate stating that he has been certified and enrolled as an Engineer-in-Training. The credit for passing the written examination in basic engineering subjects as partial fulfillment of the requirements for registration shall be exercised within a period of ten years from the date of the examination.

BE IT FURTHER RESOLVED that the fee for taking the Engineering-in-Training Examination on or after September 1, 1962, shall be $15.00. When application is subsequently made for registration as a Professional Engineer, an additional fee of $10.00 shall accompany the application. In cases where the Engineer-in-Training Examination is taken in another state, the usual fee of $25.00 will be charged to the applicant for registration as a Professional Engineer.

Calendar Of Events

June 5—Dr. Troy Laswell, Professor of Geology, Louisiana Polytechnic Institute, will speak on "The Mohole Project" at the Paragon Club, Monroe, La.

July 9—Paul S. Stewart will speak on "The Modern Navy—nuclear and conventionally fueled" at the Engineers' Club, DeSoto Hotel, New Orleans.

August 7—An outdoor barbecue will be held at Forsythe Park, Monroe. James Janssen, LES president, will be the featured speaker.

August 13—Joint meeting with National Association of Corrosion Engineers being considered.

September—Annual outing.

September 4—Tentatively scheduled meeting for the Shreveport Section at the Petroleum Club in Shreveport (the Shreveport Section will not hold meetings during the summer months of June, July and August).

October 2—Mr. B. V. Diercks of Thiokol Chemical Corp. will speak on "Rocketry" at the regularly scheduled meeting of the Monroe Section.

October 8, Nov. 12, Dec. 10—Joint meeting with A.S.C.E. and A.I.E.E. are under consideration.

January 10, 1963—Annual meeting..

Week of February 22—Engineers Week.

March 11—Joint meeting with A.S.M.E.

April 8—Annual Youth Program.

FLUID MARKET

The fluid in a car's transmission system seems like a minor item, but it is a $15-$20 million-a-year market, reveals Chemical Week, McGraw-Hill publication.

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Braselman Elected Head Of American Creosote

The board of American Creosote Works, Inc., has announced the election of Mr. Shirley B. Braselman as president of this 61-year-old New Orleans company. He succeeds his father, Mr. Shirley C. Braselman, who was elected Chairman of the Board.

American Creosote Works is one of the nation's leading companies engaged in the pressure-treating of wood and wood products. With head office in New Orleans, American Creosote Works has plants in Slidell and Winnfield, La., Louisville, Miss., Jackson, Tenn., and Pensacola, Fla. The company manufactures telephone and electric power poles, piling, crossties, crossarms, timbers, construction poles and fence posts that are preserved against decay and insects by pressure-impregnation with a variety of chemicals.

A graduate of the University of Virginia, Mr. Shirley B. Braselman began work with American Creosote Works in 1946, as a trainee. Concentrating on sales, he was elected Vice-President in 1954 and Executive Vice-President in 1959.

"For two generations, American Creosote Works has been characterized by a policy of aggressive selling," says Mr. Braselman. "We will maintain that policy and intensify advertising and sales promotion efforts."

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Pre-College Student Needs Guidance

New Orleans area high schools are providing students with sound instruction preparatory to college engineering study, but may not be equipping them with the necessary guidance.

John L. Martinez, assistant dean of engineering at Tulane University, cited for commendation these factors of high school preparation:

1. Broader, more intensive studies of mathematics.
2. Instruction in physics and chemistry on a wider plane.
3. Better testing techniques to determine the capabilities of a student to enter, or not to enter the engineering profession.

On the other hand, Dean Martinez told engineers, New Orleans area students and parents at a meeting of the Louisiana Engineering Society at the Engineers Club, "the number of students applying in the field of engineering is disappointing."

He quoted a report by U. S. Health Education and Welfare Secretary Abraham Ribicoff that "there were fewer college engineering graduates in 1961 than in 1958, there will be even less in 1962 and 1963."

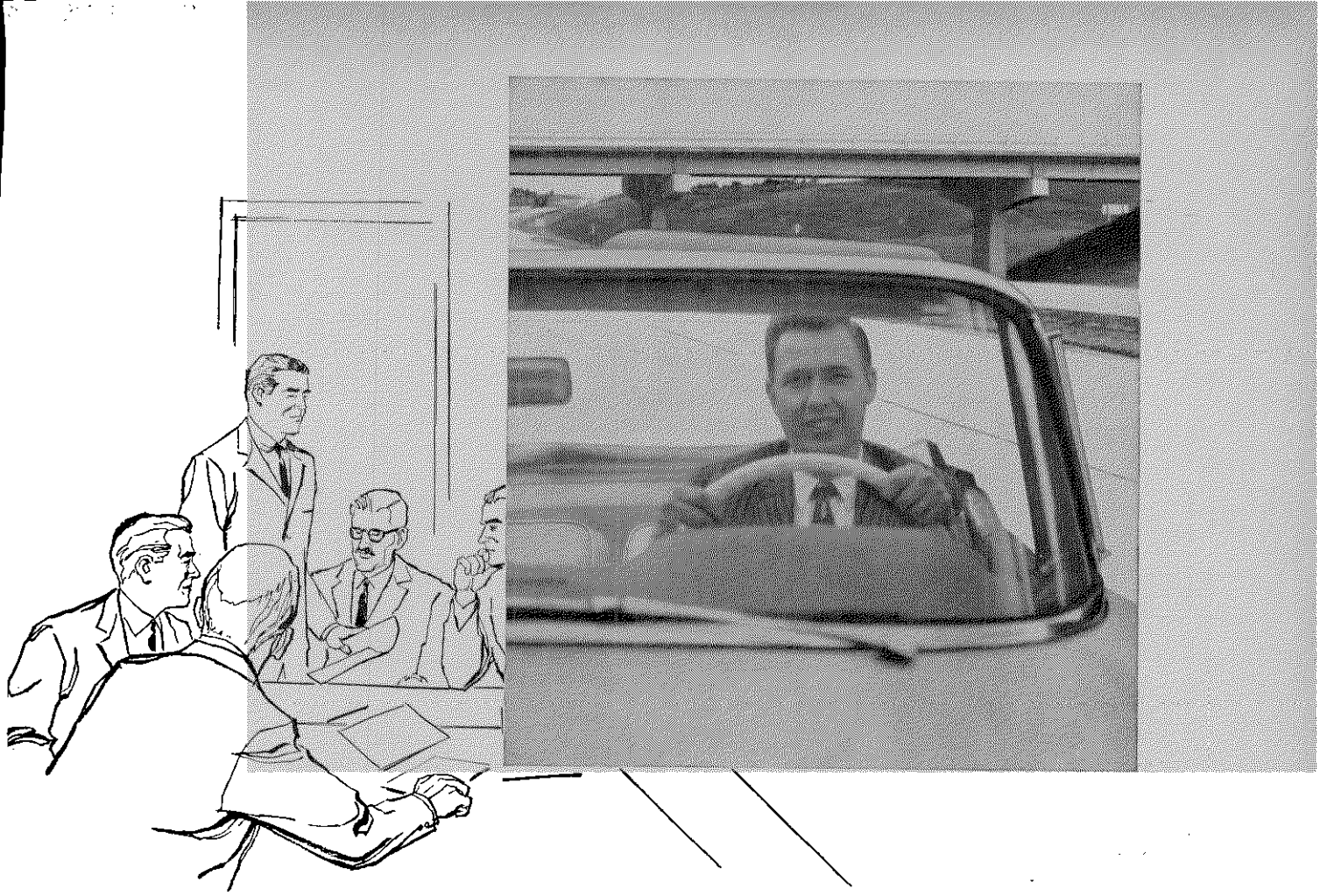
Martinez argued that the uncommitted student can begin his college studies in engineering and at the end of the sophomore year will be as well qualified in mathematics, physics and chemistry as students specializing in those fields at the same educational stage.

In answer to a question from New Orleans consulting engineer Alvin Fromherz, Martinez said there is "some engineering thinking that a solid foundation in liberal arts enables the student to obtain greater benefit from subsequent intensive engineering studies."

Acting Society President Calvin T. Watts, Baton Rouge, said the professional engineering group is anxious to further the work of vocation guidance of the high school students in leading them into the engineering field. He said that the Society is laying great emphasis on this phase of its activities.

DeWitt L. Morris, New Orleans, state chairman of vocational guidance, said the group welcomes opportunities to addresss high school science and mathematics classes, PTA groups, educators and counselors, because "this is a must for our country in these critical times." He complimented the work of engineers Robert H. Boh, Jr., Roger Battle and W. V. deGruy in this activity.

Displaying their exhibits, which won first prizes in the recent Ninth Regional Science Fair, were Henry Louis Jaubert, Fortier High; Ralph R. Bollinger, Franklin High; Jannsen Campos, Cor Jesu; Phillip D. Mollere, Franklin; John R. Heuerkamp, Holy Cross; Kenneth Kirschman, Newman.



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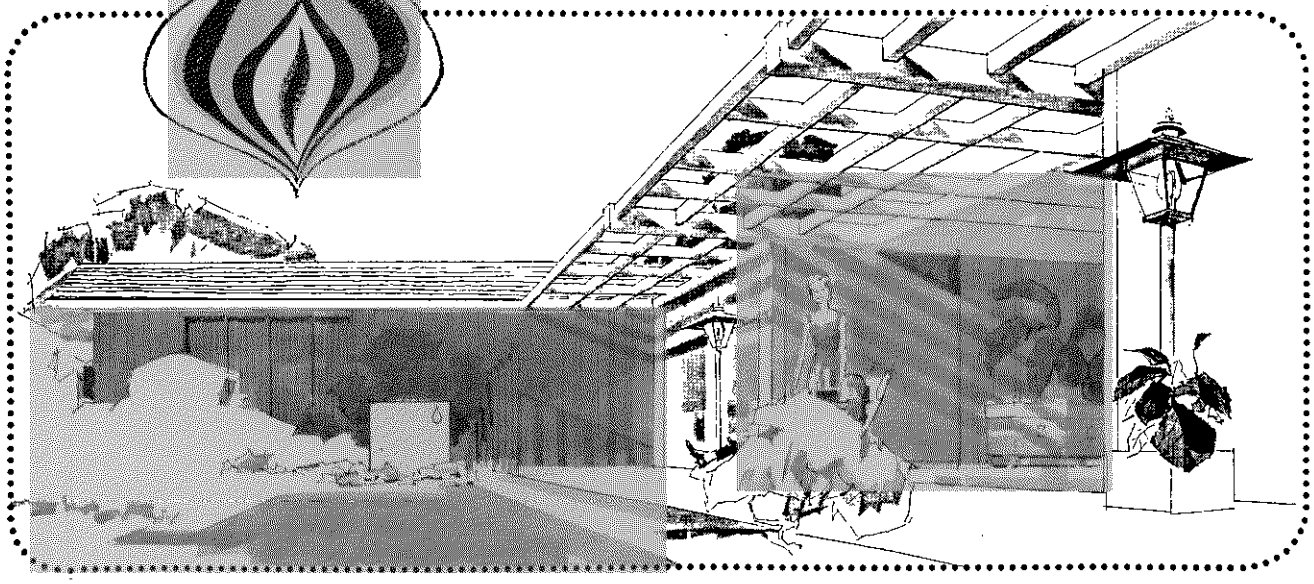

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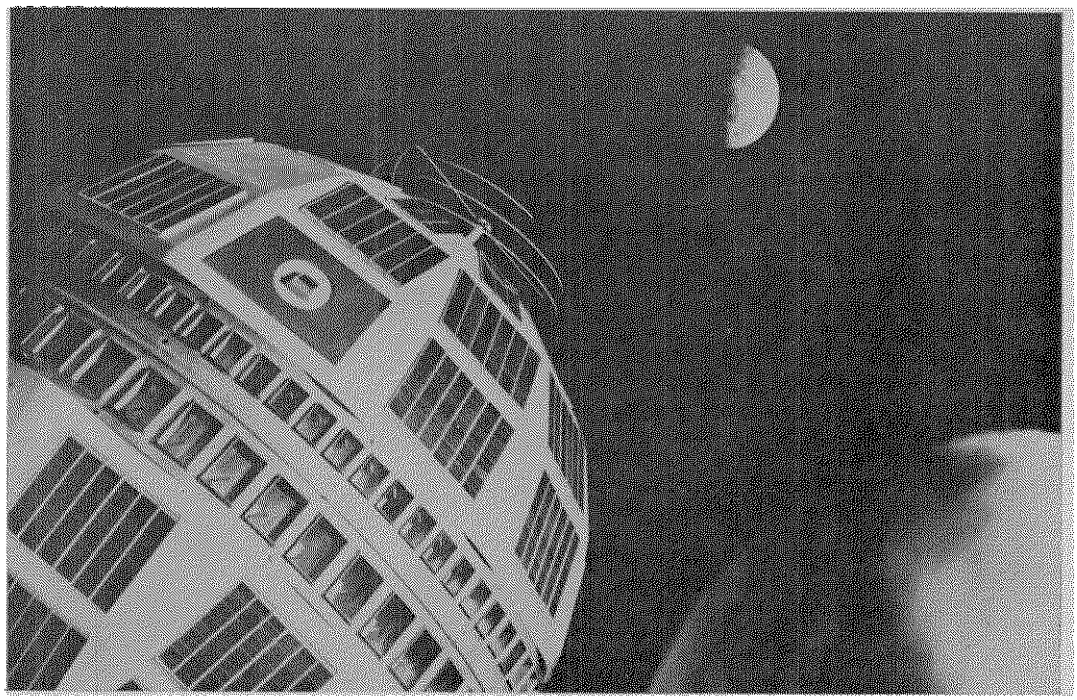

TALKING TO THE STARS

(See Pg. 21)

Vol. 48 No. 4
August, 1962

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Impressive amounts of design and performance data have been organized, studied and evaluated. These are documented in six detailed reports published by the Highway Research Board.

To help make the major test results more readily usable, Portland Cement Association engineers are summarizing and interpreting data from these Road Test reports. This material will be made available through special literature, messages in engineering publications, and various engineering field services.

If you would like copies of the literature, just send a request to PCA. Available free but only in the United States and Canada.

The National Road Test has been an impartial and cooperative effort Financed by the States and the District of Columbia, the Commonwealth Puerto Rico, the Bureau of Public Roads, the Automobile Manufacturers Association, the American Petroleum Institute, with cooperation and assistance the Department of Defense. Administered and directed by the Highway Research Board of the National Academy of Sciences—National Research Coun

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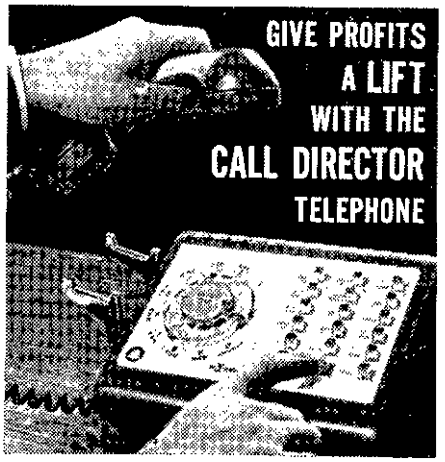

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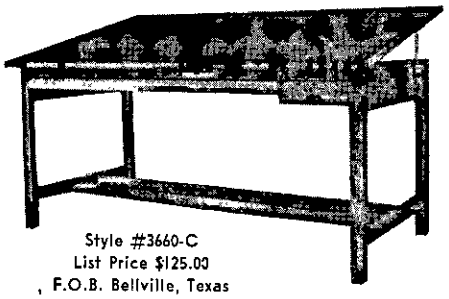

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THE LOUISIANA ENGINEER

Vol. 48 August, 1962, No. 4

OUR COVER

Photograph simulates view of earth, right foreground, and moon, in distance, from vantage point of Telestar satellite orbiting through outer space.

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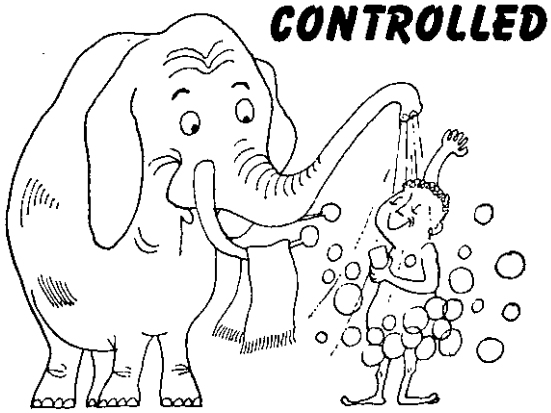

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LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, on Monday, May 14, 1962

The meeting was called to order by President Janssen, with Messrs. Domingue, Knight, Lockett, Macdonald, McNamara, Stokes, Watts and Fernandez present. Mr. Nelson, Registration Law Committee Chairman, also was present by invitation. Mr. Watts moved that minutes of the preceding meeting be accepted as read; motion seconded by Mr. Lockett and carried. The Secretary then read minutes of meetings of the Louisiana State Board of Registration held on April 10 and May 1-2, 1962.

Mr. Nelson reported on his committee's work, including the meeting with the Louisiana Architects' Association and President Janssen's endorsement of their proposed legislation.

The Secretary read abstracts from the minutes of a meeting of the local section of ASHR&ACE in which they unanimously endorsed the resolution adopted by the LES Board of Direction on April 9.

Discussion followed on proposed legislation that would limit the period during which actions for personal injury or property damage may be brought against persons who perform or furnish the design, planning, supervision, or construction of improvements to property. Mr. Domingue moved that the LES Board of Direction go on record in favor of this proposed legislation, provided that clarification is made as to the beginning of the five-year liability period. It was the concensus of opinion that such legislation should apply to "five years from the date of completion of construction." The motion was seconded by Mr. Knight and carried.

The Secretary read a report of the Legislative Committee on a meeting with the Louisiana Hospital Licensing Board, at which the committee, working with representatives of GICE, was successful in persuading that board to add to its Proposed Rules and Regulations Governing the Licensing of Louisiana Hospitals, Part 4, Approval of Plans, the following underlined phrase:

> "51. Before any new Hospital is licensed or before any alteration or expansion of a licensed hospital can be approved, the applicant must furnish three (3) complete sets of plans and specifications to the State Department of Hospitals, together with such other information as may be required by the Department. Plans and specifications for new construction other than minor alterations shall be prepared by or under the direction of a licensed architect **and/or a qualified licensed engineer."**

The Secretary read a financial report for the first quarter of 1962.

Discussion followed on a communication from Mr. E. F. Hughes, General Superintendent of the Sewerage & Water Board, requesting LES to participate in a meeting of interested agencies to adopt a new datum plane for future work contemplated for this area. President Janssen stated he would appoint a representative at a later date.

Mr. McNamara moved that Messrs. James E. Kessel (Jr.—Alabama) and U. L. Pitre, Jr. (Aff.—Baton Rouge) be dropped from the rolls in accordance with their requests, seconded by Mr. Knight and carried.

The Secretary reported that Louisiana's candidate for the NSPE-ARMCO scholarship had not been selected.

President Janssen appointed Messrs. Calvin T. Watts, D. E. Guiza, Wm. H. Rhodes and R. M. Seago as a special committee to recommend nominees for a vacancy on the State Board of Registration.

Dr. Frank W. Macdonald was appointed to head a committee to prepare a memorial resolution honoring the late Donald Derickson, Honorary Life Member and Past President of LES. Others appointed to this committee were Professor Walter E. Blessey, Mr. Thomas C. Bruns, Mr. W. T. Hogg, Mr. Leo M. Odom, and Professor C. W. Ricker.

Professor Blessey was appointed to submit recommendations for a suitable memorial to honor Professor Derickson.

Inasmuch as Messrs. Alfred C. Fuselier (Mbr.—Alexandria) and Maurice O. Jordan (Jr.—Shreveport) have not accepted membership in LES by payment of their dues, Mr. Lockett moved that their election be declared void. Motion seconded by Mr. Stokes and carried.

Mr. Watts moved that the following delinquent members be dropped for non-payment of dues, seconded by Mr. McNamara and carried:

Wm. E. Aicklen, Jr.	Member	Lake Charles
James E. Allen	Member	Shreveport
Robert W. Ammon	Member	Baton Rouge
Walter L. Ashton, Jr.	Member—NSPE	New Orleans
Van A. Barnett	Member	Shreveport
Arlen L. Bishop	Junior	Sulphur
James B. Boulet	Affiliate	Lake Charles
Charles K. Capdepon	Affiliate	Gulfport, Miss.
Lee Van Cunningham, Jr.	Member	Baton Rouge
Harry Dekerlegand	Affiliate	Livingston
Lawrence J. Delaune	Member—NSPE	Baton Rouge
David G. Douglas	Affiliate	Huntsville, Ala.
E. L. Eustis, Sr.	Member—NSPE	New Orleans
Roscoe J. Finke	Member	Jasper, Ala.
Rodney L. Grandy, Jr.	Junior	Baton Rouge
Edward C. Gremillion	Member—NSPE	New Orleans
John E. Helquist	Affiliate	Baton Rouge
George C. Hengy	Member—NSPE	Shreveport
William N. Hopkins	Member	Bogalusa
Robert E. Howson	Junior	Thibodaux
James E. Johnston	Junior	Lake Charles
Paul P. Krutak	Member	New Orleans
Howard P. Landry	Affiliate	Monroe
Pershing J. Lefort	Affiliate	Galliano
George M. Lipscomb	Member	Zachary
Numa L. Marquette, Jr.	Junior	New Orleans
Robert E. McDowell	Member—NSPE	Shreveport
C. E. Metrailer	Member	Baton Rouge
Charles E. Meyer	Junior	New Orleans
David L. Mizell	Junior	Bogalusa
Ralph F. Mongeau	Affiliate	Baton Rouge
Brandt Pedersen	Member	Lake Charles
Louis F. Primos	Member	Shreveport
Herbert E. Russell	Affiliate	Winnsboro
Carleton C. Salley	Member—NSPE	Shreveport
Alfred W. Schoeffler	Junior	Lafayette
Jerry T. Shoemaker	Affiliate	Monroe
Charles F. Smith, Jr.	Affiliate	Baton Rouge
James B. Smith	Member—NSPE	Alexandria
Jacob B. Swanson, Jr.	Member	Baton Rouge
Robert G. Taylor	Junior	Lake Charles
Eugene F. Tims	Member	St. Petersburg, Fla.
John S. White, Jr.	Affiliate	Lafayette, Ala.
Carl B. Whyte, Jr.	Member	New Orleans
L. F. Valentine	Member	Shreveport
Richard Walter	Junior	St. Martinville

The meeting then adjourned.

LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction held at UCT Park, Baton Rouge, May 26, 1962

The meeting was called to order by President Janssen with Messrs. Domingue, McNamara, Pounds, Watts and Fernandez present. Mr. Landry, Chairman of the Legislative Committee, also was present by invitation. Minutes of the preceding meeting were accepted as corrected, and the secretary read reports from the Chairmen of the Vocational Guidance and Technical Papers Committees and from the Advisors to the Tulane and USL Student Chapters.

The secretary read correspondence from the Louisiana Civil Service League concerning H. B. 447, which would remove from civil service status the directors of hospitals and other major institutions of the state.

The secretary also read a note from Mrs. Kammer thanking the obituary committee for the memorial honoring the late Karl P. Kammer, Past President and Life Member of the society.

Correspondence between the Louisiana Land Surveyors' Association and immediate Past President Bogard concerning unity in the profession was read. All those present agreed that Dean Bogard's letter was most informative and that an article on professional unity should be published in the LOUISIANA ENGINEER.

Mr. Watts moved that Mr. James H. Bradley be reinstated to the grade of member and that his record be cleared to show uninterrupted membership from the date on which he was dropped. Motion seconded by Mr. Domingue and carried.

President Janssen appointed a committee consisting of Messrs. Walter Scales, David Godat and Robert Kuhn to prepare a memorial honoring our late member, George F. Shelley.

The secretary was instructed to mail to Mr. Montgomery, Chairman of the Functional Section for Professional Engineers in Private Practice, liability insurance forms for distribution to his committee members.

Discussion followed on pending legislation including the Architects' Professional Licensing Bill, Residential Designers' Registration Bill, Liability Limitation Bill and Boiler Attendants' Bill. It was decided that all four bills, together with any other legislation that may be introduced, would be followed closely by the Legislative Committee and that, after consultation with President Janssen and available Board Members, Mr. Landry would take whatever action that may be necessary to protect the interests of professional engineers.

It was announced that the House Committee hearing on the Architects' License Bill would be held on Wednesday, May 30 at 9:00 a. m. and board members were urged to attend. The meeting then adjourned.

JOHN P. FERNANDEZ
Secretary-Treasurer

(Continued on Page 10)

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ASME Nominates Smith

Ronald B. Smith, senior vice-president of the M. W. Kellogg Company, New York, has been named to serve as 1963-64 president of The American Society of Mechanical Engineers. Smith's name headed a list of nominations of national officers prepared during the Society's recent summer annual meeting in Quebec.

The slate, including five vice-presidents and two directors, is expected to be installed in office next June, following a ballot of the membership next spring.

Smith holds the chief responsibility for M. W. Kellogg's world-wide technical operations, including construction overseas of millions of dollars worth of chemical plants, oil refineries and similar installations. He has traveled extensively in the course of his work including visits to Europe, Central and South America, Africa and Australia.

A resident of Old Greenwich, Connecticut, Smith holds degrees from the University of Washington (B. S. 1930; M. E. 1933), an M. S. from the University of Pittsburgh, and has done graduate work at the University of Pennsylvania and the University of Michigan. He has held many responsible posts in ASME and other technical organizations, and is the author of many technical papers.

In 1945, Smith was a member of the U. S. Technical Mission to Europe, and later served on the Committee on Power Plants, National Advisory Committee for Aeronautics.

Other ASME members named to national office are: Vice-Presidents (to serve two-year terms):

A. Rothermel, Professor and Head of the Department of Engineering, Queenborough Community College, Bayside, New York (ASME Region II).

Harold K. Couch, partner, Brown & Morrison, Charlotte, North Carolina, (ASME Region IV).

Theodore A. Wetzel, Staff Assistant, Servo Machine Division, Kearney & Trecker Corp., Brookfield, Wisconsin. (ASME Region VI).

Eaton H. Draper (renominated), Vice-President, Development Organization 1000, Sandia Corporation, Sandia Base, Albuquerque, New Mexico, (ASME Region VIII).

Allen H. Jensen, Mechanical Engineer in charge of maintenance, New Orleans Public Service, Inc., New Orleans, La., (ASME Region X).

Directors (to serve four-year terms):

Martin Goland, President, Southwest Research Institute, San Antonio, Texas.

Lester C. Smith, President and Chief Engr., The Spencer Turbine Co., Hartford, Connecticut.

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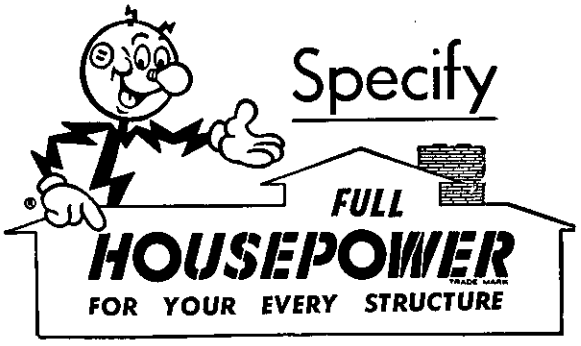

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What Every Louisiana P. E. Should Know

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 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.

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 Louisana?

ANSWER—Yes. The Louisiana Act states that such work may be considered toward qualification for registration.

QUESTION—Is it necessary that an applicant for registration as a Professional Engineer 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.

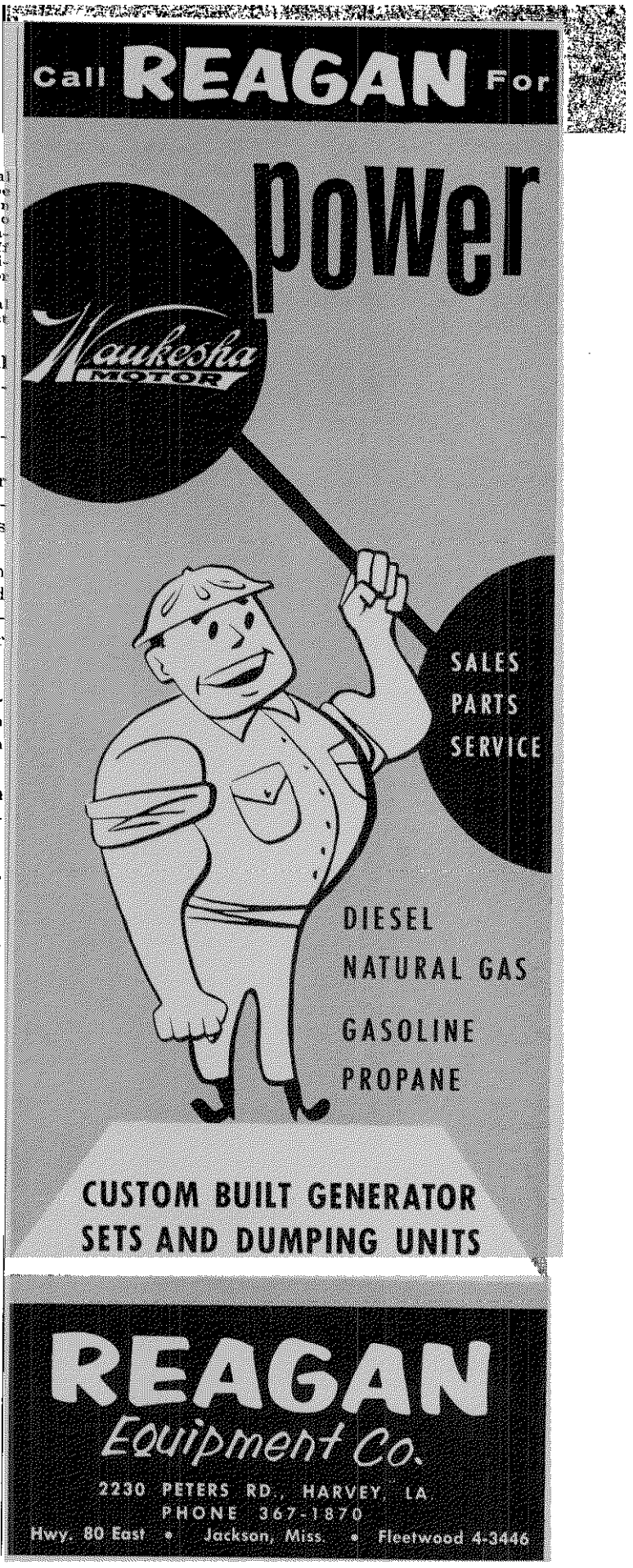
QUESTION—Are copies of the roster of Louisiana registered Professional Engineers available to the public?

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.

—o—

According to a recent report issued by Lehigh University, its electrical engineer graduates command the top median starting salary this year at $574, up five per cent over last year's $567.

Of particular note is that Lehigh's civil engineering graduates were the only group to suffer a decrease in starting salaries, down six per cent from last year to $500, or $35 less than the $535 median for all 1962 Lehigh graduates.



Gen'l Sessums– Field Notes
By Allen Johnson

Maj. Gen. Roy T. Sessums, USAFRes, vice-president and engineering coordinator of Freeport Sulphur Co., was recently appointed to the Board of Registration for Professional Engineers to fill the vacancy created by the death of Dr. Donald Derickson.

General Roy T. Sessums

The experience of General Sessums includes college teaching and administration, active and reserve military duty with the U. S. Air Force, service as a state official and duties as a business executive.

He served as Assistant Professor of Civil Engineering at Louisiana Polytechnic Institute, Ruston, from 1937 to 1940, at which time he was promoted to Professor and Dean, School of Engineering. He served in that capacity for 12 years (1940-52) with military leave of absence during the period 1942-46.

As Dean of the School of Engineering, he was responsible for the formulation of plans and policies, as well as for the conduct and administration of the School of Engineering.

In 1952 he was appointed Director, Louisiana State Department of Public Works.

In 1955 he became affiliated with the Freeport Sulphur Co. in the capacity of Assistant to the Vice-President and Engineering Coordinator. In 1958 he was promoted to Assistant Vice-President.

During the period 1949-53 he also served part time as a consultant and operations analyst with the Johns Hopkins University, Operations Research Office, Washington, D. C., with full time duties during the period between October, 1950 to March, 1951, as Operations Analyst in Korea and Japan.

His present reserve mobilization position is Mobilization Assistant to the Commander, Air Force Systems Command, Andrews Air Force Base, Washington, D. C. The Air Force Systems Command is responsible for research, development and testing of the new weapons system in the Air Force, including surveillance, radar and missiles. His current rank is Major General.

He served as president of LES in 1959 and has held various committee posts in the Society.

Clayton L. Nairne, past president of LES and executive vice-president of New Orleans Public Service, will be chairman of the Sept. 13 Luncheon Session of the Tenth Annual Engineering Management Conference to be held at the Roosevelt Hotel in New Orleans Sept. 13-14. G. C. Rawls, president, Louisiana Power and Light Co., will address the first session of the conference. He will speak on "Partners in Progress."

A highlight of the two day conference will be an address by Ambassador de Lesseps S. Morrison, U. S. Representative to OAS.

Vice-chairman of the fourth session will be J. T. Montgomery of Waldemar S. Nelson & Co.

Local arrangements are being handled by M. J. Cade, chairman of the arrangements committee. Others on the committee are:

E. A. Gastrock, G. H. Kellerman, B. M. Dornblatt, Reception; A. D. Stancliff and Forney Fuller, Registration; R. J. Dowe, Finance; J. R. Gore and J. J. Krebs, Jr., Publicity; S. M. Rawlins, Jr., and J. B. Johnson, Hotel and Meeting Rooms; W. V. Braddick and V. J. Comeaux, Luncheons; G. H. Peirce, Printing.

LOUISIANA ENGINEERING SOCIETY

(Continued from Page 7)

NEW MEMBERS

Raymond L. Bienvenu, St. Martinville; David L. Billingsley, Shreveport; Fitzhugh L. Cox, Lake Charles; Earl V. Fisher, Shreveport; Gerald M. Haydel, New Orleans; Charles F. Jacques, Baton Rouge; Monroe S. Trimble, Monroe; Joseph C. Wendling, Jr., Metairie.

TRANSFER FROM JUNIOR TO MEMBER

Richard H. Norman, Alexandria.

AFFILIATE MEMBER

Pierre F. Barnett, St. Francisville; James Q. Barrick, Baton Rouge; Ernest M. Gillen, Jr., Shreveport; Gerald E. Mitchell, Monroe; Joseph J. Voelker, Jr., New Orleans.

JUNIOR MEMBER

William G. Campbell, Jr., New Orleans; Jason D. Dupuis, St. Martinville; Albert P. Keller II, New Orleans; Sidney J. Levet III, Metairie; Thurmon E. Lofton, Jr., Alexandria; Kenneth Joseph Roy, Alexandria.

JUNIOR MEMBERSHIP AWARDS

William M. Boyle, Jr., Graduate of Tulane University; Jack Emfinger, Graduate of Louisiana Polytechnic Institute.

TRANSFER FROM STUDENT TO JUNIOR MEMBER

Graduates of University of Southwestern Louisiana: Ray Bruchez, Larry G. Fowler, John L. Guillory, E. C. Lamb, J. Harvey LeBlanc, Robert B. Moore, Carlos L. Nunez, Christian L. Olivier.

Graduates of Tulane University: Fernando A. Arguelles, Melvin J. Backes, Joshua L. Brener, Donald J. Chaisson, Henry Chambers, Richard P. Chauviere, Donald DiPascal, Richard J. Ehrlicher, Augustus Elmer III, Robert N. Endercrock, Lyle W. Ferguson, Richard N. Graham, Jr., Norman Heyd, W. J. Jeansonne, Albert O. Lanoix, Jr., Wilfred E. Lehder, Jr., Glen R. Manning, Warren F. McDonald, Jr., Keith A. McKinley, Patrick C. McKinney, Henry M. Morris, Jerald J. Neumeyer, Diane E. Newman, Louis G. Palermo, Walter F. Ramirez, Jr., David C. Randolph, Morton D. Rau, Jerry J. Saacks, Charles R. Short, Jr., William E. Spangler, Gerald Viator, Merlin F. Wadsworth, Thomas A. Wells.

JOHN P. FERNANDEZ, Secretary-Treasurer

The nation's first silicon-rectifier electric locomotive —built by the General Electric Company—was delivered recently to the Pennsylvania Railroad.

The 4400-horsepower unit will serve on the railroad's electrified lines between New York, Philadelphia, Washington and Harrisburg, Pa. It uses silicon-rectifier cells in place of electronic tubes to convert a-c current to d-c to operate the traction motors.

WANTED: BOOKS

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Sulphur Terminals Aid Leading La. Industry

A local engineering firm recently assisted in the development of the transportation and marketing facet of the highly successful Louisiana sulphur industry when, with M.T.R. Terminal Co., it designed four liquid sulphur terminals at inland and seacoast locations.

Waldemar S. Nelson and Co., New Orleans based engineers and architects, also aided in the design of seven of the sulphur mines, H. B. Myers, editor of the *"Consultant,"* a publication prepared by the firm, reported in a recent article. Myers' article on liquid sulphur terminals, as it appeared in the *"Consultant,"* is reprinted below:

Louisiana's rich deposits of sulphur have been a valuable economic asset since their first commercially successful exploitation in 1908. Sulphur production has been equally important to the national economy, since sulphur is extensiely used in manufacture of domestic and industrial products. Indeed, its use is so extensive that its consumption is one of the most reliable indices of industrial activity.

Most of the nation's sulphur is mined in the Gulf Coastal area.

Liquid sulphur terminals constitute a major step forward in the distribution and marketing of sulphur. Freeport Sulphur Company pioneered this new method of distribution in the 1940's when it shipped molten sulphur by barge from its mine at Grande Ecaille to Port Sulphur. This pioneering made possible the series of large liquid sulphur terminals which now serve a large section of this country and represent a new concept in marketing.

For many years the greater part of sulphur production was shipped in solid form, but a strong and growing preference by consumers for delivery in a molten state is rapidly changing traditional means of shipment. It is expected that by 1965 some 70% of sulphur shipments will be made in liquid form. There are several reasons for this trend, a primary one being that sulphur is mostly used in its molten state at the point of consumption. Consequently, delivering it that way eliminates the necessity of remelting the sulphur, an obvious customer convenience. Liquid sulphur is much easier to handle than in a solid state, and handling costs are lower. Liquid shipment also eliminates the average 0.5% loss in transit and handling which otherwise would occur. Another benefit to the consumer is that the sulphur arrives relatively uncontaminated by moisture, scale or other foreign substances, and there is no problem of dust which can cause some deterioration in the consumers plant equipment. In essence, then, these sulphur terminals were constructed as a customer service, as a means of delivering and making available to him ample supplies in the form most suited to his needs.

The four terminals, with a combined storage of 110,000 tons, are located at Tampa, Florida; Bucksport, Maine; Wellsville, Ohio; and Joliet, Illinois. All are naturally in areas that consume large quantities of sulphur.

Tampa is the largest of the four terminals, and logically so for it is located in the largest sulphur consuming area in the world. Tampa produces approximately 27% of the world's phosphate fertilizer of which sulphuric acid is an essential ingredient. Obviously Tampa's four ten-thousand ton storage tanks were needed in this area in order to assure satisfaction of the heavy demand to sulphur in the Tampa area. First delivery to the terminal was made by tanker in February of 1961, which was the largest shipment of liquid sulphur ever made.

The other terminal served by tanker is Bucksport, which is located in the heart of the New England paper industry, and is a major user of sulphur. This terminal has two storage tanks with a capacity of 20,000 tons. As with all the terminals, adequate space has been reserved for expansion.

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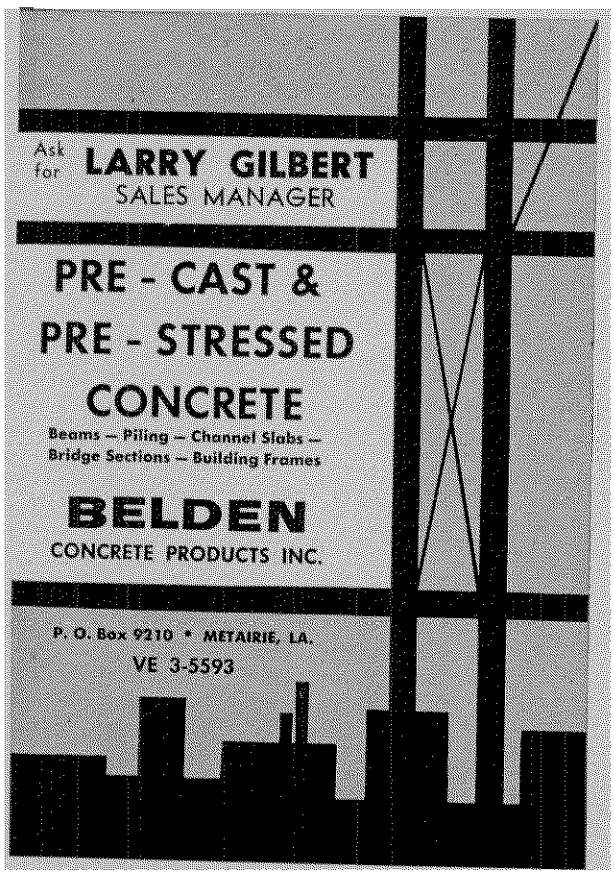

What are we talking about—Ethics?

By J. T. Knight, Jr.
Chairman, LES Committee on Ethics and Professional Affairs

Much has been said in the recent past about ethics, conduct, professionalism and obligations of the registered professional engineer — so much so that it seems some engineers become confused and seem to think the words are synonymous. Careful thought and consideration will reveal just how erroneous such a conception can be.

Let's speak of ethics and conduct. There is in ethics, and conduct, an overlapping area in which ethics and conduct are both controlling factors. There are times when ethics is entirely a separate consideration from conduct, and there are instances when conduct is entirely separate from ethics. Simply, ethics might be considered the plain principles which deal or treat with human morality and duty. Ethics is a moral philosophy. Certainly there can be acts of conduct which may not in any way involve human morality, duty, or moral philosophy.

Conduct is behavior, personal behavior, and it can be highly obnoxious without being unethical or without involving morality. It seems reasonable to agree that ethics and conduct are not, then, one and the same. We engineers go a step further, however, and we talk of professional conduct and try to interpret professional conduct as ethical conduct. Again, the same differences appear. Professional conduct is merely the behavior of one who by reason of an examination or by some other means of judgment by his peers, has been accepted as a professional.

This brings us to the term professionalism. Simply, a professional is one who makes a living by practising his art. We like to read into the meaning "professional" ethics, human morality and the unquestioned behavior of the well trained, the educated individual who, at all times, thinks and acts in accordance with the highest principles of personal and civilized behavior.

Finally, our fourth word, used so many times, is obligation — just what is obligation? Do we as professional engineers have an obligation, and for what? An obligation is the binding power of a vow, a promise, a contract. That seems to cover it completely. There is no obligation except that which is freely and personally accepted by an individual.

So, we have four words, each with its own meaning, each having a bearing on all men, be they engineers, doctors, lawyers or ministers. Just what blend of these words best fit the engineering profession? Suppose a few of us band together to support each other and to hold for ourselves certain rights and privileges, and to do this we compile a set of rules, a code — if you please — of conduct, to which all those in this particular group subscribe and endorse. This particular group frequently sits in judgment of those who did not, or have not, joined with them, even though there may be other restrictions which would not permit full membership to many. Such judgment often takes the form of declaring certain acts by non-members of the group as being unethical purely because the conduct of the judged did not conform to the code of conduct set up by that particular group.

Laws are but rules of conduct, to which we all subscribe by the fact that we are citizens. This does not mean that we think all laws are good or justifiable; but, laws are supposed to represent the views of the majority. This changing world in which we live seems to emphasize the need for laws and more laws. With such obligations required because of our citizenship, it really is asking a lot to expect everyone who is earning his living as a professional engineer to conduct his life within a restricted framework which seems to best fit the professional engineer in private practice.

The National Society for Professional Engineers has, after years of study, put together a code of ethics. This code is broad, it permits freedom of movement, it is not a protective code to shelter any one group of engineers; it does, however, set forth in positive language the principles of human morality for the professional engineer. Frequent reading of this code and constant reference to it will affect our day-to-day conduct. Whenever we associate with, and have dealings with, our fellowman we do need guide lines of ethics and conduct, over and above the law. Therefore, our ethics must become the code adopted by the professional engineer, and our conduct must fit into our pattern of ethics in order that we become true professional engineers, men who are making their living by practicing the art of engineering in private practice, in industry, in sales, in education and in government.

Now, a final word about obligation. Let's go back just a moment. Obligation, that binding power of a vow. When did we take such a vow, what did we say? What words ring loud and clear in your ears that remind you when you sign P.E. after your name? We all pledge allegiance "to the flag of the United States . . . .," we all have sworn "to defend the Constitution of the United States against all enemies . . . .," but when and where did we pledge allegiance to our profession, to our Code of Ethics? Until we make a vow we have no positive obligation.

So, gentlemen, when we speak of ethics think of a two-way street, the same rules of professional morality apply to all. The fact that one does not live up to a set of rules to which he never pledged himself, and which in themselves benefit only a segment of the P.E.'s, does not of necessity indicate that that person is unethical. Let's be professional and realistic in this age when engineers are discovering daily that they must live with engineers, scientists, technicians and specialists in many old and new fields of endeavor. The ability to apply technical and scientific knowledge to practical developments is not the sole privilege of the engineer; the truly professional engineer pursues his career today with all of its ramifications and opportunities with great rigor, knowing full well that profit to himself is in a large degree a measure of his professionalism in its broadest aspects, not the least of which is ethics.

Five outstanding high school seniors planning to study civil engineering have once again been selected by the Armco Foundation, in cooperation with NSPE, to receive four-year college scholarships.

The five youths will receive a total of $3,000 in annual stipends of $750 each during their four years in college. The nation-wide competition for the scholarships included students from public, parochial, and private schools. All candidates were required to rank in the upper one-fourth of their graduating classes.

The 1962 scholarship winners: Alexander J. Hekimian, Groveland, Mass.; Thomas F. Potter, Mooseheart, Ill.; James W. Thiesing, Jr., Pittsburg, Kan.; Richard Lee Yost, Fairmont, W. V.; Dick Shinji Kaku, San Fernando, Calif.

The scholarship awards were made by a selection committee made up of professional engineers holding membership in NSPE, and representatives of the Armco Drainage & Metal Products, Inc., a subsidiary of the Armco Steel Corporation. Funds for the scholarships are provided by The Armco Foundation, an educational and charitable organization established by Armo Steel Corporation.

The scholarship is continued the full four years provided that the student meets personal and scholastic standards satisfactory to the college he attends. Any college accredited by the Engineers' Council for Professional Development may be selected by the winners.

In addition to the grants to individual winners, privately endowed schools in which scholarship winners are enrolled receive an unrestricted grant of $500 annually from Armco Foundation each year the scholarship is in force as a cost-of-education allowance. Tax-supported colleges receive a yearly allowance of $100.

The awards are granted on the basis of a student's scholastic record and his aptitudes for engineering.

Other firms throughout the nation are urged to join with NSPE and Armco in providing scholarships to deserving engineering students.

If more young people do not enter engineering in the next ten years, national technical and scientific progress will be seriously impeded according to a report, DEMAND FOR ENGINEERS, released recently by the Engineering Manpower Commission of Engineers Joint Council.

The report shows demand for engineers and physical scientists over the next decade. Requirements for engineers will exceed by a considerable amount the number of graduates, based on present engineering college enrollments and projected trends. This data is based on a study of 517 companies and government groups employing over 200,000 engineers and is the ninth such study prepared by the Commission since the original survey in this area was conducted in 1951.

"Growing shortages of engineering manpower may well affect the nation's ability to fulfill its technological commitments at home and abroad," said Dr. Sydney B. Ingram, Chairman of the Engineering Manpower Commission. "The Commission's conclusion is that the basic problem is how to attract more capable men and women into the profession."

STEWART APPOINTS BENBROOK SALES MANAGER

S. J. Stewart Electric Co., 527 St. Joseph St., New Orleans, recently announced the appointment of James M. Benbrook as sales manager of their industrial department.

Benbrook was formerly with Smith Industries as salesman. Prior to that he was a salesman for Paul, Rice and Levy.

Benbrook is a graduate of S. J. Peters High School, and is a member of the Sons of Confederate Veterans, The Beauregard Rifles, and VFW Post 3799.

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PCI Convention set for Sept. 23-28

Internationally known design and construction authorities will participate in the 8th annual Prestressed Concrete Institute national convention scheduled for New Orleans Sept. 23-28.

Felix Candela, architect and engineer from Mexico, who has gained world wide recognition for his advanced design structures, will be keynote speaker for the event.

Upwards of 1000 architects, engineers and affiliates of the prestressed concrete industry are expected to attend the New Orleans sessions.

In addition to outstanding speakers from the United States, noted engineers Dr. P. W. Abeles and O. A. Kerensky, both of London, England, will participate. Dr. Abeles will speak on "Partial Prestressing In Europe," while Mr. Kerensky will discuss "Long Span Bridge Design."

Convention activities will include six full half-day sessions on newest developments in design, connections, technical activity committee reports, research and production techniques.

Authorities from this country who have accepted invitations to deliver major papers include Neal Fitzsimmons, director, Protective Structure Division, Office of Civil Defense, "Designing Dual Purpose Shelters;" George Duecy, Associated Sand & Gravel, Fabricating Material for Federal Science Pavilion;" W. Burr Bennett, Portland Cement Association, "Limit Design With Prestressed Concrete;" Joseph Walker, Portland Cement Association, "Report on Laboratory Studies on Prestressed Concrete;" F. P. Drew and E. J. Ruble, Association of American Railroads, "Railroads Research on Prestressed Concrete."

In an early session Ben C. Gerwick, Jr., will report on activities of the F.I.P. Congress.

A discussion on future possibilities for the prestressing industry will be moderated by William Avery, publisher of Concrete Construction magazine.

Ross H. Bryan, consulting engineer, Nashville, chairman of the technical activities committee, wil preside over a full morning session on TAC reports. These will include reports on fire resistance, grouting, workmanship, building code, AREA liasion, AASHO-PCI inspection, pavements, research, curing, post tensioning and shrinkage and creep.

Discussions on new production techniques will be given by W. C. Givens, Capitol Prestress Co., Inc.; Jack R. Way, Nebraska Prestressed Concrete Co.; and L. F. Stansbury, John A. Roebling's Sons Corp.

Another important section of the convention will cover connection details. Papers to be presented include chairman Thomas A. Hanson, precast concrete connections; Irwin J. Speyer, column bases and column splices; Alfred A. Yee, beam to column connections; Laurence Cazaly, beam to girder connections; Felix Kulka, floor and roof slabs to beams and H. Carl Walker, floor and roof slabs to masonry walls.

Now practicing in Mexico City, Candela is recognized as one of the leading exponents of the future potentialities of the hyperbolic paraboloid in architecture. To simple cylinder shells and dome and barrel vaults Candela has added highly complicated structures such as folded plate slabs and interpretations of hyperbolic curved surfaces of the most varied plan.

O. A. Kerensky, as a member of the firm of Freeman, Fox and Partners, of London, consulting engineers for the Medway Bridge, will discuss unusual construction and design features of the structure. The Medway Bridge, with a central suspended span approximately 100-ft. long, has a total clear river span of 500-ft., the largest prestressed cantilevered concrete span in the world.

The main piers are founded in the river at a distance of 500-ft. between each river pier and the adjacent bank is another pier at a distance of 312-ft.

Due to possible settlement of the river piers the bridge was designed as a statically determinate structure. Therefore, the main span of the bridge is basically a double cantilever with a central suspended span.

The bridge has a width of 113-ft. and carries, in one direction, a 6-ft. path, a 9-ft. cycle track, an 8-ft. hard shoulder, two 12-ft. traffic lanes bordered by marginal strips. A 10-ft. median separates a similar arrangement for traffic in the opposite direction.

Chairman of the arrangements committee in New Orleans is D. W. Milhan, Prestressed Concrete Products Co., Mandeville. The president of PCI, Robert J. Lyman, will welcome delegates.

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New Regulations Set

Regulations to Govern the Practice of Engineering Corporations in the State of Louisiana

1. In the case of corporations offering to provide or providing professional engineering services to the public in this state, all such professional engineering services shall be executed by or under the direct supervision of a professional engineer registered in this state. The said engineer shall be an officer, an executive, or a full time employee of the corporation. When the work consists of plans, designs, specifications, reports, or maps, he shall impress them with his seal as required by law.
2. Letterheads, business cards, advertisements and other similar identifying items issued by corporations offering to provide or providing professional engineering services to the public in this state shall reflect clearly that such corporations have officers or full time employees who are professional engineers registered in this state.
3. A.—All existing corporations offering to provide or providing professional engineering services to the public in this state shall, within sixty days from the effective date of these regulations, file with the Board a list certified to by an authorized officer, showing the names of its officers and full time employees who are professional engineers registered in this state.
   B.—Any corporation formed or qualifying to do business for the purpose of offering to provide or providing professional engineer services to the public in this state after the date that this regulation goes into effect shall, within thirty days after its formation or qualification, file a list as required by subparagraph (A) above.
   C.—Beginning with the calendar year 1964, every corporation providing or offering to provide professional engineering services to the public in this state shall file annually with the Louisiana State Board of Registration for Professional Engineers and Land Surveyors an up-to-date list of its officers and employees who are registered professional engineers in this state. This list shall be filed with the Board not later than March 1 of each year.
4. The effective date of these regulations will be October 1, 1962.

NSPE Urges Salary Reform

Testimony urging the adoption of the Administration's proposed Federal Salary Reform Act has been given by the National Society of Professional Engineers before the House Committee on Post Office and Civil Service.

Paul H. Robbins, executive director of the 58,000-member group, testified that the proposed legislation "while it does not specifically provide a separate schedule for engineers and scientists as recommended by the National Society, does encompass in principle many of the features of such a separate schedule."

Robbins said the bill would restore a more proper differential between starting and top-level salaries of engineers and scientists; it would permit Federal employees to retain their present in-grade step in switching to the new schedule; it authorizes the Civil Service Commission to set in-grade minimums higher than the first step in categories which it determines to be in short supply; it gives department heads the authority to waive in-step time requirements in cases where exceptional performance clearly merits a step increase; and it permits a new appointee possessing extra qualifications to be placed in the lowest above-minimum step in the authorized grade which equals or exceeds his salary immediately prior to appointment.

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Memorials

DONALD DERICKSON

On Saturday, May 5, 1962, the Louisiana Engineering Society lost by death an outstanding member and former President, Donald Derickson.

Born July 14, 1878 in Meadville, Pennsylvania, Professor Derickson was educated at Alegheny College Preparatory School and Allegheny College where he completed his sophomore year. He entered Thayer School of Civil Engineering of Dartmouth College, graduating in 1902 with the degree of civil engineering. Later he received the honorary degree of Doctor of Science from Allegheny College.

Professor Derickson served on the civil engineering faculty of Pennsylvania State College and Cornell University after his graduation from college. In 1912 he was appointed Professor and Head of the School of Civil Engineering at Tulane University, and remained in this position until he retired in 1946. During this period he also served in a consulting capacity on the construction of difficult foundations, bridges, buildings, sea walls, river and harbor works.

Professor Derickson served as President of the Louisiana Section, American Society of Civil Engineers, and in 1949 received the distinction of becoming an Honorary Member of the Society. He was a Past President and an honorary member of the Louisiana Engineering Society. He was Chairman of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors at the time if his death, having served on this Board continuously since 1917. He was prominently identified with the activities of the Engineers' Council for Professional Development in accrediting engineering courses, and served on many technical committees of engineering societies.

Professor Derickson was a member of the St. Charles Avenue Presbyterian Church of New Orleans. He was also a member of Tau Beta Pi and the Society of Sigma Xi.

The Don, as he was affectionately known to his friends and students, exerted a strong influence in the Engineering Profession of Louisiana and throughout the nation. His former students, many who have gained positions of prominence in their profession, remember him as a friend, a gentleman and an excellent teacher. Through his efforts, the profession of engineering in Louisiana has attained high standards for registration and practice.

BE IT RESOLVED that the membership of the Louisiana Engineering Society express hereby its feeling of great loss to the profession of engineering through the passing of Donald Derickson; that this obituary be read at a meeting of the Society, entered into the minutes, and that a copy be sent to Mrs. Donald Derickson.

LEO M. ODOM
C. W. RICKER
W. T. HOGG
THOMAS C. BRUNS
WALTER E. BLESSEY
F. W. MACDONALD

The following memorial was read into the minutes of the June meeting of the Lake Charles Section of LES, Gus G. Quinn presiding.

William M. "Slim" Larkin, supervisor of industrial sales for Gulf States Utilities Co., died May 24 in Beaumont's St. Elizabeth Hospital after a long illness. He was 54.

A native of Brenham, Texas, Mr. Larkin was graduated from Louisiana State University in 1933 with an AB in education. He began his career with Gulf States in June 1936 as a district sales representative in Beaumont.

He was promoted to power engineer in 1943, was transferred to Baton Rouge in 1943 in the same capacity and three years later moved to Lake Charles. Mr. Larkin was promoted to supervisor of industrial sales in Lake Charles in 1948 and held that position until 1959 when he was promoted to the job he held at the time of his death. While in Lake Charles Mr. Larkin in 1951 served as president of the Lake Charles section of the Louisiana Engineering Society.

Mr. Larkin was a member of St. Anne's Catholic Church in Beaumont and a past president and director of the Petroleum Electric Power Assn.

Surviving are his wife, Mrs. Gladys Larkin of Beaumont; two sons, William M. Larkin, Jr. of Baton Rouge and Ricky Larkin of Beaumont; a daughter, Mrs. Charles W. Jones of Lake Charles, and three granddaughters.

Funeral services were held May 25 in St. Anne's Catholic Church in Beaumont and burial was in St. John's Cemetery in Thibodeaux, Louisiana.

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The Modern Navy

Nuclear And Conventionally Fueled

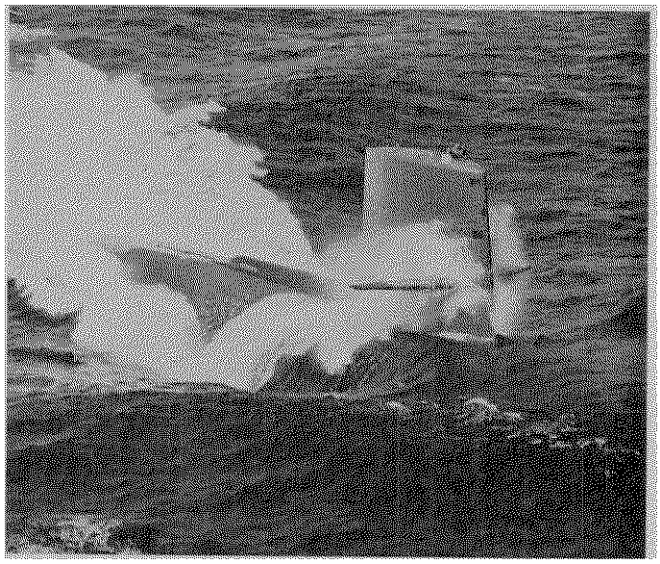
Historians, aided by Archaeological discoveries, have concluded that the first boats were built by the Egyptians for travel on the upper Nile. These boats were what we call dugouts, formed from logs, hollowed out, sharpened at each end and propelled by paddles. Excavations along the lower Nile have produced remnants of canoes built with bundles of plaited reeds. We can be farily certain that these boats are the ancestors of the modern ship.

One Chronological step from the Egyptian boat is the sailing vessel and once again Egypt is believed to have produced the first. A bas-relief of the Fourth Egyptian dynasty, 2600 B.C., depicts a type vessel of graceful hull form, curved fore and aft like the early Egyptian boat but much larger, and carrying a square sail, while retaining oars for its main method of propulsion. Vessels similar to this served as Merchant Ships and Fighting Ships for the Mediterranean world for several centuries. By the time of classical Greece and Rome, some ships existed that were propelled entirely by means of sails. These were generally merchant vessels. Large fighting ships retained power from oars in addition to sail power in order to maneuver favorably for ramming and boarding operations. The supremacy of the Roman navy continued until the fall of the Empire early in the sixth century A.D. when sea power moved northward. Without Rome's protection from piracy, ocean traffic was hazardous and for the next four centuries continued to decline.

With the coming of the renaissance and the increased interest in world exploration and navigation, there also came significant developments in naval architecture. During this period, the merchant vessel and the warship became distinct and separate. As cannon grew in importance and in weight, broader warships had to be built which required more and larger masts and greater sail area for propulsion. Nevertheless, the use of wood for keel, ribs, foreposts, sternpost and sheathing imposed limits on the size of merchant as well as naval ships and ways to offset these shortcomings were constantly being sought.

The first American crossing of the Atlantic with the help of steam took place in 1819. The American ship "Savannah", a sailing vessel fitted with steam engines and paddlewheels sailed from Savannah, Georgia to Liverpool, England in 27 days. Her wood-burning engines were operated for a total of only 80 hours. But by 1850, steamers were making the New York-Liverpool crossing in less than 11 days.

Fighting ships, also, were changing. The United States Navy was experimenting with steam vessels prior to 1830 and achieved some success with the Fulton II. In 1840 Commodore Perry put through his plan for a steam frigate which also carreid sails for emergencies. Named the Mississippi, she served as Perry's flagship in the Mexican War. She also went with Perry when he negotiated the first treaty between the United States and Japan, and afterwards made a global tour. The Mississippi was built of wood as were the other Navy ships built after her. Then, during the Civil war, an incident took place which decided forever the future of wooden fighting ships.



The USS SCULPIN SS(N)590 was the first nuclear-powered submarine built by the Ingalls shipbuilding Corporation, Division of Litton Industries, Pascagoula, Mississippi. She was commissioned June 1, 1961 and is presently based at San Diego, California as a unit of the U.S. Pacific Fleet, U.S. Navy.

One hundred years ago, on the morning of March 8, a strange-looking Confederate craft steamed toward the Union Fleet at Hampton Roads, Virginia. It was the Merrimac, possibly the first ironclad warship in history. Although originally a Union frigate, she had been left behind when the Union forces retreated from the Norfolk Navy Yard. She was rebuilt by the Confederate Navy who designed a sloping deck house covered with 4" thick iron plates. She carried ten guns, fired through ports protected by large iron closure plates. When the Union guns opened fire the cannon ball struck the Merrimac's iron plates and bounced off. Then the ironclad steamed straight for the Union ship Cumberland while taking one broadside after the other. She rammed the Cumberland and sank her with a broadside at close range. After attacking the Union Ship "Congress" and setting her on fire, the Merrimac steamed away to take on more coal and ammunition. The next day the Merrimac was met by the Monitor, an even stranger looking

From a technical paper delivered by Paul S. Stuart, Jr. at the July meeting of LES.

iron clad ship which had steamed all the way from New York to join the Union fleet. Her hull was practically all below the waterline. There were only two guns, but they were mounted in a single round turret protected by 8" armor, and could fire in any direction depending on the turret's rotation. The two ironclads fought for four hours, slamming into each other on five occasions. Since neither ship could inflict great damage on the other, the battle was indecisive and the Merrimac withdrew from the area, leaving the Monitor still in defense of the Union fleet. However, one thing was decided. Future Navy ships would never again be built of wood.

From about 1870 to 1890 steamships with double-expansion cylinders and triple-expansion cylinders dominated ocean travel. Each improvement reduced the consumption of coal and gradually did away with the need of sails, although some ships carried sails for emergency power. By 1900 practically all large ships were built of open hearth steel, driven by double to quardruple expansion steam engines turning screw propellers. Perhaps the greatest events in marine engineering were the application of the invention of Sir Charles A. Parson's high speed marine turbine and the George Westinghouse invention of a practical reduction gear, first successfully applied together for ship propulsion in the United States Navy in 1909.

The United States Navy has, over a long period of time, made a most commendable effort to increase the efficiency and economy of surface ship propulsion and has made noteworthy strides in this endeavor. However, it has become quite evident from recent events that Navy as well as Merchant Steamers will eventually be replaced by nuclear-powered ships. But the story of nuclear power rightfully belongs to the submarine since it was for this type of naval ship that nuclear propulsion was initially developed.

What, then, is the history of submarine development and why have operating characteristics been so vastly affected by changes in submarine propulsion systems?

Since the beginning of recorded history, man has attempted to conquer the water beneath the surface of the ocean. There is a legend that Alexander the Great, about the year 330 BC, explored the ocean floor in a water tight glass barrel. Centuries later, the illustrious Italian artist and engineer Leonardo da Vinci designed and perhaps built a tube shaped vessel for underwater exploration. It was not until 1624, however, that the first navigable submarine was constructed, by a Dutch inventor, Cornelius Van Drebel. His boat was propelled by six oars that extended through leather seals in a wooden hull made watertight by a skin of greased leather. The vessel utilized two pipes extending from inside the hull to above the surface of the water, one for the induction of fresh air, the other to exhaust foul air. This was in effect one of the earliest snorkel applications. Van Drebel built his first boat in 1620 and followed it with others, making improvements, but embodying the same principles of operation. It has been said that James I made a descent to about fifteen feet in the Thames River in one of Van Drebel's larger boats—after its safety had been demonstrated.

The next submarine was constructed by a Frenchman named Le Son in 1652. It was called the Rotterdam boat for the city in which it was built. Le Son's boat was constructed of wood and driven by a paddle wheel which was considered a slight improvement over oars.

In the middle of the eighteenth century, an Englishman named Symon put larger leather bags in another watertight rowboat, arranged the bags so that their necks passed through the hull. To submerge, Symon allowed the bags to fill partially with water, and then tied off each bag with string. These leather bags were the first successful ballast tanks. Forcing water from the leather bags brought the vessel to the surface again.

This nation's first president was indirectly responsible for the earliest submarine employing modern principles. During the American Revolution General Washington encouraged a Connecticut mathematician, David Bushnell, to design and build a vessel which could not only submerge, but which could also deliver an explosive charge to sink an enemy ship. Bushnell's underwater contraption contained many of the basic engineering principles of today's submarines. It was seven feet long and shaped like an egg floating upright in the water. It carried only one man who had to crank the propellers, adjust ballast and steer by looking through small portholes in the top. Water ballast was controlled by hand pumps. Named the Turtle, this diminutive craft made the first actual submarine attack. In 1776, a ship of the British fleet, H.M.S. Eagle was lying at anchor in New York Harbor and it was against this ship that Bushnell's Turtle advanced, propelled by a soldier, Sergeant Ezra Lee. By manipulating the hand pumps and cranking both propellers, Lee submerged beneath the keel of the warship and quietly began his work. By turning a crank in the top of his cramped quarters he tried to sink a screw into the Eagle's hull to secure a 150-pound charge of gunpowder. But the Turtle's screw was unable to penetrate the copper covered bottom of the warship. After another try in a different location, Sergeant Lee grasped the situation and moved away, releasing the charge with time fuse to float as near to the Eagle as possible. The charge exploded without result except that the warship immediately shifted berth to a safer area farther out to sea. Although the Turtle didn't sink its enemy it demonstrated that the submarine could, in the future, be useful as a military weapon.

Robert Fulton, who later became famous for his steamboats, built a submarine called the Nautilus in 1796. This craft had an all metal hull, a single propeller aft, and was armed with an underwater explosive. Although his submarine operated successfully, Fulton was given the brush off by France, England and also, unfortunately, by the United States. His ideas were too far in advance of the technology of the times.

The Civil War, which saw the classic battle between the first two iron clad surface ships, also witnessed the first successful use of a submarine in combat. In February of 1864, the Confederate Navy built a submarine based on the design of one previously constructed by Robert Fulton in 1801. Named the Hunley, after its designer, this vessel which was only 4 feet in diameter and about 40 feet long sank the Union corvette Housatonic by means of a torpedo attached to the Union ship's propeller. But the Hunley's victory was short lived—she sank with the Housatonic in Charleston Harbor, a victim of her own weapon.

In 1895, an American designer, John Holland, received

a contract from the Navy for a steam driven submarine to be called the Plunger. Due to specification and propulsion problems it became evident that the Plunger would be unsuccessful and it was therefore not completed. With private funds, Holland designed and built his fifth submarine which was accepted by the Navy in 1900. It proved itself in many trials and was assigned the hull number SS-1. It was named USS Holland after its designer. Unlike the steam driven Plunger, the Holland was propelled by a 50 HP gasoline engine and could make about 6 knots on the surface. It had an endurance of nearly 1500 miles. A 50 HP electric motor powered by a 60 cell electric storage battery with a capacity of 1500 ampere hours at the 4 hour discharge rate drove her submerged at a maximum speed of 5-1/2 knots. The Holland was 54 feet long, about 10 feet in diameter and carried a crew of seven. Her submerged displacement was only 75 tons.

Besides incorporating most of the principles of present day conventionally fueled submarines, the Holland also possessed many features optimizing submerged performance. These features included optimum length-to-beam ratio and streamlined superstructure. A large slow turning propeller mounted on the longtitudinal axis of the hull, further enhanced her propulsive efficiency. These features were re-discovered during the research and development leading to the design of the modern Albacore hull.

Diesel propulsion was a major factor in the success of submarines in World War I. By the spring of 1917, German U-Boats propelled on the surface by the diesel engine had emerged as a major factor in that conflict. Only by an all out effort by the U.S. and British fleets was the German submarine menace defeated. This effort was made none too soon since at the time of the Armistice the Germans had produced submarines 300 feet long and capable of 16 knots on the surface. These boats, as they were called, considerably influenced allied submarine design and development between World Wars.

The fleet submarine of World War II was designed to operate on the surface until enemy contact was made. Its performance on the surface took precedence over its submerged performance, and it was expected to have fairly decent seakeeping characteristics. While the fleet type could travel at 10 knots on the surface for almost 10,000 miles, its endurance was only about 48 hours at the slowest controllable speed submerged. This is a good example of operating characteristics being severely limited by a submarine's propulsion system.

In the post-World War II era, the United States produced the Guppy conversion for fleet type submarines. Guppy means greater underwater propulsive power and consisted mainly of installing larger capacity storage batteries together with a snorkel system to allow charging the battery while submerged, and streamlining the topside by enclosing the periscopes in a well faired metal housing. For almost ten years, Kuppy-type submarines with snorkel tubes were considered the most modern in the world.

The next event was even more revolutionary. Nuclear power was made available to propel United States submarines. With this power plant, an outside source of air, which had been so important, even to Guppy-types, was no longer required for the engines. At the same time the Navy devised methods to keep the air inside the submarine fresh so that outside air was not needed by crew or propulsion plant. The submarine Nautilus was the first ship to have nuclear power. Her propulsion plant utilized for the primary source of power a pressurized water reactor designed by Westinghouse in cooperation with the United States Atomic Energy Commission.

The reactor compartment of the Nautilus includes one reactor, and two primary coolant loops.

The reactor core of enriched uranium gives up heat to the primary coolant, water, which then is forced through the boiler heat exchanger tubes where it gives up heat to form steam on the shell or secondary side of the boiler. The primary coolant is then pumped back into the reactor where heat-up again takes place.

Water from the port and starboard loops mixes together in the reactor, but the rest of the plant is divided into identical units, ports and starboard. The primary coolant water is kept pressurized to insure that boiling will not take place in the reactor.

The secondary system is basically a conventional steam system. It is completely isolated from the primary system since the primary water goes through the tubes of the boiler while the secondary water is becoming steam on the shell side of the boiler.

Steam rises from the boiler to the steam drum where water carry-over is separated from the steam. The dry, saturated steam then flows back to the engine room where it drives main propulsion turbines, ship service turbo generator sets and other equipment as needed.

There is provision made for de-clutching the propulsion turbines and reduction gears from the propeller shafts so that the ship can be driven through the water by electric motors mounted integrally on the propeller shafts. The electric motors can receive power from the battery, from small diesel engines or from AC-DC motor generator sets.

The immediate success of the pressurized water reactor plant of the Nautilus gave impetus to the growing demand for additional nuclear submarines, with their many operational advantages associated with high sustained submerged speed.

While submarines such as Nautilus, Seawolf and the smaller ship Skate were testing nuclear plants with their long sleek hulls and twin-screw propulsion, the Navy was combining an Abacore hull design, with the pressurized water reactor. The Abacore was developed to demonstrate the improvements in submerged performance that can be obtained with a single propeller mounted on the axis of a body-of-revolution hull form, designed to optimize submerged capabilities of speed and maneuverability. The marriage of this hull form, with the Nautilus type power plant, resulted in the offspring we know as the Skipjack Class. A beautiful type of ship, she possesses great power and outstanding performance submerged.

All nuclear submarines presently under construction including Polaris missile submarines, are based on the Skipjack design and all share her remarkable heritage.

The advantages of nuclear power to submarines are now quite clear. Anything that a conventionally powered submarine could do, a nuclear submarine now does better, quicker and longer.

$222,622,766 Contract Signed

Michoud Starts Employment Countdown

Chrysler Corporation and the National Aeronautics and Space Administration recently signed agreements for the construction of 21 S-1 stage boosters of the Saturn C-1 missile totalling $222,622,766. Most of the work will be done at Michoud.

One contract for $215,520,444 is for the 21 boosters and the other is $7,102,322 for equipment with which to carry out the primary contract.

Construction of the booster rockets will take place until Sept. 21, 1966.

The White House said delivery on the first of the boosters will take place during the first quarter of 1964 and the final booster will be turned over to NASA in the final quarter of 1966.

The White House said facets of these contracts will be accomplished at the Chrysler Corporation plant in Detroit and another phase will be in Cape Canaveral, Fla., but the bulk of the work will be at Michoud.

Some of the work will also be done at the NASA computing center in Slidell.

NASA said Chrysler now has 592 employes at Michoud. By mid-1963 there will be 2700.

The announcement of the contract signing was made jointly by the White House and Sens. Allen J. Ellender and Russell B. Long and by Congressmen F. Edward Hebert and Hale Boggs.

More than 54 per cent of the NASA-contractor personnel currently employed at the Marshall Space Flight Center's Michoud Operations here have been hired from the New Orleans area according to an announcement from the NASA Michoud Operations.

A total of 1,239 technical, administrative and related support personnel are now working at the Saturn-manufacturing facility. Of this number, 672 are from the surrounding community. Not included in these figures are 34 temporary architect-engineering personnel of the Vector Corporation, of which 28 are from New Orleans area.

The following is a breakdown, by organization, of personnel employed at the Michoud facility:

NASA Michoud Operations—presently employed, 57; technical, 40; administrative, 17; local, 16.

Chrysler Corporations' Space Division (Saturn S-1 stage contractor)—presently employed, 592; technical, 217; administrative, 375; local, 236.

The Boeing Company, Saturn Branch, Aero-Space Division (Saturn S-1C stage contractor)—presently employed, 226; technical, 79; administrative, 147; local, 78.

Mason-Rust (support services contractor)—presently employed, 364; technical, 22; administrative, 111; guard, transportation and custodial, 231; local, 342.

A peak employment of some 7,000 technical and non-technical personnel is expected to be reached at Michoud by July 1, 1963. Based on present planning, NASA will employ about 150, Chrysler 2,700, Boeing 3,600, and Mason-Rust 590.

In addition to the hiring of as many qualified local personnel as possible, a policy has been established by Michoud Operations Manager Dr. George N. Constan for the procurement of property and services within the New Orleans-Gulf States area.

Instrumentation conference set

The Eleventh Annual Instrumentation Conference will be held on the campus of the Louisiana Polytechnic Institute November 1-2, according to Claud J. Irby, assistant publicity chairman for the conference.

In announcing the conference, Irby presented the following tentative program:

1. "Automation at Little Gypsy" by Mr. Lee Maurin of Louisiana Power and Light Company.
2. "Instrumentation in Continuous Digester Operation" by Mr. Tom Adams, Instrument Engineer for Continental Can Company of Augusta, Georgia.
3. "Primary Flow Measuring Devices" by Mr. C. B. Sprague of Columbian Carbon Company at Monroe, Louisiana.
4. Forum—"Applications and/or Service of Controls" by manufacturer's servicemen specializing in each of the following types of controls: pneumatic, electric, electronic, and self-contained. Panel moderator is to be Mr. Grady Carroll, Instrument Consultant.
5. "Continuous Stream Analyzers" by Mr. Steve Goldenberg, District Field Engineer for Consolidated Electrodynamics Corporation of Houston, Texas.
6. "Control Valves" (new innovations, sizing, etc.) by Mr. Roy Kelly of the Leslie Company.

To supplement this interesting program, a large number of exhibits of new equipment in instrumentation and process control will be displayed, Irby said. The final program and other general information will be supplied early in October.

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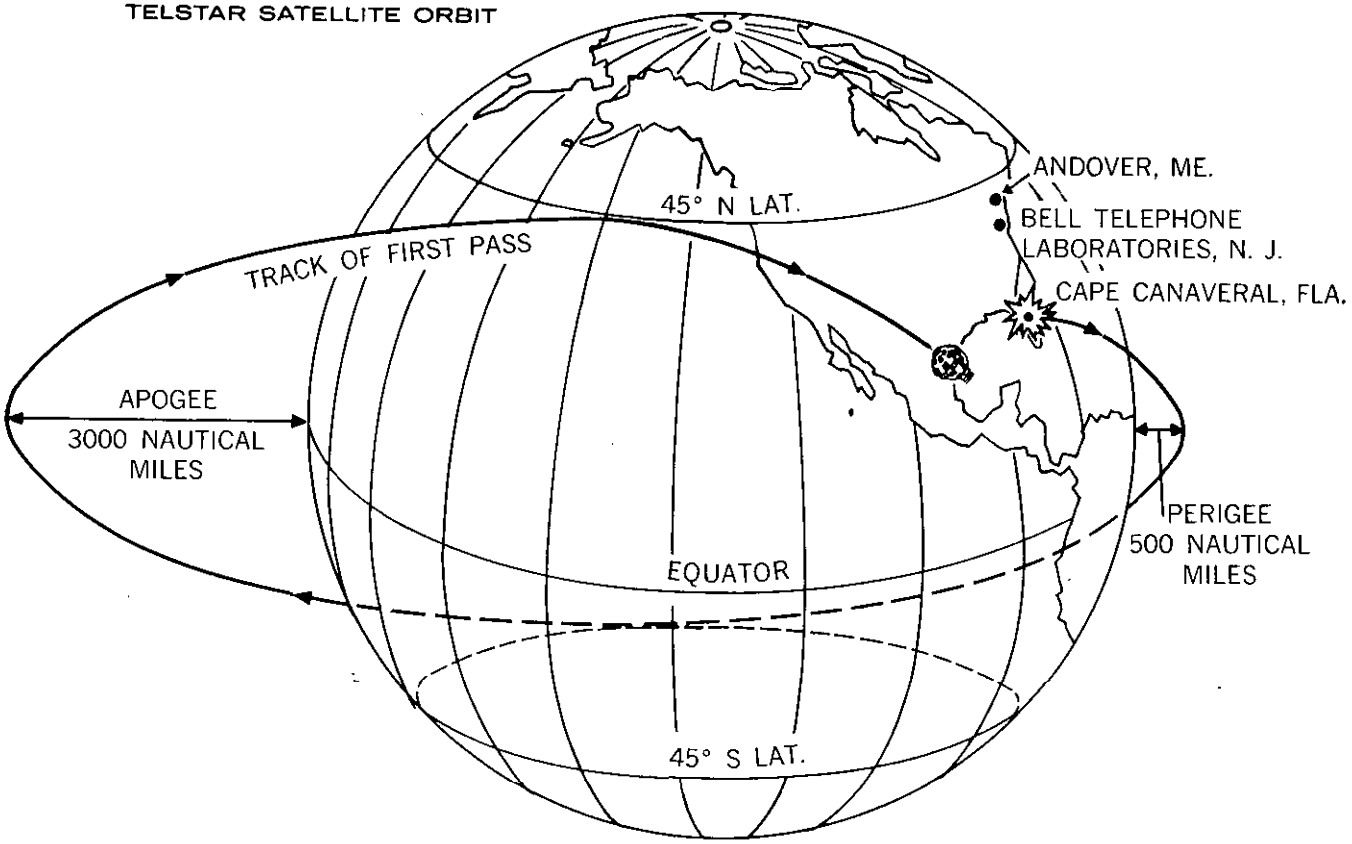

Diagram showing Telstar satellite's approximate course during first orbit of the earth.

Early theoretical suggestions had been made that artificial "moonlets" be used for world-wide communications, but it remained for Bell Telephone Laboratories scientist Dr. John R. Pierce—who also writes science fiction under the pen name of J. J. Coupling—to make the first concrete proposals that space satellites be used for overseas communications. This was in 1954—three years before Russia's Sputnik I was orbited.

In a technical paper published the following year, Dr. Pierce analyzed two methods for communicating via satellites: by reflecting signals off mirror-like "passive" satellites or by transmitting to "active" satellites which would catch and amplify the signals before retransmitting them back to earth.

Echo I, the National Aeronautics and Space Administration's ten-story-high reflecting balloon satellite, successfully orbited in August 1960, proved the wisdom of Dr. Pierce's ideas. Voices and still photographs were "bounced" off Echo I in expriments in which Bell Labs and its specially conceived horn antenna at Holmdel, N. J. were major participants.

Now the Bell System has taken another communications step forward by experimenting with its own "active" satellite—Telstar.

Under a cooperative agreement with the Bell System, the Cape Canaveral launching is by NASA.

The United States had only 550 transoceanic telephone circuits with which to handle the more than 4.3 million overseas calls made in 1961. This includes a 15 per cent call increase in that year—a continuation of the ever-increasing demand. Even with the laying of a fourth undersea cable to Europe in 1963 as well as one across the Pacific the following year and one to South America, the demand promises to mount.

Overeas circuits via both cables and high frequency radio are subject to a variety of ills which limit their reliability: cables are difficult to maintain and costly to build while radio is subject to interruption and even complete blocking by high energy particles from sun spots. Bell Labs research by some 400 scientists, engineers and technicians has led to the development of the Telstar satellite and its associated microwave experiments. More circuits of three types instead of only two, with increased flexibility and even greater overseas service reliability, are among the benefits anticipated from an operating communications satellite system following the Telstar and other experiments.

Numerous models of the 34½-inch-diameter Telstar satellite as well as the four "fly" models and all components and subassemblies were put through an infinite variety of exacting tests. Records were kept on each item's performance. Construction and testing of all "fly" models was done under hospital-like, dust-free conditions.

Balancing, vibration, magnetic drag, and electrical

transmission tests of the fully assembled models were done at Bell Labs' Hillside, N. J. laboratory where they were built. Additional transmission tests were made at the Murray Hill, N. J. lab. Next, they were sealed in special, pressurized, shock-absorbing cases and transported in an air-conditioned truck to the Whippany, N. J. lab for several days of testing on a centrifuge and in a chamber specially designed to simulate the thermal-vacuum conditions to be encountered in space. Throughout this rigorous program innumerable refinements were made so as to ensure Telstar—insofar as was humanly possible—of a long period of faultless performance in space.

Still more tests—of solar cells, antenna, transmission and telemetry—were made when the satellite arrived at Cape Canaveral. Some continued even after the satellite was mounted atop its Delta launch vehicle.

Complex as it may seem, the Telstar satellite has been kept relatively uncomplicated by the fact that the greatest portion of the work in the Telstar experiments is done on the ground. The basic plan is to "shoot" a powerful continuous signal (2,000 watts and 25 megacycle bandwidth) up to the satellite in space and have an extremely sensitive ground receiver to pick up the comparatively weak signals coming back to earth.

To accomplish this, Bell Labs' engineers designed a 177-foot-long by 94-foot-high horn antenna that is an engineering accomplishment of astonishing proportions. Although the horn weighs 380 tons, the 70-foot-diameter wheel on which it rotates is accurate to within 1/32nd of an inch. It transmits microwave signals to Telstar, continuously tracks the satellite to accuracies of better than 1/50th of a degree, and scoops up returning signals of about a billionth of a watt.

The Telstar story from this point on deals with the building of this unique structure and other portions of the Bell System's "way out" satellite communications ground station — Space Hill — in the wilds of western Maine.

With the coming of Spring 1962, there came the herculean task of replacing the temporary radome which covered the giant horn with a permanent one. Both structures, the largest inflated shelters ever built, are about 210 feet in diameter and 160 feet high. The permanent radome, made of 1/16th-inch-thick Dacron and synthetic rubber, weighs 20 tons and—if laid out flat—would cover three acres. What made the change so enormously difficult was that the temporary radome had to be kept essentially in place while the permanent one was pulled up over it.

A few hundred feet from the radome stands the control building from which Bell System engineers carry out the various Telstar experiments. Inside the one-third acre, single story building is a maze of intricate equipment. The seven-position master control console is flanked by tracking equipment and computers. Television monitors for observing and comparing TV signals are built into several console positions. Others are hung at an angle overhead.

As action center for the Telstar experiments, the control building's equipment and personnel track the satellite, send it commands, monitor its 115 experiments, control the horn antenna's movements, and relay the data received to the Murray Hill, N. J. laboratory for evaluation and study by scientists and computers.

The principal purpose of Project Telstar is to test the actual use and reliability of active satellites for the transmission of broadband microwave radio signals. If, as anticipated, the experiments are successful a basic hurdle will have been surmounted enroute to a world-wide commercial satellite system. Live overseas telecasts —of the Olympics, the Bolshoi Ballet, the pageantry of a king's coronation—as well as unlimited circuits for ocean-spanning business and personal telephone calls are among the promises of the future.

Michoud Future Foretold

Lloyd F. Gaubert, president and founder of L. F. Gaubert & Company, said that "Michoud will do for New Orleans what the oil industry did for Houston."

Speaking at the recent dedication of a new three-story office and warehouse in New Orleans, Gaubert said that the Michoud complex should begin operations in the near future.

Gaubert's new facility, designed by Rock & Galloway, architects, will offer an additional 40,000 square feet of warehouse space and 10,000 square feet of office facilities. It will have 43,600 square feet of warehouse storage, 60,000 square feet of sheltered out-of-the-weather storage, and 10,000 square feet of outdoor storage to accommodate its large inventory of marine and industrial cable and equipment. The firm, which began with Mr. Gaubert as the sole employe, today employs 23.

The company is now in a new phase of operation, the fabrication of electrical harness and similar equipment for the space vehicle industry. They will construct a new plant for this fabrication on a 14 acre site, along with other buildings and facilities in an industrial complex across from the Michoud plant. This industrial complex is to be used by the general contractors and sub-contractors operating at the NASA Michoud plant.

Gaubert, a member of the Louisiana Engineering Society, founded his firm in 1947. Today it is the largest distributer of shipboard and industrial cables in the South and one of the largest in the country. The company has also expanded to offer a ready supply for the needs of the oil, chemical, and pipeline industries, and many other production industries.

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NSPE Membership Up 8% In La.

A membership status report recently received from the National Society of Professional Engineers reveals that as of June 30, 1962 there were 58,795 members in this society. This represents a growth of 2,971 or 5% over the total of 55,824 for June 30, 1961.

It is interesting to note that N.S.P.E. members in Louisiana increased from 385 to 416 or 8%. It is good to know that our state's rate of N.S.P.E. growth is better than that of the national rate. This appears to indicate that more and more Louisiana engineers are recognizing the benefits to themselves and to the profession of belonging to the national professional engineering organization even though most of them also belong to a technological engineering society.

If you are not an N.S.P.E. member, it is suggested that you give serious consideration to applying for membership. Contact the Secretary for further information.

Details Requirements For Registration

REQUIREMENTS FOR REGISTRATION
GRADUATION PLUS EXPERIENCE
(Effective September 1, 1962)

BE IT RESOLVED that in order to more adequately safeguard life, health and property, and to place the requirements for registration as a Professional Engineer in the State of Louisiana more nearly in accordance with the requirements of all the other states, the Louisiana State Board of Registration for Professional Engineers and Land Surveyors by virtue of the authority inherent in Act 73 of 1950 of the Louisiana Legislature does hereby authorize and direct that effective September 1, 1962, applicants for registration as Professional Engineers under Section 12 (1) a. **Graduation plus Experience**, shall comply with the following requirements:

1. That graduates of approved engineering curricula applying for registration without written examination must, subsequent to graduation, have a specific record of an additional six years or more of experience in engineering work of a grade and character satisfactory to the Board and which indicates that the applicant is competent to practice professional engineering.
2. That graduates of approved engineering curricula with less than six years of experience in engineering work of a grade and character satisfactory to the Board shall be required to pass a written examination on basic engineering subjects. The examination will be given by this Board, or must be approved by this Board if given by the Board of Examiners of another state. The written examination shall be given preferably at a time approximating graduation, but in any event must be taken at a time designated by the Board and prior to registration. In addition to passing the written examination, the applicant shall have a specific record of experience in engineering work of a character satisfactory to the Board as follows:
   (a) For applications received between September 1, 1962 and September 1, 1963, one year of experience in engineering work of a character satisfactory to the Board will be required.
   (b) For applications received between September 1, 1963 and September 1, 1964, two years of experience in engineering work of a character satisfactory to the Board will be required.
   (c) For applications received between September 1, 1964 and September 1, 1965, three years of experience in engineering work of a character satisfactory to the Board will be required.
   (d) For applications received subsequent to September 1, 1965, four years of experience in engineering work of a character satisfactory to the Board will be required.
3. The experience required above may be acquired either prior to or subsequent to receipt of application by the Board.

BE IT FURTHER RESOLVED that upon passing the written examination in basic engineering subjects, the applicant will be presented with a Certificate stating that he has been certified and enrolled as an Engineer-in-Training. The credit for passing the written examination in basic engineering subjects as partial fulfillment of the requirements for registration shall be exercised within a period of ten years from the date of the examination.

BE IT FURTHER RESOLVED that the fee for taking the Engineer-in-Training Examination on or after September 1, 1962, shall be $15.00. When application is subsequently made for registration as a Professional Engineer, an additional fee of $10 shall accompany the application. In cases where the Engineer-in-Training Examination is taken in another state, the usual fee of $25.00 will be charged to the applicant for registration as a Professional Engineer.

—o—

Following two years of strife, controversy, and a previously nullified election, professional engineering employees at the Sperry Gyroscope Company voted "no union" in a representation election held May 28. The vote was 1669 to 1069.

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Annual Outing Slated For September 19th

The Annual Outing of the Louisiana Engineering Society will be held Wed., Sept. 19 at the Lakewood Country Club, Russell Hall, Chairman of the Outing Committee, announced recently.

The Outing will feature the usual golf and horseshoe tournaments, Hall said.

Hall said that the Lakewood Country Club offers "excellent facilities" for this year's outing.

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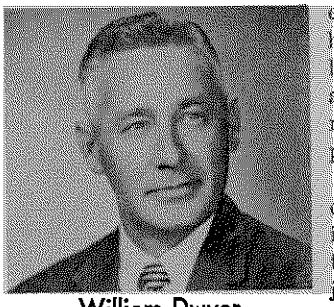
Dwyer Joins American Creosote

American Creosote Works, Inc., of New Orleans, announces that effective July 1, 1962, William W. Dwyer has joined the firm as Research and Quality Control engineer. Dwyer will have his headquarters in New Orleans, and will coordinate and supervise the company's research and quality control program.



William Dwyer

Dwyer was born in Meridian, Miss. and was educated in that state. Upon completion of his education, he joined the Mississippi Treating Laboratory as Trainee Inspector, and continued with this firm until 1941 when he accepted a position with the Corps of Engineers, U. S. Army. He remained with the Corps of Engineers, as Inspector of General Construction and Construction Supervisor, until entering military service in 1944.

Calendar Of Events

September 4—Tentatively scheduled meeting for the Shreveport Section at the Petroleum Club in Shreveport (the Shreveport Section will not hold meetings during the summer months of June, July and August).

September 13-14—Tenth Annual Engineering Management Conference, Roosevelt Hotel, New Orleans.

September 19—Annual outing, Lakewood Country Club, New Orleans.

September 23-28—Eighth Annual National Convention of Prestressed Concrete Institute, New Orleans.

October 2—Mr. B. V. Diercks of Thiokol Chemical Corp. will speak on "Rocketry" at the regularly scheduled meeting of the Monroe Section.

October 8, November 12, December 10—Joint meeting with A.S.C.E. and A.I.E.E. are under consideration.

November 1-2—Eleventh Annual Instrumentation Conference to be held on Louisiana Polytechnic Institute campus.

January 10, 1963—Annual meeting.

Week of February 22—Engineering Week.

March 11—Joint meeting with A.S.M.E.

April 8—Annual Youth Program.

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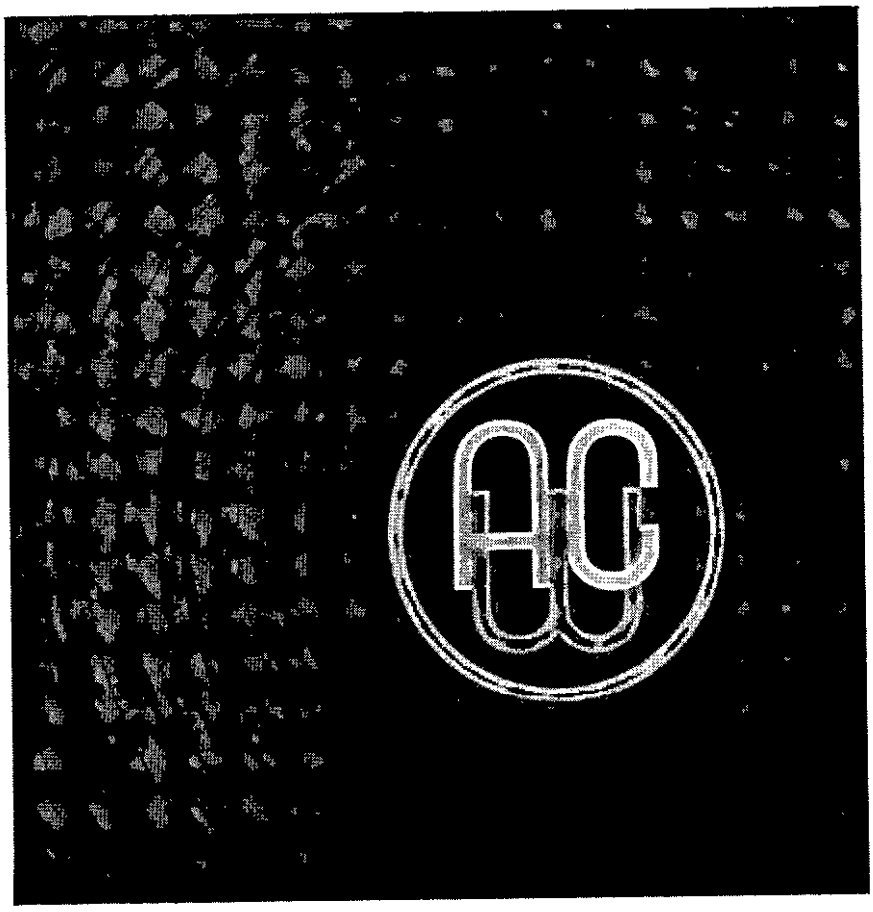

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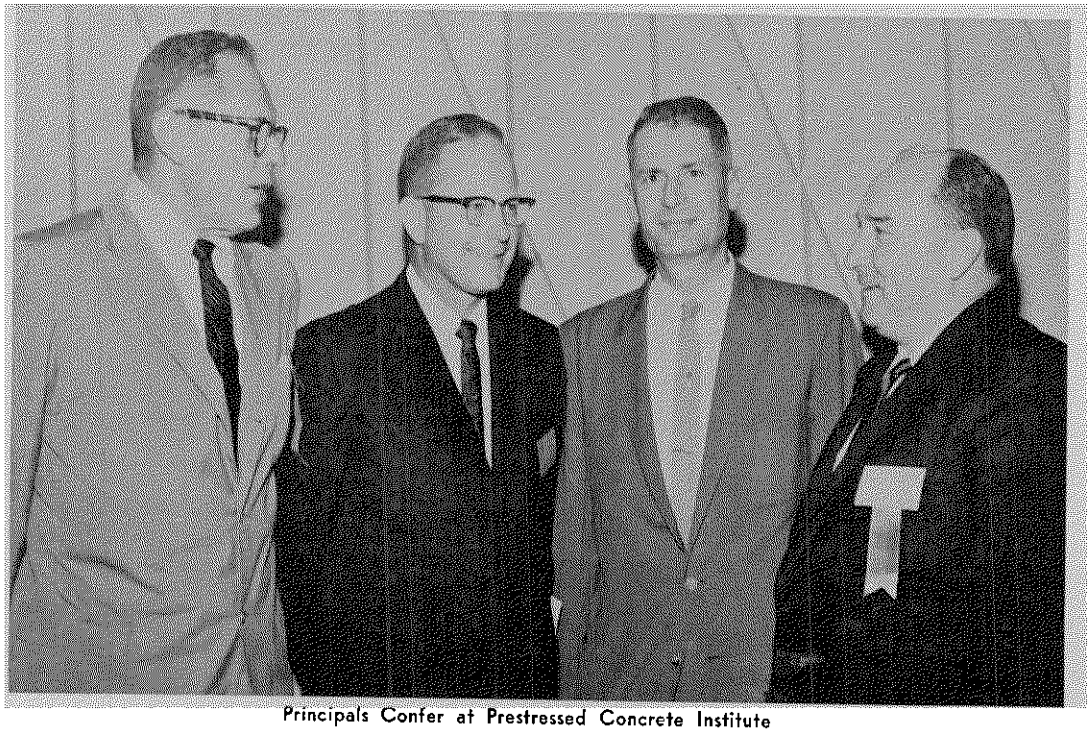
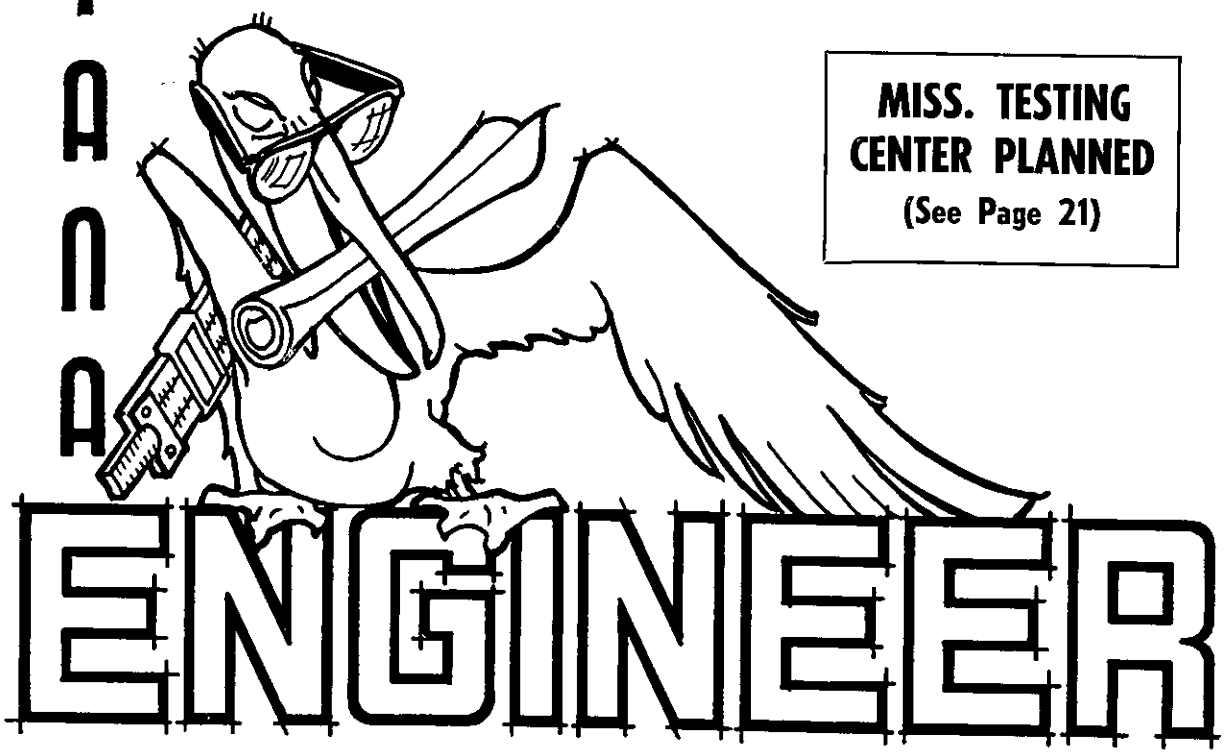


Principals Confer at Prestressed Concrete Institute



MISS. TESTING CENTER PLANNED

(See Page 21)

Vol. 48 No. 5
October, 1962

LOUISIANA ENGINEERING SOCIETY 1898

LOUISIANA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

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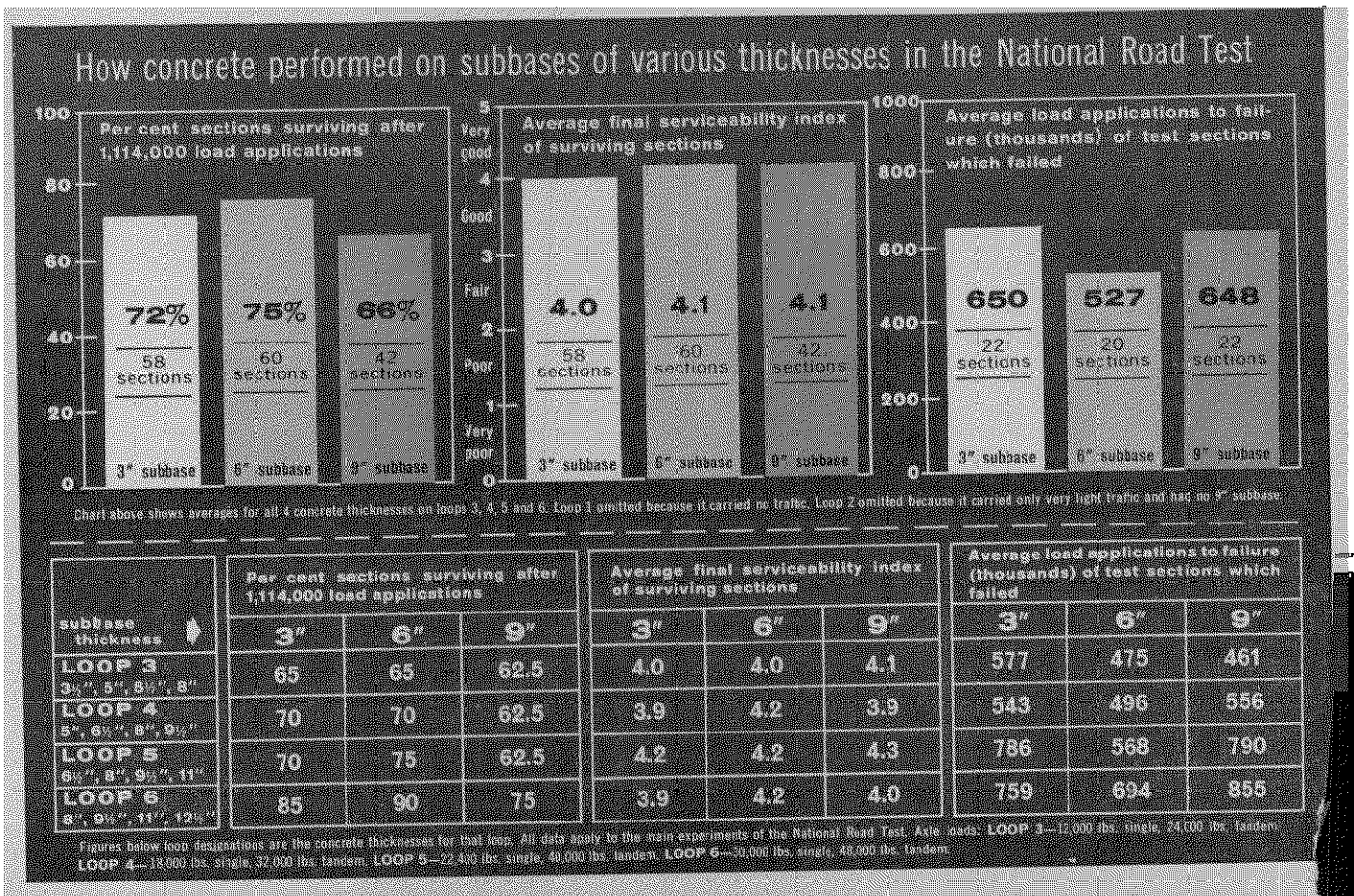
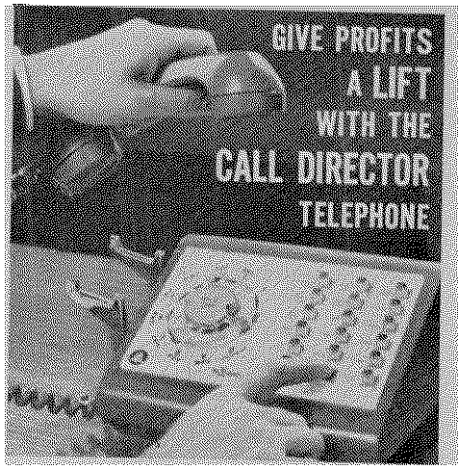


subbase thickness	Per cent sections surviving after 1,114,000 load applications			Average final serviceability index of surviving sections			Average load applications to failure (thousands) of test sections which failed		
	3″	6″	9″	3″	6″	9″	3″	6″	9″
LOOP 3 3½″, 5″, 6½″, 8″	65	65	62.5	4.0	4.0	4.1	577	475	461
LOOP 4 5″, 6½″, 8″, 9½″	70	70	62.5	3.9	4.2	3.9	543	496	556
LOOP 5 6½″, 8″, 9½″, 11″	70	75	62.5	4.2	4.2	4.3	786	568	790
LOOP 6 8″, 9½″, 11″, 12½″	85	90	75	3.9	4.2	4.0	759	694	855

Figures below loop designations are the concrete thicknesses for that loop. All data apply to the main experiments of the National Road Test. Axle loads: LOOP 3—12,000 lbs. single, 24,000 lbs. tandem. LOOP 4—18,000 lbs. single, 32,000 lbs. tandem. LOOP 5—22,400 lbs. single, 40,000 lbs. tandem. LOOP 6—30,000 lbs. single, 48,000 lbs. tandem.



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THE LOUISIANA ENGINEER

Vol. 48 OCTOBER, 1962 No. 5

OUR COVER

At a meeting of the Prestressed Concrete Institute held in New Orleans Sept. 25 Richardson L. Belden (left), president of Belden Concrete Products, Inc. and chairman of a luncheon session confers with (from left) Walter E. Blessey, chairman of a morning session, Richard F. Gompertz, who spoke on Michoud at a luncheon session, and R. J. Lyman, chairman of the conference. For Gompertz's explanation of the Michoud role see page 19.

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Minutes Of The Board, LES

LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, July 9, 1962

The meeting was called to order by President Janssen with Messrs. Bogard, Knight, Lockett, Macdonald, McNamara and Fernandez present. Messrs. Allen Johnson, Public Relations Counsel, and M. J. Marchese, Assistant to the Secretary-Treasurer also were present by invitation.

Mr. Lockett moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Knight and carried. The secretary then read minutes of the June meeting of the Louisiana Board of Registration for Professional Engineers and Land Surveyors. Mr. Macdonald moved that the State Board's resolution honoring the late Professor Donald Derickson be printed in THE LOUISIANA ENGINEER together with the Louisiana Engineering Society's memorial. Motion was seconded by Mr. McNamara and carried.

President Janssen reported on the canvass of board members to secure nominees for the vacancy on the State Board of Registration caused by the death of Dr. Derickson. His prepared letter presenting the nominees to Governor Davis was approved by all those present.

President Janssen outlined actions of the Louisiana Legislature with reference to bills affecting the engineering profession. Discussion followed as to how the LES can be more effective while the Legislature is in session. President Jenssen then appointed a committee consisting of Messrs. H. L. Landry and W. S. Nelson to prepare recommendations for future action by the LES.

The secretary presented a semi-annual Financial Report which was accepted. Mr. Lockett moved that the $2000 recently received from matured government bonds be reinvested in stock of the Greater New Orleans Homestead Association. Motion was seconded by Mr. McNamara and carried.

Dr. Macdonald, National Director, reported on the Regional Meeting of NSPE held in June at French Lick, Indiana.

The secretary reported that 479 ballots had been cast in the June membership election and that all applicants had been elected to their respective grades.

Mr. McNamara moved that Mr. Henry Chambers be transferred from Student to Junior grade and that Mr. Gerald E. Mitchell be transferred from Affiliate to full Member grade. Motion seconded by Mr. Knight and carried.

Mr. Knight reported that the Ethics & Professional Conduct Committee had been unable to determine, except by hearsay, that Section 21 of the Code of Ethics had been violated in the Baker Swimming Pool case. He therefore moved that no further action be taken, seconded by Mr. Bogard and carried.

Mr. Knight then reported on the illegal listing of a firm in the telephone directory and other publications. Mr. Macdonald advised that the State Board of Registration already had taken adequate action on this case, whereupon Mr. Knight moved that, in view of the State Board's action, his committee's report be received and no further action taken. Motion seconded by Mr. McNamara and carried.

Mr. Knight read his committee's report on its meeting held at the State Planning Conference on March 20, after which the Board concurred and reaffirmed that:

1. The Ethics & Professional Conduct Committee shall consist of two members from each section, to be appointed for two-year terms and the terms staggered. Appointees shall not be from the same branch of engineering.
2. The Ethics & Professional Conduct Committee is an arm of the Board of Direction. It is not a police group, nor is it empowered with any disciplinary authority. Its primary function shall be to investigate, assemble facts and make recommendations to the Board of Direction, and it shall not take direction from other than the Board of Direction.

The secretary read a note from the Nelson family thanking the society for its floral offering.

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

Herbert C. Albert	(Jr.)	New Orleans
Robert Guizerix	(Jr.)	New Orleans
Richard F. Messina	(Mbr.)	Metairie
E. F. Pollard	(Mbr.)	New Orleans

The secretary reported the deaths of Messrs. T. Baker Smith of Houma and Roger E. Chesnut of Bay St. Louis, which were noted with regret.

Correspondence between Mr. Knight and R. I. McDonald concerning the professional practice of engineering was read, after which the secretary was instructed to forward the correspondence to the State Board of Registration and suggest that an article be prepared for publication in THE LOUISIANA ENGINEER giving an official interpretation.

Upon motion by Mr. McNamara, seconded by Mr. Knight, the following were reinstated to the grade of Member:

A. J. Perrault	Baton Rouge
C. P. Perrault	Baton Rouge

The Auditor's Report for 1961 was presented and accepted with the request that it be published in THE LOUISIANA ENGINEER.

Mr. Mike Cade, Membership Chairman, who arrived while the meeting was in progress, presented the NSPE Introductory Membership Plan. After discussion Mr. McNamara moved that newly registered engineers residing in Louisiana be invited to join the society and that their dues be waived for the remainder of the year. Motion seconded by Mr. Knight that their dues be waived for the remainder of the year. Motion seconded by Mr. Knight and carried. The meeting then adjourned.

LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction held at the Engineers' Club, New Orleans, Monday, August 13, 1962

The meeting was called to order by President Janssen with Messrs. Carville, Domingue, Lockett, Macdonald, McNamara, Stokes, Watts and Fernandez present. Mr. Allen Johnson, Public Relations Counsel, also was in attendance. Mr. Lockett moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Stokes and carried. The secretary then read minutes of a meeting of the State Board of Registration held on July 10.

President Janssen announced that Messrs. Charles R. Monteiro, Chairman, J. Bres Eustis and John S. Gentilich had accepted appointment to a special committee to study datum planes in the New Orleans area. The committee will work with representatives of the Louisiana Section ASCE, the U. S. Corps of Engineers, N. O. Dock Board, and other interested agencies.

The President also announced that Past President Roy T. Sessums had been appointed by Governor Davis to fill the vacancy on the Louisiana State Board of Registration for Professional Engineers and Land Surveyors caused by the death of Dr. Donald Derickson.

President Janssen reported on his trip to North Louisiana, where he visited the Monroe Section and Louisiana Polytechnic Institute.

Mr. Allen Johnson presented a report on public relations, which was accepted as read. It was announced that the society's Annual Outing would be held at the Lakewood Country Club on September 19.

Discussion followed on the proposed Section Officers Conference to be held in Lake Charles. The secretary was instructed to contact the section presidents to determine a convenient date and probable attendance at the conference.

Dr. Macdonald moved that Mr. Roy T. Sessums be recommended to the NSPE Nominating Committee for Southwest Regional Vice President. Motion seconded by Mr. Domingue and carried. On motion by Mr. McNamara seconded by Mr. Watts, the secretary was instructed to submit Dr. Macdonald's name for membership on the new NSPE Nominating Committee.

Correspondence with NSPE concerning their Public Relations Program was read. This new part of the program provides for the mailing of material describing NSPE activities to key personnel who employ engineers. President Janssen stated that he would submit a list of key personnel in the New Orleans area to NSPE headquarters and would request all section presidents to do likewise.

The secretary was instructed to advise the United Fund Speakers' Committee that five minutes would be allowed in the society's October meeting program for their representative to address the audience.

The secretary read correspondence between Mr. J. T. Montgomery, Functional Section Chairman and Mr. Leigh E. St. John, Chairman, TaskForce-Planners, NSPE Functional Section for Engineers in Private Practice, on the subject of city "planners" and the requirement of holding membership in the American Institute of Planners. Mr. Domingue advised that a special committee has almost completed the drafting of by-laws for the LES Functional Section for Engineers in Private Practice.

The secretary announced that he would probably miss the October meeting of the Board and that at this meeting the Nominating Committee for 1963 and the Medal Award recipients should be selected. The secretary was instructed to urge section presidents to submit nominees for the Medal Awards and for the Certificate of Appreciation.

The secretary also was instructed to advise board members that there would be no meeting of the Board of Direction held in September, after which the meeting adjourned

JOHN P. FERNANDEZ
Secretary-Treasurer

Instrument Show Set For Nov. 13-14

W. T. Macatee, president of the New Orleans Section of the Instrument Society of America announced that the New Orleans and Baton Rouge Sections will again combine forces to sponsor their fifth annual Instrument Show on November 13 and 14, 1962. John Thompson of Oil & Gas Specialties Company is chairman of the show committee with Ed A. Lafaye of Eggelhof Engineers, Inc. as his assistant. The show will return to greatly expanded quarters in the Hilton Inn in Kenner, La., opposite New Orleans International Airport.

Forty exhibitors are expected to show their new products to industrial personnel of the Gulf Coast area. Special efforts are being made to exhibit products of interest to the technical personnel of the new Michoud Space Facility. There is no charge for admission and everyone with an interest in instrumentation is invited to attend. Show hours will be from 10 A. M. to 9 P. M. on both days.

De Gruy, NOPSI Recognized

Recognition has come to Wallace de Gruy, New Orleans Public Service Electrical Engineering, and to Public Service for work which has been done in the Junior Engineering Technical Society (JETS).

For working with and developing a JETS chapter at Jesuit High School in New Orleans, Wally received the Society's Green Founder's Plaque as an "outstanding consulting engineer." NOPSI Vice-President & Chief Engineer Lional J. Cucullu presented the award to Wally at an Engineering Department meeting on September 20.

Public Service was similarly honored, receiving a Blue Founder's Plaque from the Society as an "outstanding company sponsor." JETS Lamp of Knowledge award was also presented to Jesuit High School.

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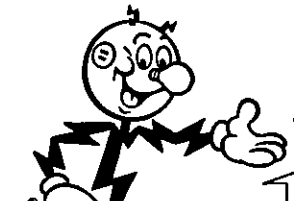
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LA. TWIN BRIDGES FEATURES LARGEST PRECAST ROADWAY SLAB

The largest precast roadway slab sections ever used in bridge construction are being fitted together to span Lake Pontchartrain. The twin bridges, part of Interstate 10 which cuts due west from New Orleans across the State and Texas, is expected to be completed in June, 1963. Construction was begun in August, 1960 and estimated completion date was October, 1963, so the contractor is ahead of schedule.

Brown & Root, Inc. of Houston has the $16 million contract to construct the pair of 5.5 mile long, three-lane bridges between New Orleans and Slidell.

Piles for the bridge are pre-stressed concrete cylinders, 54 inches in diameter with five inch think walls. These piles, driven 70 to 80 feet into the lake bottom mud, support 65 feet long precast concrete deck sections. These deck sections weigh 250 tons each. This is a 40 percent increase in weight over the previous record for this type of bridge deck.

Precasting for the bridge, including the deck sections, the piles and pile caps, is done in the Mandeville yard of Pre-stressed Concrete Products Co. They are barged the 20 odd miles to the construction site.

After the huge deck sections are floated to the construction site, a barge mounted A-frame derrick lifts them into position. The erection crews are placing six deck units on each of two days per week; the other three days are devoted to pile driving and setting pile caps.

A 150 foot wide navigation span is provided with an elevation of 65 feet, which will allow for the passage of any boat used on the lake. This span is crossed with 200 foot long steel girders, over which the deck is poured in place. The 200 foot center span is flanked by 100 foot long approach spans, also carried on girders and poured in place rather than using the 54 foot precast spans.

Pre-stressed Concrete Company also made the spans for the Pontchartrain Causeway. This bridge was constructed in the same manner, except that the spans were smaller. Also, a similar bridge across the bay in Pensacola, Florida, using 60-foot pre-stressed spans, was recently completed by the company.

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Annual Outing - Field Notes
By Allen Johnson

The 32nd Annual Outing of the Louisiana Engineering Society was a rousing success, with a grand turnout of 251 for the banquet at the swank Lakewood Country Club on the West Bank. Outing chairman Russell Hall preserved his usual calm through the usual banquet heckling and wound up beaming over the crowd . . . Banquet speaker George Nusloch repeated some old favorites, told some new tales to an appreciative audience. The entire outing committee is to be congratulated for their many hours of work in preparation for the event, and the capable manner in which they conducted the proceedings. A list of awards, donors and winners appears elsewhere in this issue.

The New Orleans Times-Picayune dedicated several news columns and a lengthy editorial to the work of the LES vocational guidance committee with respect to encouraging students to adopt engineering as their chosen field. Sitting in on the interviews were LES president James Janssen, committee chairman DeWitt Morris and Tulane assistant Dean John L. Martinez.

A revival of industrial interest in the Baton Rouge-New Orleans river stretch seems certain following the announcement of a $20 million adiponitrile plant by DuPont. After several years of relative inactivity, it is hoped that others will be attracted to establish plants on the Mississippi. Construction was due to start in October, with engineering work handled by the company.

Announcement of a $219,000-plus contract to modify and construct docks at Michoud, site of the Saturn Rocket plant, was made by NASA. Winner was The Ross Corp., whose manager, Col. J. U. Allen, served 28 years in the U. S. Corps of Engineers, terminating his service as U. S. District Engineer in Washington, D. C. He has applied for LES membership.

Fourney Fuller back from California, off to New York in what appears to be a jet-propelled consulting venture . . . Frank Walk back from an ASME (Petroleum Division) meeting in Dallas with word of expanding interest in new plant development for Louisiana.

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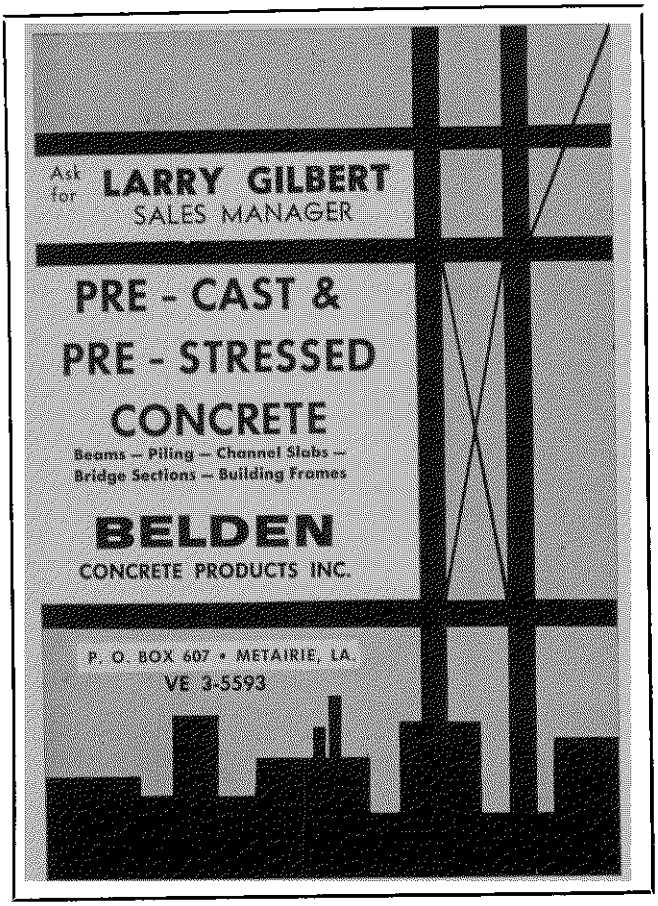

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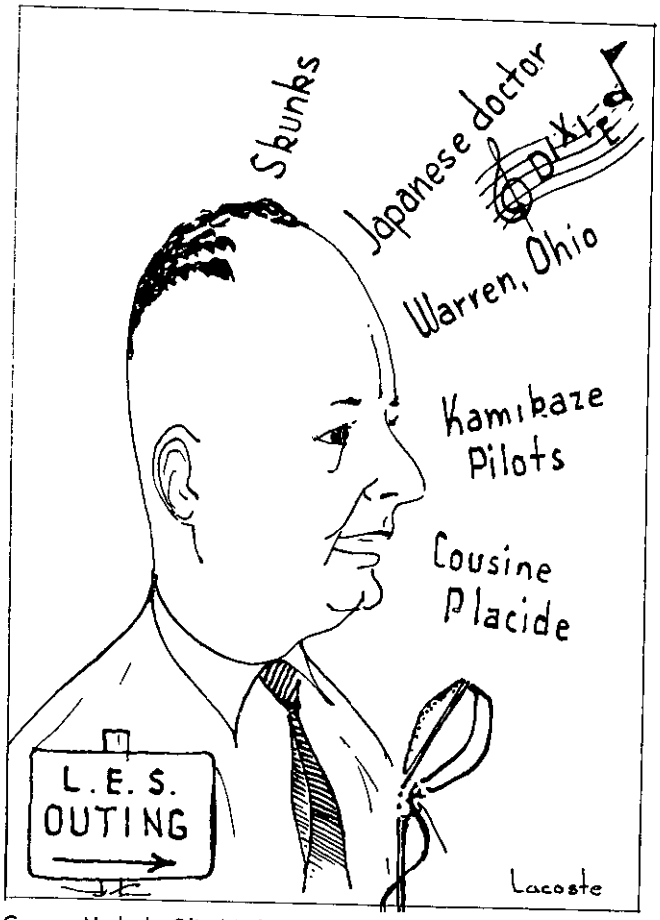
Annual Outing Scores A Success



George Nusloch, Olin Mathieson Chemical Corp., officiated at the outing, acted as emcee and regaled the group with accounts about skunks, Kamikaze pilots and various and sundry Cajuns.

Two hundred and fifty-two guests attended the 32nd LES annual outing held recently at the Lakewood Country Club in Algiers to make the event one of the most successful in recent years.

Russell Hall, chairman for the Annual Outing, thanked his committee for their help in putting together a successful and entertaining day of events.

Names of the recipients in the order of prizes awarded are: Frank MacDonald, silver tray donated by LES President James S. Janssen; Joe Riorda, electric broom donated by J. Ray McDermott Co.; H. G. Armatis, golf cart donated by Raymond International, Inc.; Joe Montgomery, radio donated by J. Ray McDermott Co.; S. V. Massimini, golf bag donated by J. Ray McDermott Co.; George Nusloch, mixer donated by Eustis Engineering Co.; Warren Bankston, blender donated by Williams-McWilliams Industries; Joe Riorda, electric fry pan donated by New Orleans Public Service, Inc.

Henry St. Paul, electric toaster donated by J. Ray McDermott Co.; Norbert Markel, knife-scissors sharpener donated by Dietzen Co.; Rou Musgrave, Seth Thomas clock donated by C. W. Nussbaum; M. J. Marchese, one dozen golf balls donated by Freeport Sulphur Co.; J. Floyd, one dozen golf balls donated by Dickey Clay Mfg. Co.; H. J. Grunsky, electric toaster donated by Freeport Sulphur Co.

Felix Alcus, electric clock donated by Standard Supply & Hardware Co.; Murray Cunningham, electric coffee maker donated by Boh Bros. Construction Co.; C. A. Schreiber, golf cart donated by Waldemar Nelson & Co.; P. A. Dimberg, electric blanket donated by Dixie Machine Welding and Metal Works, Inc.; Ike Bassich, one dozen golf balls donated by R. P. Farnsworth & Co., Inc.

H. Morris, electric shaver donated by N. O. Blue Print Co.; Joe Riorda, golf bag donated by Prestressed Concrete Prod.; Owen LeBlanc, coffee maker donated by Service Supply & Engineering Co.; R. J. Franz, hand vacuum cleaner donated by Ayers Material Co.; Mike Ruck, gun case donated by Orleans Material & Equipment Co.; M. Dan Hogan, ice chest donated by Delta Testing Labs; Ray Maddox, shoe polisher donated by Pittsburgh Testing Labs; Hal Grunsky, spinning rod donated by Lionel F. Favrot Co.; Sydney Ellis, toaster-broiler donated by Boland Machine & Mfg. Co.; Claire Foreman, toaster-broiler donated by Boland Machine & Mfg. Co.; Jim Gore, fishing reel donated by Allis Chalmers Mfg. Co.; Reech, fishing reel donated by General Electric Co.; Ray Maddox, stainless steel service for six donated by Perrilliat-Rickey Construction Co.

William Egan, stainless steel service for six donated by Allan J. Harris Co.; Martin Ripp, cigarette lighter donated by Sun Erection Co.; Mike Ruck, cigarette lighter donated by Alumaglass Bldg. Prod., Inc.; Joseph Pezold, cigarette lighter donated by R. E. Gosa; Dave Monyan, radio donated by T. Edward Ernst; Joe Ranna, golf bag donated by A. M. Lockett & Co.; Ronald D. Cressy, one dozen golf balls donated by Fromherz Engineers; C. W. Dittmer, steak knife set donated by Edgar Murray Supply Co.; Art Albertson, bathroom scale donated by United Gas Pipe Line Co.; J. M. Todd, minnow bucket donated by Fidelity & Deposit Co. of Maryland.

Tom Beck, electric blanket donated by The Flintkote Co.; Henry St. Paul, radio donated by Shilstone Testing Lab.; James R. Gore, electric clock donated by Creole Engineering Co.; Walt Schellhase, transistor radio donated by American Creosote Works, Inc.; R. A. Hall, steak knife set donated by McLellan Equip. Co.; Charlie Paine, Porter's gift certificate donated by Jahncke Service; V. E. Mathis, Jr., bathroom scale donated by N. O. Cement Products Co.; Jim Ryan, duck call donated by E. G. Boh Forest Products Co.; Mac Deloney, safety light donated by Allis-Chalmers Mfg. Co.; R. V. Drueding, minnow bucket donated by Betz Engineering Sales Co.; John F. Marshall, Porter's gift certificate donated by Jahncke Service; M. Haydel, tackle box donated by Arthur C. Hays.

J. F. Vogt, tackle box donated by La. Gas Service Co.; Harvey J. Martin, tackle box donated by Markel Lumber Co.; Norman Ford, fish skinners donated by Metal Bldg. Products Co.; P. T. Yesso, fish skinners donated by Frank P. Fischer Engineering Co.; D. L. Morris, Porter's gift certificate donated by Jahncke Service; M. O. Pattison, landing net donated by Eustis Engineering Co.; A. Breaux, ice chest donated by Boh Bros. Construction Co.; F. M. Taylor, ice chest donated by Orleans Materials &

(Continued on page 22)

WHAT PRICE ETHICS?

By J. T. Knight, Jr.
Chairman, LES Committee in Ethics and Professional Affairs

Should there be a price on ethics? Well, maybe not in dollars and cents, but if any L.E.S. member or other P.E. in Louisiana thinks that it comes without effort, then you should take another look and re-evaluate.

Ethics does involve some "pay as you go," you must practice self-discipline; you must have moral courage; and you must be willing to say which side you are on. Finally, you must realize that in changing times there is no reason to believe that the concept of ethics can or must be a static concept.

Rules of conduct must be accepted by the individual, and to mean anything to him he must practice them. Practice involves self-discipline. The rules of conduct about which we are talking are the Rules of Ethics or, to be specific, the "Canons of Ethics for Engineers." To live within the guide lines of any set of rules or canons requires self-discipline—that means restraint. At times there will be some question in your mind as to just what rule to follow, the rule of ethics, or the rule of business, "to make a dollar." If there is any question in your mind, and you weigh the dollar sign against the ethical rule, then you have not fully and without reservation accepted the "Canons of Ethics." That's the time to take a second look, re-evaluate, and see whether you come up with the same answer. This is your acid test with regard to the "Canon of Ethics." Self-discipline is a must quality if and when you accept the "Canon of Ethics." An interesting aspect of this personal battle is that many times no one but you will know your decision or by which rule you elected to live. This indicates that in addition to self-discipline, to a high degree, self-integrity is at stake.

And, this brings us to the next consideration: that you must be willing to say which side you are on, because when you declare to your peers that you believe in and agree to live by the Canon of Ethics you put yourself on notice that you are beyond the point of return, unless you wish to disparage yourself in the eyes, minds and hearts of your fellow engineers. When people know where you stand there is so much less explaining to do. Your actions then become your loud speaker, and those who have not accepted the Canon of Ethics will seldom arouse your ire by flaunting the Canon of Ethics in your presence or in matters in which you are involved. In this instance we come to this reality. From experience we know that there are professional engineers in this state who are so passive in their declaration of their acceptance of and adherence to the Canon of Ethics that unethical practice takes place right under their noses. True, they make a verbal report of such happenings, but most frequently follow it with "but don't use my name, he's a good friend of mine and I have to live with him." If asked to submit a statement of particulars in writing, the answer is usually in the negative or, "I'll try to do that," and that is the end. It does take moral courage to be helpful in ethically upgrading the engineering profession.

In going to my third point, "that in changing times there is no reason to believe that the concept of ethics can or must be a static concept," I recommend that each of you who are interested read again the Canon of Ethics. Do these canons apply equally to the engineer in private practice, the engineer in sales, the engineer on the city, parish or state payroll, the engineer in education and the engineer in industry? Isn't it true that an ever increasing percentage of graduate and registered engineers are finding themselves in areas of activity other than private practice? Does our Canon of Ethics set forth a workable set of rules for the professional in these many fields? To a very great extent controlling factors, many times beyond the influence of the engineer, seem to be inconsistent with the words of the Canons of Ethics. Engineers frequently find themselves governed by business policies, directives, presidents, rules and regulations—yes, sometimes even laws that are not entirely compatable with the Canons of Ethics.

For example, let's take Sec. 28 of the Canon of Ethics, "He will not become associated in responsibility for work with engineers who do not conform to ethical practices." In this day of joint ventures and large concentrations of engineering talent, many times in conjunction with engineers in private practice, this requirement becomes outdated.

The real price we pay for Ethics is the giving of ourselves to a code of self-discipline; we "pay as we go" with courage to uphold the canons by which we function, and we should ask that some sort of rules of ethics be equally applicable to all professional engineers. All this requires time—time for consideration, time for thought, and time for action. So we pay for ethics by sharing ourselves with our fellow professionals.

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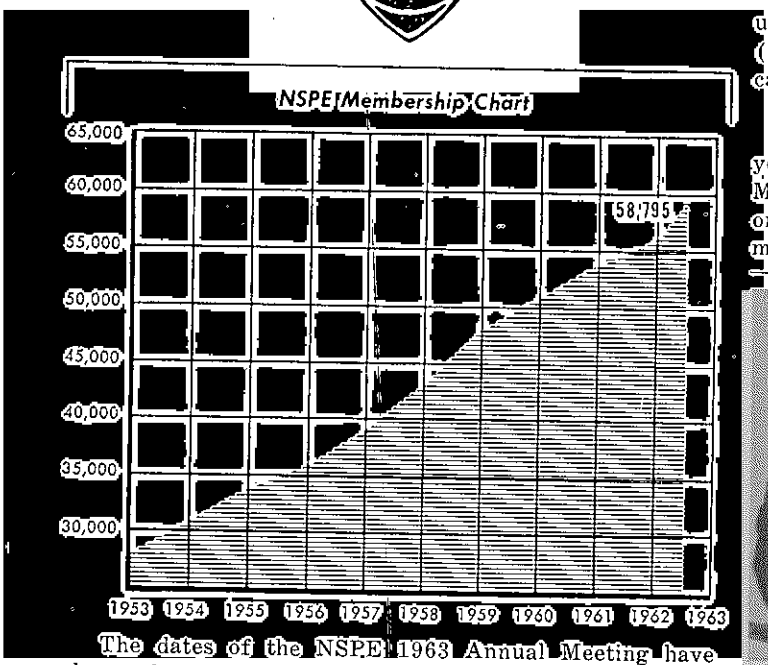

The dates of the NSPE 1963 Annual Meeting have been changed from June 19-22, 1963 to June 26-29, according to Paul H. Robbins, executive director.

The place of the meeting remains the same, i.e., the Sheraton-Cleveland Hotel, Cleveland, Ohio.

—o—

In a statement presented to the Senate Government Operations Committee, the 58,000-member National Society of Professional Engineers has questioned the need for the creation of a commission to study the desirability of establishing a department of science and technology. Hearings on the measure, which was introduced by Senator McClellan, were first held in May. It is uncertain whether additional hearings will be held on the bill.

In its statement, the National Society noted it had endorsed the President's Reorganization Plan No. 2, which created an Office of Science and Technology in the Executive Office of the White House. Observing that the new Office had not had an opportunity to demonstrate its effectiveness in coordinating engineering and science activities in the Federal Government.

The American Society for Metals becomes the 29th engineering group to join Engineers Joint Council.

The ASM was accepted for EJC affiliate membership by the Board of Directors at its meeting on May 25. The ASM is located at Metals Park, Cleveland, Ohio, and has 34,000 members.

The President's Committee on the National Medal of Science has formed a sub-committee on "Engineering Sciences" to consider contributions toward advancing the state of the art of engineering. Engineers who sit on the sub-committee include Augustus B. Kinzel, F. C. Lindvall, and Gordon S. Brown.

Engineers Joint Council has formed a committee under the chairmanship of Dean E. W. Comings (AICHE), University of Delaware, to seek engineering candidates for submission to the President's Committee.

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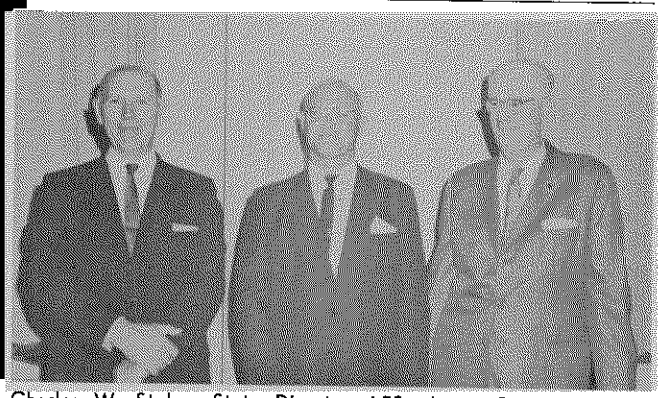
Engineers Joint Council plans to make awards each year for outstanding engineering accomplishments. On May 25th, EJC's Board of Directors created a committee on awards, which will shortly develop plans for implementing the ideas.



Charles W. Stokes, State Director, LES: James S. Janssen, LES President; and G. W. Quinn, President, Lake Charles Section, LES, pose together at the recent President Night Meeting given at the Pioneer Club in Lake Charles.

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Lack of Interest in Engineering Eyed

The idea of being just one engineer in a room full of 200 others is a frightening one to a bright college freshman.

The possibility of doing routine, formalized engineering assignments is equally as terrifying.

The prospect of a lifetime in a profession reportedly without glamor is just as formidable.

Four years of grinding academic study and application is also a deterrent.

The widespread idea that a BS in engineering is just not enough for rapid advancement is also a barrier.

Perhaps these ideas — some of them baseless, some of them well founded — are reasons why fewer college freshmen are choosing engineering as a profession.

At any rate, those in the profession as well as government officials ranging downward from the president of the United States are not just concerned about the problem — they are downright alarmed.

Five years ago 11 per cent of all freshmen enrolled in schools of engineering. Last year the number had plunged to 6½ per cent.

Why?

On the state level DeWitt L. Morris, manager of personnel and industrial relations for Freeport Sulphur Co. (also the chairman of the Louisiana Engineering Society vocational guidance committee) is trying hard to right the situation.

Working with him are James S. Janssen, president of the engineering society, and manager of the gas division of New Orleans Public Service Inc. engineering department, and Dr. John L. Martinez, assistant dean of engineering at Tulane university.

All of these men are graduate engineers. All over the United States their counterparts are also attempting to entice high school students at the ninth and 10th grade level into engineering.

Upon request, this committee will send out a panel of successful engineers to discuss engineering as a career. These engineers will show color slides, movies, and anything else they can think of to lure students into the profession.

They will talk to any group, from Boy Scout troops and church clubs to the entire student body of a high school.

And they can point out literally hundreds of reasons why a bright young high school student should orientate his curriculum toward any of the 35 engineering specialties.

For instance, a graduate electrical engineer would have a hard time landing a job with a starting salary of less than $7000 annually.

Industry will spend $200 just attempting to snare a graduate engineer.

The Soviet Union is graduating 120,000 engineers annually. In graphic contrast, the United States is turning out around 30,000 annually.

But it was not always this way in this country. In 1957 engineering attracted 79,000 freshmen — highest since 1946.

But unaccountably, the number dropped sharply.

The social scientists, the engineering profession, and almost any young student can offer a dozen reasons why.

Some say the high number of layoffs in the aircraft industry in the early 1950s had a great psychological effect.

Still others say that the engineering profession is too diverse to have a definite image, like Dr. Kildare, Perry Mason, or even the mad scientist in the legendary ivory tower. Some even blame the demoralizing effect of Sputnik I.

There are approximately 35 engineering specialties. These range from the high-prestige chemical or electrical engineers to civil engineers who sometimes spend most of their time over a draft board, under a fluorescent light, thinking about spring vacation.

Among the professional engineers, most of whom belong to the National Society of Professional Engineers, there is a strong feeling that a good public relations job is required.

Others note that engineers usually belong to the NSPE and perhaps four or five other organizations, none of which have the power of say, the American Medical Association.

Many educators, including Dr. Martinez at Tulane university, believe that the profession has done a poor job of selling itself as a creative field.

Janssen pointed out that an engineer — not a scientist — designed and developed the new Telstar satellite.

Janssen also pointed out that German space engineer Dr. Wernher von Braun "becomes extremely irked when someone calls him a scientist instead of an engineer."

A recent issue of the Wall Street Journal asserted that many of the engineering jobs today are unnecessarily tedious and boring.

They pointed out that many engineers are doing work more easily performed by technicians or bright high school graduates.

The academic difficulty of obtaining a BS degree in engineering entertains two schools of thought:

Dr. Martinez says there "is no higher rate of attrition (or drop outs) in the school of engineering than in other fields of study."

Others say drop outs account for about half of freshmen engineering students.

Many students are reportedly turning to other professions because they are skeptical about the dearth of engineers.

Carl Frey, executive secretary of the engineering manpower commission, said projected statistics show that the United States will require 45 per cent more graduate engineers in 1971 than were needed in 1961.

Yet, educators see a continuing decline, at least through 1965. of engineers.

President John F. Kennedy recently set up an advisory board to make a thorough study of why young people are turning away from engineering despite a 27 per cent

Reprinted from an article by Jack Kneece which appeared in the New Orleans Times-Picayune, Sept. 9, 1962.

spiral in overall enrollment.

Many educators believe the reason for apparent apathy among high school students is because there are no engineering courses offered at the high school level.

They add that many a bright young student is sold on physics by a particularly good high school physics teacher, or decides to become a scientist for the same reason.

Eric A. Walker, president of Pennsylvania State university, recently said the U.S. is not making full and adequate use of the engineers it now has.

He said large industries have "pools" of relatively idle and "bored" engineers who are used only for bargaining purposes in getting an occasional government contract.

To a young man who has successfully conquered high school algebra, plane geometry, physics and chemistry (and is not noted for his love of studying) perhaps this partial second semester freshman engineering catalogue definition at the University of Connecticut would be the proverbial straw that broke the academic camel's back:

". . . The definite integral and applications, plane analytic geometry, transcendental functions, formal integration . . ."

—o—

STARTING SALARIES

The College Placement Council has just issued its second report on starting salaries for the 1961-62 recruiting year. Data include eighty-two participating colleges and universities up to February 2nd of 1962. Over five thousand offers were reported showing an increase for technical graduates from $546 last year to $562 this year.

Former LES Presidents Move Up At NOPSI

Three former presidents of the Louisiana Engineering Society assumed new positions or additional responsibilities at New Orleans Public Service on August 27.

On that date Clayton L. Nairne, who was president of Louisiana Engineering Society in 1947, was elected president of New Orleans Public Service Inc. Vice-President and Chief Engineer Lionel J. Cucullu, president of LES in 1950, assumed executive responsibility for the operations of the Electric Power, Electric Distribution and Gas Departments, in addition to his previous responsibility for the operation of the Engineering Department. Michael C. Abrahm, 1953 LES president, was appointed manager of engineering.

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Memorials

C. GLENNON MELVILLE, SR.

Our Society lost a staunch supporter and loyal friend with the death of C. Glennon Melville, Sr., an outstanding member of our profession for many years. Mr. Melville, known to his friends and associates as Glenn, passed away July 12, 1962 after a heart attack. At the time of his death he was the President of Melville Equipment Company, Louisiana Engine Company and the St. Helena Telephone & Telegraph Company.

Glenn was born in Harrisburg, Pennsylvania, in 1897. He graduated in Civil Engineering from Lehigh University in 1920; served as Ensign in the U. S. Navy during the first World War; and had been a resident of New Orleans since 1930.

He is perhaps best remembered in the field of engineering for his work on many major bridges throughout the country, having worked with Modjeski, Masters and Case, Consulting Engineers, as Engineer in Charge of Construction of Large Bridges at Louisville, Kentucky, Evansville, Indiana, Mayville, Kentucky, and Paducah, Kentucky. In this capacity, he was Resident Engineer for the construction of the Huey P. Long-Public Belt Railroad Mississippi River Bridge near New Orleans. For his work on this latter bridge, he was awarded an honorary Doctorate of Engineering by Tulane University in 1935. Following completion of the Mississippi River Bridge at New Orleans, he was with the Kansas City Bridge Company in charge of construction of the piers for the Mississippi River Bridge at Baton Rouge, Louisiana, and for Steel Construction Company of Baton Rouge was in charge of the approaches to the same bridge. During World War II he was in charge of construction for W. Horace Williams Company at Camp Claiborne and other locations.

Glenn was a member of the Chamber of Commerce of the New Orleans Area, Louisiana Engineering Society, American Society of Civil Engineers, Sigma Nu social fraternity and the Holy Name Society of St. Matthias Church; a valuable contributor to the civic, economic and industrial progress of this city and community.

He is survived by his wife, Capitola, and his son, C. Glennon Melville, Jr., as well as by a sister, Mrs. Phillips Dowding of Portsmouth, Virginia. We extend deepest sympathy to his family in their time of sorrow.

WALDEMAR S. NELSON
FRANK W. MACDONALD
JAMES S. JANSSEN

—o—

T. BAKER SMITH

The Louisiana Engineering Society lost one of its pioneer members with the passing on July 1, 1962 of T. Baker Smith, a life-long resident of Houma and an engineer of enviable reputation in Southern Louisiana.

His educational background included Chamberlain Hunt Academy, Port Gibson, Mississippi; Rugby Academy and Jesuit High School of New Orleans. He entered Tulane University in 1908 and there earned his degree in Civil Engineering in 1913. While attending Tulane, he starred as a member of the track and football teams. His interest in sports continued through his life with hobbies of fishing and golf.

Except for a few months in British Honduras in the employ of the United Fruit Company immediately after his graduation from Tulane, Mr. Smith opened his office in Houma for the practice of Consultant Engineering and Land Surveying. The forty-nine years of his career included vast amounts of survey work, flood control projects, structural design, and municipal consultant services.

In recent years he was joined by a Civil Engineer son, William Clifford Smith, who will continue his father's practice.

Mr. Smith is survived by his widow, Odelia Wright Smith, and three children: Mrs. Merle Smith Lewis, T. Baker Smith, Jr., and Wm. Clifford Smith.

To them, his fellow members of the Louisiana Engineering Society extend sincere and heartfelt sympathy.

—o—

Calendar Of Events

October 8, November 12, December 10—Joint meeting with A.S.C.E. and A.I.E.E. are under consideration.

October 15—Engineers Club Board Meeting 11:00 A. M.

October 17—A. S. C. E. Meeting 8:00 P. M.

October 22—N. A. C. E. 6:30 P. M.

October 31—Secretaries Luncheon—Noon.

November 1-2—Eleventh Annual Instrumentation Conference to be held on Louisiana Polytechnic Institute campus.

January 10, 1963—Annual meeting.

Week of February 22—Engineering Week.

March 11—Joint meeting with A.S.M.E.

April 8—Annual Youth Program.

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Du Pont Plans Louisiana Plant

The Du Pont Co. recently announced that it will build a plant to produce adiponitrile, a basic chemical intermediate for nylon, at Laplace, La.

Construction of the plant, to cost over $20,000,000, will begin soon and it is scheduled to be in operation in the last half of 1964. It will be known as the Pontchartrain Works.

The new plant is part of the company's major nylon expansion program. Recently Du Pont announced a $50,000,000 modernization and expansion of its textile yarn and staple plants where nylon products for women's hosiery, carpets, tire cord, and many other apparel and industrial uses are produced. The Pontchartrain installation will support this program.

Adiponitrile is a petrochemical building block in Du Pont's process for making nylon textile yarn and staple as well as "Zytel" nylon resin and "Tynex" nylon monofilament.

The Pontchartrain Works will employ about 300 persons, of whom more than 200 will be hired from the New Orleans vicinity, when it is in production. When construction activity reaches its peak there will be over 600 persons at work on the site, the majority of whom will be employed from the New Orleans area. The company's Engineering Department will be in charge of the design and construction of these facilities.

The plant—Du Pont's first major installation in Louisiana—will be built on a 600-acre site on the Mississippi River. The site is known locally as the Belle Pointe plantation. It is just west of the town of Laplace, and 27 miles upstream from New Orleans. The land was purchased in 1957 from Gulf States Land & Industries, Inc., by Du Pont's Plastics Department, which will operate the new plant.

The plant will occupy the river end of the site, and access will be from the Jefferson Highway which runs between New Orleans and Baton Rouge. The plant will include administration and laboratory buildings, process building of open-type construction, shops and storage facilities, power conversion and distribution systems, railroad spurs, barge facilities and various utilities.

To handle wastes, extensive on-site disposal and treatment installation will be constructed. These facilities will include wells which will dispose of waste brine 5,000 feet underground.

Du Pont presently manufactures nylon intermediates in large quantities at its Victoria, Tex.; Orange, Tex.; and Belle, W. Va., plants. In the Du Pont process, adiponitrile is converted into another chemical called hexamethylene diamine, which is reacted with a second intermediate, adipic acid, to form 66 nylon.

Raw materials for the Pontchartrain Works, such as butadiene, a product of the petroleum industry, will be shipped to the plant by rail or barge and stored in tank farms. The finished product will be shipped by barge to the company's Belle, W. Va., Works for further processing. There are no other products contemplated for the Laplace site at this time.

"The professional engineering fraternity in Louisiana feels a deep satisfaction over the decision of the DuPont Co. to locate its $20,000,000 adiponitrile plant near Laplace," James S. Janssen, LES President said when informed of the project.

"Such decisions are not reached on a hit or miss basis," he said. "The problem of selecting a site for a chemical manufacturing plant is solved in these modern times by standard engineering methods and are based on availability of transportation, materials and skilled labor.

"Engineers do not claim that they discovered the Mississipp River or that they created the basic raw products that make such a plant possible.

"But they did control the Mississippi and made it navigable, they did design and dig the inland waterways that connect into it, they built the railroads, highways and bridges. They designed, developed and operated the means of extracting and processing the indigenous raw products that go to supply this proposed plant and all the other plants up and down the river.

"They developed the methods of disposing of the wastes from these plants so that the unlimited supply of river water, so essential to their operations, would not become contaminated.

"And finally, through their fine engineering schools, they produced the state's new generation of engineers to take up where they left off, producing better, more efficient plants to produce more and better products.

"The Louisiana Engineering Society is happy to note that 200 of the potential 300 employees will be employed locally. We feel that this is recognition of the type of skilled labor force that is available in this area. The proposed industry, located as it will be, in St. John the Baptist Parish, will constitute just about the last link in the chain of such plants between Baton Rouge and New Orleans. There is still room for more factories but the spaces are filling up faster and faster. As this area becomes more and more industrialized, healthy bidding for land, for raw materials and for engineers will become intensified," he said.

Sen. Russell B. Long stated that he "was highly gratified when representatives of the Du Pont Co. told me of their plans to build a large industrial plant in St. John the Baptist Parish.

"I have on several occasions urged officials of Du Pont to consider our fine industrial sites in Louisiana, and it is good news that they have decided to build a chemical plant at Laplace," the Louisiana senator said.

"I am encouraged to hear that the company considers this plant to be expandable. It gives me pleasure to join in the welcome to Du Pont with this statement."

Congressman Hale Boggs heralded the Du Pont Co.'s announcement that it wil build a chemical processing plant at Laplace as, "a splendid forward step in the industrial development and progress of St. John the Baptist Parish and the other river parishes.

"I am very pleased that the Du Pont Co., one of our Nation's great corporations, will join us in South Louisiana and contribute its experience and scientific know-how to further the economic growth of our area. The fact

that Du Pont will open a chemical plant at Laplace, employing more than 300 chemists, engineers, and other technicians, many of whom will come from our area, is a splendid step forward in the industrial development and progress of St. John Parish and the other river parishes," Con. Boggs said.

"On several occasions in the past I have had the pleasure of working closely with officials of the Du Pont Co., and I have always found them to be most capable and energetic, and always concerned with the welfare and advancement of those communities in which their facilities are located.

"The establishment of this plant also will assist St. John Parish in meeting its present unemployment problem; two months ago this Parish and three other parishes in our State were declared distressed areas and were thus made eligible for federal aid under the new Area Redevelopment Act program. By building this new plant, Du Pont will help the people of St. John Parish by making available to some of them jobs at this new facility.

"I am confident that I speak for our area's business and government community in welcoming the great Du Pont Co. to South Louisiana," he said.

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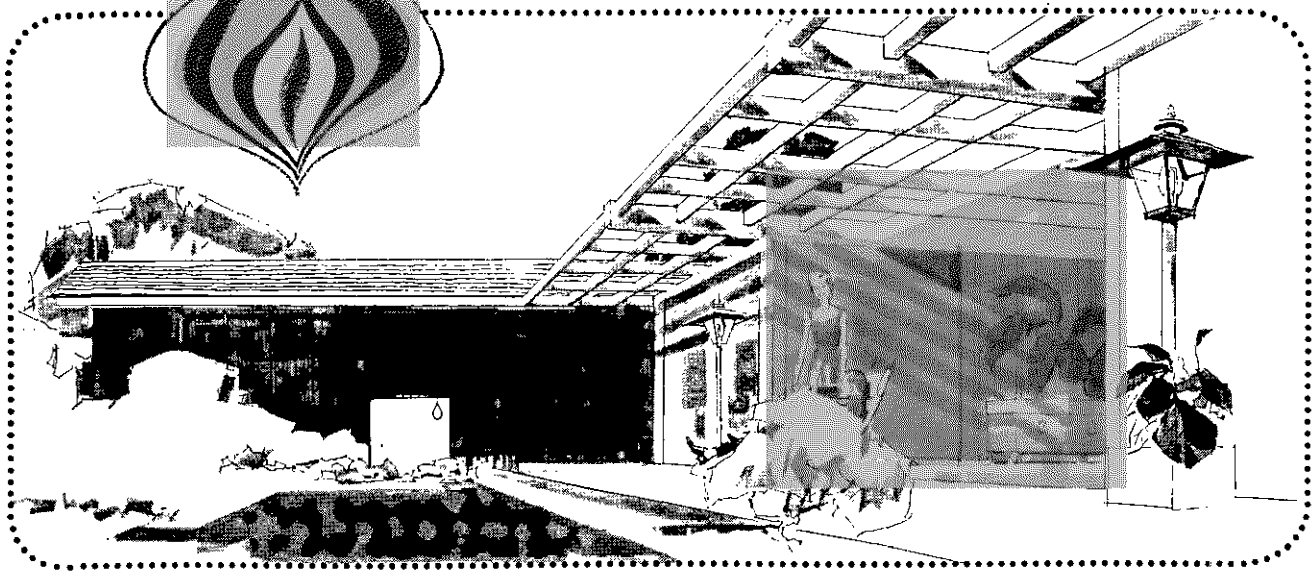

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Gompertz Explains Michoud's Role

Richard F. Gompertz is an important figure in the development of America's space program. A native of Germany, he was educated at Columbia University, the University of Havana and the Institute of Technology in Berlin.

He is trained as a mechanical engineer, an electrical engineer and as an administrator.

His interest in flight began as a youth in Germany. He worked summers for three years on diesel fuel injection engines for the JU 87 Stuka dive-bomber.

In June of 1944 he went on active duty with the United States Army and was a lead scout with the 104th Cavalry Reconnaissance Squadron during the Rhineland and Central Germany campaigns. He was moved into intelligence work and was in operation "Backfire" which was the first V-2 missile launching ever observed by allied military personnel. He was selected to work with a joint allied group investigating the famed German Rocket Experimental Station known as Peenemunde East.

In 1961 he joined the Chrysler Corporation Space Division as director of systems test. He is in direct charge of the static testing of the S-1 and the C-1 space vehicle and the launching of the vehicles. He also supervises transportation and delivery of the S-1 at Michoud, New Orleans, Huntsville, Alabama, and at Cape Canaveral.

The following paper was delivered by Mr. Gompertz at a luncheon meeting of the Prestressed Concrete Institute in New Orleans Sept. 25, 1962.

The manned space flight program of the National Aeronautics and Space Administration which has as its present goal the landing of a team of American astronauts on the moon and bringing them back safely to earth is one of the most ambitious and challenging programs our country has ever undertaken. I think it can safely be said that this is the greatest engineering job ever undertaken by man.

To assure its success, the civilian space agency is drawing on all the available resources of the nation, is broadening its dependence upon industry and is enlisting the support of a large segment of the country's scientific, engineering and technical manpower.

In a national effort of this kind, no one section of the nation, no single industry, can supply all the requirements needed for success. The space program, therefore, is a far-flung operation that affects every section of the country. It requires coordination and the task of organizing to manage the program is as difficult as the technical complexities which the program itself faces.

In New Orleans, we are involved in the production of the very large and powerful first stage boosters for the Saturn space vehicles that will be utilized to achieve a moon landing by a manned American spacecraft.

Our science, technology, industry—the ingenuity and resourcefulness of much of the nation—have been mobilized to achieve a basic national goal. Never before has this been done to such an extent except in time of war.

While the manned space flight program has become the focal point for a significant portion of the country's scientific and technical effort, this effort depends for success on the continuing support and determination of all our people.

Exploration of the moon, and even the planets, has been under consideration by NASA since it was created about four years ago to succeed the old National Advisory Committee for Aeronautics. However, until the spring of last year, NASA was not specifically committed to any manned space flights beyond those involving Project Mercury now underway. In May of 1961, President Kennedy issued a mandate to NASA to get American astronauts to the moon during this decade.

The lunar exploration project has been given the name of Apollo, and it is with Apollo that we in Louisiana are directly concerned.

NASA has awarded to Chrysler Corporation Space Division a contract in excess of $215,000,000 to produce at Michoud 21 Saturn S-1 rocket boosters. These boosters will be the first stage of the Saturn C-1 launch vehicle—the first vehicle to be used in the Apollo lunar exploration project.

The Saturn C-1 will launch three-man spacecraft into earth orbit and will be utilized in missions demonstrating docking and rendezvous techniques. In general, this involves sending the spacecraft into an earth parking orbit, where it will be fueled from a tanker stage sent into the same orbit from a separate launch operation. Then, from the earth parking orbit, the spacecraft will be sent on its journey to the moon.

Rendezvous in earth orbit, docking and propellant transfer requires development testing, of course, before it can be used operationally. NASA is planning test flights using a Saturn C-IB vehicle, which is envisioned as an intermediate vehicle between the Saturn C-1 and the advanced Saturn C-5 for which the Boeing Company will build booster stages at Michoud.

The advanced Saturn C-5, on the other hand, will be powerful enough to send the Apollo spacecraft from the earth into an escape trajectory to the moon. Because of this, consideration is being given to a lunar orbit rendezvous. This calls for the use of a small two-man "bug" to be detached from the Apollo capsule while it is in lunar orbit, have it descend to the moon and then rejoin the Apollo after the lunar mission has been accomplished.

As it stands today, the actual landing on the moon, from all indications, will be from a lunar orbit rendezvous. However, missions involving earth orbit rendezvous techniques are exceedingly important to the ultimate success of the lunar exploration program and even more ambitious probes by man farther into space.

Although most of you, I am sure, are in general familiar with the S-1 booster that Chrysler will build at the Michoud plant, permit me to refresh your memories.

This booster, which will serve as the workhorse of the space program for many years to come, is 22 feet in diameter, 82 feet long and has—in its present design—a capacity of 850,000 pounds of propellant. The Saturn C-1 space vehicle it will launch into diversified space missions will have an overall length of over 160 feet and will weigh about 1,000,000 pounds when fueled.

The S-1 booster is a complex vehicle with a cluster of eight engines capable of generating a thrust of 1,500,000 pounds. It is believed to be about twice as powerful as the present Russian booster used in their man-in-space flights.

Capable of injecting a payload of 20,000 pounds into earth orbit, the Saturn C-1 will be the first of the truly large spacecraft this nation will utilize in advancing the exploration of space sciences.

Actual production of the first S-1 booster at Michoud will start this month.

Under its present contract, Chrysler, in addition to building the 21 boosters, will have the responsibility for static test and a later date launch operation. Static firings will be performed initially by Chrysler at the George C. Marshall Space Flight Center in Huntsville, Ala. Later, the New Orleans-built boosters may be static fired at the Mississippi Test Facility, about 30 miles from Michoud to the northeast.

It is estimated that NASA will spend more than $200,000,000 to develop that test facility with its test stands, control centers and support structures.

It is planned that the initial increment facilities will be ready for use in early 1965.

Chrysler will also carry on a major effort in the area of reliability, advanced engineering and product improvement of the Saturn vehicle. This will include applied research, developing possible missions for the space booster that are unknown today and determining methods of extending the life of the booster for future use.

The recent publicity of Mercury flights and of test flights of rocket propelled aircraft and missiles have spotlighted to the public the need for testing and have vividly demonstrated launch operations to the general public.

At the turn of the century, the advent of the airplane brought sophistication into the test business. Although engineering science progressed considerably, it was and it still is not possible to simulate the operation of an aircraft under all operating conditions, especially at high altitude and at high acceleration. It was necessary to fly a prototype aircraft through its **ultimate** design perimeter and obtain sufficient data which would confirm the designer's calculation. Then, based on this data, the aircraft could be designed for production and mass-produced by the manufacturer. This was essentially the philosophy followed throughout the period until the end of World War II.

When it became apparent this method of flight test was costly and would sometimes result in disintegration of the aircraft and possible loss of the test data and the pilot, more emphasis was placed on testing conducted on the ground in a simulated environment, leaving only the flight tests for a confirmation of **operational** design data and perimeters.

With the advent of the first supersonic aircraft in this country, the X-1, which was propelled by a novel power plant, namely a liquid rocket engine, the ground tests became of major importance. Besides being a valuable tool to train and indoctrinate the test pilots and flight test engineers in the operation of rocket engines, it also became possible to simulate malfunctions which later in flight could be detected by sensors in the aircraft and engine. Correction was possible before flight failure occurred.

During the ground test phase, it made sense to protect ground test personnel sufficiently from any hazard even if the aircraft and the pilot were not specifically protected by any special equipment during these ground test operations. Although accidents did occur, to my knowledge no accident ever resulted in the loss of a test crew on the ground.

Much the same philosophy was followed during the X-15 development and flight test program. The X-15 today represents the most advanced flight envelope that can be obtained with an aircraft depending on the lift-drag principle. During the early tests of the X-15, extensive ground operations were performed. A specially protected control center was erected and concrete bunkers were built for the propellants and high pressure gas storage. Engine, tankage, propulsion and control systems were mocked up in much the same manner as they would be in the X-15 aircraft. After the so-called "boiler plate" tests proved to be successful, the ground tests with the airplane flight configuration and the pilot in the cockpit were staged. It was still considered wise to utilize the same precautions which were employed during the "boiler plate" phase of the program. Not too much to the surprise of the test personnel but to the designers, one major explosion of the propulsion system occurred which resulted in extensive but repairable structural damage to the aircraft and propulsion system but no injury to the test pilot.

The inherent hazards of testing large rocket engines or spacecraft have never been fully documented and much speculation still remains how to design suitable test facilities for static test and launch operations.

For example, we still do not all agree on the potential explosive hazard of rocket propellants, even the so-called simple propellants such as liquid oxygen and RP1. The explosive yield of a bi-propellant system is tentatively estimated to be anywhere between 10% and 90%. This data is unusable for the designer who concerns himself with safety factors and quantity distances when one considers thousands and thousands of gallons of propellants are expended at a rapid rate travelling through stainless steel pipe at hundreds of FT/SEC.

It has, however, been demonstrated that concrete structures, heavily reinforced by steel, have stood up well against explosive hazards of rocket engines and spacecraft, particularly because of the inherent resistance against high temperatures which normally follow explosions.

I have witnessed explosions that have not caused much structural damage to the pill boxes, control center or test facility. The major damage was caused by fire and high velocity flames that burned out instrumentation and control circuitry which had to be completely replaced and checked out again—an expensive and time consuming procedure. If you look at today's large test and launch facilities and even examine plans for tomorrow's, you will immediately see that concrete plays a dominant role in the design of the structures.

Large weights can be adequately supported. Vibration, especially low frequency vibration can be adequately damped out.

In the future, we will require launch facilities and test facilities in areas which are today not accessible to us.

Although it is contemplated for our first lunar expedition to utilize a minimum of lunar ground equipment to save weight and to accelerate the mission, it remains almost a certainty that future explorations of our solar-planetary system require test and launch facilities to be constructed on the moon. The lower gravitational force and the absence of a measurable atmosphere will cause some difficulty. We also know at this time from our experience with nuclear rocket engine test facilities that concrete structures help greatly to reduce radiation hazards, decontaminated and re-used.

I personally believe that a lunar test base has many merits and will come into play in the foreseeable future. When it does, it will not differ too much from the present launch operation centers at Cape Canaveral or at the Pacific Missile Range.

There is, of course, considerable speculation on how to ferry construction material to the moon, but I have no doubt that we will be in a position to utilize material available to us either on the lunar surface or below the surface. I am confident we will be able to treat such material properly and obtain the high strength needed to protect personnel during launch and test operations on the moon. The basic ingredients for concrete can be found and utilized on lunar surfaces when we obtain sufficient power to move them, convert them, and mix them to the substance required to obtain the necessary strength. Self-contained nuclear power plants that are compact and can be transported are being developed and will be available for these purposes.

For those who believe that a lunar base will not require extensive equipment, I would again like to turn back to the history of aviation to the day when the bailing-wire and plywood airplane did not require extensive ground equipment either. A pasture then was adequate for take-off and landing. Two saw-horses were sufficient to prop up the aircraft to work on it or to inspect the so-called undercarriage. Gasoline drums were adequate refueling devices. I would like to use this analogy with our present lunar exploration program. Today we will minimize the equipment to save time, but as time goes on and missions will be accomplished to fly into the solar system, a support and a test base of major proportions will be a certainty.

MISS. TESTING CENTER PLANNED

The first of four giant stands for testing the rockets that are to send United States astronauts to the moon will be completed by early in 1965.

Plans for the space agency's giant testing complex—ultimately to cost $500 million—were outlined in Washington recently.

The agency said first stage of construction will involve an outlay of $200 million in the 13,500-acre Mississippi site, located about 35 miles from the Michoud rocket manufacturing complex near New Orleans.

Also outlined were plans for moving the rocket stages and engines through specially built canals to the test towers at the new site.

The water transportation system for the test center calls for improvement of 15 miles of river channel and construction of 15 miles of canals. Using waterways, rather than roads, will be cheaper and easier in the long run, the agency believes.

The first phase construction will include four test stands, two for the S-C booster stage of the advanced Saturn C-5 moon rocket and two for the S-II, the second stage of the C-5 rocket.

The S-IC stage, developing 7½ million pounds of thrust, will be 138 feet tall and 33 feet in diameter.

The S-II, developing a million pounds of thrust, will have the same diameter as the S-IC.

The first S-II stand is to be completed early in 1965, the first S-IC stand in mid-1965, and the other stands before the end of 1965.

The early construction program will include about 20 buildings in a support area to serve the entire facility.

NASA said the upper reaches of the Pearl river, seven miles from Pearlington to Gainesville, will require dredging to a depth of 12 feet and widening to 150 feet. This will be done during 1963 and 1964.

One bridge will be required where the proposed Interstate 10 highway intersects the river route.

Also being discussed with Mississippi highway department officials is the possible construction of an alternate route for state hwy. 43 on the west side of the test area.

Negotiations are also going on with the Southern and Louisville and Nashville railroads for construction of spur lines into the area.

A convention lock at the southwest corner of the test area will provide 20 feet of lift from the river to the canal system.

Tentative plans also call for building test complexes for all three stages of the Nova vehicle, a direct space craft to the moon.

ENGINEERS ENTERING MANAGEMENT . . . JANSSEN

Commenting on the 10th annual Engineering Management conference held recently at the Roosevelt Hotel in New Orleans, James S. Janssen, president of the Louisiana Engineering Society said that "the conference emphasized what we in the engineering profession have long recognized—that engineers today are rapidly entering into the field of management."

Janssen said that all engineers are trained in the efficient use of materials, manpower and money. "This same quality is sought for in management, and it is natural that engineers are placed in managerial positions," he said.

Janssen said that G. C. Rawls, president, Louisiana Power and Light Co., told the conference that engineers and management work together for progress in the public utilities field.

Janssen complimented Dr. W. W. Hagerty, dean, college of Engineering, university of Texas for his comments on engineering education.

"Dr. Hagerty urged all high school and junior high school students interested in engineering as a profession to start preparing as early as possible by taking as many math and pre-engineering subjects as possible," Janssen said.

He said that the dean also predicted that with better

preparation in prep school there would be fewer casualties in colleges.

Janssen said that another point made at the conference that is in keeping with LES beliefs was made by Herbert Hubbins of McKinsey & Company, Washington, D. C.

"Mr. Hubbins emphasized the necessity of individually evaluating engineers in any organization for value and economic worth rather than promoting them on the basis of seniority," Janssen said.

"LES encourages its members to avoid becoming 'obsolete,' and to stay with the new developments in their fields," he said.

Lloyd G. Smiley, AIIE, Session I Chairman for the 10th Annual Engineering Management Conference, outlines the program to LES President James Janssen, R. E. Williams of Westinghouse Corp., Birmingham, Ala., and Mike Cade, LES, New Orleans coordinator of the conference.

(Continued from page 11)

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ENGINEERING EMPLOYMENT RISES

The Labor Department has released the first of a series of manpower reports based on the 1960 census. According to the report, engineering employment at 854,000 represents an increase four times the growth of total employment and nine times the growth in male employment during the decade of the 1950s.

Western states, with California leading in first place in engineering employment in the Nation, had an increase of 123 per cent over the 1950 census figure. **The second highest increase was in the South, with an increase of 60 per cent.** The lowest increase was in the Northeast, at 47 per cent.

Deutsch & Shea's demand index for engineers and scientists indicates a rise of 27.6 points over the same period in 1961, according to the latest report released by the New York advertising firm. In July 1961, the index figure was 87.5; in 1962, it stood at 115.1.

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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 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.

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.

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.

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CLOTHES, CARS CLEANED

Soon drivers will be able to have their cars and clothes cleaned in one stop, reports National Petroleum News, McGraw-Hill publication. A group of gas stations in the Midwest has installed coin-operated dry-cleaning machines on an experimental basis.

MILLION TREES PLANTED

An Ohio power company is beautifying a strip mining area by planting 1,819,500 trees, Coal Age, McGraw-Hill publication, states. Since the company began planting trees at mine sites, they have put in over 17 million seedlings.

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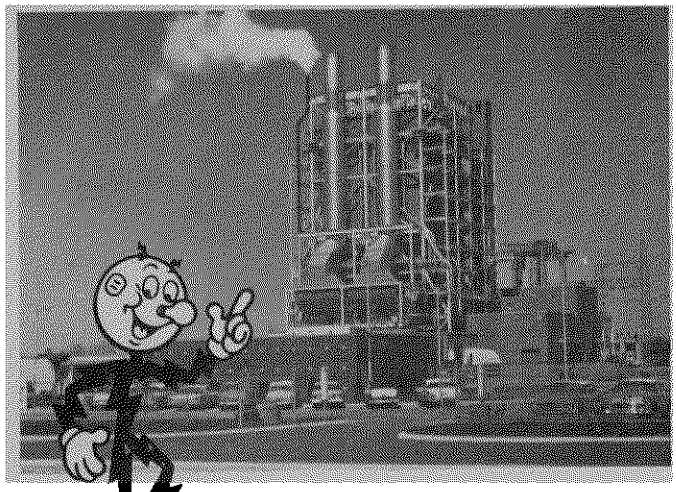

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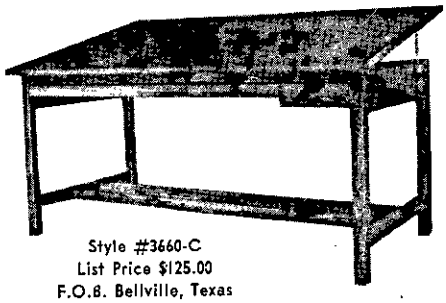

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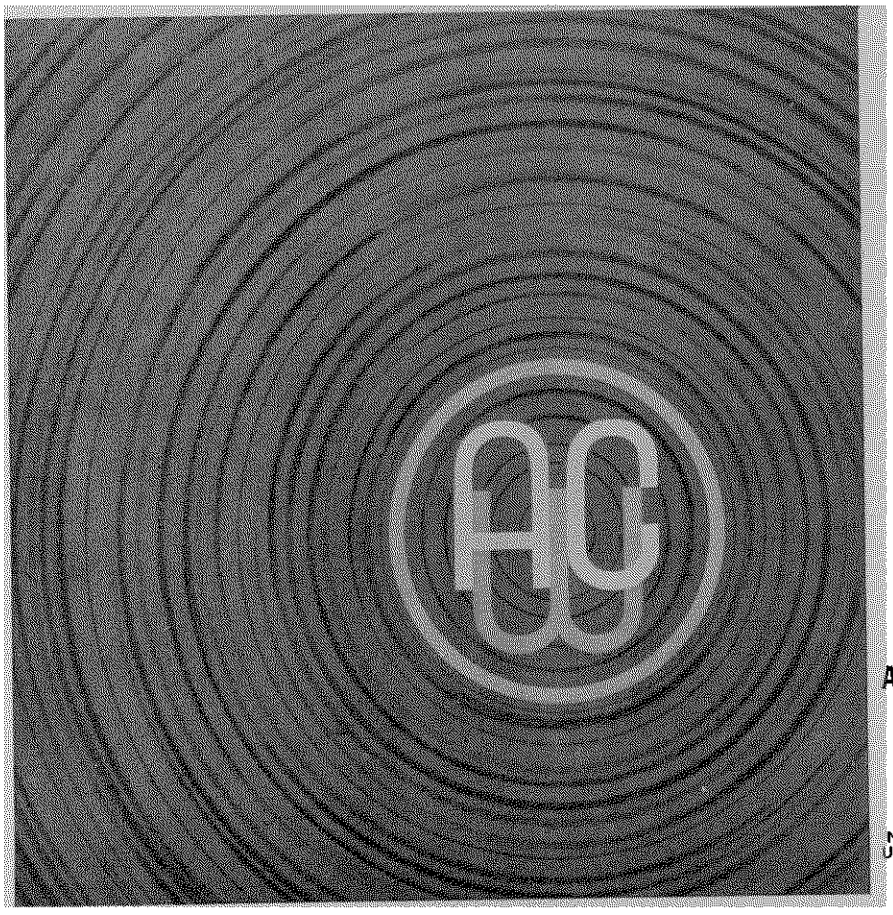

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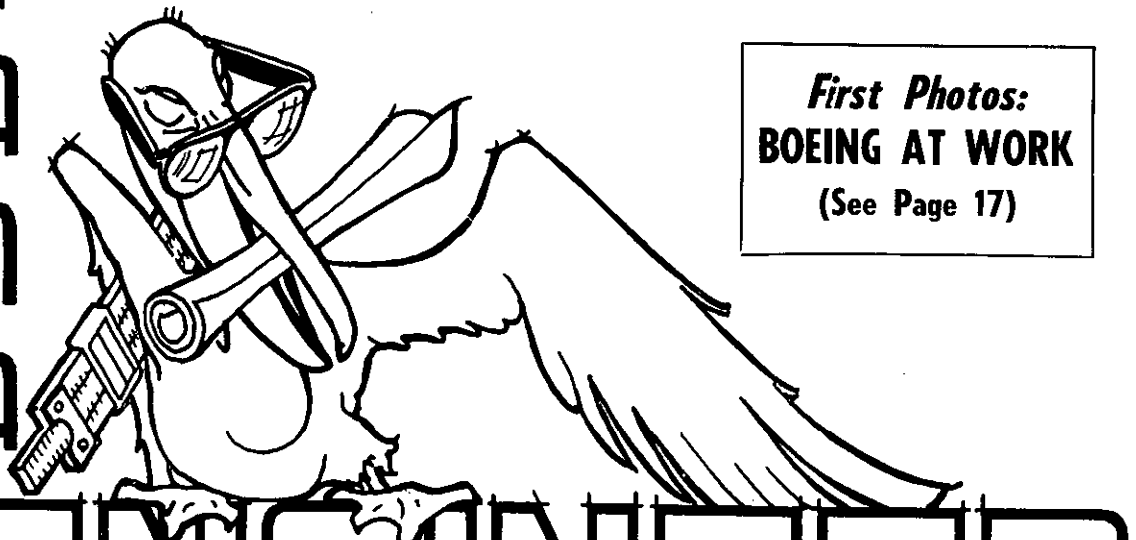

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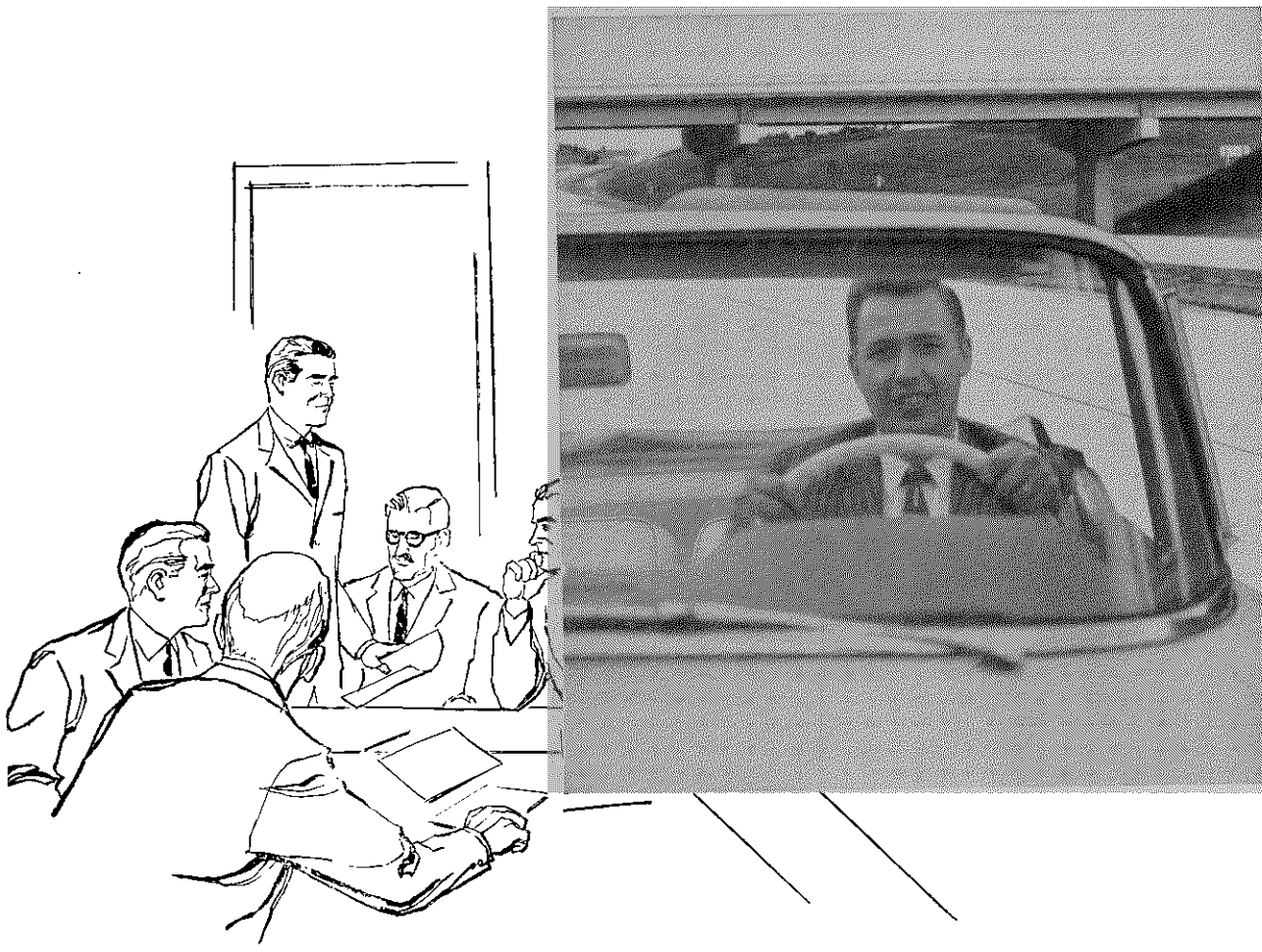

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Officers Meet at Lake Charles

LAKE CHARLES, LA., (SP)—Gus G. Quinn, president of the Lake Charles section of the Louisiana Engineering Society, announced the first annual LES Section Officers' Conference Dec. 7 and 8 at the Charleston Hotel in Lake Charles.

The conference was to open with the Board of Direction meeting.

A cocktail party and buffet was planned at the home of Mr. and Mrs. Quinn.

After a meeting of state presidents and vice presidents with James S. Janssen, LES president, presiding, J. D. "Don" Strong, field representative, National Society of Professional Engineers, was to speak on "Relationship of N.S.P.E. to L.E.S. and to Sections." A film, "Building for Professional Growth," was scheduled. Marion C. Bubenzer, president of the Shreveport section, was to address the conference on "Secrets of Successful Chapter Operations." "Public Relations Hints" was to be the subject of an address by Col. John T. "Jack" Knight, Jr., and Allen Johnson, Public Relations Counsel.

A summary of conferences was to be given by Strong and Calvin T. Watts, Baton Rouge, first vice president.

All LES members and their wives were to lunch in the Pioneer Club and hear former Gov. Sam H. Jones.

A coffee party for the ladies was planned at the residence of Mr. and Mrs. Elmer E. Shutts.

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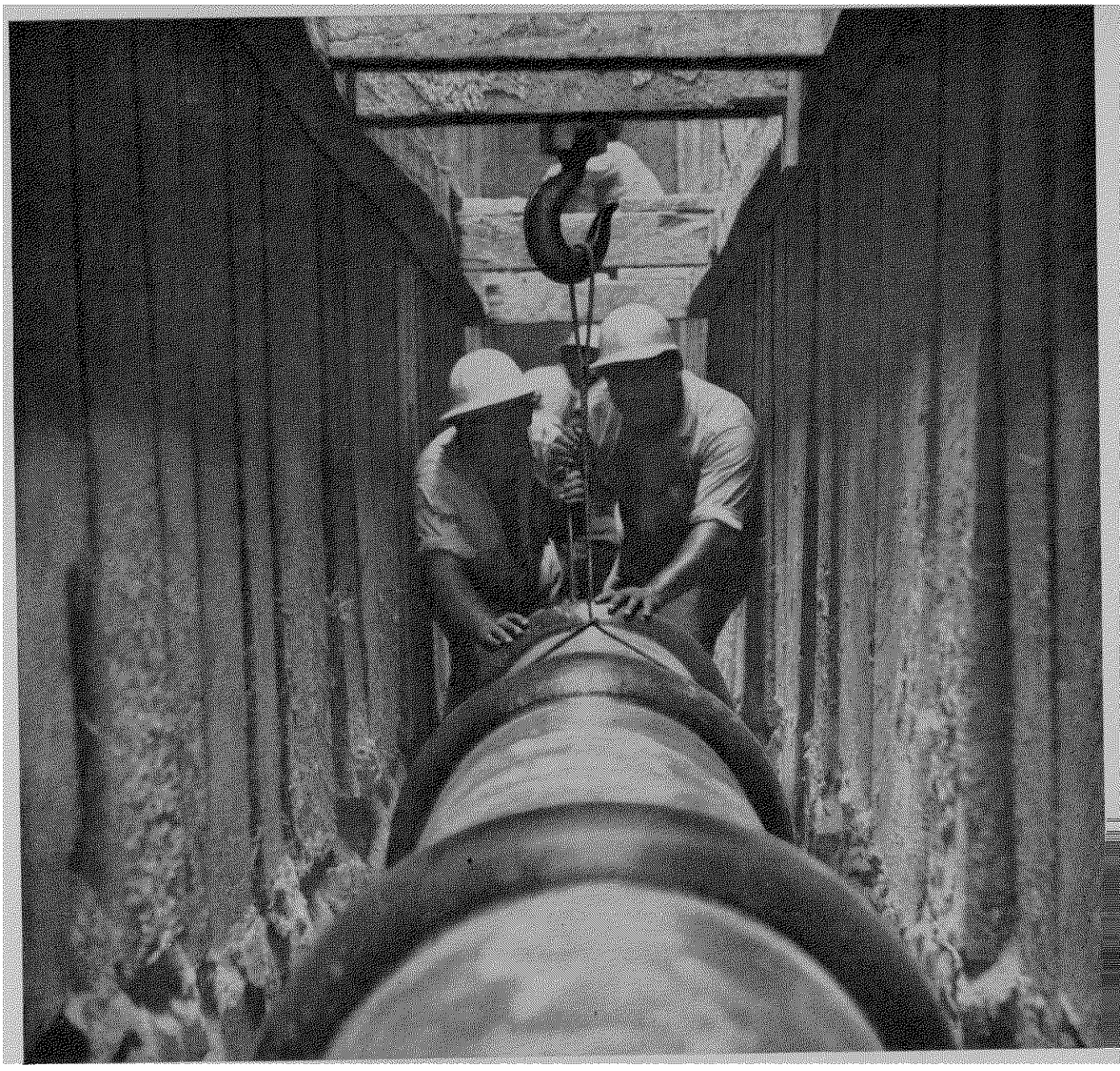

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Vol. 48 December, 1962 No. 6

OUR COVER

Wilham M. Allen (center), president of The Boeing Company, recently visited the Michoud Operations plant. At left is E. T. Stone, assistant manufacturing engineering manager, process control and development, for Boeing, and at right is George H. Stoner, vice president-manager of the Boeing Saturn Booster Branch.

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As amended and passed by the Senate and approved by the House by unanimous vote, H.R. 10 will permit the self-employed to make retirement fund contributions of up to $2,500, or ten per cent of earned income, whichever is less. Of the amount so contributed, fifty per cent, up to a maximum of $1,250, would be tax deductible.

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Minutes Of The Board, LES

LOUISIANA ENGINEERING SOCIETY

Minutes of Meeting of the Board of Direction Held at the Engineers' Club, New Orleans, Monday, October 8, 1962

The meeting was called to order by President Janssen with Messrs. Lockett, Knight, Stokes, and Marchese, Acting Secretary, in attendance. Messrs. J. T. Montgomery and Warren Bankston were present by invitation. Mr. Allen Johnson, Public Relations Counsel, also was in attendance. Mr. Lockett moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Knight and carried. Acting Secretary Marchese then read minutes of a meeting of the State Board of Registration held on September 4 and 5.

President Janssen announced that the Baton Rouge Section would hold its annual dinner at the Piedmont Club on December 1, and that all officers and board members were invited.

Mr. Joseph Montgomery reported on the proposed by-laws for the operation of the Functional Section for Engineers in Private Practice. After a general discussion in which several deletions and additions were made, Mr. Stokes moved that the by-laws be approved, subject to correction. Mr. Knight seconded the motion and the by-laws were tentatively approved. Mr. Montgomery was requested to submit the amended by-laws to the secretary for recording and distribution.

Mr. Warren Bankston reported for the Publications Committee on the proposed contract with Littell-Murray-Barnhill, Inc., in connection with national advertising in the LOUISIANA ENGINEER. After a discussion of the proposed rate schedule, Mr. Knight moved, seconded by Mr. Lockett, that the President be authorized to sign the contract, pending a final determination of the rate schedule. Mr. Janssen indicated he would discuss the rates with Mr. Fernandez prior to signing the contract.

Discussion followed on the proposed Section Officers' Conference to be held in Lake Charles. By the response received from the various sections it was decided that the meeting would be held on December 7-8, 1962. Mr. Stokes requested that the Lake Charles Section be informed as soon as practicable of the number of persons expected to attend the conference.

Mr. Marchese read Chairman Edward A. McLellan's report of the Committee on Honors & Awards, in which no recommendations were made for a recipient of the Technological Accomplishment Medal, one for the Civic Activities Medal, and one for Honorary Membership. On motion by Mr. Lockett, seconded by Mr. Stokes, the recommendations of the Honors and Awards Committee were accepted. In accordance with the constitution, the Honorary Membership Committee Chairman was instructed to take the necessary action and report at the December meeting, at which time all names of honor recipients would be announced.

President Janssen suggested that consideration of the Legislative Committee's report be postponed until the November meeting of the Board of Direction, which was agreed.

At the request of Mr. John F. Vogt, Jr., General Chairman for the 1963 Annual Meeting, a discussion of the meeting agenda took place. It was the consensus of opinion among those present that the panel on Engineering Education scheduled for Friday should not take up the entire afternoon, and that an additional paper should be scheduled for the period.

President Janssen appointed Mr. Ben Bogard, Chairman, W. Stone Leake and R. Mallard Seago to serve as a Nominating Committee for the forthcoming election of officers and directors to serve in 1963. This action was approved by the board.

President Janssen read a communication from the Louisiana Architects' Association requesting that a representative of LES attend a luncheon meeting in Baton Rouge on November 30. The president appointed Mr. Henry L. Landry to represent the society at this meeting.

The Acting Secretary read correspondence from Mrs. Donald Derickson and from the Naberschnig family thanking the society for its expressions of sympathy. A letter from Mr. Frank M. Bordelon was read in which he thanked the society for its $100 LES Scholarship Award. Mr. Bordelon attends Tulane University.

The Acting Secretary reported that word had been received of the death of William M. Larkin, Member, and of Roger E. Chesnut, Member.

Mr. Knight moved that the resignation of Mr. Arthur D. Crabtree (Houston) be accepted with regret, seconded by Mr. Lockett and carried.

Mr. Lockett moved that the election of Pierre F. Barnett, St. Francisville, (Affiliate Member) be considered void since he has not acknowledged membership in LES by a payment of dues. The motion was seconded by Mr. Stokes and carried.

It was approved that James Frederick Williams, Jr., Lake Charles, whose name appeared on the September ballot as an Affiliate Member, be offered the opportunity to become a full Member since he has subsequently become a Registered Engineer in Louisiana.

At the request of Mr. Bogard and with the approval of the Board, President Janssen recommended Professor Harry D. Richardson to serve as the LES representative on the Louisiana State Board of Nuclear Energy.

With the consent of the board, President Janssen appointed Mr. Douglas F. Latimer to serve on the Armco Scholarship Committee.

Mr. Marchese reported that 376 membership ballots had been received with only two negative votes recorded, therefore, all applicants named in the September ballot (copy attached) were elected to their respective grades.

The meeting then adjourned so that the society's regular meeting could begin on time.

M. J. MARCHESE
Acting Secretary

Letters

Pre-Engineering

To the Editor:

I've read with much interest, the article "Lack of Interest in Engineering" in the last issue of The Louisiana Engineer. Having served on the Faculty of a very good Engineering School and more recently, taught Science and Mathematics in local High Schools, I'd like to make a few observations and suggestions on the subject.

Perhaps these few remarks about our Education System will be helpful in focusing attention on what seems to me to be one of the principal reasons for the large number of "Drop-outs" in our Engineering Schools and lack of incentive to enter the Engineering Profession.

In my opinion, our Engineering Schools are doing a splendid job in Engineering Education. However, consider the background of a large segment of our Engineering Students prior to beginning their Engineering Courses. Many of our High School graduates have had such a poor foundation in Basic Mathematics and Science that they are bewildered and discouraged at the beginning of their Freshman Year.

I don't think it is so much a lack of interest in Engineering as the problems these students have in overcoming their lack of knowledge of Basic Mathematics and Science.

In most cases these boys have been promoted continuously from year to year in Elementary and High Schools, without learning Basic Mathematics and Science. This fact was so obvious a few years ago in one of our better Engineering Colleges that the Dean authorized Remedial Mathematics Courses during the Freshman Year, in an effort to correct this deplorable situation.

Another point worth considering is the amazing progress and developments in Engineering in the past few years and the crowding of so many new subjects in the curriculum, with little if any increase in the length of Engineering Courses.

Our lawyers and doctors have been required, for many years, to take Pre-Law and Pre-Medical courses before beginning their Professional Training. Certainly the Engineering Profession has become as intricate, probably more so, than these two professions.

The solution is obvious: Pre-Engineering Courses in which the latest developments in Science and Mathematics are studied.

Our entire Educational System should be closely examined and evaluated in the light of recent Scientific and Technological developments. Many potential Engineering Students are bewildered and discouraged their Freshman Year, and usually drop out for courses more in line with their earlier education and training. I'm convinced that the factors outlined above are more deterrents to the study of Engineering than any lack of interest. I think the average youth of today is very interested in Engineering, and if he were given the proper basic

education in Mathematics and Science, he would gladly choose the Engineering Profession.

Until remedial action is taken in our school system, we can continue to expect more drop-outs and fewer applicants for Engineering Courses. Certainly interest in Engineering is not lacking in the youth of today.

E. B. ARROYO

(The views expressed in "Letters to the Editor" do not necessarily reflect those of the Louisiana Engineering Society. Letters should be brief, and must be signed. — Ed. Note)

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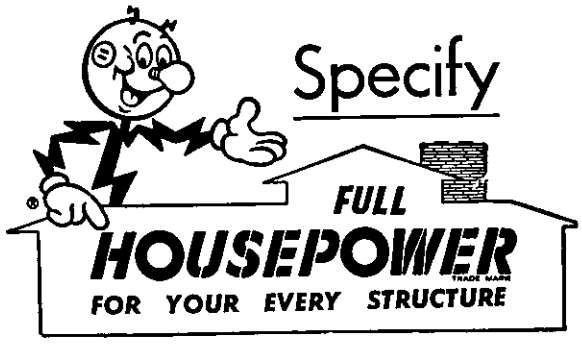

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An Urgent Case For Registration

Following are excerpts from a recent article by Harvey F. Pierce, P. E.

To those of us who are vitally concerned with the development of the Profession of Engineering, and this includes everyone who will read these words, a primary concern has to do with defining the profession and identifying its legitimate members.

The public cannot distinguish between imposters, such as flight engineers, locomotive engineers, stationery engineers, etc., and the Professional Engineer. Likewise, the Civil Engineer, Mechanical Engineer and Electrical Engineer generally do not recognize as true engineering many of the new technical specialties related to narrow fields of electronics, rocketry and nuclear oriented work.

In my opinion, this has come about largely because the engineering fraternity has failed to stay abreast of its own technological advances and neglected to provide an identifiable place in the Profession for these people.

If those of us comprising the 200,000 Registered Professional Engineers in the United States today, were to insist that the minimum qualification for a legitimate member of the Profession was Professional Registration, the first step in a long march would be completed.

The Professional Societies must recognize registration as a requirement for grade advancement, and it is the responsibility of the National Society of Professional Engineers, in particular to convince Industry, Government and Education that Registration as a Professional Engineer and the development of individual professional responsibility go hand in hand and that Professional Engineers make better employees, better Civil Service engineers and better engineering educators.

If each of these groups would dedicate their programs to achieving the above objectives, I sincerely feel that Engineering as a learned Profession would become more identifiable to the public and would better serve the public and the members of the Profession and that Registration would become the, "Hallmark of the Profession," rather than simply a license to do business.

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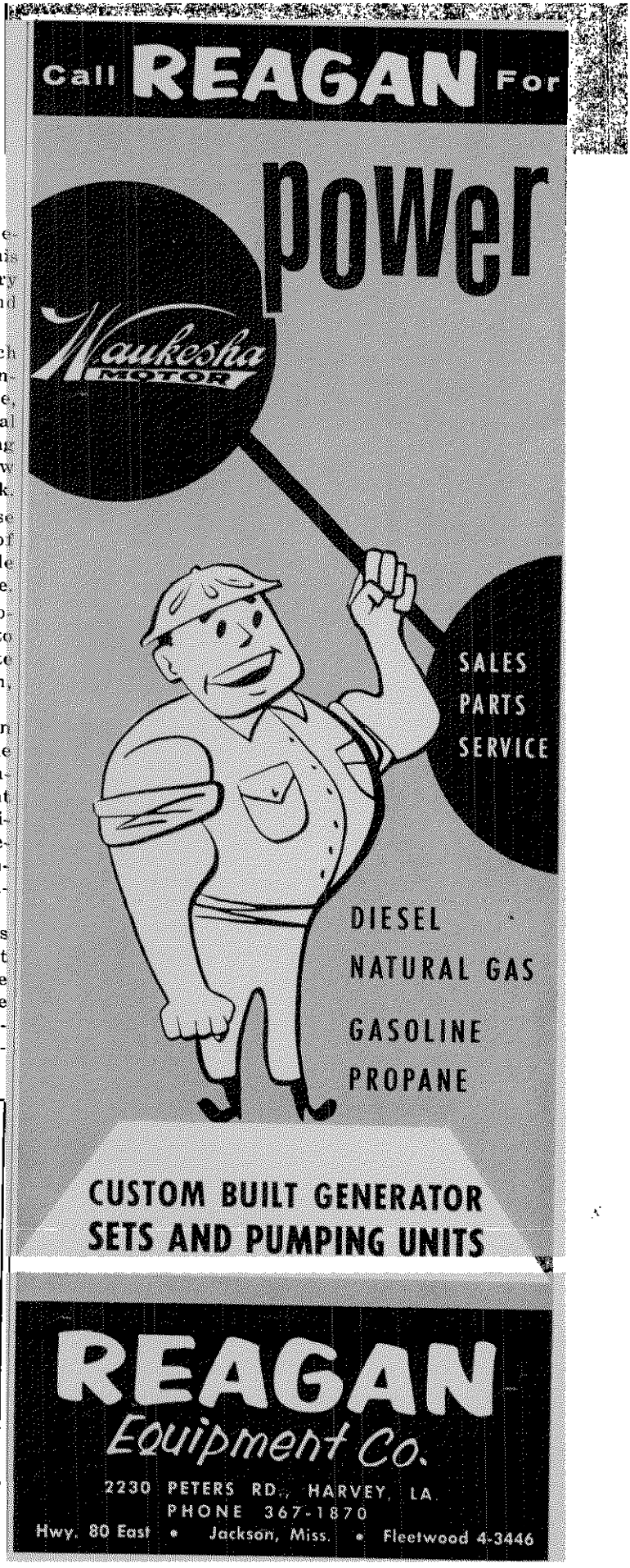

Levees- Field Notes
By Allen Johnson

LES first vice-president Calvin T. Watts was re-elected secretary-treasurer of the Association of Levee Boards of Louisiana. Other officers elected at the meeting were N. J. Caballero, Donaldsonville, president, and W. C. Brown, Jonesville, vice president. Watts was also elected executive committeeman with R. L. Bailey, Jr., of Tallulah.

Maj. Gen. Ellsworth I. Davis of Vicksburg, Miss., president of the Mississippi River Commission, told the association at the meeting that if levees don't hold up to expectations they should request an adjustment.

"Remember, of course, that since we must answer to Congress the adjustment must be adequately justified," the General cautioned.

Dr. Wernher von Braun, Director of the Marshall Space Flight Center in Huntsville, Ala., said that the $300 million spent to date in the Gulf area for space exploration projects will be more than doubled in six weeks. Dr. von Braun estimated that by 1965 annual NASA payrolls in South Louisiana should approach $100 million.

Industries in Louisiana are attempting to reduce the possibility of contaminating rivers and streams, according to Dr. Arthur G. Keller, LSU professor of chemical engineering, who is also chairman of Task Group I, Food Industries, on the National Technical Task Committee on Industrial Wastes.

The national committee held a three-day session in New Orleans recently dealing with problems of water pollution.

Dr. Keller, who is chiefly concerned with the sugar cane industry, said industrial wastes dumped into the Mississippi River are not considered serious. However, he said, when even small amounts are eliminated into slow-moving bodies of water, as in the Teche country, great problems arise.

He cited the situation several years back when an oil barge sank in the river below Baton Rouge, causing an unpleasant taste in the New Orleans drinking water. This, he said, passed by the city within a very short time. On the other hand, he continued, if a similar amount of oil had leaked into the waters in the Teche country, communities like Franklin would have had to depend on reservoir supplies for drinking water.

"Most of the water used by industries in the area is for cooling purposes; and very little other than chlorine is deposited into the Mississippi, along with some salt. Since the presence of chlorine in the water is useful in purifying raw sewage and since most impurties are chemically purified after traveling distances in water, these deposits are not serious," Dr. Keller said.

———o———

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EJC Computer To Lessen Drudgery

Engineers Joint Council has announced a long term, six point program designed to enhance information handling and data processing machine utilization in the engineering profession.

Foremost among the goals is the development of an engineering information center based on modern concepts of information storage and retrieval technology which will provide numerous services such as retrospective searches and current literature reports.

Other programs include:

Providing assistance to government agencies toward solving their information handling problems.

Stimulating the training of undergraduate students in the use of information resources and data processing machines.

Encouraging the wider application of data processing machines in engineering design activities.

Training practicing engineers in the use of information resources and data processing machines.

Promoting increased compatibility in data processing equipment made by different manufacturers.

A summary of the views of Walter Carlson, chairman of EJC's Information Systems Committee, concerning this program follow:

A basic consideration is the primacy of human intelligence in the conception, the construction, and the operation of machines. There is irony in the fact that the engineering profession must now apply the same penetrating analysis to using machines for relieving mankind of mental drudgery and extending its horizons, as it has for more than a century in relieving mankind of physical work and thereby, rebuilding our society. The irony arises in the discovrey that one of the engineer's most productive areas for such analysis is his own work, which is almost exclusively in the intellectual domain.

This observation poses a challenge to some, but to most engineers it poses a threat. Any threat to an established segment of the economy, however it may be posed, necessarily produces a variety of counteractions aimed at eliminating the threat or severely reducing its effect. The dilemma facing an engineer who must decide whether to mechanize some portion of his own activities is probably the most severe of all the dilemmas created for professional people by our rapidly changing technology. It is, therefore, instructive to see how devices for automatic information processing have progressed in terms of basic man-machine systems.

The first application of engineering skill to create man-machine systems for the handling of information, as opposed to doing work, was in communication networks. Since the characteristic of these networks is that the information must be received *exactly* in the form it is sent, the mental skills replaced by machines were obviously of the lowest order. The operator of telegraph, wireless, and telephone systems were required only to translate a set of symbols (received visually or aurally) into a set of coded actions, which uniquely transmitted the given message or hooked parts of the network together. The mechanization of these translation processes, first by mechanical relays and then by electronic means, has been one of the oustanding achievements of the engineering profession in this century.

At the next level of mental activity, the use of prepared instructions to operate a business procedure or production equipment, engineering skills have created a sequence of increasingly complex devices for automatic prosecution of previously prepared instructions. On the office side, a host of electromechanical machines have led up to today's electronic computer with internally stored instructions, as the machines for converting numerical data from one format (input) to another format (output), considered more suitable for the needs of business decision-making. On the factory side, data acquired from the production processes have activated a whole family of control units, which send corrective signals back to the process or inform human operators of the steps they must take to achieve efficient performance. The word "automation" is often used loosely to establish in a single phrase the remarkable engineering achievements of these data processing and control systems and, at the same time, point out the far-reaching social and economic implications of these achievements.

Up to this point, the engineer has been dealing with the analysis of mental processes carried out by people whose professional skill requirements are normally considered inferior to those of engineering. At the next level, however, the engineer meets himself face to face.

At this next level we find the manipulation of nonnumeric entities—ideas, concepts, languages, and meanings. The highest skills of the engineering profession are now being joined with those of the medical profession, the biologists, the mathematicians, and the social scientists to gain a fuller understanding of how the human mind assimilates, stores, and recaptures an endless mixture of data and non-numeric entities. Even without a detailed understanding of such mental processes, engineers have created and operated useful storage and retrieval systems for technical information. The road to mechanization of the mental skills encountered at this level lies in the future.

At the next and highest level of mental skill, we find the learning processes—the ability to adapt old information to new environments, and ability to discover hitherto unrecognized relationships, and the ability to synthesize the solution to new problems from previously stored methods. Only in the brightest corners of the engineering profession are there a few men who are sufficiently presumptuous to tackle the task of devising machines for activities such as these. Within the time scale surveyed by this paper, however, it it quite likely that machines will be given responsibility for some of the rudimentary learning processes. The engineering profession must embrace this likelihood in its planning for the future of information systems.

From the foregoing, it is obvious that the engineer has a dual role in man-machine systems. He creates them, and he is a part of them. In this paper, we are primarily concerned with the engineer as a part of one or more man-machine systems.

(Continued on Page 22)

1962 ETHICS REPORT

By J. T. Knight, Jr.

The year, for this Committee, actually got under way with the Planning Meeting, held in Alexandria on March 9 and 10, 1962.

That meeting, which was attended by seven members of the Committee, was occupied not only with planning the activities for the administrative year 1962, but also bringing to conclusion several investigations which had been carried on during 1961.

The report of this March meeting of this Committee was printed completely in the April issue of the Louisiana Engineer. There is, therefore, no need to include it in this report except by reference. As this report of the Planning Session was quite comprehensive and rather optimistic, it seems that it should be checked to see just how closely the work of this Committee followed the plan.

A request was made to the Board of Direction that in the future this Committee should be composed of two (2) members from each Section, and that the members be appointed for two (2) years, and the terms staggered so that one new member from each Section each year would be appointed to the Committee. This was passed by the Board of Direction at its meeting of July 9, 1962.

At the request of this Committee, the Board of Direction at its July 9th meeting passed the following, defining the scope of the activity of this Committee:

> "The Ethics and Professional Conduct Committee is an arm of the Board of Direction. It is not a police group, nor is it empowered with any disciplinary authority. Its primary function shall be to investigate, assemble facts and make recommendations to the Board of Direction, and it shall not take direction from other than the Board of Direction."

The Committee feels that the widest possible publicity should be given to the foregoing in order that all who may have cause to refer matters to this Committee will be aware that such presentations should be to the Board of Direction, who in turn, after consideration, may refer the matter to this Committee.

This Committee prepared three articles which were published in the Louisiana Engineer:

> June 1962—"Cites Honesty, Justice, Courtesy," by Marion C. Bubenzer
> August 1962—"What are we talking about—Ethics?", by J. T. Knight, Jr.
> October 1962—"What Price Ethics?", by J. T. Knight, Jr.

The Baker, Louisiana (swimming pool) investigation was formerly submitted to the Board of Direction.

Regarding the Yellow Page listing in the telephone directory by a consulting group, a report was made to the Board of Direction, At that time, it was learned that the Board of Registration had already taken action, and the situation had been resolved. Also about this time (June 1962), the NSPE Ethical Practices Committee approached the A.T. & T's Administrator of Directory Operations, and others, to establish uniform telephone listings. The end results of this action will probably be forthcoming during the next year or two. It definitely is a long range program.

The Committee had planned and hoped to have a mid-year meeting in some central location in the State, but this never materialized. However, it is felt by this Committee that the 1963 Committee should try out this idea for the purpose of clearing the work load of the Committee more expeditiously, and possibly having the opportunity to study first hand the exposure to ethics of the senior engineering students in our technical colleges and universities of the State.

The Board of Direction, upon formal request, did approve reasonable reimbursement of the expenses of this Committee to cover mailing, reproduction, and long distance telephone calls. To date no requests have been made for reimbursement.

No definite conclusions have been arrived at regarding the posture of this Committee in cases involving non-members of L.E.S., or municipal, parish or state officials. It is the general feeling that violation of the Canons of Ethics or non-professional conduct by such individuals are beyond the jurisdiction of even the L.E.S.

A report was received at the March meeting from Professors Barnwell and Killgore of the L.P.I. regarding the conduct of a professional engineer. This has been the subject of investigations and much correspondence. Because of the importance of this matter, it was felt that it could not be reported on without a meeting of the Committee. This meeting will take place in Lake Charles on Saturday, December 8, 1962, and the Committee finding and recommendations should be ready by the year end.

A number of situations have been presented to the Chairman of this Committee, and they were not referred to the entire Committee. They were single incidents where conditions affected only one person usually, or where one person was seeking individual guidance. These letters were answered, but not in the name of the Committee, nor in the name of L.E.S., but only as setting forth "one man's opinion."

Subsequent to the March meeting, Walter H. Scales of New Orleans was added to the Committee, Professor Joseph H. Barnwell resigned from the Committee, and Mr. Thomas F. Ruffin was dropped because of his departure from the State of Louisiana, for a more or less indefinite period of time.

The Committee feels that the reaction to the efforts of this group indicates the constant need for a strong Ethics and Professional Conduct Committee. We feel that two members from each section serving two year terms will give continuity to the efforts of this Committee; as a matter of fact, this is most important because of the "carry-over" of investigations from one year to another.

There are two things which this Committee failed to accomplish during this past year. We feel these two things are important and therefore recommend them to the 1963 Committee:

a. Develop a proper definition of the Professional Engineer.
b. Develop a comprehensive description of the entire function of this Committee, (something more realistic and descriptive than Paragraph (c) of By-Law (6) Committees).

L.E.S. President James Janssen has appointed to the State Scholarship Committee Fred Fenn, Dean of the School of Enginering, L.S.U.; Jerry Dyson, Engineer, State Department of Public Works; along with Douglas Latimer, Engineer, Gulf States Utilities Company in Baton Rouge as Committee Chairmen.

The committee will again work with NSPE and the ARMCO Steel Corporation in selecting a state candidate for the ARMCO — NSPE Civil Enginering Scholarship. As in previous years, ARMCO will provide five $3,000 scholarships.

Each L.E.S. Section will nominate a candidate to the State Scholarship Committee for consideration as the state winner. The successful state candidate will be provided transportation by ARMCO to a location where he will take a test with other state's candidates.

Because of the large monetary value of the scholarships, they are highly prized. If you know of any high school senior who plans a career in civil engineering you should suggest that he compete for one of these scholarships, and he should contact his high school principal or science teacher.

Chapter winners have to be selected by December 31, 1962. The state winner will be announced by February 15, 1963.

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J. W. Beretta, P. E., was elected director, Southern Zone, of the National Council of State Boards of Engineering Examiners at the Forty-First Annual Meeting of the NCSBEE held in Kansas City, Mo., recently. Beretta is a past president of NSPE.

Other officers elected were William M. Spann, P.E., president elect; Leo W. Ruth, P.E., director, Western Zone; James A. McCarthy, P.E., Central Zone director; and Chester A. Arents, P.E., Northeast Zone director. Dean Weston S. Evans, P.E., of the University of Maine, was installed as president for the coming year.

All NCSBEE officers for the coming year are members of NSPE.

Three hundred and forty persons, including delegates and wives, representing 13 countries of North and South America, met in San Juan, Puerto Rico, August 26 to September 1 for the Seventh Biennial Convention of the Pan American Federation of Engineering Societies. (UPADI).

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The Annual Meeting of Engineers Joint Council will take place Wednesday, January 16 and Thursday, January 17, 1963 at the Hotel Biltmore in New York City.

Dr. Ernst Weber, Vice-President of the Institute of Radio Engineers and past President of that organization, and Dr. B. Richard Teare, Jr., President of the American Institute of Electrical Engineers, have been elected President and Vice-President, respectively, of the newly forming Institute of Electrical and Electronic Engineers.

At the same time, Donald G. Fink, Director of the Philco Scientific Laboratory, has been appointed General Manager of the IEEE. As such, Mr. Fink will be responsible for the day to day operation of the new society.

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A new document on the position of engineering manpower will soon be available through the Engineering Manpower Commission of EJC. The publication will contain all of the significant data relating to the growth of engineering manpower over the last ten to fifteen years.

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The Engineering Manpower Commission is now collecting salary information for well over 200,000 engineers in government, industry, and education throughout the United States for the 1962 "Professional Income of Engineers" study which will be the most comprehensive available based on salary by length of experience.

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A tentative four-point plan to establish an Engineers Joint Council Achievement Award to honor outstanding engineering achievements was established by the EJC Engineering Project Award Committee under the Chairmanship of Harold S. Osbone at its September meeting.

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Announce Annual Meeting Plans

All sessions will be held in the JUNG HOTEL with the exception of the GENERAL INTEREST PROGRAM which will be held in the ENGINEERS CLUB, 404 BARONNE STREET.

Registration of members and guests on Mezzanine Floor of the Jung Hotel from 9:00 A.M. Thursday through 4:00 P.M. Friday. THERE IS NO REGISTRATION FEE.

(Deadline for Tickets to Banquet Is 4:00 P.M. Friday)

THURSDAY MORNING, JANUARY 10TH

9:00 A.M. REGISTRATION.

10:30 A.M. TECHNICAL SESSION PRESENTED BY ENGINEERING STUDENTS.
PLACE: Green Room.
PRESIDING: Kenneth Kramer, President, LES Student Chapter No. 1, University of
PLACE: Green Room.
Southwestern Louisiana.
All registrants welcome.

THURSDAY AFTERNOON, JANUARY 10TH

1:30 P.M. GENERAL MEETING OF LOUISIANA SOCIETY.
PLACE: Tulane Room.
PRESIDING: James S. Janssen, President.
INVOCATION: Rev. Robert C. Witcher, Rector, St. James Episcopal Church, Baton Rouge, La.
INTRODUCTION: Officers of State Sections, Louisiana Engineering Society.
KEYNOTE ADDRESS: Brig. Gen. Richard G. Stilwell, Commandant of Cadets, United States Military Academy, West Point, N. Y.
TITLE: "ENGINEERING EDUCATION OF UNITED STATES MILITARY CADETS."
ANNUAL REPORT: John P. Fernandez, Secretary-Treasurer.
ANNUAL REPORT: James S. Janssen, President.
Presentation of Certificates of Merit to Student Conference Speakers.
Presentation of Life Membership in Society to James H. Collins, Will S. Guedry, S. E. Hottinger, Jr., and J. F. Muller, Jr.
Presentation of Certificate of Appreciation.
Presentation of Honorary Membership in Society by Dr. Wayne P. Wallace.
TELLER'S REPORT: Ben T. Bogard, Chairman of Nominating Committee.
Installation of Newly Elected Officers.
Presentation of Token of Appreciation to Retiring President, James S. Janssen.
Announcements.
Adjournment.

THURSDAY EVENING, JANUARY 10TH

8:00 P.M. GENERAL INTEREST PROGRAM.
PLACE: Engineers Club of New Orleans, 404 Baronne Street.
PRESIDING: Calvin T. Watts, President-Elect of the Louisiana Engineering Society.
Introduction of President of Woman's Auxiliary.
Presentation of Louisiana Engineering Society Civic Activities Medal — Andrew M. Lockett Award.
SPEAKER: Dr. F. Jay Taylor, President, Louisiana Polytechnic Institute.
TITLE: "NEW DIRECTIONS IN TECHNICAL EDUCATION."
Refreshments will be served after the meeting through the courtesy of the Woman's Auxiliary to the Louisiana Engineering Society.

FRIDAY MORNING, JANUARY 11TH

9:30 A.M. TECHNICAL SESSION.
PLACE: Green Room.
PRESIDING: H. L. Payton, Manager, Monsanto Chemical Co., Luling, La.
VICE CHAIRMAN: H. R. Davies, Jr., Waldemar S. Nelson & Co., Inc.
SPEAKER: Manning Riser, Manager, Pontchartrain Works E. I. duPont de Nemours & Co., Inc.
TITLE: "DUPONT'S PONTCHARTRAIN WORKS."

10:30 A.M. TECHNICAL SESSION.
PLACE: Green Room.
PRESIDING: Frank Riess, Vice President, American Marine Corp.
VICE CHAIRMAN: J. J. Ranna, A. M. Lockett & Co., Ltd.
SPEAKER: Robert H. Macy, Naval Architect and Marine Engineer, Pascagoula, Mississippi.

12:00 NOON A.S.M.E. LUNCHEON.
PLACE: Room No. 2, Second Floor.
PRESIDING: L. L. Denson, Chairman, New Orleans Section, American Society of Mechanical Engineers.
SPEAKER: J. L. Erichson, Fred M. Erichson Co., Inc., New Orleans, Louisiana.

FRIDAY AFTERNOON, JANUARY 11TH

2:00 P.M. PANEL DISCUSSION.
PLACE: Green Room.
PRESIDING: Dr. Lee H. Johnson, Dean, School of Engineering, Tulane University.
VICE CHAIRMAN: Roy E. Johnson, H. H. Robertson Company.
PANELISTS:
Dr. Jesse W. Mason, Dean of Engineering College, Georgia Institute of Technology.
Dr. Fred H. Pumphrey, Dean, School of Engineering and Director of Engineering Experiment Station, Auburn University.
SUBJECT: "PROFESSIONAL AND INDUSTRIAL PRACTICES INFLUENCED BY ENGINEERING EDUCATION."

3:15 P.M. TECHNICAL SESSION.
PLACE: Green Room.
PRESIDING: Cary B. Gamble, President, Cary B. Gamble Associates, Inc.
VICE CHAIRMAN: L. L. Denson, Consulting Engineer.
SPEAKER: Robert H. Avery, Director of Application Engineering, Cambridge Filter Corporation, Syracuse, New York.
TITLE: "NEW CONCEPTS IN CLEAN ROOM DESIGN."

SATURDAY MORNING, JANUARY 12TH

9:30 A.M. CONSULTING ENGINEERS SECTION OF L.E.S.
PLACE: Room No. 2.
PRESIDING: Joseph Montgomery, Chairman.

SATURDAY EVENING, JANUARY 12TH

7:00 P.M. - 8:00 P.M. COCKTAIL HOUR.
PLACE: Green Room.
8:00 P.M. BANQUET.
PLACE: Tulane Room.
9:30 P.M. DANCING.
(Deadline for Tickets to Banquet Is 4:00 P.M. Friday)

LADIES ACTIVITIES

THURSDAY, JANUARY 10TH

9:00 A.M. REGISTRATION.
7:30 P.M. GENERAL INTEREST PROGRAM AND COFFEE PARTY.
Engineers Club, 404 Baronne Street.

FRIDAY, JANUARY 11TH

SATURDAY, JANUARY 12TH

LOUISIANA ENGINEERING SOCIETY ANNUAL MEETING COMMITTEE PERSONNEL

John F. Vogt, Jr.....General Chairman
George M. Baccich, Jr.....General Vice Chairman

BANQUET:
Francis J. Favaloro, Chairman
Harvey J. Martin, Vice Chairman
W. P. Cleveland, Jr.
S. G. Dinkel
G. H. Kellerman
R. G. Trumps

CORRDINATION WITH WOMAN'S AUXILIARY:
Waldemar S. Nelson, Chairman

PROGRAM:
Walter J. Verlander, Chairman
R. F. Muller, Vice Chairman

TECHNICAL PAPERS:
Spencer G. Smith, Chairman
Roy E. Johnson, Vice Chairman
H. R. Davies, Jr.
L. L. Denson
J. J. Ranna

RECEPTION:
Edward A. McLellan, Chairman
Ben T. Bogard, Vice Chairman
Ole K. Olsen
John Riess
James M. Robert
Frederick H. Fox
James M. Todd
Frederick N. Billingsley
John H. O'Neill

PUBLICITY:
Ben Louviere, Chairman
A. B. Paulson, Jr., Vice Chairman

REGISTRATION:
Claude Kelly, Jr., Chairman
Laurence Bodet
Michael Ruck

STUDENT CONFERENCE:
Pierre Stouse, Chairman
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Edmond M. Brignac, Jr.
A. Lee Dunlap
Edward S. Bres
David W. Godat
William H. Rhodes
Charles M. Kerr
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Leo Jos. Lassalle
Clayton L. Nairne
W. Stone Leake
Herman L. Lehmann
Lionel J. Cucullu
R. Mallard Seago
Michael C. Abrahm
Frank W. Macdonald
Wayne P. Wallace
Waldemar S. Nelson
E. M. Freeman
Roy T. Sessums
Leonard H. Bossier
Truman E. Pounds
Walter C. Vincent
Gus G. Quinn
H. L. Henry, Jr.
Marion C. Bubenzer

Coca-Cola Begins New Syrup Plant

Ground was broken in August for a $3 million Coca-Cola syrup plant in New Orleans.

On hand for the ceremony was J. Paul Austin, president of Coca-Cola, who said the plant would be one of the most modern soft-drink syrup manufacturing facilities in existence when completed.

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Annual Report

The Legislative Committee Report contained considerable detail which will be of great value to succeeding Legislative Committees. It covered the various meetings that the Legislative Committee and the Registration Law Committee held with the Architects Associations in which differences were ironed out. The engineers then agreed to support the architects, proposed legislation for improvements in the architect's registration law. This is the law that was ultimately vetoed by the governor, reportedly because of a required one year in training period.

The committee also assisted in defeating a house designers licensing bill which it did not feel afforded adequate protection to the public.

The Committee recommends to future Legislative Committees that it is important to get as much advance information as possible on any proposed legislation to be able to placate opposition groups who are against the Legislation *because of lack of information.* The organization of the committee should be made well in advance of the Legislative Session to allow them time to present the Society's proposals and to get a definite commitment from each Legislator before they arrive in Baton Rouge for the Legislature. It is further recommended that a possible sub group be formed to be sure that Legislators are given the latest information on changes as they occur. This information should be short, easily read, and informative.

Another suggestion is that an engineering advisory group be made available to the Governor, a group that he and the Legislators could call on regarding any bill to draft or clarify engineering details just as he has legal advisors. The advisory group should not be too large—four or five members.

Henry L. Landry concluded his report by thanking the members of the Legislative Committee and other L.E.S. members, especially including the Registration Law Committee led by Waldemar S. Nelson, for their excellent work and cooperation preceding and during the Legislative Session. The officers and the membership of the Louisiana Engineering Society, in fact the entire engineering profession in the State of Louisiana is indebted to these men for the permanent benefits that have resulted from their strenuous, time-consuming efforts.

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Pavia Enters Private Practice

Edgar H. Pavia, New Orleans engineer, is entering into practice as a private consulting engineer, according to a recent announcement.

Pavia, a graduate of Louisiana Polytechnic Institute, Ruston, Louisiana, has had considerable experience in the design and construction of power plants, water transmission and distribution, sewerage systems, drainage pumping, natural gas distribution, elevated water storage, ground storage (water) and pumping station for normal and fire demand built in lieu of water transmission plant.

He has also done preliminary studies of large shipbuilding ways and graving docks as well as the design of mechanical and electrical facilities 900' x 110' welling and assembly plants.

Pavia, who resides at 7443 Onyx Street in New Orleans, is a member of the Louisiana Engineering Society, American Society of Mechanical Engineers, American Institute of Electrical Engineers, National Society of Professional Engineers, Water Pollution Control Federation, Louisiana Conference on Water Sewerage & Industrial Waste, and the Engineers' Club. He is professionally registered in both Louisiana and Mississippi.

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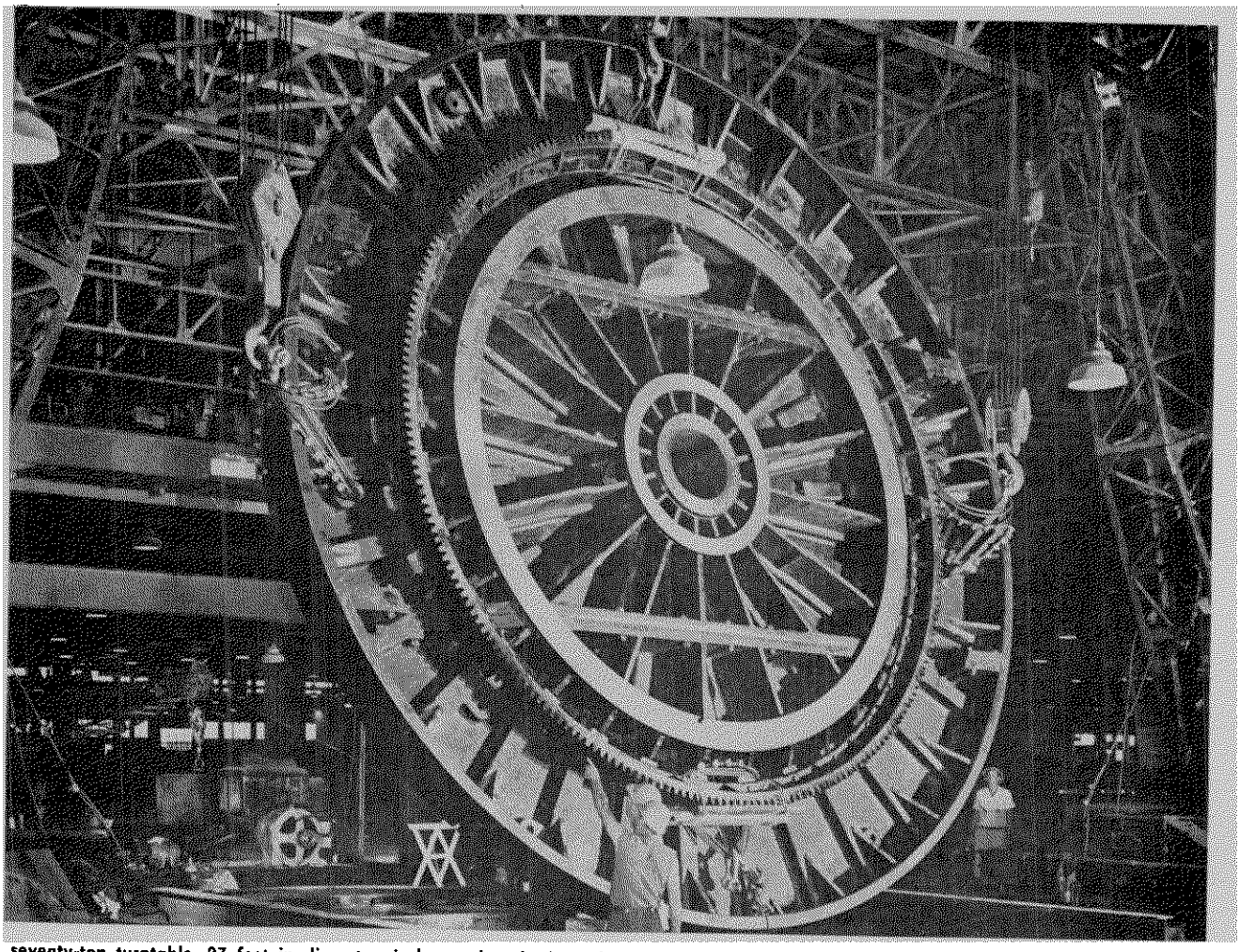
Boeing President Explains Michoud Role



A seventy-ton turntable, 27 feet in diameter, is lowered to horizontal position in the Boeing area of the Michoud Operations plant at New Orleans. Operation was part of the assembly of the vertical boring mill, largest in the U.S., which will machine "Y" rings for the S-1C space booster. Associated parts of the mill weight approximately 300 tons. The turntable, enlarged by outriggers to accommodate the 33-foot booster rings, is powered by a 75 h.p. D.C. motor.

By WILLIAM M. ALLEN
President, The Boeing Company

I appreciate very much the cordial welcome we have received in New Orleans.

The friendly atmosphere has made our company's entrance into a new city and a new task a pleasant experience. I am sure that the 1,500 Boeing employees who have already settled here feel this same way.

I expect, now that New Orleans has become a major participant in the strange new venture of getting man on the moon, that you have pondered, as I have, the awesome naure of this undertaking. Certainly the assignment will demand the best that all of us can give. I need hardly mention that involved also are our nation's prestige and some billions of dollars. The National Aeronautics and Space Administration has a tremendous responsibility in directing this effort. It calls for the utmost cooperation in industry.

I would like to use part of my time here to acquaint you somewhat with Boeing—your new neighbor. It may be helpful if I review for you briefly some of our activities, and then bring into focus in particular our newest operation, here in Louisiana, in the building of the advanced Saturn booster for the National Aeronautics and Space Administration.

Boeing is a company only 46 years old. This is young in terms of industry generally, but not so young in terms of airplanes and space. We have some 100,000 employees in various parts of the country, engaged in building airplanes, helicopters, missiles, space equipment, turbine engines, and hydrofoil boats, and in related activities including extensive research and development work.

Many of you are undoubtedly familiar with the 707 commercial jet transport. We take a certain pride in

Mr. Allen, president of The Boeing Company, spoke before Members Council, Chamber of Commerce, at New Orleans, La., October 11, 1962.

this airplane. More than 300 of the four-engined 707 and 720 jets have been delivered to eleven domestic and fifteen foreign airlines, plus several to the Federal Aviation Agency and the United States Air Force. Late this year we will roll out the first three-engined 727, a new jet liner designed for shorter range operation. Incidentally, it will be well suited to the South with its concentration of short hauls between such large cities such as New Orleans, Atlanta, Dallas, Houston and Miami.

A military parallel of the 707 is the KC-135 jet tanker, being produced along with the commercial jets. The KC-135 also has a number of offshoots, including troop transports and special aircraft for use as airborne command posts.

The B-52 bomber itself, which you may have seen making vapor trails in your own skies, has been in production for a number of years, first in Seattle and then in Wichita, Kansas.

Another link in the chain of our national defense is the Boeing Bomarc, a supersonic interceptor missile which has the capability of operating by remote guidance over an area of one-half million square miles. The Bomarc has recently been phased out of production at our Seattle plant. The quantity already produced stands at constant alert at Air Force bases along the Atlantic seaboard and in Canada.

Our work in missiles, which began before the end of World War II with the GAPA, ground-air-pilotless-aircraft, and continued into the Bomarc development, has more recently taken a still more important form in the Minuteman intercontinental ballistic missile. A considerable debate has been going on in the Pentagon in recent years, and still continues, as to whether missiles will ever take the place of manned strategic bombers, with their global retaliatory capability. The Minuteman, a 58-foot-long solid-fuel rocket, appears to have the greatest capability yet developed in a missile for the replacement of manned bombers. It is being installed in ready-to-fire condition in underground silos at a number of widely separated locations throughout the country.

Other Boeing products are twin-turbine-engined helicopters being produced at Morton, Pennsylvania in various models adapted to use by commercial airlines here and abroad and by our military services; also gas turbine engines, manufactured in Seattle and used in the Navy's drone anti-submarine helicopters, in turbo-starter ground support units for jet aircraft and in other applications.

A space research vehicle which is under development in Seattle is the Air Force Dyna-Soar, recently designated the X-20. The name comes from the term Dynamic Soaring. It refers to a manned craft which can be boosted into orbit and then soar back to earth on wings, rather than plummeting down in the manner of a projectile and parachuting to land as in the case of the Mercury capsules. The vehicle is a cross between a space capsule and an airplane. It is experimental — yet to be flown. We expect the X-20 to contribute much to our knowledge of how to get along in the still unfamiliar and extremely hostile environment of space. We hope it will lead to other, more advanced craft.

The Dyna-Soar, the Minuteman, the Bomarc, and even the early GAPA, all have their bearing on the Saturn booster project. Many of the key personnel in the new program have participated in this chain of developments in he rocket field. George Stoner, our Saturn general manager, was manager of the Dyna-Soar project prior to the establishment of the Saturn team, and was previously program manager for Bomarc. Richard Nelson, manager of the Michoud plant, was engineering coordinator in charge of the original firings of the GAPA missiles from the salt flats of Utah, back in 1946. More recently he was manufacturing manager in the Bomarc organization.

I expect many of you are familiar with the character and general organization of the Saturn project, but for those who are not, it is a program involving several major components and the work of several companies, all under the general direction of the NASA Marshall Space Flight Center at Huntsville, Alabama. The term Saturn really represents two separate developments. The initial Saturn, called C-1, will have, in its finished form, two stages, or successively fired boosters. The first stage is necessarily the largest because it must boost the vehicle with its full load of unused fuel against gravity and against the resistance of the dense atmosphere nearest the ground. This first stage booster of the C-1 Saturn is made up of a cluster of eight rockets to be assembled by the Chrysler Corporation in its portion of the Michoud plant. The clustered rockets will deliver a total of 1½ million pounds of thrust, which compares with 360,000 pounds used in the manned Atlas-boosted Mercury orbital flights and 800,000 to possible one million pounds used by the Russians in their latest orbital flights.

This C-1 Saturn will be followed by the so-called Advanced Saturn, or C-5, which will have three stages of power. The first, or getaway stage, will consist of a cluster of five rocket engines, each with as much power as the entire cluster of eight in the preceding Saturn. So the total power will be 7½ million pounds of thrust, or five times that of the earlier version. This is the unit which Boeing will assemble at the Michoud plant. It sits at the bottom of the stack of three successive stages plus a payload capsule which will give the Advanced Saturn a standing height of 350 feet when it is finally put together at Cape Canaveral in Florida. Pushing this into space will be like flying a thirty-story building, thirty-three feet in diameter. You can appreciate the prodigious package of power that is involved.

To put the comparison on a slightly different basis, the first steamboat which came down-river to New Orleans 150 years ago, was less than half as long as the Advanced Saturn and its width was almost exactly equal to the rocket's diameter. I am told that the scoffers of that day said it would never be able to get back up the river against the current. Now you are building, here in New Orleans, a device powerful enough to push one of these steamboats, fully loaded, straight up and into orbit around the earth.

North American Aviation, Incorporated, is making the rocket engines for all three stages of the Advanced Saturn. It also will build the Apollo space capsule which will sit on the top of the thirty-story pile, containing the crew of three astronauts.

While Boeing is building the first stage, North American will be assembling the second and the Douglas Company will be building the third, or upper stage. Ultimately, still another unit will be stacked between the third stage booster and the Apollo capsule, namely, a

lunar excursion module. In this so-called "Bug," two of the three Apollo astronauts are to descend to the moon's surface while the third man stays up in lunar orbit, minding the machinery until the two are able to return, Buck-Rogers-like, I might say, with the report of their extraordinary adventure. The contractor for this excursion module is yet to be selected. Boeing is among the competitors.

As I am sure you know, there will be a number of preliminary flights into earth orbit and then sweeps around the moon and back before the flight I have described is to be attempted. These will occupy several years and perhaps add a few new strains of grey to George Stoner's seemingly indestructible head of hair. I am not asking him, of course, to match the hair condition of the president of the company in this effort. Even getting to the moon should not be worth that.

Probably the most unusual characteristic of the work at the Michoud plant will be the combination of extremely large dimensions with high precision workmanship. The first-stage booster, with its 33-foot diameter, will almost touch the roof girders even when lying on its side. On end it will stand 140 feet high. This has made necessary the construction of a special assembly addition to the plant. All the tooling for the work will necessarily be huge in scale, yet precise. The milling operation on some of the metal rings, for example, requires a machine so massive that we were able to locate only one of them in the country.

Because of the size of the parts, the seemingly minor matter of expansion at different room temperatures becomes so magnified that even the air conditioning must be watched carefully. Certain areas of the plant cannot be permitted to vary by more than a few degrees or the pieces built in one place on one day will not fit those built in another part of the plant on another day.

Much of the work must be done under conditions of hygienic cleanliness, because, for reasons of safety, no foreign particles or even dust may be permitted in the big tanks which are later to be charged with liquid oxygen to feed the combustion of the RP-1 fuel in the rocket engines.

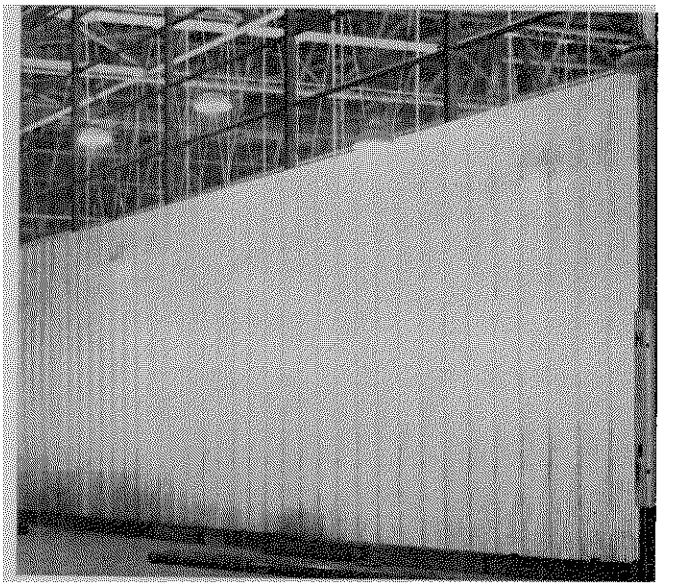
I would like, if possible, to offer some perspective on this unusual task to be undertaken here, and the nationwide effort of which it is a part. I believe it is difficult to overstate the importance of the work. The objective of landing Americans on the moon, tremendous a goal as it is, is really only an interim objective in our nation's attempt to understand and utilize our physical environment. It provides us with an immediate target against which to organize our talents and resources. But again and again in the past, in taking major technological steps forward, we have found that the most far-reaching results are in the continuing transfer of the scientific and technical knowledge gained, into activities directly benefiting our daily lives, our national economy, and our security.

We have just begun to realize the potential of space vehicles for improving our communications. A relatively few photos of Earth's physical appearance—as viewed from the outside—lead us to expect great strides in understanding weather and other physical phenomena which affect our living patterns. Equipment under development for space exploration is providing new standards for commercial machinery. Already, medical research involving man in space is providing important knowledge of life processes. While our ability to reach the moon offers prestige, our ability to apply the skills, knowledge and experience obtained in the program to our commercial and national defense efforts will provide the big payoff. Our survival may very well depend on it.

It is in this sense of the continuing urgency of our country's technological advance that the people of Boeing are undertaking the Saturn project. Viewed in this way, the project is not unlike other large assignments we have had in the past. Through the year we have competed for a number of tasks which, at the outset, seemed imposing, if not formidable. Some of these competitions we won; some we lost to firms adjudged more capable for the particular job at the time.

We are developing the first stage of the advanced Saturn vehicle because, among the competitors, we were considered best qualified. It remains for us to prove, with our product, that this is the case.

I stress this matter of competition because I believe the urgency of such a project can best be translated into action and achievement by people who know they were chosen on the basis of merit, who know their future success continues to depend on merit. The competitive environment provides the vital spur for achievement, and at the same time it provides the means for most rapid introduction of improvements into various channels of civilian use.



This large double wall of galvanized, corrugated steel will enclose—floor to ceiling—an area 270 feet by 210 feet in the Boeing section of the Michoud Operations plant where welding of some components of the advanced Saturn S-1C booster will be done. Average height of the wall is approximately 52 feet, sealing the entire enclosure from external influences of temperature and humidity. It is planned to maintain a temperature of 75 degrees, plus or minus 5 degrees, and a maximum relative humidity of 50 per cent (the target is 40 per cent, plus or minus 10).

It also provides, I feel, the best assurance of responsibility in the expenditure of the large sums of money allocated to the military and space programs. The responsibility is assumed best by the company selected on the basis of merit, not because of a need for work.

One of the most sobering responsibilities associated with these assignments is in the realm of safety and reliability. Whether it be in the transportation of more than 100 persons in a jet liner from New Orleans to Miami, or of three men to the moon, passenger safety is paramount. Each employee must recognize that his craftsmanship and his entire attitude toward his work contributes directly to this safety.

Now as to the type of personnel required in this work: A large number will necessarily be men whose experience with Boeing or allied industry qualifies them for the special assignment, as has been the case with many new people brought into your community. But a substantial portion of the five thousand ultimately to be employed here or at satellite operations including the nearby Mississippi test center, will be from local sources. Even though the proportion of specialized skills will be greater than in most manufacturing plants, there will be an increasing need, as the program develops, for other skills and talents. Secretaries, typists, clerks, drivers, mechanics, machinists—all will be needed and will be drawn from the local labor supply insofar as possible.

I believe the New Orleans community should benefit from the caliber of engineers and skilled technicians being brought here as new residents, as a result of the Saturn project. We have noticed, in Seattle and Wichita and at our other locations, that as the skill level of our personnel has increased due to technological advance, there has been a favorable effect on community life and particularly the education system. The individuals themselves wish to increase their technical and professional competence. Many will enroll for special courses, which we encourage them to do. Also, there develops a community of interest and an interchange between these professionally and technologically trained men and the faculties of the nearby institutions of higher education.

I should like to say, too, that The Boeing Company encourages its people to take a responsible interest and an active part in community affairs. We hope they will become a part of your social, cultural and political life, contributing to your charities, taking part in scouting, in service organization activities, and assuming various community responsibilities.

———o———

Nelson Tells Use Of Engineering Computer

In a speech September 19, 1962, before the Baton Rouge Branch of the ASCE, Waldemar S. Nelson, President of the firm, discussed his company's Computer Center and the general use of the computer in the engineering profession.

Mr. Nelson stressed the great savings in time and money that can be realized through the use of a computer. He cited various projects where the computer saved many engineering man hours and shortened the design and construction schedule. One example was the Old River Navigation Lock. Among other things, computer use enabled the contract for this construction to be let one year ahead of schedule. Other examples mentioned were the Offshore Sulphur Mine designed for Freeport Sulphur Company and the Bulk Terminal for the Port of New Orleans.

Construction project planning is continually being routed through the Engineering Computer Center. One recent project was a program for canal design in which 44 different cases were processed by the computer. This work took only eight hours with the computer while it was estimated that 2½ man months would have been required to complete the identical calculations by conventional methods.

The Computer Center has developed and used a program for stability analyses of floating platforms under various sea state conditions. Of interest too is the subdivision layout program which was recently completed. This program includes calculations for the design of curvilinear street type planning, lot and general site layout.

The Computer Center library now contains over 200 programs. Two new programs which have aruosed growing interest are the CPM, critical path method, and the PERT, program evaluation and review technique. These programs are primarily concerned with project schedule, cost and control and are used as a management tool by government agencies and others who do construction planning.

———o———

LSU Engineering Student Receives Cash Award

John T. Holloway, Jr., 19, sophomore in the LSU College of Engineering, was formally presented with a $100 award by the Baton Rouge chapter of Women in Construction recently.

Making the presentation was Mrs. Dora Summerell, president of the chapter. Also present was Dr. Fred H. Fenn, Dean of the College of Engineering.

Holloway is a student in the Department of Engineering and has a 2.39 overall average. Selection was made by the Admissions, Standards and Honors Committee of the College of Engineering on the basis of scholarship, need and residence in the immediate Baton Rouge area. These stipulations were partially requested by the Baton Rouge chapter of Women in Construction.

Born in Plaquemine, Holloway is the son of Mr. and Mrs. J. T. Holloway of Zachary. He was graduated as valedictorian from Zachary High School having majored in math and science and maintained a B+ average. He received the Science Award and Chemistry Award, was a member of Mu Sigma (national honor society) and the Parish Youth Council. Also, he held a parish office at Boys' State.

Women in Construction is a self-governing, nonprofit, nonsectarian and nonpartisan national organization composed of women employed in the construction industry by architects, engineers, general and mechanical contractors, subcontractors and material suppliers.

In New Orleans, Mrs. Louis M. Buja, chairman of the Founder's Scholarship Committee of the Parent Organization of the Woman's Auxiliary to the L.E.S., and Mrs. Waldemar S. Nelson, president, congratulate Mr. Terry Edmond Riemer, a sophomore in the School of Electrical Engineering at Tulane University, as he receives the 1962-63 scholarship in the amount of $500.00. Baton Rouge, Alexandria, Shreveport and Lake Charles Chapters of the Woman's Auxiliary present other annual scholarships to engineering students in Louisiana totaling $800.00.

Tulane Student Chapter Elects New Officers

The Tulane University Student Chapter of the Louisiana Engineering Society, now in its third year, has as its officers for 1963: Harold J. Gorman, Jr., M.E., President; Steve Steimle, C.E., Vice-President; G. E. Watzke, Ch.E., Treasurer, and Edward Diehle, C.E., Secretary.

The officers worked during the summer vacation to line up their program for the year and have a formidable list of speakers on the schedule.

The first meeting was held on October 10th featuring Ben Norman of Southern Bell Telephone Co. as the principal speaker. Mr. Norman spoke about the planning, design, testing, launching and operation of the Telstar Satellite.

The second meeting held on November 14 was a luncheon meeting with Dr. Frank W. MacDonald, Secretary of the Louisiana State Board of Registration of Professional Engineers and Land Surveyors, who spoke on the Louisiana Registration Laws.

The next meeting will be held as a joint meeting with the Student Chapter of the ASME on December 12th with a speaker from NASA who will talk on the various facets of the Space program.

The advanced planning and scheduling of such an elaborate list of speakers coupled with several good social functions has led to an increase in membership and has assured the group of one of its most successful years.

AIEE Honors Two Louisiana Engineers

Two Louisiana engineers were recently honored by being elected as "Fellows" in the American Institute of Electrical Engineers. These are Sidney E. Trouard of New Orleans Public Service Inc. and William O. Turner of Louisiana Power and Light Company. This is quite an honor as there are only 1,661 Fellows in the United States out of some 68,000 A.I.E.E. members.

Mr. Trouard was granted this singular distinction "In recognition of his extensive contributions as a pioneer and authority in the field of cathodic protection." He has been active in corrosion mitigation work since 1928 and many of the methods employed by him, especially in the reduction of underground corrosion by cathodic protection in his early days were considered radical and revoluntionary but have since become accepted as standard procedure throughout the United States.

Mr. Turner's citation reads simply and eloquently "In recognition of his professional contributions to the Electric Utility Industry." Thus in a few words is told the story of a career starting with a bachelor's degree in 1919, progressing up through positions of assistant engineer, resident engineer, construction superintendent, chief engineer, vice-president, president, chairman of the board and chief executive office, all in the electric utility industry. While his earlier work was in connection with design and construction of steam-electric generating stations and transmission and distribution facilities, in recent years his achievements were in providing leadership in the construction of the world's first fully automatic steam-electric generating station, in research and development of bundled conductor transmission lines, and in operation of a large scale electric utility pool.

It is interesting to note that of the six A.I.E.E. Fellows in the New Orleans area, five of these belong to the Louisiana Engineering Society and five are registered as Professional Engineers in the State of Louisiana.

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Civil Engineering Course Offered Navy Officers

The Civil Engineering Department of Tulane University has established a Civil Engineering Advanced Curriculum at the request of the United States Navy for post-graduate education of officers in the Civil Engineering Corps.

The department offers opportunities for students to major in any of five disciplines, namely, "Waterfront Facilities," "Sanitary Engineering," "Facilities Planing," "Structures" and "Soil Mechanics" and "Foundation Engineering."

The programs call for a two year curriculum for officers holding a four-year general science-engineering degree or for a one year curriculum for those who already have a bachelor degree in Civil Engineering.

The Tulane University is associated with the U. S. Naval Post-graduate School in establishing this program for the post-graduate education of officers.

(Continued from Page 11)

The engineer serves his fellow men by translating the findings of science into economically useful concepts. At any one moment, an individual engineer can operate on any one of the four levels of mental skills depending on his role as a conveyor of messages, as a calculator, as a retriever of information, or as an innovator. Across a period of time an individual may expend effort at each of these levels; the problem in analyzing his activities is to establish how much time he spends on each and how much of the mental effort expended at these levels of activity is of such a routine nature that it should be assigned to machines.

It is clear from the history of the Industrial Revolution and its replacement of manual effort by machines that the engineer, and every professional person at a comparable level of skill, will vigorously resist the transfer of any portion of his work to machines. It is equally clear from such history that every task the engineer relegates to machines will free him for work demanding higher skills and providing larger rewards. It is also clear that the engineer who uses machines properly will cause them to perform prodigious feats of routine information processing that far exceed today's concepts of what a human being can accomplish. However, much remains to be done before the engineer becomes capable of analyzing himself effectively as part of a man-machine system.

The sense of being part of a system is a concept that is contrary to the tradition of the engineer. In college he was required to learn a specialized branch of engineering. In his first job assignments he was required to develop a further degree of specialization within his chosen subdivision of engineering. Rarely has he had the opportunity to generalize and embrace several of the engineering or scientific disciplines. As a consequence, any engineering job of economic importance is carried out by merging the skills of many engineers, each contributing some part of his specialty. Thus, the synthesis of a set of instructions for a machine to carry out a significant engineering task, however menial it may be, requires a detailed understanding of the specific contribution of many individuals. This synthesis of multiple contributions into a working model is a formidable task, surely more difficult than creating a model of a physical system, such as a plant operation, a missile launching, or an automobile ride.

How well can we describe the engineer's role in the man-machine system representing his own work? Today, not well at all. The means for obtaining a better description must be found in the near future. It would be better if the engineering profession developed such descriptions in enough detail to be useful. If it doesn't, others will be forced to do the job.

—o—

H. K. Porter Increase Capacity

A $675,000 capital expansion program for H. K. Porter Company's basic refractories plant here has been announctd by J. S. Morrow, Vice-President and General Manager of the refractories division.

The expansion program will increase the capacity of the plant by approximately 25 per cent and is scheduled for completion this year.

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 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.

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 warant 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—Is it necessary that an applicant for registration as a Professional Engineer 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—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.

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IP $4.7 Million Expansion Planned

International Paper Company has announced a $1.9 million expansion of its plant at Springfield, Louisiana and a $2.8 million expansion of its Bastrop, Louisiana facilities.

Orbit Valve Co. to Little Rock

Orbit Valve Company of Tulsa, manufacturer of valves for the petroleum industry, announced it would move its entire operation to the Little Rock Industrial District.

The firm will employ about 185 persons and have an annual payroll of $1 million.

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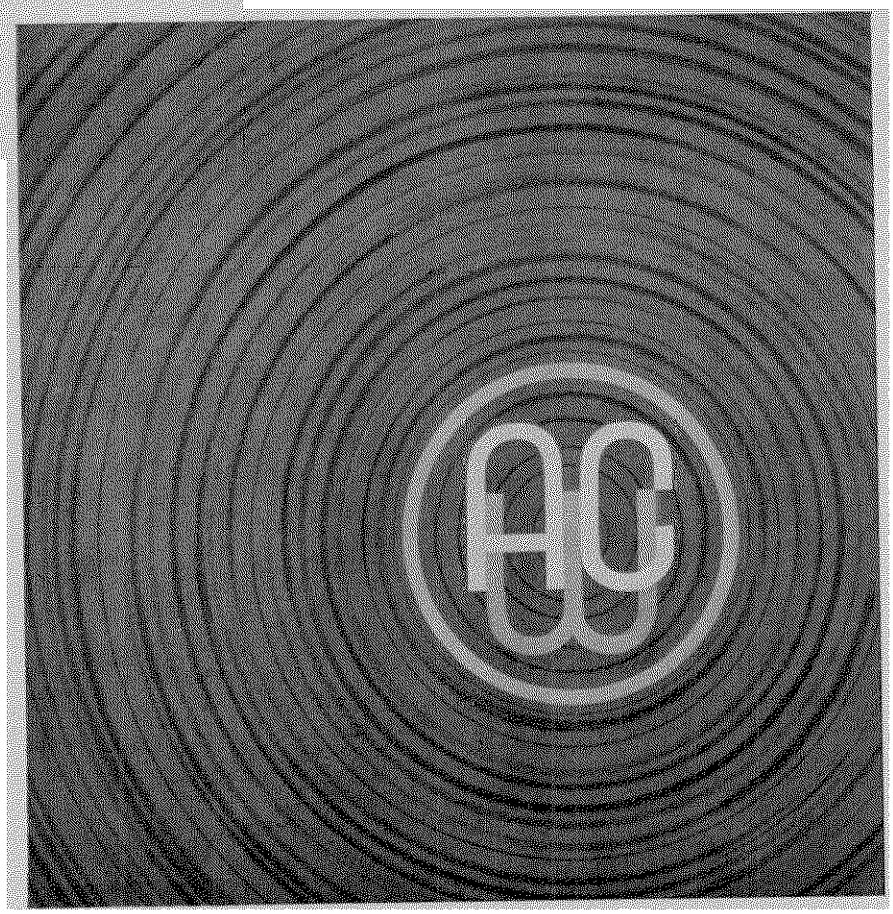

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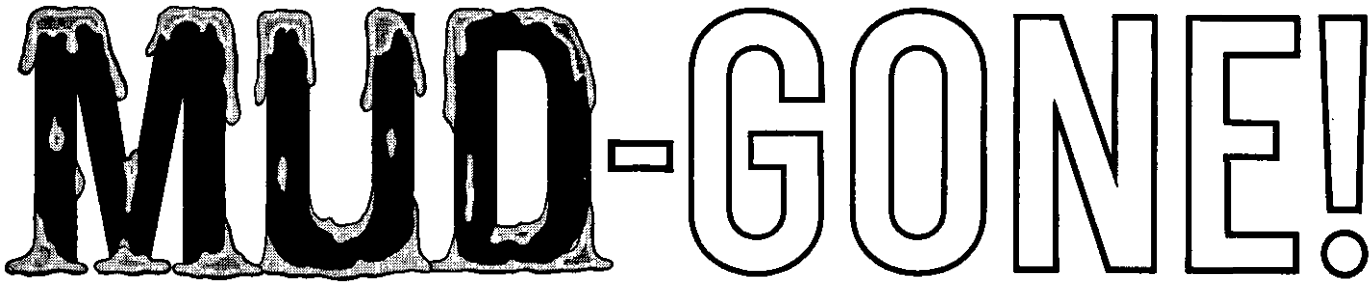

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